

**DISEÑO ESTRUCTURAL, HIDRAULICO Y SANITARIO DEL  
NUEVO LICEO DE LA UNIVERSIDAD DE NARIÑO**

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**FACULTAD DE INGENIERIA**

**DEPARTAMENTO DE DISEÑO Y CONSTRUCCION**

**PROGRAMA DE INGENIERIA CIVIL**

**SAN JUAN DE PASTO**

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**Trabajo presentado para optar al título de**

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## **DEDICATORIA**

A DIOS por permitirme alcanzar uno de mis grandes sueños.

A mi mamá NELLY B. AGUIRRE por su amor, comprensión, apoyo y sacrificio constante; y por haberme dado la libertad de escoger mi propio camino.

A mi abuelo LUIS R. AGUIRRE, ya que fue él quien hizo el papel de padre y colaboró con lo que soy ahora, una persona honesta y responsable.

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A mis tías, tíos, primos y a toda mi familia en general que siempre han vivido pendiente de mi desinteresadamente .

A mis amigos que de una u otra manera contribuyeron en la realización de este trabajo.

**ROSSY KATIANA ARROYO AGUIRRE**

## **DEDICATORIA**

A DIOS por ser mi mejor amigo y por todos los favores recibidos.

A mis padres GONZALO Y CELINA, que siempre se han esforzado por sacar nuestra familia adelante, incentivándome a estudiar; demostrándome todo su amor y comprensión.

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**ELIZABETH CALZADA CASTILLO**

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## **RESUMEN**

El diseño Estructural, Hidráulico y Sanitario del Nuevo liceo de la Universidad de Nariño; se realizó teniendo en cuenta las normas colombianas establecidas; para el estructural la Norma de Diseño y Construcción Sismo-Resistente NSR-98. y para EL hidráulico y Sanitario las RAS-98.

Para el estudio de suelos se contempló el análisis y característica de la estructura a edificar; la clasificación del proyecto es una edificación de tipo intermedio y la complejidad de tipo II. Para la investigación del subsuelo se realizaron 5 sondeos; la profundidad máxima alcanzada fue de tres metros, encontrando a esta profundidad un conglomerado con la presencia de bolos de tamaño grande, en una matriz de color tabaco. Los ensayos realizados fueron: granulometría, contenido de humedad, clasificación, límites y compresión inconfiada. De estos resultados se concluyó que el desplante utilizado para el diseño de la cimentación sería de 1.20 m. y la capacidad admisible del suelo de  $12.76 \text{ Tn/m}^2$ .

Para evitar alteraciones de las propiedades físico mecánicas en el suelo de cimentación por acción del intemperismo, el fondo de las excavaciones se protegerá con un solado de concreto pobre de un espesor no mayor de 10 centímetros.

El diseño de la cubierta se hizo con un sistema estructural metálico; proponiendo una combinación de cerchas, muros tímpanos y vigas para recepcionar las cargas transmitidas por el peso soportado por las correas; a su vez dichas cerchas y muros depositarán las cargas indirectamente mediante ménsulas de concreto sobre las columnas. Además en cubierta también tenemos marquesinas tridimensionales y domos en acrílico.

La Cercha metálica se diseñó con el programa de diseño estructural SAP-2000; este arroja los esfuerzos a los que están sometidos los diferentes elementos de la estructura después de meter las cargas puntuales sobre los nudos, tratando que las diagonales trabajen a tensión con el fin de evitar elementos esbeltos a compresión, los cuales tienden a ser más sensibles a falla. Las secciones utilizadas son las comerciales de Diaco.

Se diseñaron tres tipos de correa dependiendo de la longitud, altura, y base de la misma; analizando que la cuerda inferior funciona a tensión, la superior a flexo compresión y las diagonales a compresión.

En el análisis estructural se dividió toda la estructura en cinco bloques para mayor facilidad en el diseño. Se tiene el bloque de las Aulas; que a su vez se dividió en dos bloques porque podría tener problemas sísmicos y en la construcción por ser una estructura un poco grande e irregular. También está el bloque de la portería, las oficinas, los baños y la cafetería. Los elementos estructurales estarán dispuestos en un sistema aporticado.

El predimensionamiento de las vigas aéreas, vigas de cubierta y vigas de cimentación se hizo con la tabla C.9-1(b) de la norma; a diferencia que la viga de cimentación debe ser capaz de soportar una fuerza a tensión o a compresión 0.25 veces la carga del elemento que tenga la mayor carga que interconecta, por lo tanto  $P = 0.25F_{vmax}$ .

Los bloques de las aulas son los únicos que tienen dos niveles, por lo que la losa de entrepiso se diseñó aligerada en una dirección al igual que la losa de cubierta de los baños; la losa de cubierta de la portería es maciza. Los otros bloques y las aulas tienen cubierta en eternit.

El predimensionamiento de las columnas se hizo con el concepto de columna corta teniendo en cuenta que:  $PFs = 0.85f_c(Ag-Ast)+f_y Ast$ . Afectado por un factor de seguridad que está entre 2 y 3.

La sección del peralte de la escalera autoportante se calcula haciendo una comparación entre las tablas C.9-1(a) y C.9-1(b); del que se toma un espesor de placa de 25 cm.

Utilizamos las combinaciones  $1.4D + 1.7L$  y  $0.75C_u + E_z$  para los diferentes tramos.

Por el hecho que la escalera se trata de una estructura expuesta a excitaciones dinámicas producidas por el público, se diseña para que tenga frecuencias naturales superiores a 5 Hz (B.4.7) para vibraciones verticales. En el análisis dinámico tanto de la escalera como de las demás estructuras se empleó el espectro de la norma NSR-98 con  $A_a = 0.3$ ;  $I = 1.1$   $S = 1.5$ ;



$S_a = 2.5AaI$ ;  $R = 3$  (para la escalera). Controlamos las deflexiones en el volado con  $1/500$  para reducir la amplitud de vibración.

El refuerzo se calcula con los resultados del análisis del SAP-2000.

La carga permanente de la estructura se calcula con el 100% de la carga muerta; 60% de carga viva; 25% de carga viva de la escalera, 25% de carga viva de cubierta.

La transferencia de carga a los pórticos se hace según la aferencia y no incluye el peso propio de vigas, columnas, mampostería o escaleras por estar analizados directamente sobre los pórticos. Las cargas sobre los pórticos riostras están evaluados sin peso propio y con carga de mampostería.

El peso propio de todos los elementos estructurales es evaluado directamente en el SAP-2000, el programa también evalúa las masas aferentes para cada nudo con dichos elementos, por esto la carga permanente del análisis es reducida en la masa de los elementos.

La evaluación de carga sísmica se hace con el análisis dinámico elástico, utilizando diafragma rígido y flexible. Teniendo en cuenta los efectos directos en la dirección bajo estudio, la Torsión Natural y la Torsión accidental.

Se utilizaron dos modos de vibración para los bloques de las aulas, doce para las oficinas; seis para la cafetería; tres para los baños y dos para la portería.

La respuesta espectral modal se obtiene utilizando las ordenadas del espectro de diseño para el periodo de cada modo de vibración; y la respuesta total con el método de combinación cuadrática completa (CQC).

La fuerza sísmica de diseño es la fuerza combinada de los modos en el análisis dinámico reducida por el coeficiente de disipación de energía; que para todos los bloques es 6.3, excepto para el bloque II de las Aulas que es 7 porque no tiene ninguna irregularidad y 5.67 para el de las oficinas.

Todos estos datos son introducidos al programa del que se obtienen las envolventes de diseño y el refuerzo de los elementos para los despieces.

Este mismo procedimiento se hace para todos los bloques de la estructura, teniendo en cuenta que las Aulas tienen una losa de entrepiso de 50 cm. de espesor; vigas de 30x50, 35x50, 40x50, 35x55; columnas de 30x30, 35x35,  $\phi$  35. Los baños tienen la losa de 25 cm; vigas de 25x30, 25x25; y columnas de 30x30. Las oficinas tienen cubierta en teja de eternit; con vigas de 25x30, 30x30, 25x30 y columnas de 30x30,  $\phi$  35 y  $\phi$  40. La portería tiene una

losa maciza de cubierta de espesor 16 cm; vigas de 25x30 y columnas de 30x30. La cafetería tiene cubierta de eternit; vigas de 25x30, 25x25; columnas de 30x30 y  $\phi$  35.

El diseño de la cimentación se hizo con el programa de diseño estructural MODULO4. Con los resultados del SAP-2000 obtenidos en la envolvente vigas y envolvente cimentación, se tiene la carga de servicio y la carga última respectivamente y con la capacidad admisible del suelo se introduce al programa, el que nos da la sección y el refuerzo de la zapata cuadrada o excéntrica (según conveniencia) y el refuerzo de la viga de trabe para el caso de la zapata excéntrica.

Todos los refuerzos de los elementos estructurales se indican en los planos de despieces.

Los elementos no estructurales se diseñan teniendo en cuenta que la estructura tiene un grado de desempeño bueno, o sea, que el daño producido después de un sismo es totalmente reparable y puede haber alguna interferencia con la operación de la edificación después de un sismo.

El criterio de diseño es separarlos de la estructura para que en caso de sismo esta al deformarse no los afecte adversamente.

La fuerza sísmica horizontal reducida de diseño se calcula con la expresión:

$$F_p = (a_x a_p / R_p) g M_p \geq (A a_l / 2) g M_p.$$

El desplazamiento de los elementos no puede exceder la separación que se deje; los desplazamientos de verificación y sus anclajes o amarres se fijan en función de las derivas máximas aceptables para la estructura.

Los elementos que requieren especial cuidado en su diseño son los muros interiores y exteriores, cielorrasos, enchapes de fachada, áticos, parapetos y antepechos, vidrios, paneles prefabricados de fachada y columnas cortas o columnas cautivas; porque su desprendimiento, deformación o disgregación pueden presentar peligro grave para las personas.

Para las instalaciones hidráulicas, sanitarias y eléctricas se diseñan soportes para fuerzas sísmicas reducidas de diseño capaces de resistir los desplazamientos de la estructura inducidos por los movimientos sísmicos.

Se disponen conexiones flexibles en los empates con las redes de servicios públicos en todos los casos, en los cuales el empate está localizado en un lugar donde la estructura se puede desplazar con respecto al terreno como consecuencia de los movimientos sísmicos.

El diseño del sistema de abastecimiento, se hace teniendo en cuenta que todos los aparatos deben ser abastecidos con suficiente cantidad de agua, adecuada presión y sin desperdicio. Se utilizara tubería PVC de presión.

En la red de distribución los diámetros se calculan utilizando el método basado en las perdidas de carga, teniendo en cuenta aportaciones de caudal por tramo; se realiza un predimensionamiento de las redes interiores controlando su velocidad. Una vez calculadas las presiones se confirma que el Liceo de la Universidad de Nariño es abastecido por alimentación directa.

El sistema de desagüe no tiene bajantes porque las instalaciones sanitarias se encuentran en el primer piso por, lo que se descarga directamente en las cajillas que sirven también de ventilación.

La disposición de las aguas lluvias es en cajas de inspección diferentes a las de agua sanitarias porque el alcantarillado previsto es separado.

El sistema de protección contra incendio se hace en tubería de hierro galvanizado alimentando por un sistema de bombas a cada uno de los gabinetes.

Hay que tener en cuenta, no solo los datos del diseño estructural, si no también que los materiales utilizados sean de buena calidad y cumplan con los requisitos de la norma.

Para esto, a todos los materiales se le deben realizar los ensayos correspondientes siguiendo las normas técnicas colombianas, NTC.

El cemento utilizado debe tener una resistencia de 3000psi; y la cantidad debe corresponder a la indicada en la dosificación de la mezcla de concreto. Los agregados para el concreto deben cumplir con las especificaciones de la norma NTC 174. El acero de refuerzo debe ser corrugado con una resistencia de 60000 psi. El agua debe estar limpia y se debe tener en cuenta la función del aditivo a utilizar.

Se debe tener especial cuidado en el almacenamiento de los materiales, de tal manera que se prevenga su deterioro o contaminación con materiales extraños.

En la construcción de las formaletas no hay que olvidar el principal objetivo, que es obtener una estructura que se ciña a las formas, líneas, ejes y dimensiones de los elementos tal como se requiere en los planos de diseño y luego retirarlos de tal manera que no afecte la seguridad ni el funcionamiento futuro de la estructura.

## **ABSTRACT**

The New University Nariño High school's Sanitary, Hydraulic and structural designs were developed taking into consideration colombian regulations stated for every one of the areas.

Land analysis – recommended for foundation design – would be of 1,20 m and the ground capacity of 12.76 Tn/m<sup>2</sup>.

Metal design was done according to structure design program SAP- 2000 by adjusting sections commercial parameter of diaco.

Structural design also follows SAP – 2000 dispositions considering that the building was divided into five sections: classrooms, which in turn was splitted in two smaller ones; porter's quarter, offices, bathroom and cafeteria.

Seams, concrete roofs stairs' premeasurements go after tables C.9-1 (a) and 1 (b) stated in code. Columns were premeasured under the short column's concept.

Holding into account that the building will be constructed in Pasto which has a high landshaking threat, with a site coefficient of 1.5 and an importance coefficient of 1.1 since it possesses a structure of special ocupation, structure and stairs' dynamic analysis was realized within spectrum.

Constant load / weight of structure was figured out considering the 100% of dead load/, 60% a live load of stairs, 25% of cover landshaking force of design is the mixed force of in the dynamic analysis reduced times energy dissipation coefficient.

The software provides with required reinforcement for elements displacements.

Foundation was design according to Module 4.

Non- structural elements are designed taking into consideration the accepted performance degree of the structure. Design criterium is to get them separated in accordance with the maximum acceptable displacements range and with the design landshaking force required.

The hydraulic design was developed following direct feeding parameters waste water flows to grills. There are also safety boxes for fire hazards.



## **INTRODUCCION**

El Liceo de Bachillerato de la Universidad de Nariño, es un plantel educativo de categoría oficial cuya finalidad es la de atender la demanda en Educación Media que se genera en Pasto y en otros municipios cercanos. Debido a que la actual instalación constituye un problema urbanístico por su asentamiento en el centro de la ciudad, por sus limitaciones de área, por la obsolescencia de su construcción que amenaza ruina, y en fin, por un conjunto de aspectos urbanísticos - administrativos que no permiten soluciones alternativas sino la de construcción y traslado a una nueva sede, La Universidad de Nariño construirá el nuevo edificio de liceo en los predios ubicados en San Vicente utilizando un área aproximada de 2500 m<sup>2</sup> en construcción.

La actividad desarrollada en este trabajo, se basó en realizar el diseño estructural, hidráulico y sanitario siguiendo los planos arquitectónicos; el cálculo Estructural se diseñó teniendo en cuenta las normas consagradas en el Código Colombiano Sismorresistente NSR-98. El diseño Hidráulico y Sanitario se realiza con presión de servicio en la zona y aprovechando la topografía del terreno; siguiendo las normas de diseño RAS - 98. Todo esto en perfecta armonía con el Arquitecto.

Con la construcción del Nuevo Liceo de la Universidad de Nariño la comunidad estudiantil se sentirá en un mejor ambiente para realizar sus actividades, aumentándose la eficiencia en la prestación de los servicios por parte del personal administrativo.

## **1. OBJETIVOS**

### **1.1 OBJETIVO GENERAL**

Diseñar en su totalidad el nuevo edificio del Liceo de la Universidad de Nariño, teniendo en cuenta normas y especificaciones para el diseño respectivo.

### **1.2 OBJETIVOS ESPECIFICOS**

- Realizar el levantamiento topográfico (altimétrico y planimétrico) del lote donde se construirá esta obra.
- Realizar los cálculos estructurales, hidráulicos y sanitarios de 2500 m<sup>2</sup>.
- Entregar los planos y memorias a la oficina de planeación.

## **2. MARCO REFERENCIAL**

### **2.1 EL LICEO DE LA UNIVERSIDAD DE NARIÑO**

El Liceo Integrado de Bachillerato es una Unidad Académica Administrativa de carácter mixto, de naturaleza oficial, adscrita a la Universidad de Nariño, la que somete y coordina su administración a los órganos de gobierno y de dirección de que dispone la Institución. Su propósito fundamental es brindar educación media a un amplio sector de la población estudiantil entre los 11 y 17 años y pertenecientes a los estratos populares de la comunidad del municipio de Pasto.

El Liceo de bachillerato como entidad educativa del nivel medio en el municipio, se ha constituido en uno de los más importantes centros de formación y capacitación que tiene la ciudad de Pasto y en donde la educación se brinda de manera gratuita por la naturaleza oficial del financiamiento.

La fundación y desarrollo del Liceo de bachillerato, se inicia por el año de 1712 cuando en sus actuales predios se fundó el Colegio de la Compañía de Jesús, más tarde el Colegio Real frente a la expulsión de los jesuitas decretada por Carlos III en 1765 y finalmente el Colegio San Agustín de Pasto en el año 1827; todos ellos precedentes al establecimiento y fundación de la Universidad de Nariño .

## 2.2 DISEÑO ESTRUCTURAL

El diseño estructural, debe cumplir con las condiciones adecuadas que para sismo-resistencia exige el NSR-98, ofreciendo una respuesta adecuada sin sobrediseño frente a un acontecimiento sísmico.

Para obtener una respuesta adecuada a tales eventos sísmicos, se partirá de una propuesta arquitectónica con base en la cual se elaborará un esquema estructural (conjunto de pórticos), para a partir de este generar un modelo dinámico que ofrezca las condiciones de seguridad y servicio más adecuadas <sup>1</sup>.

**2.2.1 Combinaciones de Carga.** El diseño estructural tanto en concreto como en metal debe hacerse para la combinación de carga que produzca el efecto más desfavorable en la edificación, en su cimentación, o en el elemento estructural bajo consideración.

### 2.2.1.1 Combinaciones Estructura Metálica

- 1-  $1.4D$
- 2-  $1.2D + 0.5L$
- 3-  $1.2D + 1.6L + 0.8W_a$
- 4-  $1.2D + 1.6L + 0.8W_b$
- 5-  $1.2D + 1.3W_a + 0.5L$
- 6-  $1.2D + 1.3W_b + 0.5L$
- 7-  $1.2D + E$
- 8-  $1.2D - E$
- 9-  $0.9D + E$
- 10-  $0.9D - E$
- 11-  $0.9D - 1.3W_a$
- 12-  $0.9D - 1.3W_b$

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<sup>1</sup> CASTILLO, William. Apuntes Catedra de Hormigón Armado I.

### 2.2.1.2 Combinaciones para la Estructura en Concreto

- 1-  $1.4D + 1.7L$
- 2-  $1.05D + 1.28L + Ex + 0.3Ey$
- 3-  $1.05D + 1.28L + Ex - 0.3Ey$
- 4-  $1.05D + 1.28L - Ex + 0.3Ey$
- 5-  $1.05D + 1.28L - Ex - 0.3Ey$
- 6-  $1.05D + 1.28L + 0.3Ex + Ey$
- 7-  $1.05D + 1.28L + 0.3Ex - Ey$
- 8-  $1.05D + 1.28L - 0.3Ex + Ey$
- 9-  $1.05D + 1.28L - 0.3Ex - Ey$
- 10-  $0.9D + Ex + 0.3Ey$
- 11-  $0.9D + Ex - 0.3Ey$
- 12-  $0.9D - Ex + 0.3Ey$
- 13-  $0.9D - Ex - 0.3Ey$
- 14-  $0.9D + 0.3Ex + Ey$
- 15-  $0.9D + 0.3Ex - Ey$
- 16-  $0.9D - 0.3Ex + Ey$
- 17-  $0.9D - 0.3Ex - Ey$

## 2.3 DISEÑO HIDRAULICO Y SANITARIO

Las instalaciones Hidráulicas y Sanitarias comprenden el conjunto de tuberías, accesorios y dispositivos por medio de los cuales:

- Se conduce agua a cada uno de los puntos donde ha de ser utilizada, la cual puede ser para consumo humano o para combatir incendios; Sistemas de Suministro de Agua.
- Se conduce aguas residuales y aguas lluvias desde el punto donde se originan las primeras y de los sitios donde se captan las segundas, hasta los puntos donde han de ser evacuados o hasta la tubería de alcantarillados; Sistema de Desagues.
- Se hace circular el aire y no se permite escapar el gas del alcantarillado para el correcto funcionamiento de los diferentes artefactos <sup>2</sup>.

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<sup>2</sup> SALAZAR, Roberto. Conferencia de Instalaciones Hidráulicas y Sanitarias.

### **3. ESTUDIO DE SUELOS**

#### **3.1 INTRODUCCION**

El estudio tiene como fundamento teórico la norma NSR-98 y que esta contemplada en el TITULO H de la misma. El análisis se realizó sobre un terreno de propiedad de la Universidad de Nariño, ubicado en la zona universitaria del barrio San Vicente.

El lote de terreno destinado para la construcción del Edificio de Aulas del Liceo de Bachillerato de la Universidad de Nariño tiene un área de 1555 m<sup>2</sup>.

El estudio contempla las siguientes etapas: Análisis y caracterización de la estructura a edificar, clasificación de complejidad del proyecto, investigación del subsuelo para estudio definitivo, descripción de la estratigrafía del terreno, ensayos de laboratorio, cálculos, conclusiones y recomendaciones.

#### **3.2 OBJETIVOS**

- Investigar y sondear el subsuelo para conocer su perfil estratigráfico, determinar sus características fisicomecánicas y además conocer de la existencia o no de agua de origen subterráneo.
- Determinar todos los parámetros necesarios para el diseño de la cimentación de un edificio de dos niveles.
- Dar recomendaciones para lograr la cimentación más adecuada; teniendo en cuenta consideraciones técnicas exigidas por las normas actuales.

### **3.3 CARACTERISTICAS DE LA ESTRUCTURA**

La propuesta arquitectónica analizada, nos presenta un edificio de dos plantas, donde se ubicara el grupo de 18 aulas del Liceo de Bachillerato de la Universidad de Nariño, además de 6 oficinas, una cafetería y 2 baterías sanitarias. Se proyecta para construirse en hormigón armado. La estructura será aporticada.

### **3.4 CLASIFICACION DE COMPLEJIDAD DEL PROYECTO**

**3.4.1 Categoría de la Edificación.** Los criterios de la tabla H.3-1 (NSR-98), diferencia las edificaciones en dos grupos; Edificios y Casas, relacionándolos directamente con el área del lote. Considerando que el lote tiene un área de 1555 m<sup>2</sup>. Se clasifica como Edificación de Categoría Intermedia.

**3.4.2 Variabilidad del Subsuelo.** La pendiente transversal del lote en estudio es menor del 10%. Se encuentran formaciones geológicas con características y estratigrafías similares, encontrando como común denominador la presencia de un conglomerado de matriz grande en la profundidad máxima de cada uno de los sondeos. Con lo anteriormente se determina la Variabilidad de Subsuelo como Baja, (H.3.1.3.1 NSR-98).

**3.4.3 Grados de Complejidad.** Su determinación es fruto de la interacción de los análisis efectuados en cuanto a categoría de la edificación y variabilidad del suelo. De su análisis podemos concluir que el proyecto presenta una complejidad del Tipo II.

### **3.5 NUMERO MINIMO DE SONDEOS**

De la tabla H.3-3 (NSR-98) se determina realizar mínimo 4 sondeos con una profundidad  $\geq 20$  metros.



### **3.5.1 Investigación del Subsuelo para Estudios Definitivos.**

**3.5.1.1 Número de Sondeos:** Se programó la construcción de 5 apiques a cielo abierto, 1 más que el mínimo requerido.

Los sondeos son a cielo abierto, ubicados de tal forma que luego de procesar la información se puede obtener un perfil estratigráfico de toda la zona en estudio.

**3.5.1.2 Exploración del Subsuelo:** Debido a las características encontradas en el sitio, no se logro llegar a la profundidad estimada en la tabla H.3-3. La profundidad máxima alcanzada fue de tres metros, encontrando a esta profundidad un conglomerado con la presencia de bolos de tamaño grande, en una matriz de color tabaco.

Analizada detenidamente la NSR-98 encontramos que: “En los casos donde se encuentre roca firme, o aglomerados rocosos o capas de suelos asimilables a rocas, a profundidades inferiores a las establecidas, en proyectos de complejidad Baja y Media los sondeos pueden suspenderse al llegar a estos materiales; para proyectos de complejidad Alta y especial los sondeos deben penetrar un mínimo de 2 y 4 metros respectivamente en dichos materiales, o 2.5 veces el diámetro de pilotes en estos apoyados.

**3.5.1.3 Sondeos con Recuperación de Muestras:** Se recuperaron muestras de 4 de los 5 apiques, el restante se observo y analizo su estratigrafía, encontrando coincidencia con otro.

**3.5.1.4 Morfología del Terreno:** Luego de analizar las estratigrafías obtenidas en cada uno de los sondeos, se observa que las formaciones geológicas presentan características aproximadamente homogéneas.

La capa vegetal presenta variabilidad respecto a su espesor; circunstancia provocada por que en sitio de estudio se deposito material de descapote de otras áreas del mismo.

Resulta vital resaltar como común denominador en todos los sondeos, no se detecto presencia de aguas subterráneas.

### **SONDEOS # 1 Y 3**

El primer estrato correspondiente a una capa vegetal de 30 centímetros de espesor. El segundo estrato correspondiente a una Arena Limosa de color café, muy compacta y con presencia de bolos. Su espesor aproximado es de 1 metro. La muestra que se toma es de tipo inalterado.

El tercer estrato corresponde a un Conglomerado formado por bolos y bloques de gran tamaño en matriz areno limosa de compacidad media. La muestra se toma es de tipo alterada.

A la profundidad máxima 2.30 metros encontramos una matriz de tipo rocoso, con componentes de gran tamaño.

### **SONDEO # 2 Y 5**

En este encontramos tres estratos definidos así:

El primer estrato correspondiente a una capa vegetal de 40 centímetros de espesor.

Luego encontramos una arena limosa color café de baja a alta compresibilidad color café claro, consistencia firme. La muestra es inalterada.

El estrato número tres corresponde a una arena limosa, color café muy compacta con presencia de bolos.

A la profundidad máxima 2.70 metros, encontramos una matriz de tipo rocoso, con componentes de gran tamaño.

#### **SONDEO # 4**

El primer estrato corresponde a la capa vegetal, con 1.20 metros de profundidad.

El segundo y tercer estrato corresponden a un limo arenoso de alta compresibilidad cuya consistencia varia de media a firme. Se tomaron muestras a los dos estratos, las mismas fueron de tipo inalterado.

El cuarto estrato se encontró la presencia de una arena limosa color café con presencia de bolos muy compacta.

A la profundidad máxima 3 metros encontramos una matriz de tipo rocoso, con componentes de gran tamaño y consistencia firme.

#### **3.6 ENSAYOS REALIZADOS**

Esta fase del estudio se efectuó con la asesoría del Geotecnólogo Herney Lasso, encargado del Laboratorio de Suelos de la Universidad de Nariño. Las muestras fueron tomadas con la supervisión del geotecnólogo.

Para lograr la correspondiente caracterización al suelo se realizaron los siguientes ensayos: granulometría, contenido de humedad, clasificación, límites y compresión inconfiada.

Los datos obtenidos en los mismos se registran uno a uno en la memoria de sondeos y resultados de ensayos, en el formato de clasificación de suelos y en la memoria de registro de datos de compresión inconfiada; los que se pueden analizar en la sección de anexos.

#### **3.7 DETERMINACION DEL ESTRATO DE TRABAJO**

Para el estudio, el punto de referencia es el estrato de suelo que al ser sometido al ensayo de compresión simple arroje el menor valor.

El sondeo que presenta las condiciones más adversas es el identificado como # 4 y el estrato corresponde a un limo arenoso de alta compresibilidad que se inicia a 1.70 metros de la superficie del terreno.

### 3.8 PROFUNDIDAD DE CIMENTACION

Para lograr las condiciones aptas para comenzar el proceso constructivo, el lote se debe nivelar, tomando como punto de referencia la ubicación del sondeo número 4.

Luego del proceso de nivelación, se recomienda que el nivel de desplante sea N-1.20 metros a partir del nivel logrado. (Véase figura No.3.1)

**3.8.1 Memoria de Cálculos:** El cálculo de la presión máxima de contacto se calcula con base a los postulados expuestos por Terzaghi. El factor de seguridad asumido es 2.5.

El tipo de cimentación será el de zapatas convencionales; pudiendo ser cuadradas o rectangulares.

Ecuación para cálculo:

Reemplazando:  $q_c = c \cdot N_c + \gamma \cdot D_f N_q + 0.5 \gamma \cdot B \cdot N_\gamma$  (1)

Comentario [lasb1]:

Donde:  $c = q_u/2 \Rightarrow c = 0.85/2 = 0.425 \text{ kg/cm}^2$

$\gamma$  = Densidad húmeda.

B = Lado de la zapata.

Df = Profundidad de desplante.

Nc, Nq y N $\gamma$  se denominan factores de capacidad de carga y dependen únicamente de  $\phi$ , son adimensionales.

En la tabla de factores de carga dados por Terzaghi. Se presentan los valores de Nc, Nq y N $\gamma$  en función de  $\phi$ ; los valores son aplicables a zapatas rugosas.

Cuando  $\phi = 0 \Rightarrow N_c = 5.79$

$$N_q = 1.00$$

$$N_\gamma = 0$$

La ecuación (1) se convierte en:

$$q_c = c \cdot N_c + \gamma \cdot D_f \cdot N_q$$

$$q_c = 4.25 \text{ ton/m}^2 \cdot 5.7 + 1.31 \text{ ton/m}^3 \cdot 1 \text{ mt}$$

$$q_c = 25.53 \text{ ton/m}^2$$

Factor de seguridad adoptado 2, (H.4.1.10).

La capacidad de carga admisible será:

$$q_c = 25.53/2 = 12.76 \text{ ton/m}^2$$

### 3.9 CONCLUSIONES Y RECOMENDACIONES

La profundidad de desplante es 1 metro, se conserva para todo el sistema de cimentación, como se observa en la figura 1.

La capacidad de carga admisible calculada es  $12.73 \text{ ton/m}^2$ .

Se cimentará las columnas del conjunto estructural en zapatas de tipo convencional cuadradas o rectangulares.

En la eventualidad de encontrar condiciones no especificadas en el presente estudio, se recomienda acudir a la asesoría del geotecnólogo del laboratorio de suelos de la Universidad de Nariño o a un especialista en el área.

De no encontrar a la profundidad indicada el estrato señalado se debe profundizar la excavación hasta encontrarlo o en su defecto hasta encontrar una matriz de tipo rocoso, con

componentes de gran tamaño y consistencia firme que es el común denominador en la profundidad máxima de excavación en todos los sondeos efectuados.

Si fuese necesario excavar se reemplazará el material extraído con relleno de óptima calidad, el que se compactará debidamente, en capas no mayores de 25 centímetros teniendo en cuenta que el porcentaje de compactación en ningún caso podrá ser menor que el 95% del proctor modificado.

Para evitar alteraciones de las propiedades físico mecánicas en el suelo de cimentación por acción del intemperismo, el fondo de las excavaciones se protegerá con un solado de concreto pobre de un espesor no mayor de 10 centímetros.

Los efectos locales según el tipo de suelo corresponde a un perfil  $S_3 = 1.5$

## **4. DISEÑO EN ESTRUCTURA METALICA**

La estructura metálica utilizada está compuesta por cerchas, correas, 2 marquesinas y domos en acrílico; todo en metal.

### **4.1 DISEÑO ESTRUCTURAL DE LA CUBIERTA**

En el sistema estructural metálico propuesto, se hace una combinación de cerchas, muros tímpanos y vigas inclinadas para recepcionar las cargas transmitidas por el peso soportado por las correas; a su vez dichas cerchas y muros depositarán las cargas indirectamente mediante ménsulas de concreto sobre las columnas.

**4.1.1 Características Geométricas de las Cerchas:** Para determinar la disposición de los elementos diagonales dentro de las cerchas, se tuvo en cuenta que la inclinación en general, debería ser tal que las fuerzas internas en todas las diagonales, estén a tensión, con el fin de evitar tener elementos esbeltos a compresión, los cuales tienden a ser más sensibles a falla. Las cerchas se trabajaron hiperestáticas para que ayuden a rigidizar las estructuras. Se trató al máximo que los extremos de las cerchas terminen con elementos verticales.

#### **4.1.2 Diseño Estructural de la Cercha Tipo 1.**

Longitud = 5.35 m.

Altura = 1.28 m.

Tejas a utilizar: No 8.

Angulo de inclinación = 20°

(Véase Figura 4.1)

#### 4.1.2.1 Análisis de Cargas.

Carga Muerta (KN/m<sup>2</sup>)

|            |      |
|------------|------|
| Teja AC    | 0.18 |
| Estructura | 0.10 |
| Adicional  | 0.10 |
| Cielo raso | 0.15 |
| TOTAL CM   | 0.53 |

Carga Viva (KN/m<sup>2</sup>) 0.35

Carga de Sismo

$S_a = 1.2 A_a S / T_a$

$A_a = 0.3$  (Amenaza sísmica alta)

$S = 1.5$

$I = 1.1$

$T_a = 0.24$  seg

$S_a = 2.48$  % seg

$T_c = 0.48S = 0.72$  seg > 0.24 seg →  $S_a = 2.5A_aI = 0.825$  %g

Coefficiente Sísmico



$$C_s = S_a/R$$

R: Uniones hechas con platinas pernadas o soldadas

$$R = 3$$

$$C_s = 0.275$$

Carga de viento

Velocidad del viento = 100 Km/h

Velocidad de diseño:  $V_s = V * S_1 * S_2 * S_3$

$$S_1 = 1$$

$$S_2 = 0.56$$

$$S_3 = 1.05$$

$$V_s = 58.8 \text{ Km/h}$$

Presión dinámica q

$$q = 0.000048 V_s^2 S_4$$

$$S_4 = 0.73$$

$$q = 0.121 \text{ Kn/m}^2$$

$$P_B \uparrow = -0.049 \text{ Kn/m}^2$$

$$P_B \downarrow = 0.2 \text{ Kn/m}^2$$

$$P_s \uparrow = -0.121 \text{ Kn/m}^2$$

Este análisis de carga es el mismo para todas las cerchas, excepto en las cerchas T2 y T3 que cambia la carga de viento.

#### Cálculo de Cargas Puntuales Según Aferencia

$$\text{Carga } P = C * \text{Area aferente} \quad \text{Area aferente} = S * a$$

S: Aferencia entre cerchas

a: Aferencia entre nudos

$$\text{Área aferente (m}^2\text{)} \quad A_{2y8} = 2.21 * 0.275 = 0.6$$

$$A_{3y7} = 2.21 * 0.89 = 1.97$$

$$A_{4y6} = 2.21 * 1.15 = 2.53$$

$$A_5 = 2.21 * 1.06 = 2.34$$

$$\text{Carga } P_{\text{muerta}} \text{ (KN)} = 0.53 * A$$

$$\text{Carga } P_{\text{viva}} \text{ (KN)} = 0.35 * A$$

$$\text{Carga } P_{\text{sismo}} \text{ (KN)} = 0.275 * CM$$

$$\text{Carga } P_{\text{viento}} \text{ (KN)} = -0.049 * A ; 0.2 * A ; -0.121 * A \text{ (fuerzas inclinadas)}$$

(Véase Figura 4.2 a, b, c, d, e)

**4.1.2.2 Diseño de Elementos en Metal.** Se indican los resultados obtenidos después de haber sometido la cercha a un análisis estático, mediante el uso del programa de computador SAP – 2000, el cual arroja las fuerzas internas de los elementos, indicado si está a tensión o a compresión.

Rossy y Elizabeth

L O A D C O M B I N A T I O N M U L T I P L I E R S

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE  |
|----------|------|--------|--------|-------|--------|
| ENVOLVEN | ENVE |        |        |       | COMB13 |
|          |      | COMB1  | 1.0000 | COMBO |        |
|          |      | COMB2  | 1.0000 | COMBO |        |
|          |      | COMB3  | 1.0000 | COMBO |        |
|          |      | COMB4  | 1.0000 | COMBO |        |
|          |      | COMB5  | 1.0000 | COMBO |        |
|          |      | COMB6  | 1.0000 | COMBO |        |
|          |      | COMB7  | 1.0000 | COMBO |        |
|          |      | COMB8  | 1.0000 | COMBO |        |
|          |      | COMB9  | 1.0000 | COMBO |        |
|          |      | COMB10 | 1.0000 | COMBO |        |
|          |      | COMB11 | 1.0000 | COMBO |        |
|          |      | COMB12 | 1.0000 | COMBO |        |

J O I N T R E A C T I O N S

| JOINT | LOAD         | F1      | F2     | F3     | M1     | M2     |
|-------|--------------|---------|--------|--------|--------|--------|
| 1     | ENVOLVEN MAX | 6.1087  | 0.0000 | 8.1604 | 0.0000 | 0.0000 |
| 1     | ENVOLVEN MIN | 1.5924  | 0.0000 | 2.2700 | 0.0000 | 0.0000 |
| 13    | ENVOLVEN MAX | -1.5896 | 0.0000 | 7.6057 | 0.0000 | 0.0000 |
| 13    | ENVOLVEN MIN | -6.6969 | 0.0000 | 2.8023 | 0.0000 | 0.0000 |

F R A M E E L E M E N T F O R C E S

| FRAME   | LOAD         | LOC     | P          | V2   | V3   | T    | M2   |
|---------|--------------|---------|------------|------|------|------|------|
| CUEINF1 | ENVOLVEN MAX | 0.00    | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.3E-01 | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.6E-01 | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.8E-01 | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.1E-01 | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF1 | ENVOLVEN MIN | 0.00    | -6.11      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.3E-01 | -6.11      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.6E-01 | -6.11      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.8E-01 | -6.11      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.1E-01 | -6.11      | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF2 | ENVOLVEN MAX | 0.00    | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.9E-01 | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.9E-01 | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 8.8E-01 | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.17    | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF2 | ENVOLVEN MIN | 0.00    | -4.643E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.9E-01 | -4.643E-01 | 0.00 | 0.00 | 0.00 | 0.00 |

|         |              |            |      |      |      |      |
|---------|--------------|------------|------|------|------|------|
|         | 5.9E-01      | -4.643E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 8.8E-01      | -4.643E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.17         | -4.643E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF3 | ENVOLVEN MAX |            |      |      |      |      |
|         | 0.00         | 2.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.0E-01      | 2.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.00         | 2.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.50         | 2.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.00         | 2.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF3 | ENVOLVEN MIN |            |      |      |      |      |
|         | 0.00         | 7.127E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.0E-01      | 7.127E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.00         | 7.127E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.50         | 7.127E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.00         | 7.127E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF4 | ENVOLVEN MAX |            |      |      |      |      |
|         | 0.00         | 1.22       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.9E-01      | 1.22       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.8E-01      | 1.22       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 8.6E-01      | 1.22       | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.15         | 1.22       | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF4 | ENVOLVEN MIN |            |      |      |      |      |
|         | 0.00         | -1.548E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.9E-01      | -1.548E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.8E-01      | -1.548E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 8.6E-01      | -1.548E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.15         | -1.548E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF5 | ENVOLVEN MAX |            |      |      |      |      |
|         | 0.00         | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.3E-01      | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.6E-01      | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 3.9E-01      | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.2E-01      | -1.59      | 0.00 | 0.00 | 0.00 | 0.00 |
| CUEINF5 | ENVOLVEN MIN |            |      |      |      |      |
|         | 0.00         | -6.70      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.3E-01      | -6.70      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.6E-01      | -6.70      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 3.9E-01      | -6.70      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.2E-01      | -6.70      | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP1 | ENVOLVEN MAX |            |      |      |      |      |
|         | 0.00         | -2.33      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.7E-01      | -2.33      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.4E-01      | -2.33      | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP1 | ENVOLVEN MIN |            |      |      |      |      |
|         | 0.00         | -8.20      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 2.7E-01      | -8.20      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.4E-01      | -8.20      | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP2 | ENVOLVEN MAX |            |      |      |      |      |
|         | 0.00         | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 6.2E-01      | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.24         | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP2 | ENVOLVEN MIN |            |      |      |      |      |
|         | 0.00         | -10.89     | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 6.2E-01      | -10.89     | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.24         | -10.89     | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP3 | ENVOLVEN MAX |            |      |      |      |      |
|         | 0.00         | -3.20      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 5.3E-01      | -3.20      | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 1.06         | -3.20      | 0.00 | 0.00 | 0.00 | 0.00 |

|         |              |         |           |      |      |      |      |
|---------|--------------|---------|-----------|------|------|------|------|
| CUESUP3 | ENVOLVEN MIN | 0.00    | -11.08    | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.3E-01 | -11.08    | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.06    | -11.08    | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP4 | ENVOLVEN MAX | 0.00    | -4.06     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.4E-01 | -4.06     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.07    | -4.06     | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP4 | ENVOLVEN MIN | 0.00    | -10.51    | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.4E-01 | -10.51    | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.07    | -10.51    | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP5 | ENVOLVEN MAX | 0.00    | -3.87     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.1E-01 | -3.87     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.22    | -3.87     | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP5 | ENVOLVEN MIN | 0.00    | -10.59    | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.1E-01 | -10.59    | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.22    | -10.59    | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP6 | ENVOLVEN MAX | 0.00    | -2.91     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.8E-01 | -2.91     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.5E-01 | -2.91     | 0.00 | 0.00 | 0.00 | 0.00 |
| CUESUP6 | ENVOLVEN MIN | 0.00    | -7.84     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.8E-01 | -7.84     | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.5E-01 | -7.84     | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON1 | ENVOLVEN MAX | 0.00    | 8.88      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | 8.88      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.9E-01 | 8.88      | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON1 | ENVOLVEN MIN | 0.00    | 2.60      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | 2.60      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 5.9E-01 | 2.60      | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON2 | ENVOLVEN MAX | 0.00    | 2.67      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.3E-01 | 2.67      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.27    | 2.67      | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON2 | ENVOLVEN MIN | 0.00    | 7.264E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.3E-01 | 7.264E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.27    | 7.264E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON3 | ENVOLVEN MAX | 0.00    | 3.27      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 8.1E-01 | 3.27      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.62    | 3.27      | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON3 | ENVOLVEN MIN | 0.00    | 5.488E-02 | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 8.1E-01 | 5.488E-02 | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.62    | 5.488E-02 | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON4 | ENVOLVEN MAX | 0.00    | 2.35      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 8.1E-01 | 2.35      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.63    | 2.35      | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON4 | ENVOLVEN MIN | 0.00    | 6.431E-01 | 0.00 | 0.00 | 0.00 | 0.00 |

|         |              |         |            |      |      |      |      |
|---------|--------------|---------|------------|------|------|------|------|
|         |              | 8.1E-01 | 6.431E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.63    | 6.431E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON5 | ENVOLVEN MAX |         |            |      |      |      |      |
|         |              | 0.00    | 2.87       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.3E-01 | 2.87       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.25    | 2.87       | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON5 | ENVOLVEN MIN |         |            |      |      |      |      |
|         |              | 0.00    | 6.303E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.3E-01 | 6.303E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.25    | 6.303E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON6 | ENVOLVEN MAX |         |            |      |      |      |      |
|         |              | 0.00    | 8.53       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | 8.53       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.0E-01 | 8.53       | 0.00 | 0.00 | 0.00 | 0.00 |
| DIAGON6 | ENVOLVEN MIN |         |            |      |      |      |      |
|         |              | 0.00    | 3.05       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | 3.05       | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 6.0E-01 | 3.05       | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN1 | ENVOLVEN MAX |         |            |      |      |      |      |
|         |              | 0.00    | -2.27      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.5E-01 | -2.27      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | -2.27      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN1 | ENVOLVEN MIN |         |            |      |      |      |      |
|         |              | 0.00    | -8.16      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.5E-01 | -8.16      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | -8.16      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN2 | ENVOLVEN MAX |         |            |      |      |      |      |
|         |              | 0.00    | -2.80      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.5E-01 | -2.80      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | -2.80      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN2 | ENVOLVEN MIN |         |            |      |      |      |      |
|         |              | 0.00    | -7.61      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 1.5E-01 | -7.61      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 3.0E-01 | -7.61      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN3 | ENVOLVEN MAX |         |            |      |      |      |      |
|         |              | 0.00    | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.5E-01 | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 4.9E-01 | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN3 | ENVOLVEN MIN |         |            |      |      |      |      |
|         |              | 0.00    | -4.50      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.5E-01 | -4.50      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 4.9E-01 | -4.50      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN4 | ENVOLVEN MAX |         |            |      |      |      |      |
|         |              | 0.00    | -1.53      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.5E-01 | -1.53      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 4.9E-01 | -1.53      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN4 | ENVOLVEN MIN |         |            |      |      |      |      |
|         |              | 0.00    | -4.26      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 2.5E-01 | -4.26      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 4.9E-01 | -4.26      | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN5 | ENVOLVEN MAX |         |            |      |      |      |      |
|         |              | 0.00    | -5.504E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 4.6E-01 | -5.504E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 9.1E-01 | -5.504E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN5 | ENVOLVEN MIN |         |            |      |      |      |      |
|         |              | 0.00    | -3.61      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 4.6E-01 | -3.61      | 0.00 | 0.00 | 0.00 | 0.00 |
|         |              | 9.1E-01 | -3.61      | 0.00 | 0.00 | 0.00 | 0.00 |

|         |              |       |      |      |      |      |
|---------|--------------|-------|------|------|------|------|
| MONTAN6 | ENVOLVEN MAX |       |      |      |      |      |
|         | 0.00         | -1.09 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 4.6E-01      | -1.09 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 9.1E-01      | -1.09 | 0.00 | 0.00 | 0.00 | 0.00 |
| MONTAN6 | ENVOLVEN MIN |       |      |      |      |      |
|         | 0.00         | -2.82 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 4.6E-01      | -2.82 | 0.00 | 0.00 | 0.00 | 0.00 |
|         | 9.1E-01      | -2.82 | 0.00 | 0.00 | 0.00 | 0.00 |

(Véase Figura 4.3)

### 4.1.3 Diseño Estructural Cerchas Tipo 2.

Longitud = 2.65 m

Altura = 1.38 m.

Tejas a utilizar: No 6

Ángulo de inclinación = 15°

(Véase Figura 4.4)

#### 4.1.3.1 Análisis de Cargas.

Carga muerta: 0.53 KN/m<sup>2</sup>

Carga viva: 0.23 KN/m<sup>2</sup>

Carga de sismo: Cs = 0.275

Carga de viento:  $P\downarrow = 0.14 \text{ KN/m}^2$        $P\uparrow = -0.14 \text{ KN/m}^2$

Cálculo de cargas puntuales

Carga  $P_{\text{muerta}}$  (KN) = 0.53 \* A

Carga  $P_{\text{viva}}$  (KN) = 0.35 \* A

Carga  $P_{\text{sismo}}$  (KN) = 0.275 \* Carga  $P_{\text{muerta}}$

Carga  $P_{\text{viento}}$  (KN) = -0.14 \* A ; 0.14 \* A (fuerzas inclinadas)

(Véase Figura 4.5 a, b, c, d, e)

**4.1.3.2. Diseño de Elementos en Metal.** A continuación se indican los resultados obtenidos después de haber sometido la cercha a un análisis estático, mediante el uso del programa de computador SAP – 2000, el cual arroja las fuerzas internas de los elementos, indicado si está a tensión o a compresión.

LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE  | FACTOR | TYPE  | TITLE                 |
|----------|------|-------|--------|-------|-----------------------|
| ENVOLCER | ENVE |       |        |       | Envolvente de Cerchas |
|          |      | DSIL1 | 1.0000 | COMBO |                       |
|          |      | DSIL2 | 1.0000 | COMBO |                       |
|          |      | DSIL3 | 1.0000 | COMBO |                       |
|          |      | DSIL4 | 1.0000 | COMBO |                       |
|          |      | DSIL7 | 1.0000 | COMBO |                       |
|          |      | DSIL8 | 1.0000 | COMBO |                       |

FRAME ELEMENT FORCES

| FRAME | LOAD     | LOC | P     | V2         | V3         | T          | M2         | M3         |
|-------|----------|-----|-------|------------|------------|------------|------------|------------|
| 7     | ENVOLCER | MAX |       |            |            |            |            |            |
|       | 0.00     |     | -2.69 | 3.414E-03  | 1.398E-02  | 4.808E-05  | 5.718E-03  | 3.091E-03  |
|       | 3.0E-01  |     | -2.69 | 7.544E-03  | 1.398E-02  | 4.808E-05  | 1.540E-03  | 1.454E-03  |
|       | 6.0E-01  |     | -2.69 | 1.167E-02  | 1.398E-02  | 4.808E-05  | 3.378E-03  | 3.359E-03  |
| 7     | ENVOLCER | MIN |       |            |            |            |            |            |
|       | 0.00     |     | -6.59 | -2.528E-02 | -1.790E-02 | -6.159E-05 | -7.324E-03 | -8.460E-03 |
|       | 3.0E-01  |     | -6.59 | -1.977E-02 | -1.790E-02 | -6.159E-05 | -1.973E-03 | -1.728E-03 |
|       | 6.0E-01  |     | -6.59 | -1.427E-02 | -1.790E-02 | -6.159E-05 | -2.638E-03 | -1.418E-03 |
| 8     | ENVOLCER | MAX |       |            |            |            |            |            |
|       | 0.00     |     | -2.16 | 3.008E-03  | 1.507E-02  | 2.540E-05  | 1.432E-02  | 4.860E-03  |
|       | 5.4E-01  |     | -2.15 | 8.237E-03  | 1.507E-02  | 2.540E-05  | 6.251E-03  | 1.902E-03  |
|       | 1.07     |     | -2.14 | 1.500E-02  | 1.507E-02  | 2.540E-05  | 2.341E-03  | 2.152E-03  |
| 8     | ENVOLCER | MIN |       |            |            |            |            |            |



|         |       |            |            |            |            |            |
|---------|-------|------------|------------|------------|------------|------------|
| 0.00    | -5.27 | -1.666E-02 | -1.931E-02 | -3.252E-05 | -1.835E-02 | -8.527E-03 |
| 5.4E-01 | -5.25 | -9.686E-03 | -1.931E-02 | -3.252E-05 | -8.004E-03 | -1.525E-03 |
| 1.07    | -5.24 | -4.250E-03 | -1.931E-02 | -3.252E-05 | -1.823E-03 | -4.266E-03 |

9 ENVOLCER MAX

|         |            |            |           |           |           |            |
|---------|------------|------------|-----------|-----------|-----------|------------|
| 0.00    | -7.125E-01 | -7.198E-02 | 9.187E-03 | 8.169E-06 | 2.594E-03 | -4.192E-03 |
| 2.7E-01 | -6.954E-01 | 8.467E-03  | 9.187E-03 | 8.169E-06 | 1.067E-04 | 8.591E-03  |
| 5.4E-01 | -6.783E-01 | 1.915E-01  | 9.187E-03 | 8.169E-06 | 1.863E-03 | -4.821E-03 |

9 ENVOLCER MIN

|         |       |            |            |            |            |            |
|---------|-------|------------|------------|------------|------------|------------|
| 0.00    | -1.79 | -2.011E-01 | -7.180E-03 | -6.424E-06 | -2.028E-03 | -1.929E-02 |
| 2.7E-01 | -1.75 | -1.310E-02 | -7.180E-03 | -6.424E-06 | -8.391E-05 | 2.706E-03  |
| 5.4E-01 | -1.71 | 6.801E-02  | -7.180E-03 | -6.424E-06 | -2.384E-03 | -1.671E-02 |

10 ENVOLCER MAX

|         |      |           |            |      |            |           |
|---------|------|-----------|------------|------|------------|-----------|
| 0.00    | 3.82 | 2.232E-03 | -2.065E-03 | 0.00 | -7.407E-04 | 9.263E-04 |
| 3.3E-01 | 3.81 | 2.232E-03 | -2.065E-03 | 0.00 | 2.667E-04  | 1.956E-04 |
| 6.5E-01 | 3.81 | 2.232E-03 | -2.065E-03 | 0.00 | 3.712E-03  | 6.852E-04 |

10 ENVOLCER MIN

|         |      |            |            |      |            |            |
|---------|------|------------|------------|------|------------|------------|
| 0.00    | 1.55 | -2.858E-03 | -1.125E-02 | 0.00 | -3.655E-03 | -1.186E-03 |
| 3.3E-01 | 1.55 | -2.858E-03 | -1.125E-02 | 0.00 | -6.491E-05 | -2.503E-04 |
| 6.5E-01 | 1.55 | -2.858E-03 | -1.125E-02 | 0.00 | 6.109E-04  | -5.351E-04 |

11 ENVOLCER MAX

|         |       |            |           |           |           |            |
|---------|-------|------------|-----------|-----------|-----------|------------|
| 0.00    | -1.82 | -3.952E-03 | 7.927E-04 | 2.644E-06 | 3.216E-04 | -9.562E-05 |
| 3.0E-01 | -1.82 | 1.775E-04  | 7.927E-04 | 2.644E-06 | 8.469E-05 | 5.733E-04  |
| 6.0E-01 | -1.82 | 5.296E-03  | 7.927E-04 | 2.644E-06 | 1.180E-04 | 8.482E-04  |

11 ENVOLCER MIN

|         |       |            |            |            |            |            |
|---------|-------|------------|------------|------------|------------|------------|
| 0.00    | -4.45 | -9.366E-03 | -6.164E-04 | -2.067E-06 | -2.504E-04 | -1.459E-03 |
| 3.0E-01 | -4.45 | -3.859E-03 | -6.164E-04 | -2.067E-06 | -6.621E-05 | 1.609E-04  |
| 6.0E-01 | -4.45 | 1.624E-03  | -6.164E-04 | -2.067E-06 | -1.522E-04 | -2.017E-04 |

12 ENVOLCER MAX

|         |       |            |           |           |           |            |
|---------|-------|------------|-----------|-----------|-----------|------------|
| 0.00    | -2.37 | -3.003E-03 | 8.729E-04 | 2.006E-06 | 8.139E-04 | 5.816E-04  |
| 4.7E-01 | -2.36 | 2.710E-03  | 8.729E-04 | 2.006E-06 | 4.069E-04 | 9.449E-04  |
| 9.3E-01 | -2.36 | 9.973E-03  | 8.729E-04 | 2.006E-06 | 3.354E-06 | -9.526E-04 |

12 ENVOLCER MIN

|         |       |            |            |            |            |            |
|---------|-------|------------|------------|------------|------------|------------|
| 0.00    | -5.82 | -6.440E-03 | -6.844E-04 | -1.561E-06 | -6.358E-04 | -8.645E-04 |
| 4.7E-01 | -5.81 | 1.378E-04  | -6.844E-04 | -1.561E-06 | -3.167E-04 | 3.307E-04  |
| 9.3E-01 | -5.80 | 5.367E-03  | -6.844E-04 | -1.561E-06 | -1.024E-06 | -2.145E-03 |

13 ENVOLCER MAX

|         |       |            |           |           |           |            |
|---------|-------|------------|-----------|-----------|-----------|------------|
| 0.00    | -1.36 | -8.618E-02 | 3.800E-03 | 2.981E-05 | 1.419E-03 | -8.693E-03 |
| 2.7E-01 | -1.34 | -5.730E-03 | 3.800E-03 | 2.981E-05 | 3.894E-04 | 9.013E-03  |
| 5.4E-01 | -1.33 | 1.827E-01  | 3.800E-03 | 2.981E-05 | 5.007E-04 | -5.558E-03 |

13 ENVOLCER MIN

|         |       |            |            |            |            |            |
|---------|-------|------------|------------|------------|------------|------------|
| 0.00    | -3.34 | -2.099E-01 | -2.971E-03 | -2.329E-05 | -1.109E-03 | -2.126E-02 |
| 2.7E-01 | -3.30 | -1.360E-02 | -2.971E-03 | -2.329E-05 | -3.041E-04 | 3.617E-03  |
| 5.4E-01 | -3.26 | 7.409E-02  | -2.971E-03 | -2.329E-05 | -6.402E-04 | -1.389E-02 |

14 ENVOLCER MAX

|         |           |           |            |      |            |           |
|---------|-----------|-----------|------------|------|------------|-----------|
| 0.00    | 8.322E-01 | 2.643E-04 | -3.609E-03 | 0.00 | -8.703E-04 | 8.428E-05 |
| 2.5E-01 | 8.285E-01 | 2.643E-04 | -3.609E-03 | 0.00 | 1.565E-05  | 1.939E-05 |
| 4.9E-01 | 8.248E-01 | 2.643E-04 | -3.609E-03 | 0.00 | 2.441E-03  | 3.566E-05 |

14 ENVOLCER MIN

|         |           |            |            |      |            |            |
|---------|-----------|------------|------------|------|------------|------------|
| 0.00    | 3.570E-01 | -2.061E-04 | -1.068E-02 | 0.00 | -2.802E-03 | -6.554E-05 |
| 2.5E-01 | 3.542E-01 | -2.061E-04 | -1.068E-02 | 0.00 | -1.805E-04 | -1.494E-05 |
| 4.9E-01 | 3.514E-01 | -2.061E-04 | -1.068E-02 | 0.00 | 9.016E-04  | -4.551E-05 |

15 ENVOLCER MAX

|         |            |            |           |      |           |            |
|---------|------------|------------|-----------|------|-----------|------------|
| 0.00    | -8.779E-01 | -4.499E-03 | 2.110E-05 | 0.00 | 8.141E-06 | -4.825E-04 |
| 3.0E-01 | -8.758E-01 | -3.696E-04 | 2.110E-05 | 0.00 | 1.836E-06 | 3.656E-04  |
| 6.0E-01 | -8.736E-01 | 5.706E-03  | 2.110E-05 | 0.00 | 4.167E-06 | 5.076E-05  |

15 ENVOLCER MIN

|         |       |            |            |      |            |            |
|---------|-------|------------|------------|------|------------|------------|
| 0.00    | -2.13 | -7.303E-03 | -2.188E-05 | 0.00 | -8.963E-06 | -1.023E-03 |
| 3.0E-01 | -2.13 | -1.797E-03 | -2.188E-05 | 0.00 | -2.425E-06 | 2.250E-04  |
| 6.0E-01 | -2.13 | 3.576E-03  | -2.188E-05 | 0.00 | -4.523E-06 | -3.798E-04 |

16 ENVOLCER MAX

|         |       |            |           |      |           |            |
|---------|-------|------------|-----------|------|-----------|------------|
| 0.00    | -1.03 | -4.924E-03 | 1.390E-05 | 0.00 | 1.756E-05 | -4.432E-04 |
| 4.0E-01 | -1.03 | 4.792E-04  | 1.390E-05 | 0.00 | 1.202E-05 | 7.234E-04  |
| 8.0E-01 | -1.02 | 8.485E-03  | 1.390E-05 | 0.00 | 7.623E-06 | -6.629E-04 |

16 ENVOLCER MIN

|         |       |            |            |      |            |            |
|---------|-------|------------|------------|------|------------|------------|
| 0.00    | -2.51 | -7.783E-03 | -3.046E-05 | 0.00 | -2.429E-05 | -7.693E-04 |
| 4.0E-01 | -2.50 | 1.457E-04  | -3.046E-05 | 0.00 | -1.211E-05 | 4.457E-04  |
| 8.0E-01 | -2.49 | 5.375E-03  | -3.046E-05 | 0.00 | -1.053E-06 | -1.051E-03 |

17 ENVOLCER MAX

|         |            |            |           |           |           |            |
|---------|------------|------------|-----------|-----------|-----------|------------|
| 0.00    | -4.403E-01 | -8.178E-02 | 1.630E-04 | 1.256E-06 | 6.055E-05 | -7.514E-03 |
| 2.7E-01 | -4.232E-01 | -1.329E-03 | 1.630E-04 | 1.256E-06 | 1.640E-05 | 9.086E-03  |
| 5.4E-01 | -4.061E-01 | 1.936E-01  | 1.630E-04 | 1.256E-06 | 3.723E-05 | -6.737E-03 |

17 ENVOLCER MIN

|         |            |            |            |            |            |            |
|---------|------------|------------|------------|------------|------------|------------|
| 0.00    | -1.06      | -1.990E-01 | -2.141E-04 | -1.592E-06 | -7.881E-05 | -1.824E-02 |
| 2.7E-01 | -1.02      | -2.699E-03 | -2.141E-04 | -1.592E-06 | -2.079E-05 | 3.693E-03  |
| 5.4E-01 | -9.799E-01 | 7.872E-02  | -2.141E-04 | -1.592E-06 | -2.776E-05 | -1.677E-02 |

18 ENVOLCER MAX

|         |      |           |            |      |            |           |
|---------|------|-----------|------------|------|------------|-----------|
| 0.00    | 1.46 | 1.797E-05 | -3.708E-03 | 0.00 | -4.602E-04 | 4.212E-06 |
| 1.6E-01 | 1.45 | 1.797E-05 | -3.708E-03 | 0.00 | 2.161E-04  | 1.272E-06 |
| 3.3E-01 | 1.45 | 1.797E-05 | -3.708E-03 | 0.00 | 1.699E-03  | 2.018E-06 |

18 ENVOLCER MIN

|         |           |            |            |      |            |            |
|---------|-----------|------------|------------|------|------------|------------|
| 0.00    | 5.992E-01 | -1.721E-05 | -9.468E-03 | 0.00 | -1.400E-03 | -3.661E-06 |
| 1.6E-01 | 5.973E-01 | -1.721E-05 | -9.468E-03 | 0.00 | 1.312E-04  | 0.00       |
| 3.3E-01 | 5.955E-01 | -1.721E-05 | -9.468E-03 | 0.00 | 7.535E-04  | -1.714E-06 |

19 ENVOLCER MAX

|         |            |            |           |      |      |            |
|---------|------------|------------|-----------|------|------|------------|
| 0.00    | -7.353E-01 | -4.531E-03 | 2.215E-06 | 0.00 | 0.00 | -5.343E-04 |
| 3.0E-01 | -7.331E-01 | -4.017E-04 | 2.215E-06 | 0.00 | 0.00 | 3.154E-04  |
| 6.0E-01 | -7.310E-01 | 5.792E-03  | 2.215E-06 | 0.00 | 0.00 | -1.707E-04 |

19 ENVOLCER MIN

|         |       |            |      |      |      |            |
|---------|-------|------------|------|------|------|------------|
| 0.00    | -1.80 | -7.056E-03 | 0.00 | 0.00 | 0.00 | -9.895E-04 |
| 3.0E-01 | -1.80 | -1.370E-03 | 0.00 | 0.00 | 0.00 | 2.027E-04  |
| 6.0E-01 | -1.80 | 3.719E-03  | 0.00 | 0.00 | 0.00 | -4.556E-04 |

20 ENVOLCER MAX

|         |       |            |            |      |           |            |
|---------|-------|------------|------------|------|-----------|------------|
| 0.00    | -1.02 | -4.749E-03 | -2.536E-06 | 0.00 | 0.00      | -4.764E-04 |
| 3.4E-01 | -1.01 | 9.563E-04  | -2.536E-06 | 0.00 | 3.511E-06 | 4.021E-04  |
| 6.9E-01 | -1.01 | 8.878E-03  | -2.536E-06 | 0.00 | 8.458E-06 | -8.059E-04 |

|    |              |            |            |            |      |            |            |
|----|--------------|------------|------------|------------|------|------------|------------|
| 20 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | -2.49      | -7.390E-03 | -1.436E-05 | 0.00 | -1.436E-06 | -7.424E-04 |
|    | 3.4E-01      | -2.48      | 4.771E-04  | -1.436E-05 | 0.00 | 0.00       | 2.126E-04  |
|    | 6.9E-01      | -2.47      | 5.706E-03  | -1.436E-05 | 0.00 | 1.591E-06  | -1.317E-03 |
| 21 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | -4.498E-01 | -8.210E-02 | 5.501E-06  | 0.00 | 2.159E-06  | -7.785E-03 |
|    | 2.7E-01      | -4.327E-01 | -1.649E-03 | 5.501E-06  | 0.00 | 0.00       | 8.693E-03  |
|    | 5.4E-01      | -4.156E-01 | 1.928E-01  | 5.501E-06  | 0.00 | 2.546E-06  | -6.879E-03 |
| 21 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | -1.10      | -1.998E-01 | -1.109E-05 | 0.00 | -3.469E-06 | -1.885E-02 |
|    | 2.7E-01      | -1.06      | -3.511E-03 | -1.109E-05 | 0.00 | 0.00       | 3.553E-03  |
|    | 5.4E-01      | -1.02      | 7.873E-02  | -1.109E-05 | 0.00 | 0.00       | -1.695E-02 |
| 22 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | 9.576E-01  | 4.612E-05  | -2.676E-02 | 0.00 | -2.311E-03 | 4.732E-06  |
|    | 8.2E-02      | 9.563E-01  | 4.612E-05  | -2.676E-02 | 0.00 | -1.219E-04 | 0.00       |
|    | 1.6E-01      | 9.551E-01  | 4.612E-05  | -2.676E-02 | 0.00 | 5.080E-03  | -1.086E-06 |
| 22 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | 3.894E-01  | 1.564E-05  | -6.753E-02 | 0.00 | -5.972E-03 | 1.279E-06  |
|    | 8.2E-02      | 3.885E-01  | 1.564E-05  | -6.753E-02 | 0.00 | -4.460E-04 | 0.00       |
|    | 1.6E-01      | 3.876E-01  | 1.564E-05  | -6.753E-02 | 0.00 | 2.068E-03  | -2.816E-06 |
| 23 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | -1.54      | -1.287E-02 | 3.285E-05  | 0.00 | 6.269E-06  | -2.362E-03 |
|    | 3.0E-01      | -1.54      | -8.736E-03 | 3.285E-05  | 0.00 | 0.00       | 1.821E-03  |
|    | 6.0E-01      | -1.53      | -4.606E-03 | 3.285E-05  | 0.00 | -3.601E-06 | 7.248E-03  |
| 23 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | -3.80      | -2.642E-02 | 9.233E-06  | 0.00 | 1.918E-06  | -5.251E-03 |
|    | 3.0E-01      | -3.80      | -2.091E-02 | 9.233E-06  | 0.00 | -3.549E-06 | 8.658E-04  |
|    | 6.0E-01      | -3.80      | -1.540E-02 | 9.233E-06  | 0.00 | -1.337E-05 | 2.860E-03  |
| 24 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | -8.125E-01 | -9.193E-02 | 1.450E-05  | 0.00 | 1.936E-06  | -9.625E-03 |
|    | 2.7E-01      | -7.954E-01 | -1.148E-02 | 1.450E-05  | 0.00 | 0.00       | 1.065E-02  |
|    | 5.4E-01      | -7.783E-01 | 1.690E-01  | 1.450E-05  | 0.00 | -1.279E-06 | -3.402E-03 |

|    |              |            |            |            |      |            |            |
|----|--------------|------------|------------|------------|------|------------|------------|
| 24 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | -2.01      | -2.236E-01 | 2.225E-06  | 0.00 | 0.00       | -2.333E-02 |
|    | 2.7E-01      | -1.97      | -2.727E-02 | 2.225E-06  | 0.00 | -2.075E-06 | 4.383E-03  |
|    | 5.4E-01      | -1.93      | 6.896E-02  | 2.225E-06  | 0.00 | -6.004E-06 | -8.553E-03 |
| 25 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | -1.47      | 1.411E-02  | -7.262E-06 | 0.00 | -2.695E-06 | 6.347E-03  |
|    | 2.9E-01      | -1.47      | 1.930E-02  | -7.262E-06 | 0.00 | 0.00       | 1.576E-03  |
|    | 5.7E-01      | -1.47      | 2.449E-02  | -7.262E-06 | 0.00 | 4.971E-06  | -2.106E-03 |
| 25 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | -3.63      | 4.168E-03  | -2.751E-05 | 0.00 | -1.074E-05 | 2.501E-03  |
|    | 2.9E-01      | -3.64      | 8.064E-03  | -2.751E-05 | 0.00 | -2.885E-06 | 7.537E-04  |
|    | 5.7E-01      | -3.64      | 1.196E-02  | -2.751E-05 | 0.00 | 1.453E-06  | -4.678E-03 |
| 26 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | -7.413E-01 | -6.487E-02 | -1.356E-06 | 0.00 | 0.00       | -2.990E-03 |
|    | 2.6E-01      | -7.578E-01 | 2.618E-02  | -1.356E-06 | 0.00 | 0.00       | 9.468E-03  |
|    | 5.1E-01      | -7.743E-01 | 2.114E-01  | -1.356E-06 | 0.00 | 1.519E-06  | -8.633E-03 |
| 26 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | -1.83      | -1.590E-01 | -1.181E-05 | 0.00 | -4.716E-06 | -7.525E-03 |
|    | 2.6E-01      | -1.87      | 1.103E-02  | -1.181E-05 | 0.00 | -1.694E-06 | 3.896E-03  |
|    | 5.1E-01      | -1.91      | 8.692E-02  | -1.181E-05 | 0.00 | 0.00       | -2.092E-02 |
| 27 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | 9.430E-01  | -1.296E-05 | 5.972E-02  | 0.00 | 4.557E-03  | 0.00       |
|    | 8.4E-02      | 9.442E-01  | -1.296E-05 | 5.972E-02  | 0.00 | -1.285E-04 | 0.00       |
|    | 1.7E-01      | 9.455E-01  | -1.296E-05 | 5.972E-02  | 0.00 | -2.110E-03 | 3.867E-06  |
| 27 | ENVOLCER MIN |            |            |            |      |            |            |
|    | 0.00         | 3.822E-01  | -3.702E-05 | 2.365E-02  | 0.00 | 1.853E-03  | -2.335E-06 |
|    | 8.4E-02      | 3.831E-01  | -3.702E-05 | 2.365E-02  | 0.00 | -4.447E-04 | 0.00       |
|    | 1.7E-01      | 3.841E-01  | -3.702E-05 | 2.365E-02  | 0.00 | -5.447E-03 | 1.115E-06  |
| 28 | ENVOLCER MAX |            |            |            |      |            |            |
|    | 0.00         | -7.085E-01 | -3.468E-03 | 0.00       | 0.00 | 0.00       | -1.210E-04 |
|    | 2.9E-01      | -7.106E-01 | 1.402E-03  | 0.00       | 0.00 | 0.00       | 2.860E-04  |
|    | 5.7E-01      | -7.128E-01 | 6.718E-03  | 0.00       | 0.00 | 0.00       | -4.915E-04 |

|    |              |            |            |            |      |            |            |  |
|----|--------------|------------|------------|------------|------|------------|------------|--|
| 28 | ENVOLCER MIN |            |            |            |      |            |            |  |
|    | 0.00         | -1.74      | -5.403E-03 | -1.812E-06 | 0.00 | 0.00       | -3.917E-04 |  |
|    | 2.9E-01      | -1.74      | 4.170E-04  | -1.812E-06 | 0.00 | 0.00       | 1.837E-04  |  |
|    | 5.7E-01      | -1.75      | 4.313E-03  | -1.812E-06 | 0.00 | 0.00       | -9.219E-04 |  |
| 29 | ENVOLCER MAX |            |            |            |      |            |            |  |
|    | 0.00         | -9.406E-01 | -5.500E-03 | 1.297E-05  | 0.00 | 7.480E-06  | -7.822E-04 |  |
|    | 3.3E-01      | -9.450E-01 | -5.666E-04 | 1.297E-05  | 0.00 | 3.143E-06  | 3.601E-04  |  |
|    | 6.7E-01      | -9.494E-01 | 6.790E-03  | 1.297E-05  | 0.00 | 0.00       | -4.018E-04 |  |
| 29 | ENVOLCER MIN |            |            |            |      |            |            |  |
|    | 0.00         | -2.31      | -8.557E-03 | 1.359E-06  | 0.00 | 1.290E-06  | -1.316E-03 |  |
|    | 3.3E-01      | -2.32      | -1.189E-03 | 1.359E-06  | 0.00 | 0.00       | 1.812E-04  |  |
|    | 6.7E-01      | -2.32      | 4.363E-03  | 1.359E-06  | 0.00 | -1.517E-06 | -6.270E-04 |  |
| 30 | ENVOLCER MAX |            |            |            |      |            |            |  |
|    | 0.00         | -4.035E-01 | -7.408E-02 | 1.389E-05  | 0.00 | 2.833E-06  | -6.085E-03 |  |
|    | 2.6E-01      | -4.200E-01 | 3.742E-03  | 1.389E-05  | 0.00 | 1.043E-06  | 7.731E-03  |  |
|    | 5.1E-01      | -4.366E-01 | 1.889E-01  | 1.389E-05  | 0.00 | 3.456E-06  | -6.988E-03 |  |
| 30 | ENVOLCER MIN |            |            |            |      |            |            |  |
|    | 0.00         | -9.882E-01 | -1.815E-01 | -9.600E-06 | 0.00 | -1.459E-06 | -1.500E-02 |  |
|    | 2.6E-01      | -1.03      | 1.738E-03  | -9.600E-06 | 0.00 | 0.00       | 3.159E-03  |  |
|    | 5.1E-01      | -1.07      | 7.763E-02  | -9.600E-06 | 0.00 | -4.276E-06 | -1.692E-02 |  |
| 31 | ENVOLCER MAX |            |            |            |      |            |            |  |
|    | 0.00         | 1.38       | 2.400E-05  | 8.500E-03  | 0.00 | 1.546E-03  | 2.869E-06  |  |
|    | 1.7E-01      | 1.38       | 2.400E-05  | 8.500E-03  | 0.00 | 1.832E-04  | 1.414E-06  |  |
|    | 3.4E-01      | 1.39       | 2.400E-05  | 8.500E-03  | 0.00 | -4.275E-04 | 5.113E-06  |  |
| 31 | ENVOLCER MIN |            |            |            |      |            |            |  |
|    | 0.00         | 5.661E-01  | -2.228E-05 | 3.302E-03  | 0.00 | 6.789E-04  | -2.352E-06 |  |
|    | 1.7E-01      | 5.680E-01  | -2.228E-05 | 3.302E-03  | 0.00 | 1.098E-04  | -1.186E-06 |  |
|    | 3.4E-01      | 5.699E-01  | -2.228E-05 | 3.302E-03  | 0.00 | -1.302E-03 | -5.173E-06 |  |
| 32 | ENVOLCER MAX |            |            |            |      |            |            |  |
|    | 0.00         | -8.659E-01 | -3.283E-03 | 3.752E-05  | 0.00 | 6.792E-06  | 1.030E-04  |  |
|    | 2.9E-01      | -8.681E-01 | 1.877E-03  | 3.752E-05  | 0.00 | 3.001E-06  | 3.333E-04  |  |
|    | 5.7E-01      | -8.702E-01 | 7.071E-03  | 3.752E-05  | 0.00 | 1.241E-05  | -4.403E-04 |  |

|    |              |            |            |            |            |            |            |  |
|----|--------------|------------|------------|------------|------------|------------|------------|--|
| 32 | ENVOLCER MIN |            |            |            |            |            |            |  |
|    | 0.00         | -2.11      | -5.284E-03 | -3.295E-05 | 0.00       | -6.412E-06 | -3.105E-04 |  |
|    | 2.9E-01      | -2.11      | 3.850E-04  | -3.295E-05 | 0.00       | -3.925E-06 | 2.025E-04  |  |
|    | 5.7E-01      | -2.11      | 4.281E-03  | -3.295E-05 | 0.00       | -1.464E-05 | -9.690E-04 |  |
| 33 | ENVOLCER MAX |            |            |            |            |            |            |  |
|    | 0.00         | -9.445E-01 | -5.132E-03 | 4.813E-05  | 0.00       | 6.646E-06  | -6.450E-04 |  |
|    | 3.9E-01      | -9.505E-01 | -1.993E-04 | 4.813E-05  | 0.00       | 1.691E-05  | 6.680E-04  |  |
|    | 7.9E-01      | -9.565E-01 | 7.217E-03  | 4.813E-05  | 0.00       | 2.820E-05  | -3.697E-04 |  |
| 33 | ENVOLCER MIN |            |            |            |            |            |            |  |
|    | 0.00         | -2.30      | -8.130E-03 | -2.863E-05 | 0.00       | 0.00       | -1.028E-03 |  |
|    | 3.9E-01      | -2.31      | -6.477E-04 | -2.863E-05 | 0.00       | -1.888E-05 | 4.077E-04  |  |
|    | 7.9E-01      | -2.32      | 4.545E-03  | -2.863E-05 | 0.00       | -3.786E-05 | -6.668E-04 |  |
| 34 | ENVOLCER MAX |            |            |            |            |            |            |  |
|    | 0.00         | -3.871E-01 | -7.422E-02 | 2.798E-04  | 1.954E-06  | 4.545E-05  | -5.979E-03 |  |
|    | 2.6E-01      | -4.036E-01 | 2.486E-03  | 2.798E-04  | 1.954E-06  | 2.050E-05  | 8.135E-03  |  |
|    | 5.1E-01      | -4.201E-01 | 1.877E-01  | 2.798E-04  | 1.954E-06  | 7.524E-05  | -6.666E-03 |  |
| 34 | ENVOLCER MIN |            |            |            |            |            |            |  |
|    | 0.00         | -9.312E-01 | -1.827E-01 | -2.140E-04 | -1.534E-06 | -3.424E-05 | -1.492E-02 |  |
|    | 2.6E-01      | -9.715E-01 | 1.224E-03  | -2.140E-04 | -1.534E-06 | -2.613E-05 | 3.302E-03  |  |
|    | 5.1E-01      | -1.01      | 7.712E-02  | -2.140E-04 | -1.534E-06 | -9.771E-05 | -1.619E-02 |  |
| 35 | ENVOLCER MAX |            |            |            |            |            |            |  |
|    | 0.00         | 6.911E-01  | 2.296E-04  | 9.938E-03  | 0.00       | 2.292E-03  | 4.118E-05  |  |
|    | 2.5E-01      | 6.949E-01  | 2.296E-04  | 9.938E-03  | 0.00       | -5.773E-06 | 2.143E-05  |  |
|    | 5.0E-01      | 6.988E-01  | 2.296E-04  | 9.938E-03  | 0.00       | -8.397E-04 | 9.559E-05  |  |
| 35 | ENVOLCER MIN |            |            |            |            |            |            |  |
|    | 0.00         | 2.972E-01  | -2.951E-04 | 3.319E-03  | 0.00       | 8.282E-04  | -5.274E-05 |  |
|    | 2.5E-01      | 3.001E-01  | -2.951E-04 | 3.319E-03  | 0.00       | -2.055E-04 | -1.653E-05 |  |
|    | 5.0E-01      | 3.030E-01  | -2.951E-04 | 3.319E-03  | 0.00       | -2.703E-03 | -7.424E-05 |  |
| 36 | ENVOLCER MAX |            |            |            |            |            |            |  |
|    | 0.00         | -1.81      | -1.191E-03 | 8.131E-04  | 2.496E-06  | 1.475E-04  | 8.683E-04  |  |
|    | 2.9E-01      | -1.81      | 3.902E-03  | 8.131E-04  | 2.496E-06  | 1.088E-04  | 5.642E-04  |  |
|    | 5.7E-01      | -1.81      | 9.097E-03  | 8.131E-04  | 2.496E-06  | 4.080E-04  | 6.331E-06  |  |

|    |              |       |            |            |            |            |            |
|----|--------------|-------|------------|------------|------------|------------|------------|
| 36 | ENVOLCER MIN |       |            |            |            |            |            |
|    | 0.00         | -4.42 | -5.142E-03 | -1.047E-03 | -3.204E-06 | -1.904E-04 | -1.885E-04 |
|    | 2.9E-01      | -4.42 | -3.410E-04 | -1.047E-03 | -3.204E-06 | -8.477E-05 | 1.277E-04  |
|    | 5.7E-01      | -4.43 | 3.555E-03  | -1.047E-03 | -3.204E-06 | -3.170E-04 | -1.400E-03 |
| 37 | ENVOLCER MAX |       |            |            |            |            |            |
|    | 0.00         | -2.22 | -5.114E-03 | 8.325E-04  | 1.731E-06  | 7.484E-06  | -9.456E-04 |
|    | 4.6E-01      | -2.22 | -1.808E-04 | 8.325E-04  | 1.731E-06  | 4.865E-04  | 9.001E-04  |
|    | 9.3E-01      | -2.23 | 5.964E-03  | 8.325E-04  | 1.731E-06  | 9.803E-04  | 7.068E-04  |
| 37 | ENVOLCER MIN |       |            |            |            |            |            |
|    | 0.00         | -5.46 | -9.691E-03 | -1.067E-03 | -2.229E-06 | -7.459E-06 | -2.224E-03 |
|    | 4.6E-01      | -5.47 | -2.994E-03 | -1.067E-03 | -2.229E-06 | -3.779E-04 | 2.796E-04  |
|    | 9.3E-01      | -5.48 | 2.520E-03  | -1.067E-03 | -2.229E-06 | -7.632E-04 | -7.901E-04 |
| 38 | ENVOLCER MAX |       |            |            |            |            |            |
|    | 0.00         | -1.33 | -6.911E-02 | 3.404E-03  | 2.505E-05  | 5.360E-04  | -4.746E-03 |
|    | 2.6E-01      | -1.35 | 1.473E-02  | 3.404E-03  | 2.505E-05  | 4.301E-04  | 8.055E-03  |
|    | 5.1E-01      | -1.36 | 1.999E-01  | 3.404E-03  | 2.505E-05  | 1.548E-03  | -7.948E-03 |
| 38 | ENVOLCER MIN |       |            |            |            |            |            |
|    | 0.00         | -3.27 | -1.705E-01 | -4.370E-03 | -3.217E-05 | -6.879E-04 | -1.187E-02 |
|    | 2.6E-01      | -3.31 | 6.251E-03  | -4.370E-03 | -3.217E-05 | -3.349E-04 | 3.226E-03  |
|    | 5.1E-01      | -3.35 | 8.215E-02  | -4.370E-03 | -3.217E-05 | -1.206E-03 | -1.940E-02 |
| 39 | ENVOLCER MAX |       |            |            |            |            |            |
|    | 0.00         | 3.53  | 2.804E-03  | 1.051E-02  | 0.00       | 3.519E-03  | 6.965E-04  |
|    | 3.4E-01      | 3.54  | 2.804E-03  | 1.051E-02  | 0.00       | 2.562E-04  | 1.893E-04  |
|    | 6.7E-01      | 3.54  | 2.804E-03  | 1.051E-02  | 0.00       | -7.244E-04 | 9.208E-04  |
| 39 | ENVOLCER MIN |       |            |            |            |            |            |
|    | 0.00         | 1.43  | -2.183E-03 | 1.864E-03  | 0.00       | 5.250E-04  | -5.423E-04 |
|    | 3.4E-01      | 1.44  | -2.183E-03 | 1.864E-03  | 0.00       | -9.971E-05 | -2.430E-04 |
|    | 6.7E-01      | 1.44  | -2.183E-03 | 1.864E-03  | 0.00       | -3.525E-03 | -1.183E-03 |
| 40 | ENVOLCER MAX |       |            |            |            |            |            |
|    | 0.00         | -2.72 | 1.615E-02  | 2.058E-02  | 6.475E-05  | 3.679E-03  | 3.511E-03  |
|    | 2.9E-01      | -2.72 | 2.135E-02  | 2.058E-02  | 6.475E-05  | 1.711E-03  | 1.514E-03  |
|    | 5.7E-01      | -2.72 | 2.654E-02  | 2.058E-02  | 6.475E-05  | 6.286E-03  | 3.370E-03  |



|                 |            |            |            |            |            |            |  |
|-----------------|------------|------------|------------|------------|------------|------------|--|
| 40 ENVOLCER MIN |            |            |            |            |            |            |  |
| 0.00            | -6.66      | -1.234E-02 | -1.602E-02 | -5.040E-05 | -2.864E-03 | -1.454E-03 |  |
| 2.9E-01         | -6.66      | -8.446E-03 | -1.602E-02 | -5.040E-05 | -2.199E-03 | -1.844E-03 |  |
| 5.7E-01         | -6.66      | -4.550E-03 | -1.602E-02 | -5.040E-05 | -8.077E-03 | -8.683E-03 |  |
| 41 ENVOLCER MAX |            |            |            |            |            |            |  |
| 0.00            | -1.98      | 4.512E-03  | 1.990E-02  | 3.110E-05  | 2.401E-03  | 2.182E-03  |  |
| 5.4E-01         | -1.99      | 9.612E-03  | 1.990E-02  | 3.110E-05  | 6.421E-03  | 1.865E-03  |  |
| 1.07            | -2.00      | 1.619E-02  | 1.990E-02  | 3.110E-05  | 1.471E-02  | 5.020E-03  |  |
| 41 ENVOLCER MIN |            |            |            |            |            |            |  |
| 0.00            | -4.84      | -1.485E-02 | -1.548E-02 | -2.421E-05 | -1.865E-03 | -4.325E-03 |  |
| 5.4E-01         | -4.85      | -8.444E-03 | -1.548E-02 | -2.421E-05 | -8.249E-03 | -1.553E-03 |  |
| 1.07            | -4.86      | -3.511E-03 | -1.548E-02 | -2.421E-05 | -1.890E-02 | -8.413E-03 |  |
| 42 ENVOLCER MAX |            |            |            |            |            |            |  |
| 0.00            | -6.533E-01 | -6.234E-02 | 8.302E-03  | 6.884E-06  | 2.033E-03  | -3.998E-03 |  |
| 2.6E-01         | -6.698E-01 | 1.419E-02  | 8.302E-03  | 6.884E-06  | 1.134E-04  | 7.606E-03  |  |
| 5.1E-01         | -6.863E-01 | 1.898E-01  | 8.302E-03  | 6.884E-06  | 2.827E-03  | -3.144E-03 |  |
| 42 ENVOLCER MIN |            |            |            |            |            |            |  |
| 0.00            | -1.65      | -1.806E-01 | -1.061E-02 | -8.479E-06 | -2.602E-03 | -1.491E-02 |  |
| 2.6E-01         | -1.69      | -9.756E-03 | -1.061E-02 | -8.479E-06 | -9.203E-05 | 2.242E-03  |  |
| 5.1E-01         | -1.73      | 6.614E-02  | -1.061E-02 | -8.479E-06 | -2.215E-03 | -1.726E-02 |  |

Vease figura 4.6

#### 4.1.4 Diseño Estructural Cercha Tipo 3.

Longitud = 10.7 m.

Altura = 2.24 m.

Tejas a utilizar: No 8

Angulo de inclinación = 20° (Ver Fig. 4.8)

##### 4.1.4.1 Análisis de Cargas.

Carga muerta: 0.53 KN/m<sup>2</sup>

Carga viva: 0.23 KN/m<sup>2</sup>

Carga de sismo: Cs = 0.275

Carga P<sub>viento</sub> (KN) = -0.049 \* A ; 0.2 \* A ; -0.121 \* A (fuerzas inclinadas)

### Cálculo de cargas puntuales

$$\text{Áreas aferentes (m}^2\text{)} \quad A_{11y12} = 4.305 * 0.545 = 2.34$$

$$A_{13y14} = 4.305 * 1.12 = 4.82$$

$$A_{15y16} = 4.305 * 1.15 = 4.95$$

$$A_{17y18} = 4.305 * 1.19 = 5.13$$

$$A_{19y20} = 4.305 * 1.15 = 4.95$$

$$A_{21} = 4.305 * 1.15 = 4.95$$

$$\text{Carga } P_{\text{muerta}} \text{ (KN)} = 0.53 * A$$

$$\text{Carga } P_{\text{viva}} \text{ (KN)} = 0.35 * A$$

$$\text{Carga } P_{\text{sismo}} \text{ (KN)} = 0.275 * \text{Carga } P_{\text{muerta}}$$

$$\text{Carga } P_{\text{viento}} \text{ (KN)} = -0.049 * A ; 0.2 * A ; -0.121 * A \text{ (fuerzas inclinadas)}$$

(Véase figura 4.9 a,b,c,d,e)

**4.1.4.2. Diseño de Elementos en Metal.** Se indican los resultados obtenidos después de haber sometido la cercha a un análisis estático, mediante el uso del programa de computador SAP – 2000, el cual arroja las fuerzas internas de los elementos, indicado si está a tensión o a compresión.

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| LOAD  | COMBINATION |        |        | MULTIPLIERS  |       |
|-------|-------------|--------|--------|--------------|-------|
| COMBO | TYPE        | CASE   | FACTOR | TYPE         | TITLE |
| COMB1 | ADD         | MUERTA | 1.4000 | STATIC(DEAD) | COMB1 |
| COMB2 | ADD         | MUERTA | 1.2000 | STATIC(DEAD) | COMB2 |
|       |             | VIVA   | 0.5000 | STATIC(LIVE) |       |

|          |      |         |         |                |        |
|----------|------|---------|---------|----------------|--------|
| COMB3    | ADD  | MUERTA  | 1.2000  | STATIC( DEAD)  | COMB3  |
|          |      | VIVA    | 1.6000  | STATIC( LIVE)  |        |
|          |      | VIENTOA | 0.8000  | STATIC( WIND)  |        |
| COMB4    | ADD  | MUERTA  | 1.2000  | STATIC( DEAD)  | COMB4  |
|          |      | VIVA    | 1.6000  | STATIC( LIVE)  |        |
|          |      | VIENTOB | 0.8000  | STATIC( WIND)  |        |
| COMB5    | ADD  | MUERTA  | 1.2000  | STATIC( DEAD)  | COMB5  |
|          |      | VIENTOA | 1.3000  | STATIC( WIND)  |        |
|          |      | VIVA    | 0.5000  | STATIC( LIVE)  |        |
| COMB6    | ADD  | MUERTA  | 1.2000  | STATIC( DEAD)  | COMB6  |
|          |      | VIENTOB | 1.3000  | STATIC( WIND)  |        |
|          |      | VIVA    | 0.5000  | STATIC( LIVE)  |        |
| COMB7    | ADD  | MUERTA  | 1.2000  | STATIC( DEAD)  | COMB7  |
|          |      | SISMO   | 1.0000  | STATIC( QUAKE) |        |
| COMB8    | ADD  | MUERTA  | 1.2000  | STATIC( DEAD)  | COMB8  |
|          |      | SISMO   | -1.0000 | STATIC( QUAKE) |        |
| COMB9    | ADD  | MUERTA  | 0.9000  | STATIC( DEAD)  | COMB9  |
|          |      | SISMO   | 1.0000  | STATIC( QUAKE) |        |
| COMB10   | ADD  | MUERTA  | 0.9000  | STATIC( DEAD)  | COMB10 |
|          |      | SISMO   | -1.0000 | STATIC( QUAKE) |        |
| COMB11   | ADD  | MUERTA  | 0.9000  | STATIC( DEAD)  | COMB11 |
|          |      | VIENTOA | -1.3000 | STATIC( WIND)  |        |
| COMB12   | ADD  | MUERTA  | 0.9000  | STATIC( DEAD)  | COMB12 |
|          |      | VIENTOB | -1.3000 | STATIC( WIND)  |        |
| ENVOLVEN | ENVE | COMB1   | 1.0000  | COMBO          | COMB13 |
|          |      | COMB2   | 1.0000  | COMBO          |        |
|          |      | COMB3   | 1.0000  | COMBO          |        |
|          |      | COMB4   | 1.0000  | COMBO          |        |
|          |      | COMB5   | 1.0000  | COMBO          |        |
|          |      | COMB6   | 1.0000  | COMBO          |        |
|          |      | COMB7   | 1.0000  | COMBO          |        |
|          |      | COMB8   | 1.0000  | COMBO          |        |
|          |      | COMB9   | 1.0000  | COMBO          |        |
|          |      | COMB10  | 1.0000  | COMBO          |        |
|          |      | COMB12  | 1.0000  | COMBO          |        |

J O I N T   R E A C T I O N S

| JOINT | LOAD    | F1      | F2     | F3      | M1     | M2     | M3     |
|-------|---------|---------|--------|---------|--------|--------|--------|
| 1     | MUERTA  | 15.0596 | 0.0000 | 12.8804 | 0.0000 | 0.0000 | 0.0000 |
| 1     | VIVA    | 9.8072  | 0.0000 | 8.4977  | 0.0000 | 0.0000 | 0.0000 |
| 1     | SISMO   | -3.5238 | 0.0000 | -0.8551 | 0.0000 | 0.0000 | 0.0000 |
| 1     | VIENTOA | -2.6410 | 0.0000 | -1.7516 | 0.0000 | 0.0000 | 0.0000 |
| 1     | VIENTOB | -0.1886 | 0.0000 | 2.4636  | 0.0000 | 0.0000 | 0.0000 |
| 1     | COMB1   | 21.0835 | 0.0000 | 18.0325 | 0.0000 | 0.0000 | 0.0000 |
| 1     | COMB2   | 22.9752 | 0.0000 | 19.7053 | 0.0000 | 0.0000 | 0.0000 |

|    |              |          |        |         |        |        |        |
|----|--------------|----------|--------|---------|--------|--------|--------|
| 1  | COMB3        | 31.6503  | 0.0000 | 27.6515 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB4        | 33.6122  | 0.0000 | 31.0237 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB5        | 19.5419  | 0.0000 | 17.4282 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB6        | 22.7300  | 0.0000 | 22.9080 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB7        | 14.5478  | 0.0000 | 14.6013 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB8        | 21.5953  | 0.0000 | 16.3116 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB9        | 10.0299  | 0.0000 | 10.7372 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB10       | 17.0774  | 0.0000 | 12.4475 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB11       | 16.9869  | 0.0000 | 13.8695 | 0.0000 | 0.0000 | 0.0000 |
| 1  | COMB12       | 13.7989  | 0.0000 | 8.3897  | 0.0000 | 0.0000 | 0.0000 |
| 1  | ENVOLVEN MAX | 33.6122  | 0.0000 | 31.0237 | 0.0000 | 0.0000 | 0.0000 |
| 1  | ENVOLVEN MIN | 10.0299  | 0.0000 | 8.3897  | 0.0000 | 0.0000 | 0.0000 |
| 10 | MUERTA       | -15.0596 | 0.0000 | 12.8710 | 0.0000 | 0.0000 | 0.0000 |
| 10 | VIVA         | -9.8072  | 0.0000 | 8.4914  | 0.0000 | 0.0000 | 0.0000 |
| 10 | SISMO        | -3.5174  | 0.0000 | 0.8551  | 0.0000 | 0.0000 | 0.0000 |
| 10 | VIENTOA      | 2.0084   | 0.0000 | -2.3574 | 0.0000 | 0.0000 | 0.0000 |
| 10 | VIENTOB      | -2.6327  | 0.0000 | -0.3649 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB1        | -21.0835 | 0.0000 | 18.0195 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB2        | -22.9752 | 0.0000 | 19.6910 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB3        | -32.1564 | 0.0000 | 27.1456 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB4        | -35.8693 | 0.0000 | 28.7396 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB5        | -20.3642 | 0.0000 | 16.6264 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB6        | -26.3977 | 0.0000 | 19.2165 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB7        | -21.5890 | 0.0000 | 16.3004 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB8        | -14.5542 | 0.0000 | 14.5901 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB9        | -17.0711 | 0.0000 | 12.4391 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB10       | -10.0363 | 0.0000 | 10.7288 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB11       | -16.1646 | 0.0000 | 14.6485 | 0.0000 | 0.0000 | 0.0000 |
| 10 | COMB12       | -10.1311 | 0.0000 | 12.0584 | 0.0000 | 0.0000 | 0.0000 |
| 10 | ENVOLVEN MAX | -10.0363 | 0.0000 | 28.7396 | 0.0000 | 0.0000 | 0.0000 |
| 10 | ENVOLVEN MIN | -35.8693 | 0.0000 | 10.7288 | 0.0000 | 0.0000 | 0.0000 |

FRAME ELEMENT FORCES

| FRAME | LOAD    | LOC       | P      | V2   | V3   | T    | M2   | M3   |
|-------|---------|-----------|--------|------|------|------|------|------|
| 1     | MUERTA  |           |        |      |      |      |      |      |
|       | 0.00    |           | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 2.6E-01 |           | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 5.1E-01 |           | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 7.7E-01 |           | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.02    |           | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | VIVA    |           |        |      |      |      |      |      |
|       | 0.00    |           | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 2.6E-01 |           | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 5.1E-01 |           | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 7.7E-01 |           | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.02    |           | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | SISMO   |           |        |      |      |      |      |      |
|       | 0.00    |           | 3.52   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 2.6E-01 |           | 3.52   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 5.1E-01 |           | 3.52   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 7.7E-01 |           | 3.52   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.02    |           | 3.52   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | VIENTOA |           |        |      |      |      |      |      |
|       | 0.00    |           | 2.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 2.6E-01 |           | 2.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 5.1E-01 |           | 2.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 7.7E-01 |           | 2.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.02    |           | 2.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | VIENTOB |           |        |      |      |      |      |      |
|       | 0.00    | 1.886E-01 | 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 2.6E-01 | 1.886E-01 | 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 5.1E-01 | 1.886E-01 | 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 7.7E-01 | 1.886E-01 | 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.02    | 1.886E-01 | 0.00   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | COMB1   |           |        |      |      |      |      |      |
|       | 0.00    |           | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 2.6E-01 |           | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |              |        |      |      |      |      |      |
|---|--------------|--------|------|------|------|------|------|
|   | 5.1E-01      | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB2        |        |      |      |      |      |      |
|   | 0.00         | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB3        |        |      |      |      |      |      |
|   | 0.00         | -31.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -31.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -31.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -31.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -31.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB4        |        |      |      |      |      |      |
|   | 0.00         | -33.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -33.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -33.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -33.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -33.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB5        |        |      |      |      |      |      |
|   | 0.00         | -19.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -19.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -19.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -19.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -19.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB6        |        |      |      |      |      |      |
|   | 0.00         | -22.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -22.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -22.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -22.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -22.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB7        |        |      |      |      |      |      |
|   | 0.00         | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB8        |        |      |      |      |      |      |
|   | 0.00         | -21.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -21.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -21.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -21.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -21.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB9        |        |      |      |      |      |      |
|   | 0.00         | -10.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -10.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -10.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -10.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -10.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB10       |        |      |      |      |      |      |
|   | 0.00         | -17.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -17.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -17.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -17.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -17.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB11       |        |      |      |      |      |      |
|   | 0.00         | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | COMB12       |        |      |      |      |      |      |
|   | 0.00         | -13.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -13.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -13.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -13.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -13.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -10.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |              |            |      |      |      |      |      |
|---|--------------|------------|------|------|------|------|------|
|   | 2.6E-01      | -10.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -10.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -10.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -10.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | ENVOLVEN MIN |            |      |      |      |      |      |
|   | 0.00         | -33.61     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -33.61     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.1E-01      | -33.61     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -33.61     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.02         | -33.61     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | MUERTA       |            |      |      |      |      |      |
|   | 0.00         | 5.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | VIVA         |            |      |      |      |      |      |
|   | 0.00         | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | SISMO        |            |      |      |      |      |      |
|   | 0.00         | 1.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 1.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 1.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 1.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 1.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | VIENTOA      |            |      |      |      |      |      |
|   | 0.00         | -3.424E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | -3.424E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | -3.424E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | -3.424E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | -3.424E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | VIENTOB      |            |      |      |      |      |      |
|   | 0.00         | 3.10       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.10       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.10       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.10       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.10       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB1        |            |      |      |      |      |      |
|   | 0.00         | 7.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 7.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 7.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 7.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 7.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB2        |            |      |      |      |      |      |
|   | 0.00         | 8.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 8.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 8.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 8.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 8.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB3        |            |      |      |      |      |      |
|   | 0.00         | 12.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 12.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 12.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 12.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 12.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB4        |            |      |      |      |      |      |
|   | 0.00         | 14.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 14.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 14.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 14.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 14.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB5        |            |      |      |      |      |      |
|   | 0.00         | 8.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 8.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 8.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 8.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 8.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |              |           |      |      |      |      |      |
|---|--------------|-----------|------|------|------|------|------|
| 2 | COMB6        |           |      |      |      |      |      |
|   | 0.00         | 12.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 12.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 12.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 12.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 12.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB7        |           |      |      |      |      |      |
|   | 0.00         | 7.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 7.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 7.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 7.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 7.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB8        |           |      |      |      |      |      |
|   | 0.00         | 5.27      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.27      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.27      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.27      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.27      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB9        |           |      |      |      |      |      |
|   | 0.00         | 6.33      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 6.33      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 6.33      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 6.33      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 6.33      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB10       |           |      |      |      |      |      |
|   | 0.00         | 3.62      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.62      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.62      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.62      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.62      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB11       |           |      |      |      |      |      |
|   | 0.00         | 5.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | COMB12       |           |      |      |      |      |      |
|   | 0.00         | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | ENVOLVEN MAX |           |      |      |      |      |      |
|   | 0.00         | 14.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 14.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 14.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 14.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 14.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | ENVOLVEN MIN |           |      |      |      |      |      |
|   | 0.00         | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 9.464E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | MUERTA       |           |      |      |      |      |      |
|   | 0.00         | 4.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 4.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01      | 4.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01      | 4.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09         | 4.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | VIVA         |           |      |      |      |      |      |
|   | 0.00         | 3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01      | 3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01      | 3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09         | 3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | SISM0        |           |      |      |      |      |      |
|   | 0.00         | 8.466E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 8.466E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01      | 8.466E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |         |            |      |      |      |      |      |
|---|---------|------------|------|------|------|------|------|
|   | 8.2E-01 | 8.466E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 8.466E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | VIENTOA |            |      |      |      |      |      |
|   | 0.00    | -3.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | -3.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | -3.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | -3.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | -3.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | VIENTOB |            |      |      |      |      |      |
|   | 0.00    | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB1   |            |      |      |      |      |      |
|   | 0.00    | 6.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 6.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 6.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 6.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 6.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB2   |            |      |      |      |      |      |
|   | 0.00    | 7.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 7.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 7.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 7.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 7.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB3   |            |      |      |      |      |      |
|   | 0.00    | 10.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 10.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 10.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 10.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 10.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB4   |            |      |      |      |      |      |
|   | 0.00    | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB5   |            |      |      |      |      |      |
|   | 0.00    | 7.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 7.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 7.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 7.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 7.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB6   |            |      |      |      |      |      |
|   | 0.00    | 10.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 10.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 10.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 10.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 10.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB7   |            |      |      |      |      |      |
|   | 0.00    | 6.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 6.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 6.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 6.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 6.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB8   |            |      |      |      |      |      |
|   | 0.00    | 5.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 5.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 5.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 5.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 5.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB9   |            |      |      |      |      |      |
|   | 0.00    | 5.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 5.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01 | 5.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01 | 5.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09    | 5.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB10  |            |      |      |      |      |      |
|   | 0.00    | 3.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 3.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |



|   |              |            |      |      |      |      |      |
|---|--------------|------------|------|------|------|------|------|
|   | 5.5E-01      | 3.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01      | 3.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09         | 3.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB11       |            |      |      |      |      |      |
|   | 0.00         | 4.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 4.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01      | 4.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01      | 4.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09         | 4.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | COMB12       |            |      |      |      |      |      |
|   | 0.00         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01      | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01      | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | ENVOLVEN MAX |            |      |      |      |      |      |
|   | 0.00         | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01      | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01      | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09         | 12.91      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | ENVOLVEN MIN |            |      |      |      |      |      |
|   | 0.00         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.5E-01      | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.2E-01      | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.09         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | MUERTIA      |            |      |      |      |      |      |
|   | 0.00         | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | VIVA         |            |      |      |      |      |      |
|   | 0.00         | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | SISMO        |            |      |      |      |      |      |
|   | 0.00         | 3.776E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 3.776E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 3.776E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 3.776E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 3.776E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | VIENTOA      |            |      |      |      |      |      |
|   | 0.00         | -2.472E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | -2.472E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | -2.472E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | -2.472E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | -2.472E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | VIENTOB      |            |      |      |      |      |      |
|   | 0.00         | 1.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 1.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 1.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 1.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 1.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB1        |            |      |      |      |      |      |
|   | 0.00         | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB2        |            |      |      |      |      |      |
|   | 0.00         | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB3        |            |      |      |      |      |      |

|   |              |      |      |      |      |      |      |
|---|--------------|------|------|------|------|------|------|
|   | 0.00         | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 6.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB4        |      |      |      |      |      |      |
|   | 0.00         | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB5        |      |      |      |      |      |      |
|   | 0.00         | 4.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 4.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 4.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 4.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 4.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB6        |      |      |      |      |      |      |
|   | 0.00         | 5.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 5.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 5.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 5.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 5.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB7        |      |      |      |      |      |      |
|   | 0.00         | 3.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 3.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 3.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 3.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 3.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB8        |      |      |      |      |      |      |
|   | 0.00         | 3.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 3.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 3.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 3.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 3.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB9        |      |      |      |      |      |      |
|   | 0.00         | 3.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 3.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 3.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 3.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 3.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB10       |      |      |      |      |      |      |
|   | 0.00         | 2.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 2.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 2.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 2.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 2.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB11       |      |      |      |      |      |      |
|   | 0.00         | 2.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 2.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 2.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 2.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 2.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | COMB12       |      |      |      |      |      |      |
|   | 0.00         | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | ENVOLVEN MAX |      |      |      |      |      |      |
|   | 0.00         | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 7.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | ENVOLVEN MIN |      |      |      |      |      |      |
|   | 0.00         | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |         |            |      |      |      |      |      |
|---|---------|------------|------|------|------|------|------|
| 5 | MUERTA  |            |      |      |      |      |      |
|   | 0.00    | 6.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 6.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 6.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 6.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 6.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | VIVA    |            |      |      |      |      |      |
|   | 0.00    | 3.789E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 3.789E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 3.789E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 3.789E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 3.789E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | SISM0   |            |      |      |      |      |      |
|   | 0.00    | 2.058E-03  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 2.058E-03  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 2.058E-03  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 2.058E-03  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 2.058E-03  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | VIENT0A |            |      |      |      |      |      |
|   | 0.00    | -5.849E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | -5.849E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | -5.849E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | -5.849E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | -5.849E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | VIENT0B |            |      |      |      |      |      |
|   | 0.00    | 3.786E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 3.786E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 3.786E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 3.786E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 3.786E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB1   |            |      |      |      |      |      |
|   | 0.00    | 9.699E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 9.699E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 9.699E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 9.699E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 9.699E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB2   |            |      |      |      |      |      |
|   | 0.00    | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB3   |            |      |      |      |      |      |
|   | 0.00    | 1.39       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 1.39       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 1.39       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 1.39       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 1.39       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB4   |            |      |      |      |      |      |
|   | 0.00    | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB5   |            |      |      |      |      |      |
|   | 0.00    | 9.447E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 9.447E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 9.447E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 9.447E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 9.447E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB6   |            |      |      |      |      |      |
|   | 0.00    | 1.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 1.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 1.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50    | 1.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00    | 1.07       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB7   |            |      |      |      |      |      |
|   | 0.00    | 8.334E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01 | 8.334E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00    | 8.334E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |              |            |      |      |      |      |      |
|---|--------------|------------|------|------|------|------|------|
|   | 1.50         | 8.334E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 8.334E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB8        |            |      |      |      |      |      |
|   | 0.00         | 8.293E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01      | 8.293E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00         | 8.293E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50         | 8.293E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 8.293E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB9        |            |      |      |      |      |      |
|   | 0.00         | 6.256E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01      | 6.256E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00         | 6.256E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50         | 6.256E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 6.256E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB10       |            |      |      |      |      |      |
|   | 0.00         | 6.214E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01      | 6.214E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00         | 6.214E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50         | 6.214E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 6.214E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB11       |            |      |      |      |      |      |
|   | 0.00         | 6.995E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01      | 6.995E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00         | 6.995E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50         | 6.995E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 6.995E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | COMB12       |            |      |      |      |      |      |
|   | 0.00         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01      | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | ENVOLVEN MAX |            |      |      |      |      |      |
|   | 0.00         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01      | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 1.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | ENVOLVEN MIN |            |      |      |      |      |      |
|   | 0.00         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.0E-01      | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.00         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.50         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.00         | 5.743E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | MUERIA       |            |      |      |      |      |      |
|   | 0.00         | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 2.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | VIVA         |            |      |      |      |      |      |
|   | 0.00         | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 1.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | SISMO        |            |      |      |      |      |      |
|   | 0.00         | -3.740E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | -3.740E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | -3.740E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | -3.740E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | -3.740E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | VIENTOA      |            |      |      |      |      |      |
|   | 0.00         | -6.228E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | -6.228E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | -6.228E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | -6.228E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | -6.228E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | VIENTOB      |            |      |      |      |      |      |
|   | 0.00         | -6.673E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |         |            |      |      |      |      |      |
|---|---------|------------|------|------|------|------|------|
|   | 2.9E-01 | -6.673E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | -6.673E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | -6.673E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | -6.673E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB1   |            |      |      |      |      |      |
|   | 0.00    | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 4.12       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB2   |            |      |      |      |      |      |
|   | 0.00    | 4.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 4.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 4.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 4.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 4.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB3   |            |      |      |      |      |      |
|   | 0.00    | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB4   |            |      |      |      |      |      |
|   | 0.00    | 6.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 6.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 6.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 6.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 6.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB5   |            |      |      |      |      |      |
|   | 0.00    | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB6   |            |      |      |      |      |      |
|   | 0.00    | 3.61       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 3.61       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 3.61       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 3.61       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 3.61       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB7   |            |      |      |      |      |      |
|   | 0.00    | 3.16       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 3.16       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 3.16       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 3.16       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 3.16       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB8   |            |      |      |      |      |      |
|   | 0.00    | 3.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 3.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 3.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 3.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 3.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB9   |            |      |      |      |      |      |
|   | 0.00    | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB10  |            |      |      |      |      |      |
|   | 0.00    | 3.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 3.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 3.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 3.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 3.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB11  |            |      |      |      |      |      |
|   | 0.00    | 3.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01 | 3.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01 | 3.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01 | 3.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16    | 3.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | COMB12  |            |      |      |      |      |      |

|   |              |            |      |      |      |      |      |
|---|--------------|------------|------|------|------|------|------|
|   | 0.00         | 3.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 3.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 3.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 3.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 3.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | ENVOLVEN MAX |            |      |      |      |      |      |
|   | 0.00         | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 6.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | ENVOLVEN MIN |            |      |      |      |      |      |
|   | 0.00         | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.9E-01      | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.8E-01      | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.7E-01      | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.16         | 2.28       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | MUERTA       |            |      |      |      |      |      |
|   | 0.00         | 4.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 4.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 4.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 4.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 4.94       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | VIVA         |            |      |      |      |      |      |
|   | 0.00         | 3.24       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.24       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.24       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.24       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.24       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | SISMD        |            |      |      |      |      |      |
|   | 0.00         | -8.436E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | -8.436E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | -8.436E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | -8.436E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | -8.436E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | VIENTOA      |            |      |      |      |      |      |
|   | 0.00         | -1.18      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | -1.18      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | -1.18      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | -1.18      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | -1.18      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | VIENTOB      |            |      |      |      |      |      |
|   | 0.00         | -1.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | -1.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | -1.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | -1.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | -1.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB1        |            |      |      |      |      |      |
|   | 0.00         | 6.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 6.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 6.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 6.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 6.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB2        |            |      |      |      |      |      |
|   | 0.00         | 7.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 7.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 7.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 7.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 7.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB3        |            |      |      |      |      |      |
|   | 0.00         | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB4        |            |      |      |      |      |      |
|   | 0.00         | 9.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 9.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 9.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 9.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |              |       |      |      |      |      |      |
|---|--------------|-------|------|------|------|------|------|
|   | 1.08         | 9.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB5        |       |      |      |      |      |      |
|   | 0.00         | 6.01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 6.01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 6.01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 6.01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 6.01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB6        |       |      |      |      |      |      |
|   | 0.00         | 5.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB7        |       |      |      |      |      |      |
|   | 0.00         | 5.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB8        |       |      |      |      |      |      |
|   | 0.00         | 6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB9        |       |      |      |      |      |      |
|   | 0.00         | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB10       |       |      |      |      |      |      |
|   | 0.00         | 5.29  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.29  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.29  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.29  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.29  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB11       |       |      |      |      |      |      |
|   | 0.00         | 5.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | COMB12       |       |      |      |      |      |      |
|   | 0.00         | 6.37  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 6.37  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 6.37  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 6.37  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 6.37  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | ENVOLVEN MAX |       |      |      |      |      |      |
|   | 0.00         | 10.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 10.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 10.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 10.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 10.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | ENVOLVEN MIN |       |      |      |      |      |      |
|   | 0.00         | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | MUERTA       |       |      |      |      |      |      |
|   | 0.00         | 5.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 5.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 5.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 5.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 5.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | VIVA         |       |      |      |      |      |      |
|   | 0.00         | 3.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |         |       |      |      |      |      |      |
|---|---------|-------|------|------|------|------|------|
|   | 5.4E-01 | 3.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 3.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 3.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | SISMD   |       |      |      |      |      |      |
|   | 0.00    | -1.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | -1.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | -1.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | -1.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | -1.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | VIENTOA |       |      |      |      |      |      |
|   | 0.00    | -1.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | -1.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | -1.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | -1.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | -1.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | VIENTOB |       |      |      |      |      |      |
|   | 0.00    | -2.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | -2.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | -2.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | -2.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | -2.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB1   |       |      |      |      |      |      |
|   | 0.00    | 7.76  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 7.76  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 7.76  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 7.76  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 7.76  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB2   |       |      |      |      |      |      |
|   | 0.00    | 8.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 8.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 8.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 8.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 8.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB3   |       |      |      |      |      |      |
|   | 0.00    | 11.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 11.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 11.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 11.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 11.38 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB4   |       |      |      |      |      |      |
|   | 0.00    | 10.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 10.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 10.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 10.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 10.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB5   |       |      |      |      |      |      |
|   | 0.00    | 6.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 6.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 6.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 6.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 6.60  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB6   |       |      |      |      |      |      |
|   | 0.00    | 5.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 5.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 5.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 5.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 5.68  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB7   |       |      |      |      |      |      |
|   | 0.00    | 5.31  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 5.31  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 5.31  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 5.31  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 5.31  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB8   |       |      |      |      |      |      |
|   | 0.00    | 8.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01 | 8.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01 | 8.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01 | 8.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08    | 8.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB9   |       |      |      |      |      |      |
|   | 0.00    | 3.64  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |



|   |              |        |      |      |      |      |      |
|---|--------------|--------|------|------|------|------|------|
|   | 2.7E-01      | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB10       |        |      |      |      |      |      |
|   | 0.00         | 6.34   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 6.34   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 6.34   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 6.34   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 6.34   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB11       |        |      |      |      |      |      |
|   | 0.00         | 6.88   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 6.88   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 6.88   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 6.88   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 6.88   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | COMB12       |        |      |      |      |      |      |
|   | 0.00         | 7.80   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 7.80   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 7.80   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 7.80   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 7.80   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | 11.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 11.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 11.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 11.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 11.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.7E-01      | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.4E-01      | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.1E-01      | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.08         | 3.64   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | MUERTA       |        |      |      |      |      |      |
|   | 0.00         | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -15.06 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | VIVA         |        |      |      |      |      |      |
|   | 0.00         | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -9.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | SISMO        |        |      |      |      |      |      |
|   | 0.00         | -3.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -3.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -3.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -3.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -3.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | VIENTOA      |        |      |      |      |      |      |
|   | 0.00         | 2.01   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | 2.01   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | 2.01   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | 2.01   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | 2.01   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | VIENTOB      |        |      |      |      |      |      |
|   | 0.00         | -2.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -2.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -2.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -2.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -2.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB1        |        |      |      |      |      |      |
|   | 0.00         | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -21.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |              |        |      |      |      |      |      |
|---|--------------|--------|------|------|------|------|------|
| 9 | COMB2        |        |      |      |      |      |      |
|   | 0.00         | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -22.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB3        |        |      |      |      |      |      |
|   | 0.00         | -32.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -32.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -32.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -32.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -32.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB4        |        |      |      |      |      |      |
|   | 0.00         | -35.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -35.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -35.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -35.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -35.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB5        |        |      |      |      |      |      |
|   | 0.00         | -20.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -20.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -20.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -20.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -20.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB6        |        |      |      |      |      |      |
|   | 0.00         | -26.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -26.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -26.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -26.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -26.40 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB7        |        |      |      |      |      |      |
|   | 0.00         | -21.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -21.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -21.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -21.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -21.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB8        |        |      |      |      |      |      |
|   | 0.00         | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -14.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB9        |        |      |      |      |      |      |
|   | 0.00         | -17.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -17.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -17.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -17.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -17.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB10       |        |      |      |      |      |      |
|   | 0.00         | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB11       |        |      |      |      |      |      |
|   | 0.00         | -16.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -16.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -16.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -16.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -16.16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | COMB12       |        |      |      |      |      |      |
|   | 0.00         | -10.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -10.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -10.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -10.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.03         | -10.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.6E-01      | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.2E-01      | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.7E-01      | -10.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |           |      |      |      |      |      |
|----|--------------|-----------|------|------|------|------|------|
|    | 1.03         | -10.04    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -35.87    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.6E-01      | -35.87    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.2E-01      | -35.87    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.7E-01      | -35.87    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.03         | -35.87    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | MUERTA       |           |      |      |      |      |      |
|    | 0.00         | -12.88    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -12.88    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -12.88    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | VIVA         |           |      |      |      |      |      |
|    | 0.00         | -8.50     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -8.50     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -8.50     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | SISMO        |           |      |      |      |      |      |
|    | 0.00         | 8.551E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | 8.551E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | 8.551E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | VIENTOA      |           |      |      |      |      |      |
|    | 0.00         | 1.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | 1.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | 1.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | VIENTOB      |           |      |      |      |      |      |
|    | 0.00         | -2.46     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -2.46     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -2.46     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB1        |           |      |      |      |      |      |
|    | 0.00         | -18.03    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -18.03    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -18.03    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB2        |           |      |      |      |      |      |
|    | 0.00         | -19.71    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -19.71    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -19.71    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB3        |           |      |      |      |      |      |
|    | 0.00         | -27.65    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -27.65    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -27.65    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB4        |           |      |      |      |      |      |
|    | 0.00         | -31.02    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -31.02    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -31.02    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB5        |           |      |      |      |      |      |
|    | 0.00         | -17.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -17.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -17.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB6        |           |      |      |      |      |      |
|    | 0.00         | -22.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -22.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -22.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB7        |           |      |      |      |      |      |
|    | 0.00         | -14.60    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -14.60    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -14.60    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB8        |           |      |      |      |      |      |
|    | 0.00         | -16.31    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -16.31    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -16.31    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB9        |           |      |      |      |      |      |
|    | 0.00         | -10.74    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -10.74    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -10.74    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB10       |           |      |      |      |      |      |
|    | 0.00         | -12.45    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -12.45    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -12.45    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB11       |           |      |      |      |      |      |
|    | 0.00         | -13.87    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -13.87    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |        |      |      |      |      |      |
|----|--------------|--------|------|------|------|------|------|
|    | 3.0E-01      | -13.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | COMB12       |        |      |      |      |      |      |
|    | 0.00         | -8.39  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -8.39  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -8.39  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -8.39  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -8.39  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -8.39  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -31.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -31.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -31.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | MUERTA       |        |      |      |      |      |      |
|    | 0.00         | 18.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 18.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 18.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | VIVA         |        |      |      |      |      |      |
|    | 0.00         | 12.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 12.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 12.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | SISMO        |        |      |      |      |      |      |
|    | 0.00         | -1.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -1.54  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | VIENTOA      |        |      |      |      |      |      |
|    | 0.00         | -2.59  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -2.59  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -2.59  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | VIENTOB      |        |      |      |      |      |      |
|    | 0.00         | 3.13   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 3.13   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 3.13   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB1        |        |      |      |      |      |      |
|    | 0.00         | 25.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 25.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 25.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB2        |        |      |      |      |      |      |
|    | 0.00         | 28.32  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 28.32  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 28.32  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB3        |        |      |      |      |      |      |
|    | 0.00         | 39.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 39.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 39.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB4        |        |      |      |      |      |      |
|    | 0.00         | 44.21  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 44.21  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 44.21  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB5        |        |      |      |      |      |      |
|    | 0.00         | 24.94  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 24.94  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 24.94  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB6        |        |      |      |      |      |      |
|    | 0.00         | 32.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 32.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 32.38  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB7        |        |      |      |      |      |      |
|    | 0.00         | 20.69  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 20.69  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 20.69  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB8        |        |      |      |      |      |      |
|    | 0.00         | 23.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 23.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 23.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB9        |        |      |      |      |      |      |
|    | 0.00         | 15.13  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 15.13  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 15.13  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB10       |        |      |      |      |      |      |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 0.00         | 18.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 18.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 18.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | 20.04      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 20.04      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 20.04      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | 12.61      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 12.61      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 12.61      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 44.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 44.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 44.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 12.61      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 12.61      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 12.61      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | MUERIA       |            |      |      |      |      |      |
|    | 0.00         | 18.57      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 18.57      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 18.57      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | 12.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 12.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 12.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | -3.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | -3.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -3.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | -1.196E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | -1.196E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.196E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | 26.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 26.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 26.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | 28.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 28.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 28.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | 39.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 39.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 39.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | 41.73      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 41.73      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 41.73      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | 24.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 24.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 24.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | 28.24      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 28.24      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 28.24      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | 23.83      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 23.83      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 23.83      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | 20.74      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 20.74      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |         |            |      |      |      |      |      |
|----|--------------|---------|------------|------|------|------|------|------|
| 12 |              | 1.07    | 20.74      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB9        | 0.00    | 18.26      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | 18.26      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | 18.26      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 |              | 0.00    | 15.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB10       | 5.4E-01 | 15.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | 15.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 |              | 0.00    | 20.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB11       | 5.4E-01 | 20.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | 20.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 |              | 0.00    | 16.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB12       | 5.4E-01 | 16.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | 16.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 |              | 0.00    | 41.73      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | ENVOLVEN MAX | 5.4E-01 | 41.73      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | 41.73      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 |              | 0.00    | 15.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | ENVOLVEN MIN | 5.4E-01 | 15.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | 15.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -12.87     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | MUERTA       | 1.5E-01 | -12.87     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -12.87     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -8.49      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | VIVA         | 1.5E-01 | -8.49      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -8.49      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -8.551E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | SISMO        | 1.5E-01 | -8.551E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -8.551E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | 2.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | VIENTOA      | 1.5E-01 | 2.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | 2.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | 3.649E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | VIENTOB      | 1.5E-01 | 3.649E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | 3.649E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -18.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB1        | 1.5E-01 | -18.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -18.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -19.69     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB2        | 1.5E-01 | -19.69     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -19.69     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -27.15     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB3        | 1.5E-01 | -27.15     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -27.15     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -28.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB4        | 1.5E-01 | -28.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -28.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -16.63     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB5        | 1.5E-01 | -16.63     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -16.63     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -19.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB6        | 1.5E-01 | -19.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 3.0E-01 | -19.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 |              | 0.00    | -19.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | COMB7        |         |            |      |      |      |      |      |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 0.00         | -16.30     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -16.30     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -16.30     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -14.59     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -14.59     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -14.59     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -12.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -12.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -12.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -10.73     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -10.73     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -10.73     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -14.65     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -14.65     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -14.65     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -12.06     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -12.06     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -12.06     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -10.73     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -10.73     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -10.73     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -28.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -28.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -28.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | MUERTIA      |            |      |      |      |      |      |
|    | 0.00         | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -1.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -1.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -1.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | -2.466E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.466E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -2.466E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 2.443E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | 2.443E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | 2.443E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | -9.720E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -9.720E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -9.720E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -3.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -3.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -5.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -5.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -5.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | -6.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -6.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -6.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | -3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 6.7E-01      | -3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -5.04      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -5.04      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -5.04      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | -3.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -3.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -2.70      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.70      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -2.70      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -1.96      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -1.96      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -1.96      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -2.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -2.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -9.430E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -9.430E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -9.430E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -9.430E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -9.430E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -9.430E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -6.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -6.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.7E-01      | -6.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | MUERTA       |            |      |      |      |      |      |
|    | 0.00         | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -2.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -1.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -1.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -1.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | 2.466E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | 2.466E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | 2.466E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 6.109E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | 6.109E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | 6.109E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | 6.109E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | 6.109E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | 6.109E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -3.43      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -3.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -3.78      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -5.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -5.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -5.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB4        |            |      |      |      |      |      |



|    |              |        |      |      |      |      |      |
|----|--------------|--------|------|------|------|------|------|
|    | 0.00         | -5.12  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -5.12  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -5.12  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB5        |        |      |      |      |      |      |
|    | 0.00         | -2.98  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.98  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -2.98  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB6        |        |      |      |      |      |      |
|    | 0.00         | -2.98  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.98  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -2.98  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB7        |        |      |      |      |      |      |
|    | 0.00         | -2.70  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.70  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -2.70  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB8        |        |      |      |      |      |      |
|    | 0.00         | -3.19  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.19  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -3.19  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB9        |        |      |      |      |      |      |
|    | 0.00         | -1.96  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -1.96  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -1.96  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB10       |        |      |      |      |      |      |
|    | 0.00         | -2.45  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -2.45  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -2.45  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB11       |        |      |      |      |      |      |
|    | 0.00         | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | COMB12       |        |      |      |      |      |      |
|    | 0.00         | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -1.96  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -1.96  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -1.96  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 15 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -5.12  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.4E-01      | -5.12  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.8E-01      | -5.12  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | MUERTIA      |        |      |      |      |      |      |
|    | 0.00         | -18.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | -18.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.09         | -18.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | VIVA         |        |      |      |      |      |      |
|    | 0.00         | -12.43 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | -12.43 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.09         | -12.43 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | SISMO        |        |      |      |      |      |      |
|    | 0.00         | 1.23   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 1.23   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.09         | 1.23   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | VIENTOA      |        |      |      |      |      |      |
|    | 0.00         | 2.69   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | 2.69   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.09         | 2.69   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | VIENTOB      |        |      |      |      |      |      |
|    | 0.00         | -3.36  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | -3.36  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.09         | -3.36  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB1        |        |      |      |      |      |      |
|    | 0.00         | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.09         | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB2        |        |      |      |      |      |      |
|    | 0.00         | -28.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.4E-01      | -28.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |         |           |      |      |      |      |      |
|----|--------------|---------|-----------|------|------|------|------|------|
| 16 | COMB3        | 1.09    | -28.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 0.00    | -40.44    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -40.44    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -40.44    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB4        | 0.00    | -45.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -45.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -45.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB5        | 0.00    | -25.42    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -25.42    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -25.42    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB6        | 0.00    | -33.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -33.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -33.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB7        | 0.00    | -21.47    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -21.47    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -21.47    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB8        | 0.00    | -23.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -23.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -23.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB9        | 0.00    | -15.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -15.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -15.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB10       | 0.00    | -18.25    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -18.25    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -18.25    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB11       | 0.00    | -20.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -20.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -20.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | COMB12       | 0.00    | -12.66    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -12.66    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -12.66    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MAX | 0.00    | -12.66    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -12.66    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -12.66    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MIN | 0.00    | -45.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.4E-01 | -45.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.09    | -45.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | MUERTA       | 0.00    | -18.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.5E-01 | -18.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.10    | -18.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | VIVA         | 0.00    | -12.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.5E-01 | -12.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.10    | -12.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | SISMO        | 0.00    | -1.23     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.5E-01 | -1.23     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.10    | -1.23     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | VIENTOA      | 0.00    | 3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.5E-01 | 3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.10    | 3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | VIENTOB      | 0.00    | 2.235E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.5E-01 | 2.235E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.10    | 2.235E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB1        |         |           |      |      |      |      |      |

|    |              |           |      |      |      |      |      |
|----|--------------|-----------|------|------|------|------|------|
|    | 0.00         | -26.57    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -26.57    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -26.57    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB2        |           |      |      |      |      |      |
|    | 0.00         | -29.02    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -29.02    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -29.02    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB3        |           |      |      |      |      |      |
|    | 0.00         | -39.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -39.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -39.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB4        |           |      |      |      |      |      |
|    | 0.00         | -42.56    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -42.56    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -42.56    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB5        |           |      |      |      |      |      |
|    | 0.00         | -24.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -24.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -24.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB6        |           |      |      |      |      |      |
|    | 0.00         | -28.73    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -28.73    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -28.73    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB7        |           |      |      |      |      |      |
|    | 0.00         | -24.01    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -24.01    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -24.01    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB8        |           |      |      |      |      |      |
|    | 0.00         | -21.54    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -21.54    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -21.54    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB9        |           |      |      |      |      |      |
|    | 0.00         | -18.32    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -18.32    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -18.32    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB10       |           |      |      |      |      |      |
|    | 0.00         | -15.85    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -15.85    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -15.85    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB11       |           |      |      |      |      |      |
|    | 0.00         | -21.58    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -21.58    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -21.58    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | COMB12       |           |      |      |      |      |      |
|    | 0.00         | -17.37    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -17.37    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -17.37    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | -15.85    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -15.85    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -15.85    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -42.56    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.5E-01      | -42.56    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.10         | -42.56    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | MUERTIA      |           |      |      |      |      |      |
|    | 0.00         | -3.95     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01      | -3.95     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52         | -3.95     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | VIVA         |           |      |      |      |      |      |
|    | 0.00         | -2.52     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01      | -2.52     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52         | -2.52     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | SISMO        |           |      |      |      |      |      |
|    | 0.00         | 9.700E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01      | 9.700E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52         | 9.700E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | VIENTOA      |           |      |      |      |      |      |
|    | 0.00         | 6.945E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01      | 6.945E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |         |            |      |      |      |      |      |
|----|--------------|---------|------------|------|------|------|------|------|
| 18 | VIENTOS      | 1.52    | 6.945E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 0.00    | 1.282E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | 1.282E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | 1.282E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB1        | 0.00    | -5.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -5.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -5.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB2        | 0.00    | -6.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -6.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -6.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB3        | 0.00    | -8.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -8.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -8.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB4        | 0.00    | -8.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -8.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -8.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB5        | 0.00    | -5.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -5.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -5.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB6        | 0.00    | -5.83      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -5.83      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -5.83      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB7        | 0.00    | -3.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -3.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -3.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB8        | 0.00    | -5.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -5.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -5.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB9        | 0.00    | -2.59      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -2.59      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -2.59      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB10       | 0.00    | -4.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -4.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -4.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB11       | 0.00    | -4.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -4.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -4.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | COMB12       | 0.00    | -3.72      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -3.72      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -3.72      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | ENVOLVEN MAX | 0.00    | -2.59      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -2.59      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -2.59      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | ENVOLVEN MIN | 0.00    | -8.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.6E-01 | -8.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.52    | -8.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | MUERTA       | 0.00    | -8.001E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -8.001E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | -8.001E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | VIVA         | 0.00    | -5.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -5.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.07    | -5.814E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | SISMO        |         |            |      |      |      |      |      |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 0.00         | -6.833E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -6.833E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -6.833E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | -5.230E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -5.230E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -5.230E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | -1.09      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.09      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.09      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -1.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -1.25      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.25      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.25      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -1.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | -2.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -2.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -2.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -2.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -2.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -2.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | -1.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -2.768E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -2.768E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -2.768E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -1.40      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.40      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.40      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -3.677E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -3.677E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -3.677E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -6.521E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -6.521E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -6.521E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | 6.973E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 6.973E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 6.973E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 6.973E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 6.973E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 6.973E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -2.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -2.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -2.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | MUERTA       |            |      |      |      |      |      |
|    | 0.00         | -8.170E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -8.170E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 1.07         | -8.170E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -5.926E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -5.926E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -5.926E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | SISMD        |            |      |      |      |      |      |
|    | 0.00         | 6.827E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 6.827E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 6.827E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 3.675E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 3.675E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 3.675E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | 9.266E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 9.266E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | 9.266E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -1.14      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.14      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.14      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -1.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -1.63      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.63      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.63      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | -1.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | -7.990E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -7.990E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -7.990E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -7.215E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -7.215E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -7.215E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | -2.978E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -2.978E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -2.978E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -1.66      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.66      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.66      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -5.267E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -5.267E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -5.267E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -1.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -1.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -1.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -1.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -5.267E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -5.267E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -5.267E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -1.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |         |            |      |      |      |      |      |
|----|---------|------------|------|------|------|------|------|
|    | 5.3E-01 | -1.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07    | -1.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | MUERIA  |            |      |      |      |      |      |
|    | 0.00    | -3.90      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -3.90      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -3.90      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | VIVA    |            |      |      |      |      |      |
|    | 0.00    | -2.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -2.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -2.48      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | SISMO   |            |      |      |      |      |      |
|    | 0.00    | -9.650E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -9.650E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -9.650E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | VIENTOA |            |      |      |      |      |      |
|    | 0.00    | 4.372E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | 4.372E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | 4.372E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | VIENTOB |            |      |      |      |      |      |
|    | 0.00    | -8.208E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -8.208E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -8.208E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB1   |            |      |      |      |      |      |
|    | 0.00    | -5.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -5.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -5.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB2   |            |      |      |      |      |      |
|    | 0.00    | -5.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -5.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -5.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB3   |            |      |      |      |      |      |
|    | 0.00    | -8.30      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -8.30      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -8.30      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB4   |            |      |      |      |      |      |
|    | 0.00    | -9.31      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -9.31      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -9.31      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB5   |            |      |      |      |      |      |
|    | 0.00    | -5.35      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -5.35      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -5.35      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB6   |            |      |      |      |      |      |
|    | 0.00    | -6.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -6.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -6.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB7   |            |      |      |      |      |      |
|    | 0.00    | -5.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -5.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -5.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB8   |            |      |      |      |      |      |
|    | 0.00    | -3.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -3.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -3.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB9   |            |      |      |      |      |      |
|    | 0.00    | -4.47      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -4.47      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -4.47      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB10  |            |      |      |      |      |      |
|    | 0.00    | -2.54      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -2.54      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -2.54      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB11  |            |      |      |      |      |      |
|    | 0.00    | -4.08      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -4.08      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -4.08      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | COMB12  |            |      |      |      |      |      |
|    | 0.00    | -2.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.6E-01 | -2.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.52    | -2.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |





|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 9.1E-01      | 8.132E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 8.132E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -8.697E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | -8.697E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | -8.697E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 3.45       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 3.45       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 3.45       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -8.697E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | -8.697E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | -8.697E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | MUERTA       |            |      |      |      |      |      |
|    | 0.00         | -3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -3.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -2.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -2.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -2.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | -7.622E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -7.622E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -7.622E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 2.182E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | 2.182E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | 2.182E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | -1.86      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -1.86      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -1.86      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -4.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -4.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -4.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -4.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -4.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -4.97      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -7.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -7.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -7.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | -8.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -8.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -8.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | -4.69      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -4.69      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -4.69      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -7.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -7.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -7.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | -4.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -4.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -4.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -3.11      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -3.11      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -3.11      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -3.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -3.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -3.67      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |         |            |      |      |      |      |      |
|----|--------------|---------|------------|------|------|------|------|------|
| 23 | COMB10       | 0.00    | -2.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -2.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -2.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB11       | 0.00    | -3.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -3.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -3.19      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | COMB12       | 0.00    | -4.886E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -4.886E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -4.886E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | ENVOLVEN MAX | 0.00    | -4.886E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -4.886E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -4.886E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | ENVOLVEN MIN | 0.00    | -8.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -8.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -8.87      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | MUERTA       | 0.00    | -3.24      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -3.24      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -3.24      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | VIVA         | 0.00    | -2.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -2.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -2.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | SISMD        | 0.00    | 7.635E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | 7.635E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | 7.635E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | VIENTOA      | 0.00    | 9.125E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | 9.125E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | 9.125E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | VIENTOB      | 0.00    | 1.32       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | 1.32       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | 1.32       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB1        | 0.00    | -4.54      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -4.54      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -4.54      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB2        | 0.00    | -4.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -4.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -4.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB3        | 0.00    | -6.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -6.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -6.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB4        | 0.00    | -6.35      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -6.35      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -6.35      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB5        | 0.00    | -3.81      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -3.81      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -3.81      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB6        | 0.00    | -3.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -3.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -3.28      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB7        | 0.00    | -3.13      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 7.3E-01 | -3.13      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.46    | -3.13      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB8        | 0.00    | -4.66      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 7.3E-01      | -4.66      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -4.66      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -2.16      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -2.16      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -2.16      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -3.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -3.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -3.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -4.11      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -4.11      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -4.11      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -4.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -4.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -4.64      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -2.16      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -2.16      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -2.16      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -6.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | -6.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | -6.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | MUERTA       |            |      |      |      |      |      |
|    | 0.00         | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 1.02       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | 7.367E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 7.367E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 7.367E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | -8.486E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | -8.486E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | -8.486E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | -4.568E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | -4.568E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | -4.568E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | -1.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | -1.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | -1.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | 1.42       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 1.42       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 1.42       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | 1.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 1.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 1.59       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | 2.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 2.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 2.03       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | 1.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 1.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 1.48       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | 9.932E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 9.932E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 9.932E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | 8.969E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | 8.969E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.82         | 8.969E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |         |           |      |      |      |      |      |
|----|--------------|---------|-----------|------|------|------|------|------|
| 25 | COMB7        | 0.00    | 3.702E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 3.702E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 3.702E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB8        | 0.00    | 2.07      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 2.07      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 2.07      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB9        | 0.00    | 6.547E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 6.547E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 6.547E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB10       | 0.00    | 1.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 1.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 1.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB11       | 0.00    | 1.51      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 1.51      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 1.51      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | COMB12       | 0.00    | 2.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 2.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 2.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVEN MAX | 0.00    | 2.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 2.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 2.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVEN MIN | 0.00    | 6.547E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.1E-01 | 6.547E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.82    | 6.547E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | MUERTA       | 0.00    | -18.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -18.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -18.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | VIVA         | 0.00    | -12.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -12.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -12.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | SISMO        | 0.00    | 5.079E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | 5.079E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | 5.079E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | VIENTOA      | 0.00    | 2.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | 2.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | 2.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | VIENTOB      | 0.00    | -3.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -3.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -3.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB1        | 0.00    | -26.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -26.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -26.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB2        | 0.00    | -28.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -28.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -28.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB3        | 0.00    | -40.37    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -40.37    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -40.37    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB4        | 0.00    | -45.49    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -45.49    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -45.49    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB5        | 0.00    | -25.31    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 5.7E-01      | -25.31     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -25.31     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -33.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -33.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -33.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | -22.19     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -22.19     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -22.19     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -23.20     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -23.20     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -23.20     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -16.51     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -16.51     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -16.51     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -17.53     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -17.53     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -17.53     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -20.63     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -20.63     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -20.63     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -12.32     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -12.32     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -12.32     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -12.32     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -12.32     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -12.32     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -45.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -45.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -45.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | MUERTIA      |            |      |      |      |      |      |
|    | 0.00         | -18.98     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -18.98     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -18.98     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -12.48     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -12.48     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -12.48     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | -5.148E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -5.148E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -5.148E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | 3.67       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | 4.322E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | 4.322E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | 4.322E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -26.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -26.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -26.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -29.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -29.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -29.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -39.81     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -39.81     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -39.81     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |         |            |      |      |      |      |      |
|----|--------------|---------|------------|------|------|------|------|------|
| 27 | COMB4        | 0.00    | -42.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -42.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -42.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB5        | 0.00    | -24.25     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -24.25     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -24.25     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB6        | 0.00    | -28.45     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -28.45     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -28.45     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB7        | 0.00    | -23.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -23.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -23.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB8        | 0.00    | -22.26     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -22.26     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -22.26     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB9        | 0.00    | -17.60     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -17.60     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -17.60     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB10       | 0.00    | -16.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -16.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -16.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB11       | 0.00    | -21.85     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -21.85     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -21.85     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | COMB12       | 0.00    | -17.64     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -17.64     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -17.64     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVEN MAX | 0.00    | -16.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -16.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -16.57     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVEN MIN | 0.00    | -42.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.7E-01 | -42.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.15    | -42.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | MUERIA       | 0.00    | 3.79       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11    | 3.79       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21    | 3.79       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | VIVA         | 0.00    | 2.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11    | 2.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21    | 2.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | SISMO        | 0.00    | 8.949E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11    | 8.949E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21    | 8.949E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | VIENTOA      | 0.00    | -2.562E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11    | -2.562E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21    | -2.562E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | VIENTOB      | 0.00    | 2.18       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11    | 2.18       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21    | 2.18       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB1        | 0.00    | 5.31       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11    | 5.31       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21    | 5.31       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB2        | 0.00    | 5.84       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |            |            |      |      |      |      |
|----|--------------|------------|------------|------|------|------|------|
|    | 1.11         | 5.84       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 5.84       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB3        | 0.00       | 8.46       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 8.46       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 8.46       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB4        | 0.00       | 10.41      | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 10.41      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 10.41      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB5        | 0.00       | 5.50       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 5.50       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 5.50       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB6        | 0.00       | 8.68       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 8.68       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 8.68       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB7        | 0.00       | 5.45       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 5.45       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 5.45       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB8        | 0.00       | 3.66       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 3.66       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 3.66       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB9        | 0.00       | 4.31       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 4.31       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 4.31       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB10       | 0.00       | 2.52       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 2.52       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 2.52       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB11       | 0.00       | 3.75       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 3.75       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 3.75       | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | COMB12       | 0.00       | 5.737E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 5.737E-01  | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 5.737E-01  | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | ENVOLVEN MAX | 0.00       | 10.41      | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 10.41      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 10.41      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 28 | ENVOLVEN MIN | 0.00       | 5.737E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 5.737E-01  | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 5.737E-01  | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | MUERTA       | 0.00       | -5.06      | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -5.06      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -5.06      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | VIVA         | 0.00       | -3.39      | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -3.39      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -3.39      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | SISMD        | 0.00       | -8.451E-01 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -8.451E-01 | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -8.451E-01 | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | VIENTOA      | 0.00       | 4.245E-01  | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | 4.245E-01  | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | 4.245E-01  | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | VIENTOB      | 0.00       | -2.48      | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -2.48      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -2.48      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |         |           |      |      |      |      |      |
|----|--------------|---------|-----------|------|------|------|------|------|
| 29 | COMB1        | 0.00    | -7.08     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -7.08     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -7.08     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB2        | 0.00    | -7.76     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -7.76     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -7.76     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB3        | 0.00    | -11.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -11.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -11.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB4        | 0.00    | -13.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -13.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -13.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB5        | 0.00    | -7.21     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -7.21     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -7.21     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB6        | 0.00    | -10.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -10.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -10.98    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB7        | 0.00    | -6.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -6.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -6.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB8        | 0.00    | -5.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -5.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -5.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB9        | 0.00    | -5.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -5.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -5.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB10       | 0.00    | -3.71     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -3.71     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -3.71     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB11       | 0.00    | -5.10     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -5.10     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -5.10     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | COMB12       | 0.00    | -1.33     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -1.33     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -1.33     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | ENVOLVEN MAX | 0.00    | -1.33     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -1.33     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -1.33     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | ENVOLVEN MIN | 0.00    | -13.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -13.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -13.48    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | MUERIA       | 0.00    | -5.07     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -5.07     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -5.07     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | VIVA         | 0.00    | -3.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | -3.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | -3.40     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | SISMD        | 0.00    | 8.460E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 9.4E-01 | 8.460E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.89    | 8.460E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | VIENTOA      | 0.00    | 1.27      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |



|    |              |        |      |      |      |      |      |
|----|--------------|--------|------|------|------|------|------|
|    | 9.4E-01      | 1.27   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | 1.27   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | VIENTOS      |        |      |      |      |      |      |
|    | 0.00         | 1.59   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | 1.59   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | 1.59   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB1        |        |      |      |      |      |      |
|    | 0.00         | -7.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -7.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -7.09  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB2        |        |      |      |      |      |      |
|    | 0.00         | -7.78  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -7.78  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -7.78  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB3        |        |      |      |      |      |      |
|    | 0.00         | -10.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -10.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -10.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB4        |        |      |      |      |      |      |
|    | 0.00         | -10.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -10.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -10.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB5        |        |      |      |      |      |      |
|    | 0.00         | -6.13  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -6.13  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -6.13  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB6        |        |      |      |      |      |      |
|    | 0.00         | -5.72  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -5.72  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -5.72  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB7        |        |      |      |      |      |      |
|    | 0.00         | -5.23  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -5.23  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -5.23  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB8        |        |      |      |      |      |      |
|    | 0.00         | -6.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -6.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -6.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB9        |        |      |      |      |      |      |
|    | 0.00         | -3.71  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -3.71  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -3.71  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB10       |        |      |      |      |      |      |
|    | 0.00         | -5.41  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -5.41  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -5.41  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB11       |        |      |      |      |      |      |
|    | 0.00         | -6.21  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -6.21  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -6.21  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | COMB12       |        |      |      |      |      |      |
|    | 0.00         | -6.62  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -6.62  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -6.62  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -3.71  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -3.71  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -3.71  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -10.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.4E-01      | -10.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.89         | -10.51 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | MUERTA       |        |      |      |      |      |      |
|    | 0.00         | 3.81   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 3.81   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 3.81   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | VIVA         |        |      |      |      |      |      |
|    | 0.00         | 2.58   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.11         | 2.58   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.21         | 2.58   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |      |            |      |      |      |      |      |
|----|--------------|------|------------|------|------|------|------|------|
| 31 | SISMD        | 0.00 | -8.964E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | -8.964E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | -8.964E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | VIENTOA      | 0.00 | -1.07      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | -1.07      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | -1.07      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | VIENTOB      | 0.00 | -1.55      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | -1.55      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | -1.55      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB1        | 0.00 | 5.33       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 5.33       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 5.33       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB2        | 0.00 | 5.86       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 5.86       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 5.86       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB3        | 0.00 | 7.84       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 7.84       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 7.84       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB4        | 0.00 | 7.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 7.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 7.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB5        | 0.00 | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 4.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB6        | 0.00 | 3.85       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 3.85       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 3.85       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB7        | 0.00 | 3.68       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 3.68       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 3.68       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB8        | 0.00 | 5.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 5.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 5.47       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB9        | 0.00 | 2.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 2.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 2.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB10       | 0.00 | 4.33       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 4.33       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 4.33       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB11       | 0.00 | 4.82       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 4.82       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 4.82       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | COMB12       | 0.00 | 5.45       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 5.45       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 5.45       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | ENVOLVEN MAX | 0.00 | 7.84       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 7.84       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 7.84       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | ENVOLVEN MIN | 0.00 | 2.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.11 | 2.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 2.21 | 2.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 | MUERTA       | 0.00 | 5.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|                 |      |            |      |      |      |      |      |
|-----------------|------|------------|------|------|------|------|------|
|                 | 1.23 | 5.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 5.53       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 VIVA         | 0.00 | 3.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 3.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 3.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 SISMO        | 0.00 | 9.248E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 9.248E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 9.248E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 VIENTOA      | 0.00 | -4.645E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | -4.645E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | -4.645E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 VIENTOB      | 0.00 | 2.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 2.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 2.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB1        | 0.00 | 7.75       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 7.75       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 7.75       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB2        | 0.00 | 8.50       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 8.50       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 8.50       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB3        | 0.00 | 12.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 12.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 12.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB4        | 0.00 | 14.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 14.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 14.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB5        | 0.00 | 7.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 7.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 7.89       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB6        | 0.00 | 12.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 12.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 12.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB7        | 0.00 | 7.56       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 7.56       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 7.56       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB8        | 0.00 | 5.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 5.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 5.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB9        | 0.00 | 5.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 5.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 5.90       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB10       | 0.00 | 4.05       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 4.05       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 4.05       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB11       | 0.00 | 5.58       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 5.58       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 5.58       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 COMB12       | 0.00 | 1.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 1.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 1.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 ENVOLVEN MAX | 0.00 | 14.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23 | 14.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46 | 14.75      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 32 ENVOLVEN MIN |      |            |      |      |      |      |      |

|            |      |            |      |      |      |      |      |
|------------|------|------------|------|------|------|------|------|
|            | 0.00 | 1.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 1.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 1.46       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 MUERTA  |      |            |      |      |      |      |      |
|            | 0.00 | 5.54       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 5.54       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 5.54       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 VIVA    |      |            |      |      |      |      |      |
|            | 0.00 | 3.72       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 3.72       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 3.72       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 SISMO   |      |            |      |      |      |      |      |
|            | 0.00 | -9.258E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | -9.258E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | -9.258E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 VIENTOA |      |            |      |      |      |      |      |
|            | 0.00 | -1.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | -1.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | -1.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 VIENTOB |      |            |      |      |      |      |      |
|            | 0.00 | -1.74      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | -1.74      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | -1.74      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB1   |      |            |      |      |      |      |      |
|            | 0.00 | 7.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 7.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 7.76       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB2   |      |            |      |      |      |      |      |
|            | 0.00 | 8.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 8.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 8.52       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB3   |      |            |      |      |      |      |      |
|            | 0.00 | 11.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 11.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 11.50      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB4   |      |            |      |      |      |      |      |
|            | 0.00 | 11.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 11.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 11.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB5   |      |            |      |      |      |      |      |
|            | 0.00 | 6.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 6.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 6.71       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB6   |      |            |      |      |      |      |      |
|            | 0.00 | 6.26       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 6.26       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 6.26       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB7   |      |            |      |      |      |      |      |
|            | 0.00 | 5.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 5.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 5.73       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB8   |      |            |      |      |      |      |      |
|            | 0.00 | 7.58       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 7.58       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 7.58       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB9   |      |            |      |      |      |      |      |
|            | 0.00 | 4.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 4.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 4.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB10  |      |            |      |      |      |      |      |
|            | 0.00 | 5.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 5.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 5.92       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB11  |      |            |      |      |      |      |      |
|            | 0.00 | 6.80       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 6.80       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 2.46 | 6.80       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 COMB12  |      |            |      |      |      |      |      |
|            | 0.00 | 7.25       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|            | 1.23 | 7.25       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|                 |         |           |      |      |      |      |      |
|-----------------|---------|-----------|------|------|------|------|------|
|                 | 2.46    | 7.25      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 ENVOLVEN MAX | 0.00    | 11.50     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23    | 11.50     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46    | 11.50     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 ENVOLVEN MIN | 0.00    | 4.06      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.23    | 4.06      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 2.46    | 4.06      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 MUERTA       | 0.00    | -21.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -21.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -21.91    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 VIVA         | 0.00    | -14.34    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -14.34    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -14.34    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 SISMO        | 0.00    | 5.018E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | 5.018E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | 5.018E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 VIENTOA      | 0.00    | 3.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | 3.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | 3.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 VIENTOB      | 0.00    | -3.88     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -3.88     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -3.88     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB1        | 0.00    | -30.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -30.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -30.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB2        | 0.00    | -33.46    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -33.46    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -33.46    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB3        | 0.00    | -46.53    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -46.53    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -46.53    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB4        | 0.00    | -52.34    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -52.34    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -52.34    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB5        | 0.00    | -29.06    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -29.06    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -29.06    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB6        | 0.00    | -38.50    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -38.50    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -38.50    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB7        | 0.00    | -25.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -25.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -25.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB8        | 0.00    | -26.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -26.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -26.79    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB9        | 0.00    | -19.22    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -19.22    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -19.22    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB10       | 0.00    | -20.22    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 5.8E-01 | -20.22    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                 | 1.16    | -20.22    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 COMB11       |         |           |      |      |      |      |      |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 0.00         | -24.12     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.8E-01      | -24.12     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | -24.12     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -14.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.8E-01      | -14.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | -14.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -14.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.8E-01      | -14.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | -14.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 34 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -52.34     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.8E-01      | -52.34     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | -52.34     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | MUERIA       |            |      |      |      |      |      |
|    | 0.00         | -21.93     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -21.93     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -21.93     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -14.36     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -14.36     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -14.36     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | -5.036E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -5.036E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -5.036E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 4.21       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | 4.21       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | 4.21       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | 2.013E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | 2.013E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | 2.013E-02  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -30.70     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -30.70     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -30.70     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -33.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -33.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -33.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -45.92     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -45.92     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -45.92     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | -49.27     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -49.27     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -49.27     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | -28.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -28.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -28.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -33.47     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -33.47     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -33.47     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | -26.82     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -26.82     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -26.82     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -25.81     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -25.81     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -25.81     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -20.24     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -20.24     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |           |      |      |      |      |      |
|----|--------------|-----------|------|------|------|------|------|
|    | 1.15         | -20.24    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB10       |           |      |      |      |      |      |
|    | 0.00         | -19.23    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -19.23    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -19.23    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB11       |           |      |      |      |      |      |
|    | 0.00         | -25.20    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -25.20    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -25.20    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | COMB12       |           |      |      |      |      |      |
|    | 0.00         | -19.76    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -19.76    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -19.76    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | -19.23    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -19.23    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -19.23    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -49.27    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -49.27    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -49.27    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | MUERTA       |           |      |      |      |      |      |
|    | 0.00         | -21.27    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -21.27    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -21.27    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | VIVA         |           |      |      |      |      |      |
|    | 0.00         | -13.88    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -13.88    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -13.88    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | SISMD        |           |      |      |      |      |      |
|    | 0.00         | 2.714E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | 2.714E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | 2.714E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | VIENTOA      |           |      |      |      |      |      |
|    | 0.00         | 3.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | 3.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | 3.52      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | VIENTOB      |           |      |      |      |      |      |
|    | 0.00         | -3.38     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -3.38     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -3.38     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB1        |           |      |      |      |      |      |
|    | 0.00         | -29.78    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -29.78    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -29.78    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB2        |           |      |      |      |      |      |
|    | 0.00         | -32.47    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -32.47    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -32.47    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB3        |           |      |      |      |      |      |
|    | 0.00         | -44.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -44.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -44.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB4        |           |      |      |      |      |      |
|    | 0.00         | -50.44    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -50.44    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -50.44    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB5        |           |      |      |      |      |      |
|    | 0.00         | -27.89    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -27.89    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -27.89    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB6        |           |      |      |      |      |      |
|    | 0.00         | -36.86    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -36.86    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -36.86    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB7        |           |      |      |      |      |      |
|    | 0.00         | -25.26    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -25.26    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -25.26    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB8        |           |      |      |      |      |      |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 0.00         | -25.80     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -25.80     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -25.80     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -18.87     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -18.87     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -18.87     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -19.42     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -19.42     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -19.42     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -23.72     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -23.72     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -23.72     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -14.75     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -14.75     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -14.75     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -14.75     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -14.75     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -14.75     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -50.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -50.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -50.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | MUERTA       |            |      |      |      |      |      |
|    | 0.00         | -21.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -21.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -21.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -13.89     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -13.89     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -13.89     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | -2.677E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -2.677E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -2.677E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 4.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | 4.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | 4.14       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | -4.889E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -4.889E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -4.889E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -29.80     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -29.80     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -29.80     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -32.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -32.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -32.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -44.46     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -44.46     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -44.46     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB4        |            |      |      |      |      |      |
|    | 0.00         | -48.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -48.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -48.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB5        |            |      |      |      |      |      |
|    | 0.00         | -27.11     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -27.11     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | -27.11     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -33.13     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.2E-01      | -33.13     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |



|    |              |         |           |      |      |      |      |      |
|----|--------------|---------|-----------|------|------|------|------|------|
| 37 | COMB7        | 1.23    | -33.13    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 0.00    | -25.81    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -25.81    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -25.81    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB8        | 0.00    | -25.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -25.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -25.28    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB9        | 0.00    | -19.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -19.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -19.43    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB10       | 0.00    | -18.89    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -18.89    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -18.89    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB11       | 0.00    | -24.54    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -24.54    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -24.54    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | COMB12       | 0.00    | -18.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -18.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -18.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | ENVOLVEN MAX | 0.00    | -18.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -18.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -18.52    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 37 | ENVOLVEN MIN | 0.00    | -48.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 6.2E-01 | -48.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.23    | -48.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | MUERTA       | 0.00    | -19.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -19.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | -19.16    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | VIVA         | 0.00    | -12.45    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -12.45    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | -12.45    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | SISMD        | 0.00    | 2.937E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | 2.937E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | 2.937E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | VIENTOA      | 0.00    | 3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | 3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | 3.46      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | VIENTOB      | 0.00    | -2.51     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -2.51     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | -2.51     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB1        | 0.00    | -26.82    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -26.82    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | -26.82    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB2        | 0.00    | -29.21    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -29.21    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | -29.21    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB3        | 0.00    | -40.14    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -40.14    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | -40.14    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB4        | 0.00    | -44.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 5.3E-01 | -44.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    |              | 1.06    | -44.92    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB5        |         |           |      |      |      |      |      |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 0.00         | -24.71     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -24.71     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -24.71     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB6        |            |      |      |      |      |      |
|    | 0.00         | -32.48     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -32.48     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -32.48     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB7        |            |      |      |      |      |      |
|    | 0.00         | -22.96     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -22.96     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -22.96     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB8        |            |      |      |      |      |      |
|    | 0.00         | -23.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -23.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -23.02     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB9        |            |      |      |      |      |      |
|    | 0.00         | -17.21     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -17.21     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -17.21     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB10       |            |      |      |      |      |      |
|    | 0.00         | -17.27     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -17.27     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -17.27     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB11       |            |      |      |      |      |      |
|    | 0.00         | -21.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -21.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -21.74     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | COMB12       |            |      |      |      |      |      |
|    | 0.00         | -13.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -13.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -13.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -13.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -13.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -13.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -44.92     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -44.92     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -44.92     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | MUERIA       |            |      |      |      |      |      |
|    | 0.00         | -19.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -19.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -19.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | VIVA         |            |      |      |      |      |      |
|    | 0.00         | -12.45     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -12.45     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -12.45     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | SISMO        |            |      |      |      |      |      |
|    | 0.00         | -2.655E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -2.655E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -2.655E-02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | VIENTOA      |            |      |      |      |      |      |
|    | 0.00         | 3.75       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | 3.75       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | 3.75       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | VIENTOB      |            |      |      |      |      |      |
|    | 0.00         | -1.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -1.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -1.15      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB1        |            |      |      |      |      |      |
|    | 0.00         | -26.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -26.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -26.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB2        |            |      |      |      |      |      |
|    | 0.00         | -29.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -29.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -29.22     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB3        |            |      |      |      |      |      |
|    | 0.00         | -39.92     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |        |      |      |      |      |      |
|----|--------------|--------|------|------|------|------|------|
|    | 5.3E-01      | -39.92 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -39.92 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB4        |        |      |      |      |      |      |
|    | 0.00         | -43.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -43.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -43.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB5        |        |      |      |      |      |      |
|    | 0.00         | -24.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -24.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -24.35 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB6        |        |      |      |      |      |      |
|    | 0.00         | -30.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -30.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -30.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB7        |        |      |      |      |      |      |
|    | 0.00         | -23.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -23.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -23.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB8        |        |      |      |      |      |      |
|    | 0.00         | -22.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -22.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -22.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB9        |        |      |      |      |      |      |
|    | 0.00         | -17.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -17.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -17.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB10       |        |      |      |      |      |      |
|    | 0.00         | -17.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -17.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -17.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB11       |        |      |      |      |      |      |
|    | 0.00         | -22.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -22.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -22.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | COMB12       |        |      |      |      |      |      |
|    | 0.00         | -15.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -15.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -15.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -15.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -15.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -15.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 39 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -43.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -43.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.06         | -43.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

(Véase Figura 4.10)

#### 4.1.5 Diseño Estructural Cerchas Tipo 4, 5 Y 6.

Longitud = 8 m.

Altura = 1.4 m.

Tejas a utilizar: No 6

Angulo de inclinación = 15° (Véase Figura 4.11)

#### 4.1.5.1 Análisis de Cargas.

Carga muerta:  $0.53 \text{ KN/m}^2$

Carga viva:  $0.23 \text{ KN/m}^2$

Carga de sismo:  $C_s = 0.275$

Carga  $P_{\text{viento}}$  (KN) =  $-0.049 * A$  ;  $0.2 * A$  ;  $-0.121 * A$  (fuerzas inclinadas)

Cálculo de cargas puntuales CT4

$$\text{Áreas aferentes (m}^2\text{)} \quad A_{8y2} = 3.575 * 0.33 = 1.18$$

$$A_{3y7} = 3.575 * 1.175 = 4.2$$

$$A_{4y6} = 3.575 * 1.79 = 6.4$$

$$A_5 = 3.575 * 1.9 = 6.8$$

Carga  $P_{\text{muerta}}$  (KN) =  $0.53 * A$

Carga  $P_{\text{viva}}$  (KN) =  $0.35 * A$

Carga  $P_{\text{sismo}}$  (KN) =  $0.275 * \text{Carga } P_{\text{muerta}}$

Carga  $P_{\text{viento}}$  (KN) =  $-0.049 * A$  ;  $0.2 * A$  ;  $-0.121 * A$  (fuerzas inclinadas)

(Véase Figura 4.12 a, b, c, d, e)

Cálculo de cargas puntuales CT5

$$\text{Áreas aferentes (m}^2\text{)} \quad A_{8y2} = 5.425 * 0.33 = 1.79$$

$$A_{3y7} = 5.425 * 1.175 = 6.3$$

$$A_{4y6} = 5.425 * 1.79 = 9.7$$

$$A_5 = 5.425 * 1.9 = 10.3$$

$$\text{Carga } P_{\text{muerta}} \text{ (KN)} = 0.53 * A$$

$$\text{Carga } P_{\text{viva}} \text{ (KN)} = 0.35 * A$$

$$\text{Carga } P_{\text{sismo}} \text{ (KN)} = 0.275 * \text{Carga } P_{\text{muerta}}$$

$$\text{Carga } P_{\text{viento}} \text{ (KN)} = -0.049 * A ; 0.2 * A ; -0.121 * A \text{ (fuerzas inclinadas)}$$

(Véase Figura 4.13 a, b, c, d, e)

Cálculo de cargas puntuales CT6

$$\text{Áreas aferentes (m}^2\text{)} \quad A_{8y2} = 3 * 0.33 = 0.99$$

$$A_{3y7} = 3 * 1.175 = 3.52$$

$$A_{4y6} = 3 * 1.79 = 5.37$$

$$A_5 = 3 * 1.9 = 5.7$$

$$\text{Carga } P_{\text{muerta}} \text{ (KN)} = 0.53 * A$$

$$\text{Carga } P_{\text{viva}} \text{ (KN)} = 0.35 * A$$

$$\text{Carga } P_{\text{sismo}} \text{ (KN)} = 0.275 * \text{Carga } P_{\text{muerta}}$$

$$\text{Carga } P_{\text{viento}} \text{ (KN)} = -0.049 * A ; 0.2 * A ; -0.121 * A \text{ (fuerzas inclinadas)}$$

(Véase Figura 4.14 a, b, c, d, e)

**4.1.5.2 Diseño de Elementos en Metal.** En la tabla # 1 se indican los resultados obtenidos después de haber sometido la cercha a un análisis estático, mediante el uso del programa de computador SAP – 2000, el cual arroja las fuerzas internas de los elementos indicado si está a tensión o a compresión.

## REACCIONES Y FUERZAS CERCHA T4

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### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE  |
|----------|------|--------|--------|-------|--------|
| ENVOLVEN | ENVE |        |        |       | COMB13 |
|          |      | COMB1  | 1.0000 | COMBO |        |
|          |      | COMB2  | 1.0000 | COMBO |        |
|          |      | COMB3  | 1.0000 | COMBO |        |
|          |      | COMB4  | 1.0000 | COMBO |        |
|          |      | COMB5  | 1.0000 | COMBO |        |
|          |      | COMB6  | 1.0000 | COMBO |        |
|          |      | COMB7  | 1.0000 | COMBO |        |
|          |      | COMB8  | 1.0000 | COMBO |        |
|          |      | COMB9  | 1.0000 | COMBO |        |
|          |      | COMB10 | 1.0000 | COMBO |        |
|          |      | COMB11 | 1.0000 | COMBO |        |
|          |      | COMB12 | 1.0000 | COMBO |        |

### JOINT REACTIONS

| JOINT | LOAD         | F1       | F2     | F3      | M1     | M2     | M3     |
|-------|--------------|----------|--------|---------|--------|--------|--------|
| 1     | ENVOLVEN MAX | 25.2917  | 0.0000 | 19.4387 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLVEN MIN | 6.9305   | 0.0000 | 5.1654  | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVEN MAX | -6.8731  | 0.0000 | 18.1693 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVEN MIN | -26.4813 | 0.0000 | 6.8830  | 0.0000 | 0.0000 | 0.0000 |

### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC     | P      | V2   | V3   | T    | M2   | M3   |
|-------|--------------|---------|--------|------|------|------|------|------|
| 1     | ENVOLVEN MAX | 0.00    | -7.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 2.8E-01 | -7.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 5.6E-01 | -7.99  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | ENVOLVEN MIN | 0.00    | -20.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 2.8E-01 | -20.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 5.6E-01 | -20.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2     | ENVOLVEN MAX | 0.00    | -6.88  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 1.5E-01 | -6.88  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 3.0E-01 | -6.88  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2     | ENVOLVEN MIN | 0.00    | -18.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 1.5E-01 | -18.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 3.0E-01 | -18.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3     | ENVOLVEN MAX | 0.00    | -6.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 8.4E-01 | -6.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 1.69    | -6.49  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3     | ENVOLVEN MIN | 0.00    | -25.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 8.4E-01 | -25.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 1.69    | -25.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4     | ENVOLVEN MAX | 0.00    | -10.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |        |      |      |      |      |      |
|----|--------------|--------|------|------|------|------|------|
|    | 9.1E-01      | -10.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.81         | -10.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -36.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01      | -36.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.81         | -36.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -13.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.5E-01      | -13.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.91         | -13.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -33.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.5E-01      | -33.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.91         | -33.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -7.25  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01      | -7.25  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69         | -7.25  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -19.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01      | -19.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69         | -19.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | 26.56  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01      | 26.56  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01      | 26.56  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | 7.32   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01      | 7.32   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01      | 7.32   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.3E-01      | -6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.5E-01      | -6.77  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -24.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.3E-01      | -24.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.5E-01      | -24.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -6.87  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.3E-01      | -6.87  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.7E-01      | -6.87  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.0E-01      | -6.87  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -6.87  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.3E-01      | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.7E-01      | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.0E-01      | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -26.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | 6.10   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 6.10   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 6.10   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 6.10   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 6.10   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | 1.90   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 1.90   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 1.90   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 1.90   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 1.90   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | 1.43   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 4.6E-01      | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01      | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38         | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84         | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.6E-01      | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01      | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38         | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84         | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.4E-01      | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01      | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.31         | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.74         | 1.43       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.4E-01      | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01      | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.31         | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.74         | 4.555E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 9.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 9.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 9.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 9.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 9.36       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 9.835E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 9.835E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 9.835E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 9.835E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 9.835E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -6.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.6E-01      | -6.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.1E-01      | -6.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -6.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.3E-01      | -6.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -25.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.6E-01      | -25.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.1E-01      | -25.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -25.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.3E-01      | -25.29     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -5.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -5.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -5.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -19.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -19.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -19.44     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -8.320E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01      | -8.320E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -8.320E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -5.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01      | -5.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -5.53      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -3.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -3.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |



|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 1.86         | -3.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -12.19     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -12.19     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86         | -12.19     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -4.248E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -4.248E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -4.248E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -6.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -6.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -6.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.12         | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.23         | 10.17      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 6.777E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.12         | 6.777E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.23         | 6.777E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.40         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.40         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 21.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | 21.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.1E-01      | 21.94      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 7.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | 7.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.1E-01      | 7.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 6.22       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | 6.22       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.31         | 6.22       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 1.69       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | 1.69       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.31         | 1.69       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -1.03      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -1.03      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -1.03      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -3.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -3.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -3.77      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -4.36      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -4.36      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86         | -4.36      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -15.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -15.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86         | -15.16     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -1.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |             |       |      |      |      |      |      |
|----|-------------|-------|------|------|------|------|------|
|    | 2.3E-01     | -1.39 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -1.39 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVE MIN |       |      |      |      |      |      |
|    | 0.00        | -3.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01     | -3.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -3.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

(Véase Figura 4.15 a)

## REACCIONES Y FUERZAS CERCHA T5

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### LOAD COMBINATION MULTIPLIERS

| COMBO   | TYPE | CASE   | FACTOR | TYPE  | TITLE  |
|---------|------|--------|--------|-------|--------|
| ENVOLVE | ENVE |        |        |       | COMB13 |
|         |      | COMB1  | 1.0000 | COMBO |        |
|         |      | COMB2  | 1.0000 | COMBO |        |
|         |      | COMB3  | 1.0000 | COMBO |        |
|         |      | COMB4  | 1.0000 | COMBO |        |
|         |      | COMB5  | 1.0000 | COMBO |        |
|         |      | COMB6  | 1.0000 | COMBO |        |
|         |      | COMB7  | 1.0000 | COMBO |        |
|         |      | COMB8  | 1.0000 | COMBO |        |
|         |      | COMB9  | 1.0000 | COMBO |        |
|         |      | COMB10 | 1.0000 | COMBO |        |
|         |      | COMB11 | 1.0000 | COMBO |        |
|         |      | COMB12 | 1.0000 | COMBO |        |

### JOINT REACTIONS

| JOINT | LOAD        | F1       | F2     | F3      | M1     | M2     | M3     |
|-------|-------------|----------|--------|---------|--------|--------|--------|
| 1     | ENVOLVE MAX | 36.6160  | 0.0000 | 28.7504 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLVE MIN | 11.8284  | 0.0000 | 8.6508  | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVE MAX | -11.7772 | 0.0000 | 26.8496 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVE MIN | -38.4768 | 0.0000 | 10.4461 | 0.0000 | 0.0000 | 0.0000 |

### FRAME ELEMENT FORCES

| FRAME | LOAD        | LOC | P      | V2   | V3   | T    | M2   | M3   |
|-------|-------------|-----|--------|------|------|------|------|------|
| 1     | ENVOLVE MAX |     |        |      |      |      |      |      |
|       | 0.00        |     | -8.65  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.5E-01     |     | -8.65  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 3.0E-01     |     | -8.65  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | ENVOLVE MIN |     |        |      |      |      |      |      |
|       | 0.00        |     | -28.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.5E-01     |     | -28.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 3.0E-01     |     | -28.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2     | ENVOLVE MAX |     |        |      |      |      |      |      |
|       | 0.00        |     | -11.42 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 3.3E-01     |     | -11.42 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 6.5E-01     |     | -11.42 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2     | ENVOLVE MIN |     |        |      |      |      |      |      |
|       | 0.00        |     | -36.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 3.3E-01     |     | -36.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 6.5E-01     |     | -36.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3     | ENVOLVE MAX |     |        |      |      |      |      |      |

|    |             |        |      |      |      |      |      |
|----|-------------|--------|------|------|------|------|------|
|    | 0.00        | -10.96 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01     | -10.96 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69        | -10.96 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3  | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -36.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01     | -36.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69        | -36.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4  | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | -17.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01     | -17.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.81        | -17.86 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4  | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -53.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.1E-01     | -53.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.81        | -53.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5  | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | -19.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.5E-01     | -19.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.91        | -19.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5  | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -48.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.5E-01     | -48.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.91        | -48.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6  | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | -11.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01     | -11.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69        | -11.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6  | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -28.93 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01     | -28.93 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69        | -28.93 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7  | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | -11.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.8E-01     | -11.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.6E-01     | -11.58 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7  | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -29.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.8E-01     | -29.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.6E-01     | -29.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8  | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | -10.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01     | -10.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01     | -10.45 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8  | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -26.85 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01     | -26.85 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01     | -26.85 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | -11.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.3E-01     | -11.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.7E-01     | -11.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.0E-01     | -11.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01     | -11.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -38.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.3E-01     | -38.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.7E-01     | -38.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.0E-01     | -38.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01     | -38.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | 9.41   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01     | 9.41   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01     | 9.41   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22        | 9.41   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |             |            |      |      |      |      |      |
|----|-------------|------------|------|------|------|------|------|
|    | 1.63        | 9.41       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 3.11       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01     | 3.11       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01     | 3.11       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22        | 3.11       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63        | 3.11       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.6E-01     | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01     | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38        | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84        | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.6E-01     | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01     | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38        | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84        | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.4E-01     | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01     | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.31        | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.74        | 1.70       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.4E-01     | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01     | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.31        | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.74        | 7.921E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 14.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01     | 14.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01     | 14.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22        | 14.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63        | 14.10      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 1.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01     | 1.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01     | 1.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22        | 1.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63        | 1.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | -11.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.6E-01     | -11.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.1E-01     | -11.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -11.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.3E-01     | -11.83     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | -36.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.6E-01     | -36.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.1E-01     | -36.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -36.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.3E-01     | -36.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 39.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01     | 39.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01     | 39.22      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 12.34      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01     | 12.34      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01     | 12.34      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | -2.709E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |             |            |      |      |      |      |      |
|----|-------------|------------|------|------|------|------|------|
|    | 4.5E-01     | -2.709E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01     | -2.709E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | -9.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01     | -9.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01     | -9.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 15.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.12        | 15.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.23        | 15.93      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 4.322E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.12        | 4.322E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.23        | 4.322E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 9.69       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16        | 9.69       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.31        | 9.69       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 2.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16        | 2.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.31        | 2.91       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | -1.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01     | -1.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01     | -1.76      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | -5.86      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01     | -5.86      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01     | -5.86      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 32.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01     | 32.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.1E-01     | 32.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 23 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 12.38      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01     | 12.38      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.1E-01     | 12.38      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | -2.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01     | -2.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -2.12      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | -5.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01     | -5.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -5.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01     | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.40        | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01     | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.40        | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | ENVOLVE MAX |            |      |      |      |      |      |
|    | 0.00        | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01     | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -1.32      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | ENVOLVE MIN |            |      |      |      |      |      |
|    | 0.00        | -8.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01     | -8.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01     | -8.42      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | ENVOLVE MAX |            |      |      |      |      |      |

|    |             |        |      |      |      |      |      |
|----|-------------|--------|------|------|------|------|------|
|    | 0.00        | -5.72  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01     | -5.72  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86        | -5.72  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 36 | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -17.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01     | -17.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86        | -17.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | ENVOLVE MAX |        |      |      |      |      |      |
|    | 0.00        | -7.10  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01     | -7.10  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86        | -7.10  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 38 | ENVOLVE MIN |        |      |      |      |      |      |
|    | 0.00        | -21.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01     | -21.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86        | -21.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

(Véase Figura 4.15 b)

## REACCIONES Y FUERZAS CERCHA T6

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### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE  |
|----------|------|--------|--------|-------|--------|
| ENVOLVEN | ENVE |        |        |       | COMB13 |
|          |      | COMB1  | 1.0000 | COMBO |        |
|          |      | COMB2  | 1.0000 | COMBO |        |
|          |      | COMB3  | 1.0000 | COMBO |        |
|          |      | COMB4  | 1.0000 | COMBO |        |
|          |      | COMB5  | 1.0000 | COMBO |        |
|          |      | COMB6  | 1.0000 | COMBO |        |
|          |      | COMB7  | 1.0000 | COMBO |        |
|          |      | COMB8  | 1.0000 | COMBO |        |
|          |      | COMB9  | 1.0000 | COMBO |        |
|          |      | COMB10 | 1.0000 | COMBO |        |
|          |      | COMB11 | 1.0000 | COMBO |        |
|          |      | COMB12 | 1.0000 | COMBO |        |

### JOINT REACTIONS

| JOINT | LOAD         | F1       | F2     | F3      | M1     | M2     | M3     |
|-------|--------------|----------|--------|---------|--------|--------|--------|
| 1     | ENVOLVEN MAX | 20.8976  | 0.0000 | 16.2757 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLVEN MIN | 6.6673   | 0.0000 | 4.5071  | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVEN MAX | -5.9111  | 0.0000 | 15.4643 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVEN MIN | -22.6664 | 0.0000 | 5.8639  | 0.0000 | 0.0000 | 0.0000 |

### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC     | P     | V2   | V3   | T    | M2   | M3   |
|-------|--------------|---------|-------|------|------|------|------|------|
| 1     | ENVOLVEN MAX |         |       |      |      |      |      |      |
|       |              | 0.00    | -6.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 2.8E-01 | -6.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       |              | 5.6E-01 | -6.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|   |              |        |      |      |      |      |      |
|---|--------------|--------|------|------|------|------|------|
| 1 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | -17.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 2.8E-01      | -17.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 5.6E-01      | -17.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -5.86  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.5E-01      | -5.86  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 3.0E-01      | -5.86  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | -15.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.5E-01      | -15.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 3.0E-01      | -15.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -5.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.4E-01      | -5.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.69         | -5.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | -20.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.4E-01      | -20.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.69         | -20.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -9.20  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 9.1E-01      | -9.20  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.81         | -9.20  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | -30.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 9.1E-01      | -30.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.81         | -30.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -10.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 9.5E-01      | -10.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.91         | -10.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | -28.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 9.5E-01      | -28.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.91         | -28.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -6.62  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.4E-01      | -6.62  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.69         | -6.62  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | -16.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 8.4E-01      | -16.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.69         | -16.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | 22.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 3.5E-01      | 22.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.0E-01      | 22.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | 6.41   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 3.5E-01      | 6.41   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 7.0E-01      | 6.41   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -5.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 3.3E-01      | -5.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 6.5E-01      | -5.93  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8 | ENVOLVEN MIN |        |      |      |      |      |      |
|   | 0.00         | -20.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 3.3E-01      | -20.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 6.5E-01      | -20.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9 | ENVOLVEN MAX |        |      |      |      |      |      |
|   | 0.00         | -5.91  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|   | 1.3E-01      | -5.91  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |           |      |      |      |      |      |
|----|--------------|-----------|------|------|------|------|------|
|    | 2.7E-01      | -5.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.0E-01      | -5.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -5.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -22.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.3E-01      | -22.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.7E-01      | -22.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.0E-01      | -22.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.3E-01      | -22.67    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 5.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 5.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 5.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 5.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 5.21      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 1.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 1.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 1.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 1.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 1.71      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.6E-01      | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01      | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38         | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84         | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.6E-01      | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01      | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38         | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84         | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.4E-01      | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01      | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.31         | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.74         | 1.20      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.4E-01      | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01      | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.31         | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.74         | 3.923E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 7.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 7.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 7.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 7.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 7.92      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 7.164E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 7.164E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.1E-01      | 7.164E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 7.164E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 7.164E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | -6.67     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.6E-01      | -6.67     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.1E-01      | -6.67     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -6.67     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.3E-01      | -6.67     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -20.90    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.6E-01      | -20.90    | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |



|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 3.1E-01      | -20.90     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -20.90     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.3E-01      | -20.90     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -4.51      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -4.51      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -4.51      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -16.28     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -16.28     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -16.28     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -7.037E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01      | -7.037E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -7.037E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -4.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01      | -4.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -4.68      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 18.65      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | 18.65      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.1E-01      | 18.65      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 18 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 6.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | 6.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 6.1E-01      | 6.93       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -2.608E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -2.608E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -2.608E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -5.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -5.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -5.41      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 8.63       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.12         | 8.63       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.23         | 8.63       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 4.160E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.12         | 4.160E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.23         | 4.160E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.40         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.0E-01      | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.40         | 0.00       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 5.29       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | 5.29       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.31         | 5.29       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.16         | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.31         | 1.55       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -9.380E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -9.380E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -9.380E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |        |      |      |      |      |      |
|----|--------------|--------|------|------|------|------|------|
| 25 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -3.20  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.5E-01      | -3.20  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.0E-01      | -3.20  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -1.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01      | -1.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -1.18  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.3E-01      | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.7E-01      | -3.00  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -3.22  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -3.22  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86         | -3.22  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 31 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -10.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -10.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86         | -10.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -3.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -3.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86         | -3.63  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 33 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -12.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.3E-01      | -12.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.86         | -12.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

(Véase Figura 4.15 c)

#### 4.1.6 Diseño Estructural Cerchas Tipo 7.

Longitud = 9.8 m.

Altura = 1.64 m.

Tejas a utilizar: No 6

Angulo de inclinación = 15° (Véase Figura 4.16)

##### 4.1.6.1 Análisis de Cargas.

Carga muerta: 0.53 Kn/m<sup>2</sup>

Carga viva: 0.23 Kn/m<sup>2</sup>

Carga de sismo: Cs = 0.275

Carga  $P_{viento}$  (KN) =  $-0.049 * A$  ;  $0.2 * A$  ;  $-0.121 * A$  (fuerzas inclinadas)

Cálculo de cargas puntuales

Áreas aferentes ( $m^2$ )  $A_{8y2} = 3.725 * 0.8 = 2.98$

$A_{3y7} = 3.725 * 1.645 = 6.12$

$A_{4y6} = 3.725 * 1.79 = 6.67$

$A_5 = 3.725 * 1.9 = 7.08$

Carga  $P_{muerta}$  (KN) =  $0.53 * A$

Carga  $P_{viva}$  (KN) =  $0.35 * A$

Carga  $P_{sismo}$  (KN) =  $0.275 * \text{Carga } P_{muerta}$

Carga  $P_{viento}$  (KN) =  $-0.049 * A$  ;  $0.2 * A$  ;  $-0.121 * A$  (fuerzas inclinadas)

(Véase Figura 4.17)

**4.1.6.2 Diseño de Elementos en Metal.** A cotinuación se indican los resultados obtenidos después de haber sometido la cercha a un análisis estático, mediante el uso del programa de computador SAP – 2000, el cual arroja las fuerzas internas de los elementos indicado si está a tensión o a compresión.

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| LOAD COMBINATION MULTIPLIERS |      |       |        |       |        |
|------------------------------|------|-------|--------|-------|--------|
| COMBO                        | TYPE | CASE  | FACTOR | TYPE  | TITLE  |
| ENVOLVEN                     | ENVE |       |        |       | COMB13 |
|                              |      | COMB1 | 1.0000 | COMBO |        |
|                              |      | COMB2 | 1.0000 | COMBO |        |
|                              |      | COMB3 | 1.0000 | COMBO |        |
|                              |      | COMB4 | 1.0000 | COMBO |        |

|        |        |       |
|--------|--------|-------|
| COMB5  | 1.0000 | COMBO |
| COMB6  | 1.0000 | COMBO |
| COMB7  | 1.0000 | COMBO |
| COMB8  | 1.0000 | COMBO |
| COMB9  | 1.0000 | COMBO |
| COMB10 | 1.0000 | COMBO |
| COMB11 | 1.0000 | COMBO |
| COMB12 | 1.0000 | COMBO |

J O I N T   R E A C T I O N S

| JOINT | LOAD         | F1       | F2     | F3      | M1     | M2     | M3     |
|-------|--------------|----------|--------|---------|--------|--------|--------|
| 1     | ENVOLVEN MAX | 26.6812  | 0.0000 | 24.5689 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLVEN MIN | 8.0215   | 0.0000 | 6.5202  | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVEN MAX | -7.6662  | 0.0000 | 22.8951 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVEN MIN | -28.1796 | 0.0000 | 8.8105  | 0.0000 | 0.0000 | 0.0000 |

F R A M E   E L E M E N T   F O R C E S

| FRAME | LOAD         | LOC | P      | V2   | V3   | T    | M2   | M3   |
|-------|--------------|-----|--------|------|------|------|------|------|
| 1     | ENVOLVEN MAX |     |        |      |      |      |      |      |
|       | 0.00         |     | -6.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.5E-01      |     | -6.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 3.0E-01      |     | -6.52  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1     | ENVOLVEN MIN |     |        |      |      |      |      |      |
|       | 0.00         |     | -24.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.5E-01      |     | -24.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 3.0E-01      |     | -24.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2     | ENVOLVEN MAX |     |        |      |      |      |      |      |
|       | 0.00         |     | -12.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 8.0E-01      |     | -12.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.59         |     | -12.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2     | ENVOLVEN MIN |     |        |      |      |      |      |      |
|       | 0.00         |     | -46.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 8.0E-01      |     | -46.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.59         |     | -46.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3     | ENVOLVEN MAX |     |        |      |      |      |      |      |
|       | 0.00         |     | -12.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 8.4E-01      |     | -12.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.69         |     | -12.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3     | ENVOLVEN MIN |     |        |      |      |      |      |      |
|       | 0.00         |     | -46.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 8.4E-01      |     | -46.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.69         |     | -46.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4     | ENVOLVEN MAX |     |        |      |      |      |      |      |
|       | 0.00         |     | -13.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 9.0E-01      |     | -13.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.80         |     | -13.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4     | ENVOLVEN MIN |     |        |      |      |      |      |      |
|       | 0.00         |     | -47.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 9.0E-01      |     | -47.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.80         |     | -47.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5     | ENVOLVEN MAX |     |        |      |      |      |      |      |
|       | 0.00         |     | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 9.5E-01      |     | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.90         |     | -16.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5     | ENVOLVEN MIN |     |        |      |      |      |      |      |
|       | 0.00         |     | -44.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 9.5E-01      |     | -44.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|       | 1.90         |     | -44.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |        |      |      |      |      |      |
|----|--------------|--------|------|------|------|------|------|
| 6  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -16.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01      | -16.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69         | -16.48 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -40.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.4E-01      | -40.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.69         | -40.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -15.64 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.4E-01      | -15.64 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.49         | -15.64 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -41.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.4E-01      | -41.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.49         | -41.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -8.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -8.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -8.81  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -22.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.5E-01      | -22.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.0E-01      | -22.90 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | -7.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.6E-01      | -7.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.2E-01      | -7.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -7.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.43         | -7.67  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9  | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | -28.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.6E-01      | -28.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.2E-01      | -28.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.07         | -28.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.43         | -28.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | 14.83  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 14.83  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.2E-01      | 14.83  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 14.83  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 14.83  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | 5.51   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 5.51   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.2E-01      | 5.51   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 5.51   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 5.51   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.6E-01      | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01      | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38         | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84         | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11 | ENVOLVEN MIN |        |      |      |      |      |      |
|    | 0.00         | 3.06   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.6E-01      | 3.06   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 9.2E-01      | 3.06   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.38         | 3.06   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.84         | 3.06   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVEN MAX |        |      |      |      |      |      |
|    | 0.00         | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.3E-01      | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01      | 8.57   | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |            |      |      |      |      |      |
|----|--------------|------------|------|------|------|------|------|
|    | 1.30         | 8.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.73         | 8.57       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 3.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.3E-01      | 3.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.7E-01      | 3.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.30         | 3.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.73         | 3.06       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 18.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 18.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.2E-01      | 18.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 18.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 18.45      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 3.95       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 4.1E-01      | 3.95       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.2E-01      | 3.95       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.22         | 3.95       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.63         | 3.95       | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -8.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.8E-01      | -8.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.7E-01      | -8.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -8.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.54         | -8.02      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 14 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -26.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.8E-01      | -26.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.7E-01      | -26.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -26.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.54         | -26.68     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 45.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.8E-01      | 45.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.57         | 45.44      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 16 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | 12.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.8E-01      | 12.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.57         | 12.98      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -1.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01      | -1.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.1E-01      | -1.39      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 17 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -8.31      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01      | -8.31      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.1E-01      | -8.31      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | 2.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.0E+00      | 2.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.99         | 2.928E-01  | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 19 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -1.89      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.0E+00      | -1.89      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.99         | -1.89      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MAX |            |      |      |      |      |      |
|    | 0.00         | -8.438E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -8.438E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -8.438E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | ENVOLVEN MIN |            |      |      |      |      |      |
|    | 0.00         | -9.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -9.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -9.37      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

|    |              |           |      |      |      |      |      |
|----|--------------|-----------|------|------|------|------|------|
| 21 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 13.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.19         | 13.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.38         | 13.62     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 21 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 1.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.19         | 1.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.38         | 1.23      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 0.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.2E-01      | 0.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.64         | 0.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 22 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 0.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 8.2E-01      | 0.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.64         | 0.00      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 8.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | 8.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.46         | 8.99      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 24 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 3.05      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.23         | 3.05      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 2.46         | 3.05      | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | -2.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -2.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -2.03     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -5.98     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 5.7E-01      | -5.98     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.15         | -5.98     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 3.796E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.0E+00      | 3.796E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.99         | 3.796E-01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 26 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -4.14     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.0E+00      | -4.14     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.99         | -4.14     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | -2.36     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01      | -2.36     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.1E-01      | -2.36     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 27 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | -5.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 3.5E-01      | -5.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.1E-01      | -5.97     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | ENVOLVEN MAX |           |      |      |      |      |      |
|    | 0.00         | 40.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | 40.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | 40.49     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 29 | ENVOLVEN MIN |           |      |      |      |      |      |
|    | 0.00         | 14.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 7.3E-01      | 14.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|    | 1.46         | 14.91     | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

(Véase Figura 4.18)

## 4.2 DISEÑO DE CORREAS

Para hacer la clasificación del tipo de correas, se tuvo en cuenta parámetros tales como la longitud de la correa, separación entre celosías y altura de la correa que depende directamente de la longitud que tenga la misma.

### 4.2.1 Diseño de Correa Tipo 1.

Longitud = 7 m.

$H = 1/20$   $h = 7.0/20 = 35$  cm

$B = 0.15$  m.

#### CARGAS

Carga muerta:  $0.23 \text{ KN/m}^2$

Carga viva:  $0.35 \text{ KN/m}^2$

Carga sísmica: (10 % de la carga muerta)  $0.023 \text{ KN/m}^2$

Carga de viento:

$V = 100 \text{ Km/h}$

$V_s = 58.8 \text{ Km/h}$

$q = 0.121 \text{ KN/m}^2$

$C_p = +1.9$  o  $-1.6$

$P = C_p * q$

Si  $C_p = +1.9$  →  $P = 0.23 \text{ KN/m}^2$  (presión)

Si  $C_p = -1.6$  →  $P = -0.2 \text{ KN/m}^2$  (succión)

#### CARGA APLICADA EN EL SENTIDO ANALIZADO

$w_2$  (KN/ml)

$w_y = w_2 * \cos \alpha$

$w_x = w_2 * \sin \alpha$

$M_x = w_y * l^2 / 8$   $M_y = w_x * l^2 / 8$



$$T = t/D+L \quad t = M_y/h$$

$$C = c/D+L \quad c = M_x/2*h + M_y/b$$

### COMBINACIONES

| CARGA D<br>KN/m <sup>2</sup> | CARGA Lr<br>KN/m <sup>2</sup> | D + Lr | Lado aferene | Componentes de carga (KN/m <sup>2</sup> ) |                                    |
|------------------------------|-------------------------------|--------|--------------|---|------------------------------------|
|                              |                               |        |              | $w_x = (D+Lr)1.69\text{sen}\alpha$        | $w_y = (D+Lr)1.69\text{cos}\alpha$ |
| 0.23                         | 0.35                          | 0.58   | 1.69         | 0.24                                      | 0.95                               |

| Mx (KN/m)<br>$w_y l^2/8$ | My (KN/m)<br>$w_x (l/2)^2/8$ | T (KN)<br>Mx/h | c (KN)<br>Mx/2h+My/b | T (KNm <sup>2</sup> /KN)<br>t/D+L | C (KNm <sup>2</sup> /KN)<br>c/D+L |
|--------------------------|------------------------------|----------------|----------------------|-----------------------------------|-----------------------------------|
| 5.8                      | 0.37                         | 16.57          | 10.75                | 28.57                             | 18.22                             |

| W ↓         | P dinámica | Aferencia | Wx | Wy    | Mx   | My | T    |
|-------------|------------|-----------|----|-------|------|----|------|
| 0.23        | 0.23       | 1.69      | -  | 0.39  | 2.4  | -  | 6.85 |
| W ↑<br>0.20 | 0.2        | 1.69      |    | 0.34  | 2.08 |    | 5.94 |
| E<br>0.023  | 0.023      | 1.69      |    | 0.039 | 0.24 |    | 0.68 |

### COMBINACIONES CORREAS

| COMBINACION CORREA               | CUERDA SUPERIOR | CUERDA INFERIOR |
|----------------------------------|-----------------|-----------------|
| 1- (1.2D) (T o C)                | -5.86           | 9.2             |
| 2- (1.2D + 0.5Lr) (T o C)        | -8.21           | 12.9            |
| 3- (1.2D + 1.6Lr) T o C + 0.8 Wa | -17.97          | 29.36           |
| 4- (1.2D + 0.5Lr) T o C + 1.3 Wa | -12.67          | 21.79           |
| 5- 0.9D (T o C) +- 1.3 Wb        | -0.09           | -1.8            |
| ESTADO MAS CRITICO               | -17.97          | 29.36           |

## DISEÑO A TENSION CUERDA INFERIOR

Adoptamos un diámetro de varilla igual a  $5/8 = 15,9 \text{ mm.} = \phi_v$

Controlamos la esbeltez del elemento  $kl/r < 300$

r: radio de giro =  $\phi_v/4$

l: luz entre montantes

k: factor de longitud efectiva. En correas = 1

$kl/r = 1 * 400 \text{ mm.} / (15,9/4) = 100,62 < 300 \text{ ok!}$

$\lambda_c$  controla el comportamiento elástico o inelástico al ser aplicada a la carga crítica.

$\lambda_c = kl/r * \sqrt{f_y / \pi^2 * E}$  entonces  $\lambda_c = 100,62 * \sqrt{253 \text{ MPA} / (\pi^2 * 2E5)} = 1,14 < 1,5$  estado inelástico

Si  $\lambda_c \leq 1,5$  entonces  $f_{cr} = (0,658^{\lambda_c^2}) * f_y$

Esfuerzo crítico

$F_{cr} = (0,658^{1,14^2}) * 253 = 146,85 \text{ Mpa}$

Calculo de la resistencia nominal de la varilla

$\phi_{pn} = \phi F_{cr} A_g$        $A_g$ : area bruta de la varilla

$\phi = 0,85$        $A_g: 199 \text{ mm}^2$

$\phi_{pn} = 0,85 * 146,85 \text{ Mpa} * 199 \text{ mm}^2 = 24839,67 \text{ Nw} > 17970 \text{ Nw ok!}$

## DISEÑO POR TENSION

$T_u \leq \phi T_n$        $\phi = 0,9$

$T_n = Q f_y A_g$        $f_y = 280 \text{ Mpa}$

$\phi T_n = 0,9 * 253 * 199 = 45312,3 \text{ Nw}$        $A_g = 199 \text{ mm}^2$

$29,36 \text{ KN} < 45,31 \text{ KN}$        $T_u < \phi T_n$       ok!

## DISEÑO DE LAS DIAGONALES

### CARGAS

calculamos cargas mayoradas

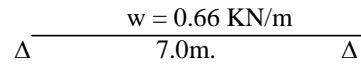
$w_{\text{diagonal}} = 1,2D + 0,5 L_r$

$w_{\text{diagonal}} = 1,2 * 0,18 + 0,5 * 0,35 = 0,39 \text{ KN/m}^2$

$w = w_{\text{diagonal}} * \text{aferencia}$

$$w = 0.39 * 1.69 = 0.66 \text{ KN/m}$$

#### REACCIONES



$$R = 0.66 \text{ KN/m} * 7.0 \text{ m./2} = 2.31 \text{ KN}$$

#### CARGA APLICADA EN EL NUDO

$$P = w * s \quad s: \text{ separación entre montantes}$$

$$s = 40 \text{ cm.} = 0.4 \text{ m.}$$

$$P = 0.66 \text{ KN/m} * 0.4 \text{ m} = 0.264 \text{ KN}$$

#### ESFUERZOS EN LAS DIAGONALES

$$P_1(+) = (R - P/2)/\text{SEN}\theta \quad P_1(+) = (2.31 - 0.264/2)/\text{SEN}45 = 3.08 \text{ KN}$$

$$P_2(-) = (R - P/2 - P)/\text{SEN}\theta \quad P_2(-) = 2.7 \text{ KN}$$

$$P_3(+) = (R - P/2 - 2P)/\text{SEN}\theta \quad P_3(+) = 2.33 \text{ KN}$$

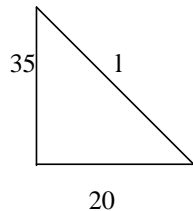
$$P_4(-) = (R - P/2 - 3P)/\text{SEN}\theta \quad P_4(-) = 1.96 \text{ KN}$$

#### DISEÑO DE LAS DIAGONALES

$$A_g = T_u / \phi f_y \quad A_g = 3080 / (0.9 * 253) = 13.52 \text{ mm}^2$$

Se evalúa una varilla de diámetro de 3/8 = 71 mm<sup>2</sup> > 13.52 mm<sup>2</sup>

#### DISEÑO A COMPRESIÓN



$$1 = \sqrt{35^2 + 20^2} = 40.31 \text{ cm} = 403.1 \text{ mm}$$

Control de esbeltez

$$kl/r = 1 * 403.1 / (9.5/4) = 169.7 > 200 \text{ ok!}$$

$$\lambda_c = kl/r * \sqrt{253/(\pi^2 * 2E5)} = 1.92 \quad \text{Estado inelástico}$$

$$f_{cr} = (0.877/\lambda_c^2) * f_y \quad f_{cr} = 60.18 \text{ Mpa}$$

Cálculo de la resistencia nominal de la varilla

$$\phi_p n = 0.85 * 60.18 \text{ Mpa} * 71 \text{ mm}^2 = 3631.9 \text{ NW} > 3080 \text{ NW}$$

#### DISEÑO A FLEXOCOMPRESIÓN

Soporta adicionalmente un 2.5% de esfuerzo por efecto de lámparas.

$$C = 17.97 \text{ Kn} * 1.025 = -18.41 \text{ KN}$$

Por efecto de compresión carga de diseño = 18.41 KN

ELEMENTO : CUERDA SUPERIOR

#### CARGAS

$$D = 0.23 \text{ KN/m}^2$$

$$L = 0.35 \text{ KN/m}^2$$

$$W = 0.23 \text{ KN/m}^2$$

#### MOMENTOS

$$M = wl^2/8 \quad w = w_D * \text{aferencia} / \# \text{ varillas}$$

$$w = 0.23 * 1.69 / 2 = 0.194 \text{ KN/m}^2$$

$$M_D = 0.194 * 0.4^2 / 8 = 3.8 \text{ N.m}$$

$$M_L = (0.35 * 1.69 / 2 * 0.4^2) / 8 = 5.9 \text{ N.m.}$$

$$M_W = (0.23 * 1.69 / 2) \cos 15 * 0.2^2 / 8 = 0.93 \text{ N.m.}$$

Combinación más crítica

$$1.2D + 1.6L_r + 0.8W = 1.2 * 3.8 + 1.6 * 5.9 + 0.8 * 0.94 = 14.75 \text{ N.m}$$

$$M_{\text{diseño}} = 14.75 \text{ N.m.}$$

## MATERIAL

Adoptamos D específico ½" y A – 615 grado 40

## ANALISIS

Control de esbeltez

$$kl/r = 1*200/(12.7/4) = 62.99 \ll 200$$

$$\lambda_c = 0.71 < 1.5 \quad \text{Estado inelástico}$$

Evaluamos el elemento para carga crítica de Euler con respecto al eje de flexión, considerando sin desplazamiento horizontal

$$P_{e1} = A_s f_y / \lambda_c^2 \qquad A_g = \pi * d^2 / 4 = 1.27 \text{ cm}^2 = 127 \text{ mm}^2$$

$$P_{e1} = 127 \text{ mm}^2 * 253 \text{ Mpa} / 0.71^2 = 63739.33 \text{ NW}$$

$B_1$  : Coeficiente para definir la ampliación del momento como un factor de carga.

$C_m = 1$ ; coeficiente para evaluación crítica de la carga presentada como condición más desfavorable con unión de soldadura.

$$B_1 = C_m / (1 - (P_u / P_{e1})) \geq 1$$

$$B_1 = 1 / (1 - (18410 \text{ Nw} / 63739.33 \text{ NW})) = 1.39 > 1 \text{ ok!}$$

## CALCULO DEL MOMENTO ULTIMO

$$M_{ux} = B_1 * M_D \qquad M_{ux} = 1.39 * 14.75 \text{ Nm} = 20.50 \text{ Nm}$$

## VALORACION DE LA EXPRESION

$$P_u / \phi_p n + 8/9 * (M_{ux} / (\phi_b M_{nx}) + M_{uy} / (\phi_b M_{ny})) \leq 1 \qquad M_{uy} / \phi_b M_{ny} = 0$$

$$\phi_p n = \phi A_g f_{cr}$$

$$\text{con } \lambda_c = 1 \quad f_{cr} = (0.658^{\lambda_c^2}) f_y$$

$$f_{cr} = (0.658^{0.1^2}) * 253 = 166.47 \text{ Mpa}$$

$$\phi_b M_n = \phi_b M_p = \phi z f_y \quad z = \phi^3 / 6 = 341.4 \text{ mm}^3$$

$$\phi_b M_{nx} = 0.9 * 341.4 \text{ mm}^3 * 253 \text{ Mpa} = 77736.78 \text{ N.m.}$$

Para el cálculo de la resistencia axial  $\phi = 0.85$

$$\phi P_n = \phi A_g f_{cr} = 0.85 * 127 \text{ mm}^2 * 166.47 \text{ Mpa} = 17970.43 \text{ Nw}$$

Para el control de flexocompresión es función de la unidad el factor de reducción  $\phi_b$  actúan sobre el momento nominal equivalente al plástico  $\rightarrow \phi_b = 0.9$

$$P_u / \phi P_n + 8/9 (M_{ux} / \phi_b M_{nx}) = 17970 \text{ NW} / 17970.43 \text{ NW} + 8/9 * (20.50 \text{ N.m} / 77736.78 \text{ N.m}) = 1 < 1 \text{ ok!}$$

#### 4.2.2 Diseño Correa Tipo 2.

$$L = 3.5 \text{ m.}$$

$$H = l/20 \quad h = 350/20 = 17.5 \text{ cm} \quad \text{Asumimos } 20 \text{ cm.}$$

$$B = 0.10 \text{ m.}$$

#### CARGAS

$$\text{Carga muerta: } 0.23 \text{ KN/m}^2$$

$$\text{Carga viva: } 0.35 \text{ KN/m}^2$$

$$\text{Carga sísmica: (10 \% CM) } 0.023 \text{ KN/m}^2$$

Carga de viento:

$$V = 100 \text{ Km/h}$$

$$V_s = 58.8 \text{ Km/h}$$

$$q = 0.121 \text{ KN/m}^2$$

$$C_p = +1.9 \text{ o } -1.6$$

$$P = C_p * q$$

$$\text{Si } C_p = +1.9 \quad \rightarrow \quad P = 0.23 \text{ KN/m}^2 \text{ (presión)}$$

Si  $C_p = -1.6 \rightarrow P = -0.2 \text{ KN/m}^2$  (succión)

**CARGA APLICADA EN EL SENTIDO ANALIZADO**

$w_2$  (KN/m)

$w_y = w_2 * \cos \alpha$

$w_x = w_2 * \sin \alpha$

$M_x = w_y * l^2 / 8 \quad M_y = w_x * l^2 / 8$

$T = t/D+L \quad t = M_y/h$

$C = c/D+L \quad c = M_x/2 * h + M_y/b$

**COMBINACIONES**

| CARGA D<br>KN/m <sup>2</sup> | CARGA Lr<br>KN/m <sup>2</sup> | D + Lr | Lado aferene | Componentes de carga (KN/m <sup>2</sup> ) |                              |
|------------------------------|-------------------------------|--------|--------------|---|------------------------------|
|                              |                               |        |              | $w_x = (D+Lr)1.69\sin\alpha$              | $w_y = (D+Lr)1.69\cos\alpha$ |
| 0.23                         | 0.35                          | 0.58   | 1.69         | 0.24                                      | 0.95                         |

| Mx (KN/m)<br>$w_y l^2 / 8$ | My (KN/m)<br>$w_x (l/2)^2 / 8$ | t (KN)<br>Mx/h | c (KN)<br>Mx/2h+My/b | T (KNm <sup>2</sup> /KN)<br>t/D+L | C (KNm <sup>2</sup> /KN)<br>c/D+L |
|----------------------------|--------------------------------|----------------|----------------------|-----------------------------------|-----------------------------------|
| 1.45                       | 0.091                          | 7.25           | 4.53                 | 12.5                              | 7.8                               |

| W ↓         | P dinámica | Aferencia | Wx | Wy    | Mx   | My | t    |
|-------------|------------|-----------|----|-------|------|----|------|
| 0.23        | 0.23       | 1.69      | -  | 0.39  | 0.59 | -  | 2.95 |
| W ↑<br>0.20 | 0.2        | 1.69      |    | 0.34  | 0.52 |    | 2.6  |
| E<br>0.023  | 0.023      | 1.69      |    | 0.039 | 0.06 |    | 0.3  |

### COMBINACIONES CORREAS

| COMBINACION CORREA               | CUERDA SUPERIOR | CUERDA INFERIOR |
|----------------------------------|-----------------|-----------------|
| 1- (1.4D) (T o C)                | -2.51           | 4.02            |
| 2- (1.2D + 0.5Lr) (T o C)        | -3.5            | 5.63            |
| 3- (1.2D + 1.6Lr) T o C + 0.8 Wa | -7.7            | 12.81           |
| 4- (1.2D + 0.5Lr) T o C + 1.3 Wa | -5.43           | 9.47            |
| 5- 0.9D (T o C) +- 1.3 Wb        | -0.075          | -.8             |
| ESTADO MAS CRITICO               | -7.7            | 12.81           |

### DISEÑO A TENSION CUERDA INFERIOR

Adoptamos un diámetro de varilla igual a ½" = 12.7 mm. =  $\phi_v$

Controlamos la esbeltez del elemento  $kl/r < 300$

r: radio de giro =  $\phi_v/4$

l: luz entre montantes

k: factor de longitud efectiva. En correas = 1

$$kl/r = 1 * 400 \text{ mm.} / (12.7/4) = 125.98 < 300 \text{ ok!}$$

$\lambda_c$  controla el comportamiento elástico o inelástico al ser aplicada a la carga crítica.

$$\lambda_c = kl/r * \sqrt{f_y / \pi^2 * E} \quad \text{entonces } \lambda_c = 125.98 * \sqrt{253 \text{ MPA} / (\pi^2 * 2E5)} = 1.42 < 1.5 \text{ estado inelástico}$$

$$\text{Si } \lambda_c \leq 1.5 \text{ entonces } f_{cr} = (0.658^{\lambda_c^2}) * f_y$$

Esfuerzo crítico

$$F_{cr} = (0.658^{1.42^2}) * 253 = 108.79 \text{ Mpa}$$

Calculo de la resistencia nominal de la varilla

$$\phi_{pn} = \phi F_{cr} A_g \quad A_g: \text{ area bruta de la varilla}$$

$$\phi = 0.85 \quad A_g: 129 \text{ mm}^2$$

$$\phi_{pn} = 0.85 * 108.79 \text{ Mpa} * 129 \text{ mm}^2 = 11928.82 \text{ Nw} > 7700 \text{ Nw ok!}$$



## DISEÑO POR TENSIÓN

$$\begin{aligned}T_u &\leq \phi T_n & \phi &= 0.9 \\T_n &= Q f_y A_g & f_y &= 253 \text{ Mpa} \\ \phi T_n &= 0.9 * 253 * 129 = 29373.3 \text{ Nw} & A_g &= 129 \text{ mm}^2 \\12.81 \text{ KN} &< 29.37 \text{ KN} & T_u &< \phi T_n \quad \text{ok!}\end{aligned}$$

## DISEÑO DE LAS DIAGONALES

### CARGAS

calculamos cargas mayoradas

$$W_{\text{diagonal}} = 1.2D + 0.5 L_r$$

$$W_{\text{diagonal}} = 1.2 * 0.18 + 0.5 * 0.35 = 0.39 \text{ KN/m}^2$$

$$w = W_{\text{diagonal}} * \text{aferencia}$$

$$w = 0.39 * 1.69 = 0.66 \text{ KN/m}$$

### REACCIONES

$$\frac{w = 0.66 \text{ KN/m}}{\Delta \quad 3.5\text{m.} \quad \Delta}$$

$$R = 0.66 \text{ KN/m} * 3.5\text{m.}/2 = 1.15 \text{ KN}$$

### CARGA APLICADA EN EL NUDO

$$P = w * s \quad s: \text{separación entre montantes}$$

$$s = 40 \text{ cm.} = 0.4 \text{ m.}$$

$$P = 0.66 \text{ KN/m} * 0.4 \text{ m} = 0.264 \text{ KN}$$

### 1- ESFUERZOS EN LAS DIAGONALES

$$P_1(+) = (R - P/2)/\text{SEN}\theta \quad P_1(+) = (1.15 - 0.264/2)/\text{SEN}45 = 1.44 \text{ KN}$$

$$P_2(-) = (R - P/2 - P)/\text{SEN}\theta \quad P_2(-) = 1.06 \text{ KN}$$

$$P_3(+) = (R - P/2 - 2P)/\text{SEN}\theta \quad P_3(+) = 0.7 \text{ KN}$$

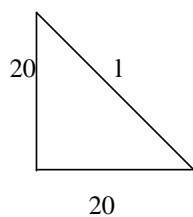
$$P_4(-) = (R - P/2 - 3P)/\text{SEN}\theta \quad P_4(-) = 0.32 \text{ KN}$$

#### DISEÑO DE LAS DIAGONALES

$$A_g = T_u/\phi f_y \quad A_g = 1440/(0.9 * 253) = 5.0 \text{ mm}^2$$

Se evalúa una varilla de diámetro de  $3/8 = 71 \text{ mm}^2 > 5.0 \text{ mm}^2$

#### DISEÑO A COMPRESIÓN



$$l = \sqrt{20^2 + 20^2} = 28.28 \text{ cm} = 282.8 \text{ mm}$$

#### Control de esbeltez

$$kl/r = 1 * 282.8 / (9.5/4) = 119.07 > 200 \text{ ok!}$$

$$\lambda_c = kl/r * \sqrt{253/(\pi^2 * 2E5)} = 1.34 \quad \text{Estado inelástico}$$

$$f_{cr} = (0.658^{\lambda_c^2}) * f_y \quad f_{cr} = 119.32 \text{ Mpa}$$

#### Cálculo de la resistencia nominal de la varilla

$$\phi_p n = 0.85 * 119.32 \text{ Mpa} * 71 \text{ mm}^2 = 7200.96 \text{ NW} > 1550 \text{ NW}$$

#### DISEÑO A FLEXOCOMPRESIÓN

Soporta adicionalmente un 2.5% de esfuerzo por efecto de lámparas.

$$C = 7.7 \text{ KN} * 1.025 = 7.89 \text{ KN}$$

Por efecto de compresión carga de diseño = 7.89 KN

#### ELEMENTO : CUERDA SUPERIOR

#### CARGAS

$$D = 0.23 \text{ KN/m}^2$$

$$L = 0.35 \text{ KN/m}^2$$

$$W = 0.23 \text{ KN/m}^2$$

#### MOMENTOS

$$M = w l^2 / 8 \quad w = w_D * \text{aferencia} / \# \text{ varillas}$$

$$w = 0.23 * 1.69 / 2 = 0.194 \text{ KN/m}^2$$

$$M_D = 0.194 * 0.4^2 / 8 = 3.8 \text{ N.m}$$

$$M_L = (0.35 * 1.69 / 2 * 0.4^2) / 8 = 5.9 \text{ N.m.}$$

$$M_W = (0.23 * 1.69 / 2) \cos 15 * 0.4^2 / 8 = 0.93 \text{ N.m.}$$

Combinación más crítica

$$1.2D + 1.6L_r + 0.8W = 1.2 * 3.8 + 1.6 * 5.9 + 0.8 * 0.93 = 14.75 \text{ N.m}$$

$$M_{\text{diseño}} = 14.75 \text{ N.m.}$$

MATERIAL

Adoptamos D específico ½" y A – 615 grado 40

ANALISIS

Control de esbeltez

$$kl/r = 1 * 200 / (12.7 / 4) = 62.99 \ll 200$$

$$\lambda_c = 0.71 < 1.5 \quad \text{Estado inelástico}$$

Evaluamos el elemento para carga crítica de euler con respecto al eje de flexión, considerando sin desplazamiento horizontal

$$P_{e1} = A_s f_y / \lambda_c^2 \quad A_g = \pi * d^2 / 4 = 1.27 \text{ cm}^2 = 127 \text{ mm}^2$$

$$P_{e1} = 127 \text{ mm}^2 * 253 \text{ Mpa} / 0.71^2 = 63739.33 \text{ NW}$$

$B_1$  : Coeficiente para definir la ampliación del momento como un factor de carga.

$C_m = 1$ ; coeficiente para evaluación crítica de la carga presentada como condición más desfavorable con unión de soldadura.

$$B_1 = C_m / (1 - (P_u / P_{e1})) \geq 1$$

$$B_1 = 1 / (1 - (7700 \text{ Nw} / 63739.33 \text{ NW})) = 1.14 > 1 \text{ ok!}$$

#### CALCULO DEL MOMENTO ULTIMO

$$M_{ux} = B_1 * M_D \quad M_{ux} = 1.14 * 14.75 \text{ Nm} = 16.81 \text{ Nm}$$

#### VALORACION DE LA EXPRESION

$$P_u / \phi_{pn} + 8/9 * (M_{ux} / (\phi_b M_{nx}) + M_{uy} / (\phi_b M_{ny})) \leq 1 \quad M_{uy} / \phi_b M_{ny} = 0$$

$$\phi_{pn} = \phi A_g f_{cr}$$

$$\text{con } \lambda c = 1 \quad f_{cr} = (0.658^{\lambda c^2}) f_y$$

$$f_{cr} = (0.658^{1^2}) * 253 = 166.47 \text{ Mpa}$$

$$\phi_b M_n = \phi_b M_p = \phi z f_y \quad z = \phi 3/6 = 341.4 \text{ mm}^3$$

$$\phi_b M_{nx} = 0.9 * 341.4 \text{ mm}^3 * 253 \text{ Mpa} = 77736.78 \text{ N.m.}$$

Para el cálculo de la resistencia axial  $\phi = 0.85$

$$\phi_{pn} = \phi A_g f_{cr} = 0.85 * 127 \text{ mm}^2 * 166.47 \text{ Mpa} = 17970.43 \text{ Nw}$$

Para el control de flexocompresión es función de la unidad el factor de reducción  $\phi_b$  actúan sobre el momento nominal equivalente al plástico  $\rightarrow \phi_b = 0.9$

$$P_u / \phi_{pn} + 8/9 (M_{ux} / \phi_b M_{nx}) = 7700 \text{ NW} / 17970.43 \text{ NW} + 8/9 * (16.81 \text{ N.m} / 77736.78 \text{ N.m}) = 0.43 < 1 \text{ ok!}$$

#### 4.2.3 Diseño de Correas Tipo 3.

$$L = 4.95 \text{ m.}$$

$$H = 1/20 \quad h = 495/20 = 24.75 \text{ cm} \quad 25 \text{ cm.}$$

$$B = 0.10 \text{ m.}$$

#### CARGAS

$$\text{Carga muerta: } 0.23 \text{ KN/m}^2$$

$$\text{Carga viva: } 0.35 \text{ KN/m}^2$$

$$\text{Carga sísmica: (10 \% CM) } 0.023 \text{ KN/m}^2$$

Carga de viento:

$$V = 100 \text{ Km/h}$$

$$V_s = 58.8 \text{ Km/h}$$

$$q = 0.121 \text{ KN/m}^2$$

$$C_p = +1.9 \text{ o } -1.6$$

$$P = C_p * q$$

$$\text{Si } C_p = +1.9 \quad \rightarrow \quad P = 0.23 \text{ KN/m}^2 \text{ (presión)}$$

$$\text{Si } C_p = -1.6 \quad \rightarrow \quad P = -0.2 \text{ KN/m}^2 \text{ (succión)}$$

#### CARGA APLICADA EN EL SENTIDO ANALIZADO

$w_2$  (KN/m)

$$w_y = w_2 * \cos \alpha$$

$$w_x = w_2 * \sin \alpha$$

$$M_x = w_y * l^2 / 8 \quad M_y = w_x * l^2 / 8$$

$$T = t / D + L \quad t = M_y / h$$

$$C = c / D + L \quad c = M_x / 2 * h + M_y / b$$

#### COMBINACIONES

| CARGA D<br>KN/m <sup>2</sup> | CARGA Lr<br>KN/m <sup>2</sup> | D + Lr | Lado aferente | Componentes de carga (KN/m <sup>2</sup> ) |                              |
|------------------------------|-------------------------------|--------|---------------|---|------------------------------|
|                              |                               |        |               | $w_x = (D+Lr)1.69\sin\alpha$              | $w_y = (D+Lr)1.69\cos\alpha$ |
| 0.23                         | 0.35                          | 0.58   | 1.69          | 0.24                                      | 0.95                         |

#### COMBINACIONES CORREAS

| COMBINACION CORREA               | CUERDA SUPERIOR | CUERDA INFERIOR |
|----------------------------------|-----------------|-----------------|
| 1- (1.4D) (T o C)                | -4.21           | 6.44            |
| 2- (1.2D + 0.5Lr) (T o C)        | -5.9            | 9.02            |
| 3- (1.2D + 1.6Lr) T o C + 0.8 Wa | -12.85          | 20.52           |
| 4- (1.2D + 0.5Lr) T o C + 1.3 Wa | -9.4            | 15.9            |
| 5- 0.9D (T o C) +- 1.3 Wb        | -0.0077         | -1.26           |
| ESTADO MAS CRITICO               | -12.85          | 20.52           |

## DISEÑO A TENSION CUERDA INFERIOR

Adoptamos un diámetro de varilla igual a  $5/8'' = 15.9 \text{ mm.} = \phi_v$

Controlamos la esbeltez del elemento  $kl/r < 300$

r: radio de giro =  $\phi_v/4$

l: luz entre montantes

k: factor de longitud efectiva. En correas = 1

$kl/r = 1 * 400 \text{ mm.} / (15.9/4) = 100.62 < 300 \text{ ok!}$

$\lambda_c$  controla el comportamiento elástico o inelástico al ser aplicada a la carga crítica.

$\lambda_c = kl/r * \sqrt{f_y / \pi^2 * E}$  entonces  $\lambda_c = 100.62 * \sqrt{253 \text{ MPA} / (\pi^2 * 2E5)} = 1.14 < 1.5$  estado inelástico

Si  $\lambda_c \leq 1.5$  entonces  $f_{cr} = (0.658^{\lambda_c^2}) * f_y$

Esfuerzo crítico

$F_{cr} = (0.658^{1.4}) * 253 = 146.85 \text{ Mpa}$

Calculo de la resistencia nominal de la varilla

$\phi_{pn} = \phi F_{cr} A_g$        $A_g$ : area bruta de la varilla

$\phi = 0.85$        $A_g: 199 \text{ mm}^2$

$\phi_{pn} = 0.85 * 146.85 \text{ Mpa} * 199 \text{ mm}^2 = 24839.67 \text{ Nw} > 12850 \text{ Nw ok!}$

## DISEÑO POR TENSION

$T_u \leq \phi T_n$        $\phi = 0.9$

$T_n = Q f_y A_g$        $f_y = 253 \text{ Mpa}$

$\phi T_n = 0.9 * 253 * 199 = 45312.3 \text{ Nw}$        $A_g = 199 \text{ mm}^2$

$20.52 \text{ KN} < 45.31 \text{ KN}$        $T_u < \phi T_n$       ok!

## DISEÑO DE LAS DIAGONALES

### CARGAS

calculamos cargas mayoradas

$w_{\text{diagonal}} = 1.2D + 0.5 L_r$

$w_{\text{diagonal}} = 1.2 * 0.18 + 0.5 * 0.35 = 0.39 \text{ Kn/m}^2$

$w = w_{\text{diagonal}} * \text{aferencia}$

$w = 0.39 * 1.69 = 0.66 \text{ KN/m}$

## REACCIONES

$$\Delta \frac{w = 0.66 \text{ KN/m}}{4.95\text{m.}} \Delta$$

$$R = 0.66 \text{ KN/m} * 4.95 \text{ m./2} = 1.63 \text{ KN}$$

## CARGA APLICADA EN EL NUDO

$$P = w * s \quad s: \text{separación entre montantes}$$

$$s = 40 \text{ cm.} = 0.4 \text{ m.}$$

$$P = 0.66 \text{ KN/m} * 0.4 \text{ m} = 0.264 \text{ KN}$$

## ESFUERZOS EN LAS DIAGONALES

$$P_1(+) = (R - P/2)/\text{SEN}\theta \quad P_1(+) = (1.63 - 0.264/2)/\text{SEN}45 = 2.18 \text{ KN}$$

$$P_2(-) = (R - P/2 - P)/\text{SEN}\theta \quad P_2(-) = 1.74 \text{ KN}$$

$$P_3(+) = (R - P/2 - 2P)/\text{SEN}\theta \quad P_3(+) = 1.37 \text{ KN}$$

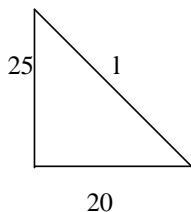
$$P_4(-) = (R - P/2 - 3P)/\text{SEN}\theta \quad P_4(-) = 1 \text{ KN}$$

## DISEÑO DE LAS DIAGONALES

$$A_g = T_u / \phi f_y \quad A_g = 2180 / (0.9 * 253) = 9.57 \text{ mm}^2$$

Se evalúa una varilla de diámetro de 3/8" = 71 mm<sup>2</sup> > 9.57 mm<sup>2</sup>

## DISEÑO A COMPRESIÓN



$$l = \sqrt{25^2 + 20^2} = 32.01 \text{ cm} = 320.1 \text{ mm}$$

## Control de esbeltez

$$kl/r = 1 * 320.1 / (9.5/4) = 134.78 > 200 \text{ ok!}$$

$$\lambda c = kl/r * \sqrt{253 / (\pi^2 * 2E5)} = 1.52 \quad \text{Estado elástico}$$

$$f_{cr} = (0.877 / \lambda c^2) * f_y \quad f_{cr} = 96.03 \text{ Mpa}$$

## Cálculo de la resistencia nominal de la varilla

$$\phi p_n = 0.85 * 96.03 \text{ Mpa} * 71 \text{ mm}^2 = 5795.4 \text{ NW} > 2180 \text{ NW}$$

#### DISEÑO A FLEXOCOMPRESIÓN

Soporta adicionalmente un 2.5% de esfuerzo por efecto de lámparas.

$$C = 12.85 \text{ Kn} * 1.025 = -13.17 \text{ KN}$$

Por efecto de compresión carga de diseño = 13.17 KN

ELEMENTO : CUERDA SUPERIOR

#### CARGAS

$$D = 0.23 \text{ KN/m}^2$$

$$L = 0.35 \text{ KN/m}^2$$

$$W = 0.23 \text{ KN/m}^2$$

#### MOMENTOS

$$M = w l^2 / 8 \quad w = w_D * \text{aferencia} / \# \text{ varillas}$$

$$w = 0.23 * 1.69 / 2 = 0.194 \text{ KN/m}^2$$

$$M_D = 0.194 * 0.2^2 / 8 = 3.8 \text{ N.m}$$

$$M_L = (0.35 * 1.69 / 2 * 0.2^2) / 8 = 5.9 \text{ N.m.}$$

$$M_W = (0.23 * 1.69 / 2) \cos 15 * 0.2^2 / 8 = 0.93 \text{ N.m.}$$

Combinación más crítica

$$1.2D + 1.6Lr + 0.8W = 1.2 * 3.8 + 1.6 * 5.9 + 0.8 * 0.93 = 14.75 \text{ N.m}$$

$$M_{\text{diseño}} = 14.75 \text{ N.m.}$$

#### MATERIAL

Adoptamos D específico 1/2" y A – 615 grado 40

#### ANALISIS

Control de esbeltez



$$kl/r = 1 \cdot 200 / (12.7/4) = 62.99 \ll 200$$

$$\lambda_c = 0.71 < 1.5 \quad \text{Estado inelástico}$$

Evaluamos el elemento para carga crítica de Euler con respecto al eje de flexión, considerando sin desplazamiento horizontal

$$P_{e1} = A_s f_y / \lambda_c^2 \qquad A_g = \pi \cdot d^2 / 4 = 1.27 \text{ cm}^2 = 127 \text{ mm}^2$$

$$P_{e1} = 127 \text{ mm}^2 \cdot 253 \text{ Mpa} / 0.71^2 = 63739.33 \text{ NW}$$

$B_1$  : Coeficiente para definir la ampliación del momento como un factor de carga.

$C_m = 1$ ; coeficiente para evaluación crítica de la carga presentada como condición más desfavorable con unión de soldadura.

$$B_1 = C_m / (1 - (P_u / P_{e1})) \geq 1$$

$$B_1 = 1 / (1 - (13170 \text{ Nw} / 63739.33 \text{ NW})) = 1.26 > 1 \text{ ok!}$$

#### CALCULO DEL MOMENTO ULTIMO

$$M_{ux} = B_1 \cdot M_D \qquad M_{ux} = 1.26 \cdot 14.75 \text{ Nm} = 18.58 \text{ Nm}$$

#### VALORACION DE LA EXPRESION

$$P_u / \phi_p n + 8/9 \cdot (M_{ux} / (\phi_b M_{nx}) + M_{uy} / (\phi_b M_{ny})) \leq 1 \qquad M_{uy} / \phi_b M_{ny} = 0$$

$$\phi_p n = \phi A_g f_{cr}$$

$$\text{con } \lambda_c = 1 \quad f_{cr} = (0.658^{\lambda_c^2}) f_y$$

$$f_{cr} = (0.658^{1^2}) \cdot 253 = 166.47 \text{ Mpa}$$

$$\phi_b M_n = \phi_b M_p = \phi z f_y \qquad z = \phi^3 / 6 = 341.4 \text{ mm}^3$$

$$\phi_b M_{nx} = 0.9 \cdot 341.4 \text{ mm}^3 \cdot 253 \text{ Mpa} = 77736.78 \text{ N.m.}$$

Para el cálculo de la resistencia axial  $\phi = 0.85$

$$\phi P_n = \phi A_g f_{cr} = 0.85 * 127 \text{ mm}^2 * 166.47 \text{ Mpa} = 17970.43 \text{ Nw}$$

Para el control de flexocompresión es función de la unidad el factor de reducción  $\phi_b$  actúan sobre el momento nominal equivalente al plástico  $\rightarrow \phi_b = 0.9$

$$P_u / \phi P_n + 8/9 (M_{ux} / \phi_b M_{nx}) = 12850 \text{ NW} / 17970.43 \text{ NW} + 8/9 * (18.58 \text{ N.m} / 77736.78 \text{ N.m}) = 0.71 < 1 \text{ ok!}$$

### 4.3 DISEÑO ESTRUCTURA TRIDIMENSIONAL

Para el diseño se tiene en cuenta la luz más corta a cubrir, tratando de que el número de domos utilizados sean comerciales y alcancen exactamente a cubrir la luz; En la marquesina grande se trabajó con domos de 1.074 m.\* 1.05 m .en una luz de 23.6 m. En la marquesina pequeña se hacen domos de las mismas dimensiones. En la figura N° se indica la estructura con la deformación alcanzada con las secciones utilizadas. (Véase Figura 4.19)

#### ANALISIS DE CARGA

$$\text{Carga muerta} = 14.79 \text{ KN/m}^2$$

$$\text{Carga viva} = 40.44 \text{ KN/m}^2$$

#### 4.3.1 Fuerzas y reacciones.

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| LOAD COMBINATION MULTIPLIERS |      |        |        |              |       |
|------------------------------|------|--------|--------|--------------|-------|
| COMBO                        | TYPE | CASE   | FACTOR | TYPE         | TITLE |
| CU                           | ADD  | MUERTA | 1.4000 | STATIC(DEAD) | COMB1 |
|                              |      | VIVA   | 1.7000 | STATIC(LIVE) |       |

J O I N T R E A C T I O N S

| JOINT | LOAD | F1       | F2       | F3      | M1     | M2     | M3     |
|-------|------|----------|----------|---------|--------|--------|--------|
| 330   | CU   | 2.5326   | 2.5969   | -4.3247 | 0.0000 | 0.0000 | 0.0000 |
| 331   | CU   | 4.9097   | -2.8531  | 1.3506  | 0.0000 | 0.0000 | 0.0000 |
| 332   | CU   | 4.5652   | -5.8820  | 2.4524  | 0.0000 | 0.0000 | 0.0000 |
| 333   | CU   | 4.0561   | -8.7494  | 3.3517  | 0.0000 | 0.0000 | 0.0000 |
| 334   | CU   | 3.4241   | -11.2899 | 4.1215  | 0.0000 | 0.0000 | 0.0000 |
| 335   | CU   | 2.7030   | -13.4269 | 4.7943  | 0.0000 | 0.0000 | 0.0000 |
| 336   | CU   | 1.9205   | -15.1222 | 5.3634  | 0.0000 | 0.0000 | 0.0000 |
| 337   | CU   | 1.0994   | -16.3597 | 5.8042  | 0.0000 | 0.0000 | 0.0000 |
| 338   | CU   | 0.2588   | -17.1318 | 6.0907  | 0.0000 | 0.0000 | 0.0000 |
| 339   | CU   | -0.5855  | -17.4319 | 6.2033  | 0.0000 | 0.0000 | 0.0000 |
| 340   | CU   | -1.4205  | -17.2643 | 6.1339  | 0.0000 | 0.0000 | 0.0000 |
| 341   | CU   | -2.2325  | -16.6567 | 5.8889  | 0.0000 | 0.0000 | 0.0000 |
| 342   | CU   | -2.9992  | -15.6364 | 5.4832  | 0.0000 | 0.0000 | 0.0000 |
| 343   | CU   | -3.6849  | -14.1536 | 4.9200  | 0.0000 | 0.0000 | 0.0000 |
| 344   | CU   | -4.2491  | -12.0187 | 4.1669  | 0.0000 | 0.0000 | 0.0000 |
| 345   | CU   | -4.6617  | -8.9687  | 3.1528  | 0.0000 | 0.0000 | 0.0000 |
| 346   | CU   | -4.8989  | -4.8722  | 1.7808  | 0.0000 | 0.0000 | 0.0000 |
| 347   | CU   | -2.4881  | 2.5513   | -4.2483 | 0.0000 | 0.0000 | 0.0000 |
| 348   | CU   | -4.5931  | 5.1473   | 1.6712  | 0.0000 | 0.0000 | 0.0000 |
| 365   | CU   | 4.3362   | 4.9072   | 1.6984  | 0.0000 | 0.0000 | 0.0000 |
| 366   | CU   | -8.9092  | 4.9648   | 2.9272  | 0.0000 | 0.0000 | 0.0000 |
| 383   | CU   | 8.4868   | 4.5001   | 3.1733  | 0.0000 | 0.0000 | 0.0000 |
| 384   | CU   | -12.9410 | 4.7243   | 3.8633  | 0.0000 | 0.0000 | 0.0000 |
| 401   | CU   | 12.2197  | 3.9091   | 4.4169  | 0.0000 | 0.0000 | 0.0000 |
| 402   | CU   | -16.8029 | 4.5545   | 4.5587  | 0.0000 | 0.0000 | 0.0000 |
| 419   | CU   | 15.3738  | 3.1836   | 5.4587  | 0.0000 | 0.0000 | 0.0000 |
| 420   | CU   | -20.8955 | 4.5986   | 5.1932  | 0.0000 | 0.0000 | 0.0000 |
| 437   | CU   | 17.7964  | 2.3361   | 6.3057  | 0.0000 | 0.0000 | 0.0000 |
| 438   | CU   | -26.7721 | 4.8546   | 6.7953  | 0.0000 | 0.0000 | 0.0000 |
| 455   | CU   | 19.3653  | 1.3488   | 6.9555  | 0.0000 | 0.0000 | 0.0000 |
| 456   | CU   | -51.0623 | -16.2342 | 30.7674 | 0.0000 | 0.0000 | 0.0000 |
| 473   | CU   | 20.0387  | 0.1691   | 7.4057  | 0.0000 | 0.0000 | 0.0000 |
| 491   | CU   | 19.9011  | -1.2949  | 7.6540  | 0.0000 | 0.0000 | 0.0000 |

|     |    |          |         |          |        |        |        |
|-----|----|----------|---------|----------|--------|--------|--------|
| 509 | CU | 19.0867  | -3.1718 | 7.6357   | 0.0000 | 0.0000 | 0.0000 |
| 527 | CU | 17.4864  | -5.6104 | 6.9702   | 0.0000 | 0.0000 | 0.0000 |
| 545 | CU | 13.9962  | -8.5246 | 3.9348   | 0.0000 | 0.0000 | 0.0000 |
| 563 | CU | -5.4390  | -0.7202 | -24.5621 | 0.0000 | 0.0000 | 0.0000 |
| 580 | CU | 5.7273   | 21.9633 | 17.7291  | 0.0000 | 0.0000 | 0.0000 |
| 581 | CU | -47.2204 | 19.3968 | 31.2907  | 0.0000 | 0.0000 | 0.0000 |
| 596 | CU | 15.5960  | 23.8485 | 14.0029  | 0.0000 | 0.0000 | 0.0000 |
| 597 | CU | -23.5228 | -3.5276 | 7.4958   | 0.0000 | 0.0000 | 0.0000 |
| 611 | CU | 43.7298  | 24.3465 | 36.7553  | 0.0000 | 0.0000 | 0.0000 |
| 612 | CU | -18.1562 | -3.1609 | 6.1418   | 0.0000 | 0.0000 | 0.0000 |
| 626 | CU | -15.2513 | -3.0357 | 5.8416   | 0.0000 | 0.0000 | 0.0000 |
| 639 | CU | -13.5531 | -3.1312 | 5.5771   | 0.0000 | 0.0000 | 0.0000 |
| 651 | CU | -12.1656 | -3.2317 | 5.0634   | 0.0000 | 0.0000 | 0.0000 |
| 661 | CU | 24.5286  | 38.4875 | 31.6359  | 0.0000 | 0.0000 | 0.0000 |
| 662 | CU | -9.8397  | -3.2437 | 4.0557   | 0.0000 | 0.0000 | 0.0000 |
| 671 | CU | 19.5894  | 13.2170 | 7.3340   | 0.0000 | 0.0000 | 0.0000 |
| 672 | CU | -5.7573  | -3.1784 | 2.3746   | 0.0000 | 0.0000 | 0.0000 |
| 680 | CU | 14.6914  | 6.6245  | 7.6449   | 0.0000 | 0.0000 | 0.0000 |
| 681 | CU | 1.5137   | -1.5521 | -2.5731  | 0.0000 | 0.0000 | 0.0000 |
| 682 | CU | 2.7057   | 3.3362  | 1.1954   | 0.0000 | 0.0000 | 0.0000 |
| 683 | CU | 2.0820   | 6.6816  | 2.2607   | 0.0000 | 0.0000 | 0.0000 |
| 684 | CU | 1.1377   | 9.5956  | 3.0478   | 0.0000 | 0.0000 | 0.0000 |
| 685 | CU | -0.1345  | 11.7662 | 3.4708   | 0.0000 | 0.0000 | 0.0000 |
| 686 | CU | -1.7617  | 12.7750 | 3.2467   | 0.0000 | 0.0000 | 0.0000 |
| 687 | CU | -3.6287  | 11.6312 | 1.3050   | 0.0000 | 0.0000 | 0.0000 |
| 688 | CU | 0.7685   | -0.5812 | -15.8757 | 0.0000 | 0.0000 | 0.0000 |

FRAME ELEMENT FORCES

| FRAME | LOAD | LOC     | P      | V2         | V3   | T    | M2   | M3        |
|-------|------|---------|--------|------------|------|------|------|-----------|
| 2280  | CU   |         |        |            |      |      |      |           |
|       |      | 0.00    | -12.59 | -9.264E-03 | 0.00 | 0.00 | 0.00 | 0.00      |
|       |      | 2.6E-01 | -12.59 | -4.632E-03 | 0.00 | 0.00 | 0.00 | 1.819E-03 |
|       |      | 5.2E-01 | -12.59 | 0.00       | 0.00 | 0.00 | 0.00 | 2.425E-03 |
|       |      | 7.9E-01 | -12.59 | 4.632E-03  | 0.00 | 0.00 | 0.00 | 1.819E-03 |
|       |      | 1.05    | -12.59 | 9.264E-03  | 0.00 | 0.00 | 0.00 | 0.00      |
| 2281  | CU   |         |        |            |      |      |      |           |
|       |      | 0.00    | -14.87 | -9.264E-03 | 0.00 | 0.00 | 0.00 | 0.00      |
|       |      | 2.6E-01 | -14.87 | -4.632E-03 | 0.00 | 0.00 | 0.00 | 1.819E-03 |
|       |      | 5.2E-01 | -14.87 | 0.00       | 0.00 | 0.00 | 0.00 | 2.425E-03 |
|       |      | 7.9E-01 | -14.87 | 4.632E-03  | 0.00 | 0.00 | 0.00 | 1.819E-03 |
|       |      | 1.05    | -14.87 | 9.264E-03  | 0.00 | 0.00 | 0.00 | 0.00      |

|      |    |         |            |            |      |      |           |
|------|----|---------|------------|------------|------|------|-----------|
| 2282 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -16.17     | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -16.17     | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -16.17     | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -16.17     | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -16.17     | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2283 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -16.44     | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -16.44     | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -16.44     | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -16.44     | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -16.44     | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2284 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -15.68     | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -15.68     | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -15.68     | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -15.68     | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -15.68     | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2285 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -13.91     | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -13.91     | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -13.91     | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -13.91     | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -13.91     | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2286 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -11.22     | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -11.22     | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -11.22     | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -11.22     | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -11.22     | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2287 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -7.83      | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -7.83      | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -7.83      | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -7.83      | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -7.83      | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2288 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -4.05      | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -4.05      | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -4.05      | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -4.05      | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -4.05      | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2289 | CU |         |            |            |      |      |           |
|      |    | 0.00    | -1.872E-01 | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | -1.872E-01 | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | -1.872E-01 | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | -1.872E-01 | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | -1.872E-01 | 9.264E-03  | 0.00 | 0.00 | 0.00      |
| 2290 | CU |         |            |            |      |      |           |
|      |    | 0.00    | 3.73       | -9.264E-03 | 0.00 | 0.00 | 0.00      |
|      |    | 2.6E-01 | 3.73       | -4.632E-03 | 0.00 | 0.00 | 1.819E-03 |
|      |    | 5.2E-01 | 3.73       | 0.00       | 0.00 | 0.00 | 2.425E-03 |
|      |    | 7.9E-01 | 3.73       | 4.632E-03  | 0.00 | 0.00 | 1.819E-03 |
|      |    | 1.05    | 3.73       | 9.264E-03  | 0.00 | 0.00 | 0.00      |

**4.3.2 Diseño de los elementos:** Aquí solo se muestran los más criticos debido a el gran número de elementos.

1/19/01 12:44:03

M A T E R I A L P R O P E R T Y D A T A

| MAT LABEL | MODULUS OF ELASTICITY | POISSON'S RATIO | THERMAL COEFF | WEIGHT PER UNIT VOL | MASS PER UNIT VOL |
|-----------|-----------------------|-----------------|---------------|---------------------|-------------------|
| STEEL     | 199957598             | 0.300           | 1.170E-05     | 76.820              | 7.827             |

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M A T E R I A L D E S I G N D A T A

| MAT LABEL | DESIGN CODE | STEEL FY   | CONCRETE FC | REBAR FY | CONCRETE FCS | REBAR FYS |
|-----------|-------------|------------|-------------|----------|--------------|-----------|
| STEEL     | S           | 227514.285 |             |          |              |           |

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1/19/01 12:44:04

F R A M E S E C T I O N P R O P E R T Y D A T A

| SECTION LABEL | MAT LABEL | SECTION TYPE | DEPTH     | FLANGE WIDTH TOP | FLANGE THICK TOP | WEB THICK | FLANGE WIDTH BOTTOM | FLANGE THICK BOTTOM |
|---------------|-----------|--------------|-----------|------------------|------------------|-----------|---------------------|---------------------|
| N6            | STEEL     |              | 2.642E-02 | 0.000            | 0.000            | 2.159E-03 | 0.000               | 0.000               |

F R A M E S E C T I O N P R O P E R T Y D A T A

| SECTION LABEL | AREA      | TORSIONAL INERTIA | MOMENTS OF INERTIA I33 | I22   | SHEAR AREAS A2 | A3        |
|---------------|-----------|-------------------|------------------------|-------|----------------|-----------|
| N6            | 1.645E-04 | 0.000             | 0.000                  | 0.000 | 9.302E-05      | 9.302E-05 |

F R A M E S E C T I O N P R O P E R T Y D A T A

| SECTION LABEL | SECTION S33 | MODULII S22 | PLASTIC MODULII Z33 | Z22       | RADII OF GYRATION R33 | R22       |
|---------------|-------------|-------------|---------------------|-----------|-----------------------|-----------|
| N6            | 0.000       | 0.000       | 1.274E-06           | 1.274E-06 | 8.610E-03             | 8.610E-03 |

L O A D C O M B I N A T I O N M U L T I P L I E R S

| COMBO | TYPE | CASE   | FACTOR | TYPE         | TITLE |
|-------|------|--------|--------|--------------|-------|
| CU    | ADD  | MUERTA | 1.4000 | STATIC(DEAD) | COMB1 |
|       |      | VIVA   | 1.7000 | STATIC(LIVE) |       |

C O D E P R E F E R E N C E S

Code: AISC-LRFD93

Phi\_bending : 0.9  
Phi\_tension : 0.9  
Phi\_compression : 0.85  
Phi\_shear : 0.9

S T E E L S T R E S S C H E C K E L E M E N T I N F O R M A T I O N (AISC-LRFD93)

| FRAME ID | SECTION ID | FRAMING TYPE | LLRF FACTOR | L_ratio MAJOR | L_ratio MINOR | K MAJOR | K MINOR |
|----------|------------|--------------|-------------|---------------|---------------|---------|---------|
|----------|------------|--------------|-------------|---------------|---------------|---------|---------|

|      |    |        |       |       |       |       |       |
|------|----|--------|-------|-------|-------|-------|-------|
| 2280 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2281 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2282 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2283 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2284 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2285 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2286 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2287 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2288 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2289 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2290 | N6 | MOMENT | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

STEEL STRESS CHECK OUTPUT (AISC-LRFD93)

| FRAME ID | SECTION ID | COMBO | MOMENT RATIO | INTERACTION CHECK       | AXL | B33 | B22 | SHEAR22 COMBO | SHEAR22 RATIO | SHEAR33 COMBO | SHEAR33 RATIO |
|----------|------------|-------|--------------|-------------------------|-----|-----|-----|---------------|---------------|---------------|---------------|
| 2280     | N6         | CU    | (C) 0.827    | = 0.808 + 0.019 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2281     | N6         | CU    | (C) 0.980    | = 0.954 + 0.026 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2282     | N6         | CU    | (C) 1.069    | = 1.038 + 0.031 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2283     | N6         | CU    | (C) 1.088    | = 1.055 + 0.033 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2284     | N6         | CU    | (C) 1.035    | = 1.006 + 0.029 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2285     | N6         | CU    | (C) 0.915    | = 0.892 + 0.023 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2286     | N6         | CU    | (C) 0.737    | = 0.720 + 0.017 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2287     | N6         | CU    | (C) 0.515    | = 0.502 + 0.013 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2288     | N6         | CU    | (C) 0.270    | = 0.260 + 0.010 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2289     | N6         | CU    | (C) 0.015    | = 0.006 + 0.009 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |
| 2290     | N6         | CU    | (T) 0.065    | = 0.055 + 0.009 + 0.000 |     |     |     | CU            | 0.001         | CU            | 0.000         |





## 5. DISEÑO ESTRUCTURAL EN CONCRETO

### 5.1. DISEÑO ESTRUCTURAL DE AULAS

NORMA NSR-98

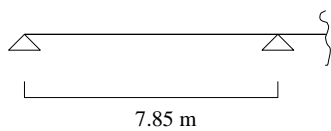
#### 5.1.1 Materiales. Anexo

#### 5.1.2 Predimensionamiento y Secciones Definitivas.

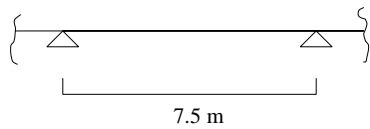
Sistema de Pórtico

##### 5.1.2.1 Vigas aéreas.

##### 5.1.2.1.1 Evaluación de peraltes. Tabla C.9-1(b)



| TABLA       |               |
|-------------|---------------|
| C.9-1(a)    | C.9-1(b)      |
| $L/12=0.65$ | $L/18.5=0.42$ |



|             |             |
|-------------|-------------|
| $L/14=0.54$ | $L/21=0.36$ |
|-------------|-------------|

El peralte de acuerdo a la Tabla C.9-1(a) sería de 63 cm y de acuerdo a la Tabla C.9-1(b) sería de 41 cm, así que tomamos un promedio para luego hacer una revisión de las deflexiones, entonces el peralte promedio sería de 50 cm.

#### 5.1.2.1.2 Ancho de Alma.

$$b_w \geq 0.25 \text{ mt} \quad \text{C.21.3.1(d)}$$

Ancho seleccionado = 0.35 mt

#### 5.1.2.2 Losa de Entrepiso

5.1.2.2.1 Tipo de Losa Aligerada y armada en una dirección

5.1.2.2.2 Materiales Anexo

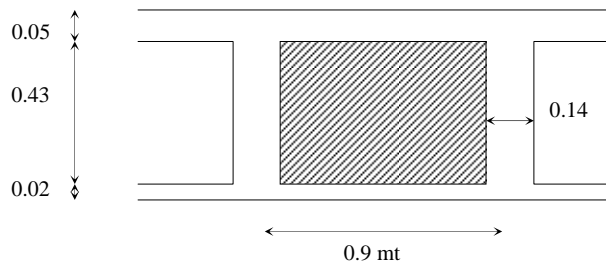
#### 5.1.2.2.3 Predimensionamiento

5.1.2.2.4 Evaluación de Peralte: tabla C.9-1(b)

Tomado del predimensionamiento de vigas

$$h = 50 \text{ cm}$$

### 5.1.2.2.5 Geometría de la Losa.



Ancho de nervios

$$b_w (\text{nervios}) = 0.14 \text{ m} > 0.10 \text{ m} \quad \text{C.13.2.2(a)}$$

Separación entre nervios centro a centro

$$2.5 * e_{\text{losa}} = 2.5 * 50 = 125 \text{ cm} \quad \text{C.13.2.2(c)}$$

Pero como la  $S_{\text{max}} = 1.2 \text{ m}$ ; Si se elige una separación centro a centro de 1.2 m el refuerzo en nervios se incrementa ya que posee una mayor carga aferente, por este motivo se decide adoptar una separación entre nervios (centro a centro) de 90 cm.

Separación entre riostras.

$$10h \text{ o } 4 \text{ m El menor: } 10 * 0.5 = 5 \text{ m} \Rightarrow S = 3 \text{ m} \quad \text{C.13.2.2(d)}$$

Escogemos esta separación por la disposición en el sitio de los materiales para la elaboración de los casetones.

Espesor de diafragma

$$e = 0.05 \text{ m} \quad \text{C.21.6.4.1}$$

**5.1.2.2.6 Análisis de cargas.** Para este punto tenemos en cuenta una posible falla en la conformación estructural de la losa, resultándose posiblemente un sobrepeso, para

contrarrestar dicho aspecto tomamos un espesor de losa promedio de 7cm y un ancho promedio de nervios de 16cm y un solado inferior de 3 cm

$$\text{Carga de placa superior} = 24 * 0.07 = 1.68 \text{ KNw/m}^2$$

$$\text{Carga de nervios} = 0.16 * 0.43 * 24 / 0.9 = 1.83 \text{ KNw/m}^2$$

$$\text{Carga de solado inferior} = 0.03 * 22 * 0.74 / 0.9 = 0.54 \text{ KNw/m}^2$$

$$\text{Casetón} = 0.25 \text{ KNw/m}^2$$

$$\text{Carga unitaria de losa} = 4.30 \text{ KNw/m}^2$$

Mampostería = Evaluada para cada pórtico, ya que los muros Presentados, se encuentran sobre vigas (no hay presencia de muros sobre la placa). Esta aclaración ira sobre planos.

$$\text{Acabados} = 1.5 \text{ KNw/m}^2$$

$$\text{Carga total de losa} = 5.80 \text{ KNw/m}^2$$

### 5.1.2.3 Columnas

Predimensionamiento.

Concepto : Columna corta

$$P Fs = 0.85f_c(Ag - Ast) + f_y Ast$$

Ag: Area bruta de concreto.

Ast: área total de refuerzo en (%Ag) para el caso (1%Ag)

- Cargas.

- Carga Muerta

- Carga de Losa = 5.80 KNw/m<sup>2</sup>

- Carga de Muros:
  - Altura de muro : 2.45 m
  - Espesor del muro : 0.12 m
  - Peso unitario de ladrillo
    - Farol : 13 KNw/m<sup>3</sup>
    - Peso unitario de repello : 21 KNw/m<sup>3</sup>
  - Carga de repello (4 cm) : 0.84 KNw/m<sup>2</sup>
  - Carga de mampostería : 1.56 KNw/m<sup>2</sup>

Carga total por longitud = 5.88 KNw/m

Area aferente = 42.72 m<sup>2</sup>

Longitud de muros aferente = 10.98 m

Peso por aferencia de losa = 5.80 \* 42.72 = 248 KNw

- Peso por aferencia de muros = 5.88 \* 10.98 = 65 KNw

- La carga del segundo piso es evaluada con el peso de cubierta 0.53 KNw/m<sup>2</sup>

Peso por aferencia de cubierta = 0.53 \* 42.72 = 23 KNw

- Carga total sobre columna = 248 + 65 + 23 = 336 KNw

- Carga Viva

- Carga viva para Entrepiso = 2 KNw/m<sup>2</sup>

- Carga viva para Cubierta= 0.35 KNw/m<sup>2</sup>

- Carga total sobre Columna = 2.35 \* 42.72 = 100 KNw

- Carga Ultima = 1.4 D + 1.7 L = 1.4\*336 + 1.7\*100 = 640 KNw

Podemos utilizar un factor de seguridad entre 2 y 3, para el caso tomamos 3.

$$3 P = 0.85 f_c (A_g - A_{st}) + f_y A_{st}$$

$$3*0.64=0.85*21(Ag-0.01Ag) + 420*0.01Ag$$

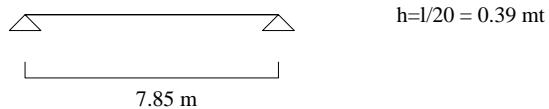
$$Ag = 0.08779 \text{ m}^2$$

Para una sección cuadrada de  $b = h = 30 \text{ cm}$

Teniendo en cuenta el anterior resultado tomamos una sección de  $35 \times 35 \text{ cm}$  para columnas y de  $40 \times 40$  para controlar los efectos torsionales de la estructura.

#### 5.1.2.4 Vigas de cimentación.

##### 5.1.2.4.1 Evaluación de peralte: (como viga de amarre) C.15.13.3



Peralte seleccionado 50 cm

##### 5.1.2.4.2 Ancho del Alma: (como viga de amarre)

La selección de la viga de amarre debe ser capaz de soportar una fuerza de compresión o tensión de 0.25 veces la carga vertical total del elemento que tenga la mayor carga entre los que interconecta, por tanto.

$$P = 0.25 F_{vmax} \quad \text{A.3.6.4.2}$$

Por tratarse de una viga de cimentación podemos escoger un ancho de 35 cm

$$Ag \approx 0.35*0.45 = 0.158 \text{ m}^2$$

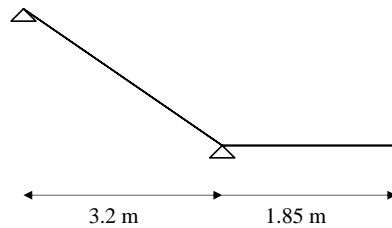
$$P_{max} = 0.1f_c A_g \quad C.21.3.1(a)$$

$$F_{vmax} = \frac{0.1f_c A_g}{0.25} = \frac{0.1 * 21 * 0.158}{0.25} = 1.327 MN_w = 1327 KN_w$$

### 5.1.2.5 Diseño de Escalera Autoportante.

#### 5.1.2.5.1 Materiales: Generales.

#### 5.1.2.5.2 Evaluación de Peralte.



Para seleccionar el peralte hacemos una comparación entre la tabla C.9-1(a) y la C.9.1(b), donde;

| Peralte según Tabla (m) |               |               |
|-------------------------|---------------|---------------|
| C.9-1(a)                | C.9-1(b)      |               |
| <p>3.2 m</p>            | $L/16 = 0.20$ | $L/24 = 0.13$ |
| <p>1.85 m</p>           | $L/7 = 0.26$  | $L/10 = 0.19$ |

Para evaluar la estructura, tomamos un espesor de placa de 25 cm

Recubrimiento: 3cm ;  $d = 22$  cm.

### 5.1.2.5.3 Evaluación de Cargas.

**5.1.2.5.3.1 Carga Muerta.** Peso Propio =  $0.25 \cdot 24 = 6.0 \text{ KNw/m}^2$  (Por metro cuadrado en sentido normal a su plano).

Acabado Superior:

|               |                        |
|---------------|------------------------|
| Material      | Granito                |
| Espesor       | 3cm                    |
| Peso Unitario | $15.5 \text{ KNw/m}^3$ |

Peso propio de acabado superior para tramo inclinado =  $0.465(0.17+0.4)/0.4 = 0.66 \text{ KNw/m}^2$

Peso propio de acabado superior para descanso =  $0.465 \text{ KNw/m}^2$

Cielo Raso : Pañete

|               |                      |
|---------------|----------------------|
| Material      | Mortero              |
| Espesor       | 2.5cm                |
| Peso Unitario | $22 \text{ KNw/m}^3$ |

Peso propio de cielo raso =  $22 \cdot 0.025 = 0.55 \text{ KNw/m}^2$  (en sentido normal a su plano)

Peldaños =  $0.17 \cdot 24 / 2 = 2.04 \text{ KNw/m}^2$

### 5.1.2.5.3.2 Carga Viva.

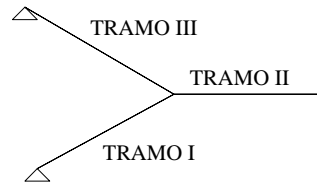
Total =  $5 \text{ KNw/m}^2$

### 5.1.2.5.3.3 Combinaciones de Carga.

- 1 :  $1.4 D + 1.7 L$
- 2 :  $0.75 C_u + E_z$

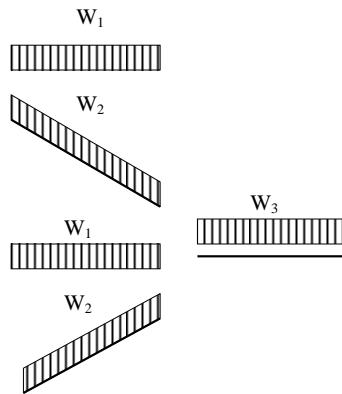


Se hace combinaciones de carga para los diferentes tramos



| COMBINACION | TRAMO CARGADO |    |     |
|-------------|---------------|----|-----|
|             | I             | II | III |
| 1           | X             | -  | -   |
| 2           | -             | X  | -   |
| 3           | -             | -  | X   |
| 4           | X             | X  | -   |
| 5           | -             | X  | X   |
| 6           | X             | -  | X   |
| 7           | X             | X  | X   |

#### 5.1.2.5.3.4 Distribución de Cargas.



- $W_1$  : Carga de Peldaños, carga de acabado superior, Carga Viva.
- $W_2$  : Cielo raso, Peso Propio.
- $W_3$  : Carga de acabado superior, Cielo Raso, Peso Propio, Carga Viva

| TIPO | CARGAS (KNw/m <sup>2</sup> ) |
|------|------------------------------|
|------|------------------------------|

|               |                     | <b>W<sub>1</sub></b> | <b>W<sub>2</sub></b> | <b>W<sub>3</sub></b> |
|---------------|---------------------|----------------------|----------------------|----------------------|
| <b>Muerta</b> | <b>Peldaños</b>     | 2.04                 | -                    | -                    |
|               | <b>Acabado Sup.</b> | 0.66                 | -                    | 0.465                |
|               | <b>Cielo Raso</b>   | -                    | 0.55                 | 0.55                 |
|               | <b>Peso Propio</b>  | -                    | 6.0                  | 6.0                  |
| <b>Viva</b>   |                     | 5                    | -                    | 5                    |

**5.1.2.5.4 Análisis Sísmico.** Por el hecho de tratarse de una estructura expuesta a excitaciones dinámicas producidas por el público, entonces es diseñada para que tenga frecuencias naturales superiores a 5Hz (B.4.7) para vibraciones verticales; Después de realizar el análisis por elementos finitos e incluyéndose el análisis dinámico se puede decir que la estructura no presenta resonancia debido a que la frecuencia de oscilación vertical para carga viva se encuentra en 14.82 Hz.

Para el análisis dinámico se empleó el espectro de la norma NSR-98 con los siguientes parámetros.

$$A_a = 0.3$$

$$I = 1.1$$

$$S = 1.5$$

$$S_a = 2.5A_a I = 0.825 \%g \text{ desde } T=0 \text{ a } 0.72 \text{ seg.}$$

Se analiza la estructura con base en vectores propios y cuatro modos de vibración, alcanzándose en este punto un 59.88% de participación de la masa de la escalera, Además, consideramos que la estructura posee una capacidad de disipación de energía baja, para esto  $R=3$ .

Controlamos la deflexión en el volado con 1/500 (elástica), para de esta manera reducir considerablemente la amplitud de vibración.

La deflexión máxima permitida será de  $1.85/500 = 0.0037 \text{ m} = 3.7\text{mm}$ . (volado) y  $5.05/500 = 0.0101 \text{ m} = 1 \text{ cm}$ . (toda la escalera).

### 5.1.2.5.5 Análisis Dinámico.

ESCALERA AUTOPORTANTE

D I S P L A C E M E N T   D E G R E E S   O F   F R E E D O M

(A) = Active DOF, equilibrium equation  
 (-) = Restrained DOF, reaction computed  
 (+) = Constrained DOF  
 ( ) = Null DOF

| JOINTS |     | UX | UY | UZ | RX | RY | RZ |
|--------|-----|----|----|----|----|----|----|
| 1 TO   | 6   | -  | -  | -  | -  | -  | -  |
| 7 TO   | 204 | A  | A  | A  | A  | A  | A  |
| 205 TO | 210 | -  | -  | -  | -  | -  | -  |

T O T A L   A S S E M B L E D   J O I N T   M A S S E S

IN GLOBAL COORDINATES

|       | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| TOTAL | 1.099072 | 1.099072 | 1.099072 | .000000 | .000000 | .000000 |

T O T A L   A C C E L E R A T E D   M A S S   A N D   L O C A T I O N

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

|       | UX       | UY       | UZ       |
|-------|----------|----------|----------|
| MASS  | 1.073271 | 1.073271 | 1.073271 |
| X-LOC | 1.850000 | 1.850000 | 1.850000 |
| Y-LOC | 2.359609 | 2.359609 | 2.359609 |
| Z-LOC | 1.450000 | 1.450000 | 1.450000 |

M O D A L   P E R I O D S   A N D   F R E Q U E N C I E S

| MODE | PERIOD<br>(TIME) | FREQUENCY<br>(CYC/TIME) | FREQUENCY<br>(RAD/TIME) | EIGENVALUE<br>(RAD/TIME)**2 |
|------|------------------|-------------------------|-------------------------|-----------------------------|
| 1    | 0.067456         | 14.824433               | 93.144661               | 8675.928                    |
| 2    | 0.038874         | 25.724463               | 161.631566              | 26124.763                   |
| 3    | 0.033967         | 29.440647               | 184.981041              | 34217.985                   |
| 4    | 0.025196         | 39.688798               | 249.372074              | 62186.431                   |

M O D A L   P A R T I C I P A T I O N   F A C T O R S

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

| MODE | PERIOD | UX | UY | UZ |
|------|--------|----|----|----|
|------|--------|----|----|----|

|   |          |           |           |           |
|---|----------|-----------|-----------|-----------|
| 1 | 0.067456 | 0.274325  | 2.01E-08  | -0.639631 |
| 2 | 0.038874 | 0.268977  | -1.22E-06 | -0.329016 |
| 3 | 0.033967 | -4.88E-07 | -0.367721 | 2.31E-07  |
| 4 | 0.025196 | 0.741352  | 7.47E-05  | 0.354092  |

M O D A L P A R T I C I P A T I N G M A S S R A T I O S

| MODE | PERIOD   | INDIVIDUAL MODE (PERCENT) |         |         | CUMULATIVE SUM (PERCENT) |         |         |
|------|----------|---------------------------|---------|---------|--------------------------|---------|---------|
|      |          | UX                        | UY      | UZ      | UX                       | UY      | UZ      |
| 1    | 0.067456 | 7.0117                    | 0.0000  | 38.1198 | 7.0117                   | 0.0000  | 38.1198 |
| 2    | 0.038874 | 6.7410                    | 0.0000  | 10.0861 | 13.7526                  | 0.0000  | 48.2059 |
| 3    | 0.033967 | 0.0000                    | 12.5987 | 0.0000  | 13.7526                  | 12.5987 | 48.2059 |
| 4    | 0.025196 | 51.2082                   | 0.0000  | 11.6821 | 64.9608                  | 12.5987 | 59.8880 |

M O D A L L O A D P A R T I C I P A T I O N R A T I O S

| LOAD, ACC, OR NLLINK/DEF<br>(TYPE) | STATIC<br>(PERCENT) | DYNAMIC<br>(PERCENT) | EFFECTIVE<br>PERIOD |
|------------------------------------|---------------------|----------------------|---------------------|
| LOAD MUERTA                        | 96.4794             | 56.6860              | 0.062060            |
| LOAD VIVA1                         | 82.5822             | 38.9079              | 0.040457            |
| LOAD VIVA2                         | 99.6598             | 80.8358              | 0.066095            |
| LOAD VIVA3                         | 82.5797             | 38.9052              | 0.040457            |
| ACC UX                             | 97.9624             | 64.9608              | 0.048804            |
| ACC UY                             | 72.0794             | 12.5987              | 0.029753            |
| ACC UZ                             | 97.1619             | 59.8880              | 0.063680            |

(\*) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

R E S P O N S E S P E C T R U M A C C E L E R A T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECZ -----

| MODE | PERIOD   | DAMP-RATIO | U1      | U2      | U3       |
|------|----------|------------|---------|---------|----------|
| 1    | 0.067456 | 0.050000   | .000000 | .000000 | 8.093250 |
| 2    | 0.038874 | 0.050000   | .000000 | .000000 | 8.093250 |
| 3    | 0.033967 | 0.050000   | .000000 | .000000 | 8.093250 |
| 4    | 0.025196 | 0.050000   | .000000 | .000000 | 8.093250 |

### 5.1.2.5.8 Cálculo de Refuerzos.

#### REFUERZO LONGITUDINAL NEGATIVO (SUPERIOR)

$$\mu = 4.8 \text{ T-m/m}$$

$$\rho = 0.21/4.2 * (0.85 - \sqrt{(0.85^2 - 4.8/(0.59*0.9*0.21*21^2))}) = 0.00297$$

$$A_s = 0.00297*100*21 = 6.25 \text{ cm}^2$$

$$S = 1.29/6.25 * 100 = 20 \text{ cm}$$

Refuerzo N4 c/ 20 cm

#### REFUERZO LONGITUDINAL POSITIVO (INFERIOR)

$$M_u = 0.83 \text{ T-m/m}$$

$$\rho = \rho_{\min} = 0.002$$

$$A_s = 0.002 * 100 * 21 = 4.2 \text{ cm}^2$$

$$S = 1.29/4.2 * 100 \approx 25 \text{ cm}$$

Refuerzo N4 c/ 25 cm

#### REFUERZO TRANSVERSAL NEGATIVO (SUPERIOR)

Descanso

$$M_u = 6 \text{ T-m/m}$$

$$\rho = 0.21/4.2(0.85 - \sqrt{(0.85 - 6/(0.59 * 0.9 * 0.21 * 21^2))}) = 0.00375$$

$$A_s = 0.00375 * 100 * 21 = 7.88 \text{ cm}^2$$

$$S = 1.29/7.88 * 100 \approx 15 \text{ cm}$$

Refuerzo N4 c/ 15 cm

Tramos de Peldaño

$$M_u = 3 \text{ T-m/m}$$

$$\rho = \rho_{\min} = 0.002$$

$$A_s = 0.002 * 100 * 21 = 4.2 \text{ cm}^2$$

$$S = 1.29/4.2 * 100 \approx 25 \text{ cm}$$

Refuerzo N4 c/ 0.25 m

#### REFUERZO TRANSVERSAL POSITIVO (INFERIOR)

$$M_u = 0.24 \text{ T-m/m}$$

$$\rho = \rho_{\min} = 0.002$$

$$A_s = 4.2 \text{ cm}^2$$

$$S = 1.29/4.2 * 100 \approx 0.25 \text{ m}$$

#### CALCULO DE REFUERZO EN VIGAS INTERIORES

Vigas longitudinales (Sentido de las escaleras)

$$M_u = 6.55 \text{ T-m/m}$$

$$V_u = 31.3 \text{ T/m}$$

Cálculo del refuerzo longitudinal a flexión:

$$\rho = 0.21/4.2 * (0.85 - \sqrt{(0.85^2 - 6.55/(0.59*0.9*0.21*21^2)})) = 0.0041$$

$$A_s = 0.0041 * 25 * 21 = 2.16 \text{ cm}^2$$

Refuerzo 2 N5

Cálculo del refuerzo por cortante

$$V_u = 31.3/0.21 = 149 \text{ T/m}^2 = 14.9 \text{ Kg/cm}^2$$

$$\phi V_c = 0.85 * 0.53 \sqrt{21} = 6.54 \text{ Kg/cm}^2$$

$$V_s = V_u - \phi V_c / \phi = 14.9 - 6.54/0.85 = 9.84 \text{ Kg/cm}^2$$

$$S = A_{fy}/bV_s = 1.42*4219/25*9.84 = 24 \text{ cm}$$

Para zonas de confinamiento N3 c/ 0.10 m

Para el resto N3 c/ 0.15 m

Viga transversal en descanso

$$M_u = 10.7 \text{ T-m/m}$$

$$V_u = 22.9 \text{ T/m}$$

Cálculo del refuerzo longitudinal a flexión.

$$\rho = 0.21/4.2(0.85 - \sqrt{(0.85^2 - 10.7/(0.59*0.9*0.21*21^2)}) = 0.007$$

$$A_s = 0.007 * 25 * 21 = 3.66 \text{ cm}^2$$

Refuerzo 2N5

Cálculo del refuerzo por cortante.

$$V_u = 22.9/0.21 = 109 \text{ T/m}^2 = 10.9 \text{ Kg/cm}^2$$

$$\phi V_c = 0.85 * 0.53 \sqrt{211} = 6.54 \text{ Kg/cm}^2$$

$$V_s = V_u - \phi V_c / \phi = 10.9 - 6.54/0.85 = 5.13 \text{ Kg/cm}^2$$

$$S = A_{ufy}/bV_s = 1.42*4219/25*5.13 = 46 \text{ cm}$$

Para zonas de confinamiento N3 c/ 0.1 m

Para el resto N3 c/ 0.15 m

**5.1.2.5.9 Despiece:** Ver anexos

**5.1.2.6 Recubrimientos.** Generales.

**5.1.3 Evaluación de carga permanente**

**5.1.3.1 Bloque I**

**5.1.3.1.1 Carga Muerta:** (B.3)

**Nivel + 2.95**

- ◆ Peso propio de los elementos estructurales

- Los elementos estructurales como vigas y columnas son analizados inherentemente en el programa por tal motivo no son especificados en este análisis.

- Area de la placa = 414.63 m<sup>2</sup>

$$\text{Total peso propio de losa} = 414.63 * 5.80 = 2405 \text{ KNw}$$

◆ Mampostería:

Altura de muro : 2.45 m

Espesor del muro : 0.12 m

Peso unitario de ladrillo

Farol : 13 KNw/m<sup>3</sup>

Peso unitario de repello : 21 KNw/m<sup>3</sup>

Carga de repello (4 cm) : 0.84 KNw/m<sup>2</sup>

Carga de mampostería : 1.56 KNw/m<sup>2</sup>

Carga total por longitud = 5.88 KNw/m

Longitud de Muros = 139.30 m

Total peso de Mampostería = 1.5 \* 5.88 \* 139.30 = 1229 KNw

Utilizamos un factor de seguridad de 1.5 por la posibilidad de que sobre algunos tramos se coloque muros dobles de ladrillo farol o se cambie a bloque macizo. Para el análisis de la estructura se considerado que los muros son dobles y de ladrillo farol, considerando la posibilidad de una sobrecarga. Pero para efectos sismicos consideramos que actúa un 50% mas de carga que la consideración de los planos arquitectónicos.

$$\text{Carga por área de placa} = 1229 / 414.63 = 2.96 \text{ KNw/m}^2$$

- ◆ Escaleras Autoportantes: Reacción en el nivel de entrepiso = 75 KNw



- ◆ Total Carga Muerta = 3709 KNw

#### Nivel + 5.90

- ◆ Peso propio de los elementos estructurales

- Los elementos estructurales como vigas y columnas son analizados inherentemente en el programa por tal motivo no son especificados en este análisis.

- ◆ Cubierta:

|                         |   |                               |
|-------------------------|---|-------------------------------|
| Carga de teja AC        | = | 0.18 KNw/m <sup>2</sup>       |
| Carga de la estructura  | = | 0.10 KNw/m <sup>2</sup>       |
| Carga adicional         | = | <u>0.10 KNw/m<sup>2</sup></u> |
| Total carga de cubierta | = | 0.38 KNw/m <sup>2</sup>       |

|                            |   |                                       |
|----------------------------|---|---------------------------------------|
| Area de cubierta(planta)   | = | 229.63 m <sup>2</sup>                 |
| Inclinación de la cubierta | = | 15°                                   |
| Area de Cubierta inclinada | = | 229.63/cos15° = 310.20 m <sup>2</sup> |
| Peso de cubierta           | = | 310.2*0.38 = 118 KNw                  |

- ◆ Cielo Raso:

|                    |   |                         |
|--------------------|---|-------------------------|
| Madera             | = | 0.15 KNw/m <sup>2</sup> |
| Peso de cielo raso | = | 0.15*229.63 = 34.44 KNw |

- ◆ Domo Acrílico (φ = 4 m):

|                    |   |            |
|--------------------|---|------------|
| Carga por longitud | = | 0.30 KNw/m |
| Longitud domo      | = | 3.8 m      |
| Peso del domo      | = | 1.14 KNw   |

- ◆ Marquesina:

|                           |   |                          |
|---------------------------|---|--------------------------|
| Carga de vidrio (6mm)     | = | 0.154 KNw/m <sup>2</sup> |
| Carga de la estructura    | = | 0.10 KNw/m <sup>2</sup>  |
| Carga adicional           | = | 0.05 KNw/m <sup>2</sup>  |
| Total carga de Marquesina | = | 0.304 KNw/m <sup>2</sup> |

|                    |   |                       |
|--------------------|---|-----------------------|
| Area cubierta      | = | 163.43 m <sup>2</sup> |
| Peso de Marquesina | = | 50 KNw                |

◆ Muro Culata:

|                           |   |                         |
|---------------------------|---|-------------------------|
| Altura de muro            | : | 1.0 m                   |
| Espesor del muro          | : | 0.12 m                  |
| Peso unitario de ladrillo |   |                         |
| Farol                     | : | 13 KNw/m <sup>3</sup>   |
| Peso unitario de repello  | : | 21 KNw/m <sup>3</sup>   |
| Carga de repello (4 cm)   | : | 0.84 KNw/m <sup>2</sup> |
| Carga de mampostería      | : | 1.56 KNw/m <sup>2</sup> |
| Carga de Cinta de amarre  |   |                         |
| Secc. 0.12*0.15 mt        | : | 0.432 KNw/m             |
| Carga total sin cinta     | = | 2.4 KNw/m <sup>2</sup>  |
| Carga total por longitud  | = | 2.83 KNw/m              |

Longitud de Muro de Culata = 77.7 m  
 Total peso de Culata = 2.83 \* 77.7 = 220 KNw

◆ Total Carga Muerta = 424 KNw

**5.1.3.1.2 Carga Viva: (B.4)**

### Nivel +2.95

- ◆ Losa de entrepiso
  - Nervio I = 2 KNw/m<sup>2</sup>
  - Nervio II, III y IV = 3 KNw/m<sup>2</sup>
  - Nervio V = 4 KNw/m<sup>2</sup>
  
  - Area aferente Nervio I = 168.38 m<sup>2</sup>
  - Area aferente Nervio II, III y IV = 143.5 m<sup>2</sup>
  - Area aferente Nervio V = 102.75 m<sup>2</sup>
  
  - Total carga viva =  $2*169+3*144+4*103$  = 1182 KNw
- ◆ Escaleras = 42.94
- ◆ Total carga Viva = 1225 KNw

### Nivel +5.90

- ◆ Para cubierta con pendiente mayor al 20 % = 0.35 KNw/m<sup>2</sup>  
Total Carga Viva =  $0.35 * (229.63+163.43) = 138$  KNw

### 5.1.3.2 Bloque II

#### 5.1.3.2.1 Carga Muerta (B.3)

### Nivel + 2.95

- ◆ Peso propio de los elementos estructurales
  - Los elementos estructurales como vigas y columnas son analizados inherentemente en el programa por tal motivo no son especificados en este análisis.
  - Area de la placa = 411.92 m<sup>2</sup>  
Total peso propio de losa =  $411.92*5.80 = 2389$  KNw

◆ Mampostería:

|                           |   |                                |
|---------------------------|---|--------------------------------|
| Altura de muro            | : | 2.45 m                         |
| Espesor del muro          | : | 0.12 m                         |
| Peso unitario de ladrillo |   |                                |
| Farol                     | : | 13 KNw/m <sup>3</sup>          |
| Peso unitario de repello  | : | 21 KNw/m <sup>3</sup>          |
| <br>                      |   |                                |
| Carga de repello (4 cm)   | : | 0.84 KNw/m <sup>2</sup>        |
| Carga de mampostería      | : | 1.56 KNw/m <sup>2</sup>        |
| <br>                      |   |                                |
| Carga total por longitud  | = | 5.88 KNw/m                     |
| Longitud de Muros         | = | 137.14 m                       |
| Total peso de Mampostería | = | 1.5 * 5.88 * 137.14 = 1210 KNw |

Utilizamos un factor de seguridad de 1.5 por la posibilidad de que sobre algunos tramos se coloque muros dobles de ladrillo farol o se cambie a bloque macizo. Para el análisis de la estructura se considerado que los muros son dobles y de ladrillo farol, considerando la posibilidad de una sobrecarga. Pero para efectos sismicos consideramos que actúa un 50% mas de carga que la consideración de los planos arquitectónicos.

$$\text{Carga por área de placa} = 1210 / 411.92 = 2.94 \text{ KNw/m}^2$$

◆ Total Carga Muerta = 3599 KNw

**Nivel + 5.90**

◆ Peso propio de los elementos estructurales

- Los elementos estructurales como vigas y columnas son analizados inherentemente en el programa por tal motivo no son especificados en este análisis.

◆ Cubierta:

|                            |   |                                       |
|----------------------------|---|---------------------------------------|
| Carga de teja AC           | = | 0.18 KNw/m <sup>2</sup>               |
| Carga de la estructura     | = | 0.10 KNw/m <sup>2</sup>               |
| Carga adicional            | = | <u>0.10 KNw/m<sup>2</sup></u>         |
| Total carga de cubierta    | = | 0.38 KNw/m <sup>2</sup>               |
| Area de cubierta(planta)   | = | 319.34 m <sup>2</sup>                 |
| Inclinación de la cubierta | = | 15°                                   |
| Area de Cubierta inclinada | = | 319.34/cos15° = 330.61 m <sup>2</sup> |
| Peso de cubierta           | = | 330.61*0.38 = 126 KNw                 |

◆ Cielo Raso:

|                    |   |                         |
|--------------------|---|-------------------------|
| Madera             | = | 0.15 KNw/m <sup>2</sup> |
| Peso de cielo raso | = | 0.15*319.34 = 47.90 KNw |

◆ Domo Acrílico (ϕ = 4 m):

|                    |   |            |
|--------------------|---|------------|
| Carga por longitud | = | 0.30 KNw/m |
| Longitud domo      | = | 20.80 m    |
| Peso del domo      | = | 6.24 KNw   |

◆ Muro Culata:

|                           |   |                       |
|---------------------------|---|-----------------------|
| Altura de muro            | : | 1.0 m                 |
| Espesor del muro          | : | 0.12 m                |
| Peso unitario de ladrillo |   |                       |
| Farol                     | : | 13 KNw/m <sup>3</sup> |
| Peso unitario de repello  | : | 21 KNw/m <sup>3</sup> |

Carga de repello (4 cm) : 0.84 KNw/m<sup>2</sup>  
 Carga de mampostería : 1.56 KNw/m<sup>2</sup>  
 Carga de Cinta de amarre  
     Secc. 0.12\*0.15 mt : 0.432 KNw/m

Carga total sin cinta = 2.4 KNw/m<sup>2</sup>  
 Carga total por longitud = 2.83 KNw/m

Longitud de Muro de Culata = 61.4 m  
 Total peso de Culata = 2.83 \* 61.4 = 174 KNw

◆ Total Carga Muerta = 354 KNw

#### 5.1.3.2.2 Carga Viva: (B.4)

##### Nivel +2.95

◆ Losa de entrepiso  
 - Nervio VI = 2 KNw/m<sup>2</sup>  
 - Nervio VII, VIII = 3 KNw/m<sup>2</sup>  
  
 - Area aferente Nervio VI = 163.31 m<sup>2</sup>  
 - Area aferente Nervio VII, VIII = 248.61 m<sup>2</sup>  
  
 Total carga viva = 2\*163+3\*249 = 1073 KNw  
  
 ◆ Total carga Viva = 1073 KNw

##### Nivel +5.90

◆ Para cubierta con pendiente mayor al 20 % = 0.35 KNw/m<sup>2</sup>  
 Total Carga Viva = 0.35 \* 319.34 = 112 KNw

### 5.1.3.3 Carga Permanente en la estructura: (Wp)

#### 5.1.3.3.1 Bloque I

##### Nivel +2.95

|       |   |                      |
|-------|---|----------------------|
| 100 % | : | Carga Muerta         |
| 60 %  | : | Carga Viva de Aulas  |
| 25 %  | : | Carga Viva Escaleras |

$$\text{Total Carga Permanente} = 3709 + 0.6 * 1182 + 0.25 * 43 = 4429 \text{ KNw}$$

$$\text{Total Carga Permanente} = 4429 \text{ KNw}$$

##### Nivel +5.90

|       |   |                        |
|-------|---|------------------------|
| 100 % | : | Carga Muerta           |
| 25 %  | : | Carga Viva de cubierta |

$$\text{Total Carga Permanente} = 424 + 0.25 * 138 = 459 \text{ KNw}$$

$$\text{Total Carga Permanente} = 459 \text{ KNw}$$

#### 5.1.3.3.2 Bloque II

##### Nivel +2.95

|       |   |                      |
|-------|---|----------------------|
| 100 % | : | Carga Muerta         |
| 60 %  | : | Carga Viva de Aulas  |
| 25 %  | : | Carga Viva Escaleras |

$$\text{Total Carga Permanente} = 3599 + 0.6 * 1073 = 4243 \text{ KNw}$$

Total Carga Permanente = 4243 KNw

#### Nivel +5.90

100 % : Carga Muerta  
25 % : Carga Viva de cubierta

Total Carga Permanente =  $354 + 0.25 * 112 = 382$  KNw

Total Carga Permanente = 382 KNw

#### 5.1.3.4 Transferencia de cargas a pórticos:

##### 5.1.3.4.1 Cargas sobre las Nervaduras

##### 5.1.3.4.1.1 Bloque I (Nivel + 2.95)

#### Cargas Distribuidas (Aferencia 0.9 mt)

| Nervio     | CM<br>KNw/m       | CV<br>KNw/m       |
|------------|-------------------|-------------------|
| <b>I</b>   | 5.22 <sup>1</sup> | 1.80 <sup>2</sup> |
| <b>II</b>  | 5.22 <sup>1</sup> | 2.7 <sup>2</sup>  |
| <b>III</b> | 5.22 <sup>1</sup> | 2.7 <sup>2</sup>  |
| <b>IV</b>  | 5.22 <sup>1</sup> | 2.7 <sup>2</sup>  |
| <b>V</b>   | 5.22 <sup>1</sup> | 3.6 <sup>2</sup>  |

- (1) Las cargas no incluyen el peso propio de vigas, columnas, mampostería o escaleras. Por estar analizados directamente sobre los pórticos.
- (2) Las cargas no incluyen el los efectos de la escalera autoportante. Esta carga es inducida directamente sobre los pórticos.

Nota: Cualquier modificación en la disposición de la mampostería debe ser evaluada acorde a la resistencia de los elementos estructurales (teniendo en cuenta que todos los



muros sencillos presentes en los planos arquitectónicos han sido evaluados como muro doble en ladrillo farol).

#### 5.1.3.4.1.2 Bloque II (Nivel + 2.95)

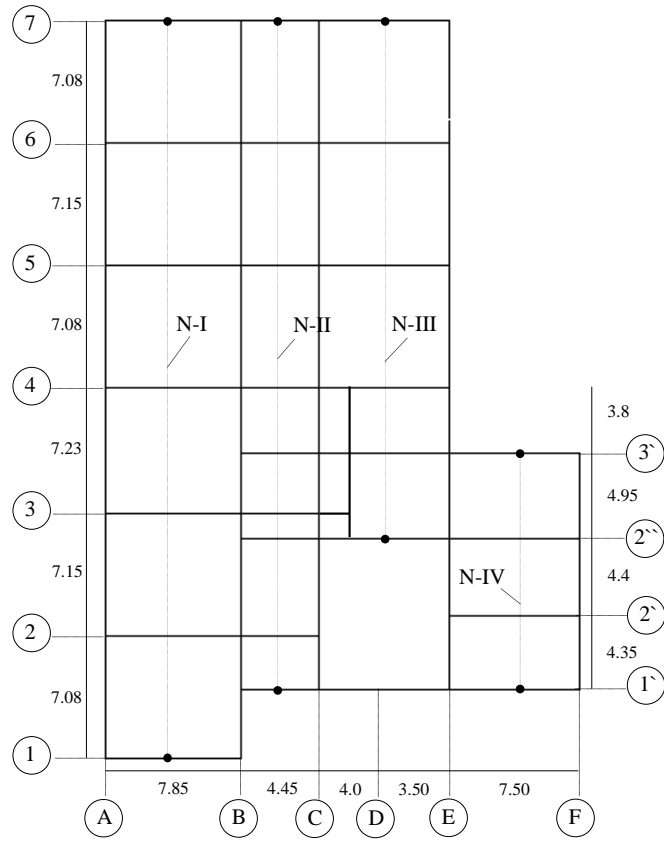
##### Cargas Distribuidas (Aferencia 0.9 mt)

| Nervio      | CM<br>KNw/m       | CV<br>KNw/m       |
|-------------|-------------------|-------------------|
| <b>VI</b>   | 5.22 <sup>1</sup> | 1.80 <sup>2</sup> |
| <b>VII</b>  | 5.22 <sup>1</sup> | 2.7 <sup>2</sup>  |
| <b>VIII</b> | 5.22 <sup>1</sup> | 2.7 <sup>2</sup>  |

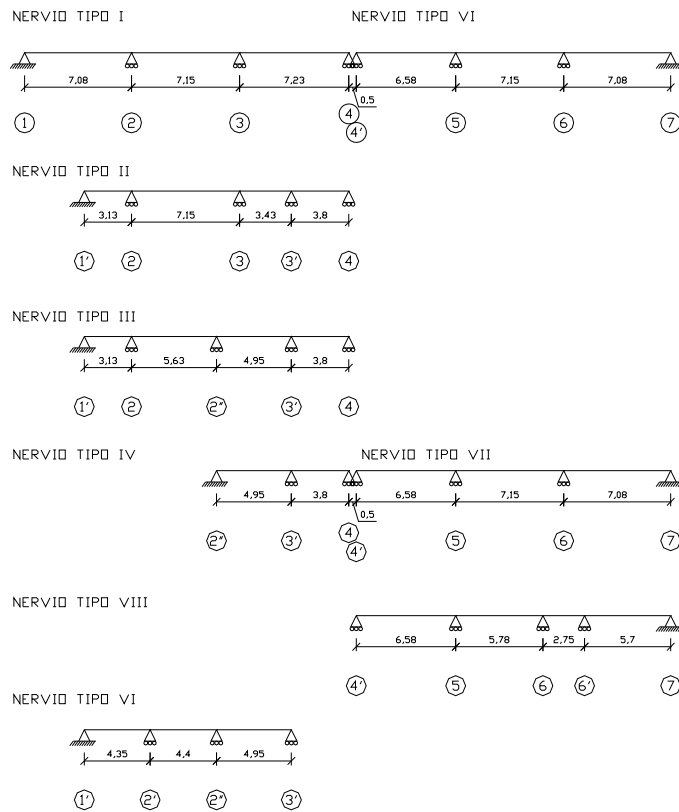
- (1) Las cargas no incluyen el peso propio de vigas, columnas o mampostería, por estar analizados directamente sobre los pórticos.
- (2) Las cargas no incluyen los efectos de la escalera autoportante. Esta carga es inducida directamente sobre los pórticos.

Nota: El muro denotado sobre los planos arquitectónicos en el eje 8 del segundo nivel esta evaluado como carga puntual sobre los nervios VII y VIII. Cualquier modificación en la disposición de la mampostería debe ser evaluada acorde a la resistencia de los elementos estructurales (teniendo en cuenta que todos los muros sencillos presentes en los planos arquitectónicos han sido evaluados como muro doble en ladrillo farol).

### 5.1.3.4.1.1 Disposición de los Nervios



Para el análisis de los nervios se ha dispuesto de ocho tipos de nervios:



Las condiciones de carga se han analizado para el estado CU, analizando la condición de carga que presente más perjuicio para la estructura, esto se lo logra considerando diferentes formas de carga (Viva), como sigue:

$$1.4CM + 1.7 CV$$

**NERVIO I Y VI**

| COMBINACION | TRAMO CARGADO (CARGA VIVA) |     |     |      |     |     |
|-------------|----------------------------|-----|-----|------|-----|-----|
|             | 1-2                        | 2-3 | 3-4 | 4'-5 | 5-6 | 6-7 |
| 1           | X                          | -   | -   | -    | -   | -   |
| 2           | -                          | X   | -   | -    | -   | -   |
| 3           | -                          | -   | X   | -    | -   | -   |
| 4           | -                          | -   | -   | X    | -   | -   |
| 5           | -                          | -   | -   | -    | X   | -   |
| 6           | -                          | -   | -   | -    | -   | X   |
| 7           | X                          | -   | X   | -    | X   | -   |
| 8           | -                          | X   | -   | X    | -   | X   |
| 9           | X                          | X   | -   | X    | X   | -   |
| 10          | -                          | X   | X   | -    | X   | X   |
| 11          | X                          | X   | X   | X    | X   | X   |

**NERVIO II**

| COMBINACION | TRAMO CARGADO<br>(CARGA VIVA) |     |      |      |
|-------------|-------------------------------|-----|------|------|
|             | 1'-2                          | 2-3 | 3-3' | 3'-4 |
| 1           | X                             | -   | -    | -    |
| 2           | -                             | X   | -    | -    |
| 3           | -                             | -   | X    | -    |
| 4           | -                             | -   | -    | X    |
| 5           | X                             | -   | X    | -    |
| 6           | -                             | X   | -    | X    |
| 7           | X                             | X   | -    | X    |
| 8           | -                             | X   | X    | -    |
| 9           | X                             | -   | X    | X    |
| 10          | X                             | X   | X    | X    |

**NERVIO III**

| COMBINACIÓN | TRAMO CARGADO<br>(CARGA VIVA) |       |        |      |
|-------------|-------------------------------|-------|--------|------|
|             | 1'-2                          | 2-2'' | 2''-3' | 3'-4 |
| 1           | X                             | -     | -      | -    |
| 2           | -                             | X     | -      | -    |
| 3           | -                             | -     | X      | -    |
| 4           | -                             | -     | -      | X    |
| 5           | X                             | -     | X      | -    |
| 6           | -                             | X     | -      | X    |
| 7           | X                             | X     | -      | X    |
| 8           | -                             | X     | X      | -    |
| 9           | X                             | -     | X      | X    |
| 10          | X                             | X     | X      | X    |

**NERVIO IV Y VII**

| COMBINACION | TRAMO CARGADO<br>(CARGA VIVA) |      |      |     |     |
|-------------|-------------------------------|------|------|-----|-----|
|             | 2''-3`                        | 3`-4 | 4'-5 | 5-6 | 6-7 |
| 1           | X                             | -    | -    | -   | -   |
| 2           | -                             | X    | -    | -   | -   |
| 3           | -                             | -    | X    | -   | -   |
| 4           | -                             | -    | -    | X   | -   |
| 5           | -                             | -    | -    | -   | X   |
| 6           | X                             | -    | X    | -   | X   |
| 7           | -                             | X    | -    | X   | -   |
| 8           | X                             | X    | -    | -   | X   |
| 9           | X                             | -    | -    | X   | X   |
| 10          | -                             | X    | X    | -   | X   |
| 11          | X                             | -    | X    | X   | -   |
| 12          | X                             | X    | X    | X   | X   |

### NERVIO VIII

| COMBINACIÓN | TRAMO CARGADO<br>(CARGA VIVA) |     |      |     |
|-------------|-------------------------------|-----|------|-----|
|             | 4'-5                          | 5-6 | 6-6' | 6-7 |
| 1           | X                             | -   | -    | -   |
| 2           | -                             | X   | -    | -   |
| 3           | -                             | -   | X    | -   |
| 4           | -                             | -   | -    | X   |
| 5           | X                             | -   | X    | -   |
| 6           | -                             | X   | -    | X   |
| 7           | X                             | -   | X    | X   |
| 8           | X                             | X   | -    | X   |
| 9           | X                             | X   | X    | X   |

### NERVIO V

| COMBINACION | TRAMO CARGADO<br>(CARGA VIVA) |        |        |
|-------------|-------------------------------|--------|--------|
|             | 1'-2'                         | 2'-2'' | 2''-3' |
| 1           | X                             | -      | -      |
| 2           | -                             | X      | -      |
| 3           | -                             | -      | X      |
| 4           | X                             | -      | X      |
| 5           | X                             | X      | -      |
| 6           | -                             | X      | X      |
| 7           | X                             | X      | X      |

#### 5.1.3.4.1.2 Reacciones en nervios

##### ◆ NERVIO I Y VI

| Carga  | REACCION EN APOYOS (KNw/m) |       |       |       |       |       |       |       |
|--------|----------------------------|-------|-------|-------|-------|-------|-------|-------|
|        | 1                          | 2     | 3     | 4     | 4'    | 5     | 6     | 7     |
| Muerta | 14.66                      | 40.78 | 41.54 | 14.99 | 13.38 | 39.29 | 41.42 | 14.55 |
| Viva   | 5.73                       | 15.45 | 15.63 | 5.82  | 5.38  | 14.89 | 15.40 | 5.68  |

◆ NERVIO II

| Carga         | REACCION EN APOYOS (KNw/m) |       |       |       |      |
|---------------|----------------------------|-------|-------|-------|------|
|               | 1`                         | 2     | 3     | 3`    | 4    |
| <b>Muerta</b> | 1.85                       | 33.35 | 31.52 | 16.02 | 8.71 |
| <b>Viva</b>   | 3.84                       | 17.25 | 16.30 | 8.99  | 4.98 |

◆ NERVIO III

| Carga         | REACCION EN APOYOS (KNw/m) |       |       |       |      |
|---------------|----------------------------|-------|-------|-------|------|
|               | 1`                         | 2     | 2''   | 3`    | 4    |
| <b>Muerta</b> | 4.50                       | 26.00 | 29.17 | 24.39 | 7.39 |
| <b>Viva</b>   | 4.17                       | 13.82 | 15.09 | 12.62 | 4.73 |

◆ NERVIO IV Y VII

| Carga         | REACCION EN APOYOS (KNw/m) |       |      |       |       |       |       |
|---------------|----------------------------|-------|------|-------|-------|-------|-------|
|               | 2''                        | 3'    | 4    | 4'    | 5     | 6     | 7     |
| <b>Muerta</b> | 10.13                      | 29.25 | 6.29 | 12.96 | 42.68 | 44.08 | 14.17 |
| <b>Viva</b>   | 5.69                       | 15.13 | 4.55 | 8.08  | 22.25 | 23.12 | 8.52  |

◆ NERVIO VIII

| Carga         | REACCION EN APOYOS (KNw/m) |       |       |       |       |
|---------------|----------------------------|-------|-------|-------|-------|
|               | 4'                         | 5     | 6     | 6'    | 7     |
| <b>Muerta</b> | 13.15                      | 41.68 | 20.42 | 26.26 | 12.38 |
| <b>Viva</b>   | 7.55                       | 20.14 | 11.57 | 17.40 | 6.44  |

◆ NERVIO V

| Carga         | REACCION EN APOYOS<br>(KNw/m) |       |       |       |
|---------------|-------------------------------|-------|-------|-------|
|               | 1`                            | 2`    | 2''   | 3`    |
| <b>Muerta</b> | 9.10                          | 24.44 | 27.63 | 10.35 |
| <b>Viva</b>   | 7.13                          | 19.11 | 20.62 | 7.82  |

Las cargas sobre los pórticos riostras están evaluadas sin peso propio y con carga de mampostería, esta última es además considerada para los pórticos cargueros que poseen esta característica. El peso propio de todos los elementos estructurales es evaluado directamente sobre el programa de diseño estructural SAP2000, además el programa evalúa las masas aferentes para cada nudo con dichos elementos, por esta razón la carga permanente incluida en el análisis no posee la masa de dichos elementos.

Por el hecho de haber sido incluida en la estructura de la edificación la escalera autoportante, esta transfiere directamente a la edificación la carga muerta y viva de la misma; la carga viva incluida en el análisis es la resultante de la suma de cargas vivas en los tres tramos

Los pórticos riostra poseen además, carga con el doble de aferencia de un nervio tipo.

C.13.3.2.2

$$\text{Mampostería} = 5.88 * 2 = 11.76 \text{ KNw/m (muro doble)}$$

Carga sobre riostras

$$\text{Muerta} = 10.44 \text{ KNw/m}$$

$$\text{Viva (Pórtico A)} = 3.6 \text{ KNw/m}$$



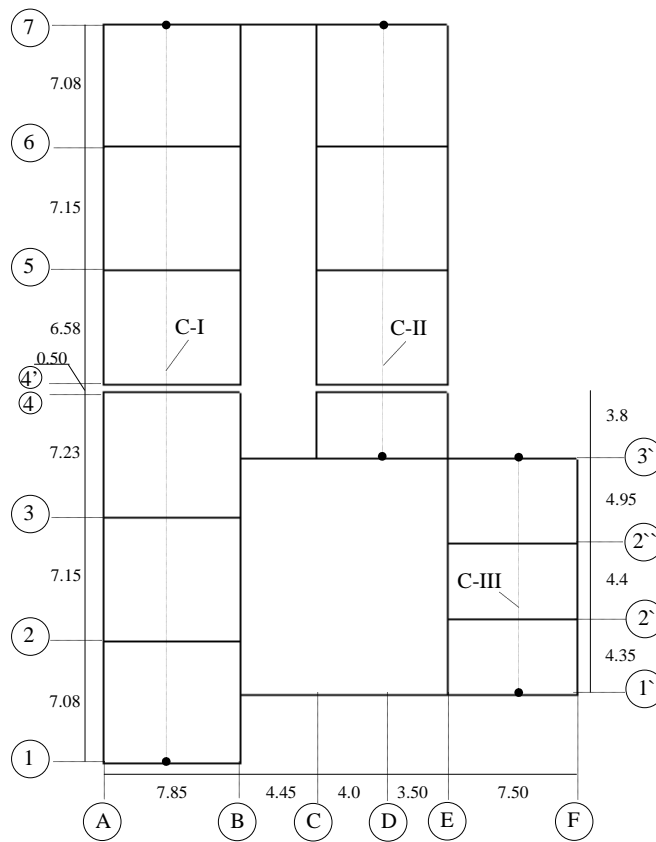
Viva (Pórtico B, C, E)= 5.4 KNw/m

Viva (Pórtico E, F) = 7.2 KNw/m

### 5.1.3.4.2 Cargas sobre Cubierta

(Nivel + 5.90)

Esta estructura consta de tres cubiertas,



#### 5.1.3.4.2.1 Cargas

Cargas Distribuidas

| Cubierta | CM<br>KNw/m <sup>2</sup> | CV<br>KNw/m <sup>2</sup> |
|----------|--------------------------|--------------------------|
| 1,2,3    | 0.53                     | 0.35                     |

## CARGAS SOBRE VIGAS DE CUBIERTA

| VIGA            | Aferencia<br>(m) | CM<br>(KNw/m) | CV<br>(KNw/m) |
|-----------------|------------------|---------------|---------------|
| <b>1(A-B)</b>   | 3.54             | 1.88          | 1.24          |
| <b>2(A-B)</b>   | 7.12             | 3.77          | 2.49          |
| <b>3(A-B)</b>   | 7.19             | 3.81          | 2.52          |
| <b>4(A-B)</b>   | 3.58             | 1.90          | 1.26          |
| <b>4'(A-B)</b>  | 3.58             | 1.90          | 1.26          |
| <b>5(A-B)</b>   | 7.12             | 3.77          | 2.49          |
| <b>6(A-B)</b>   | 7.12             | 3.77          | 2.49          |
| <b>7(A-B)</b>   | 3.54             | 1.88          | 1.24          |
| <b>3` (C-E)</b> | 1.9              | 1.01          | 0.67          |
| <b>4(C-E)</b>   | 1.9              | 1.01          | 0.67          |
| <b>4'(C-E)</b>  | 3.29             | 1.74          | 1.15          |
| <b>5(C-E)</b>   | 7.12             | 3.77          | 2.49          |
| <b>6(C-E)</b>   | 7.12             | 3.77          | 2.49          |
| <b>7(C-E)</b>   | 3.54             | 1.88          | 1.24          |
| <b>1` (E-F)</b> | 2.18             | 1.16          | 0.76          |
| <b>2` (E-F)</b> | 4.38             | 2.32          | 1.53          |
| <b>2''(E-F)</b> | 4.68             | 2.48          | 1.64          |
| <b>3` (E-F)</b> | 2.48             | 1.31          | 0.87          |

Las cargas en la cubierta además incluyen el efecto producido por la presencia de la Culata (en vigas periféricas ) e incluye la torsión provocada por las mismas, además, las cargas proveniente del domo acrílico, marquesina de cubierta con estructura metálica tridimensional y el efecto para vigas que dan arriostamiento cargadas con una aferencia de 1.5 m de las cargas de cubierta C.13.3.2.2

Carga de Culata (incluye cinta de amarre) = 2.83 KNw/m

Torsión inducida = 1.16 KNw-m/m

Carga sobre riostra

Muerta = 0.8 KNw/m

|                        |   |            |
|------------------------|---|------------|
| Viva                   | = | 0.53 KNw/m |
| Carga de Marquesina    | = | 2.1 KNw/m  |
| Carga de Domo acrílico | = | 0.15 KNw/m |

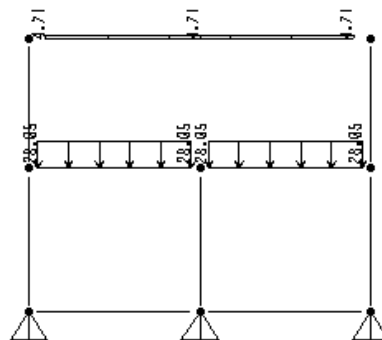
Las cargas que se han analizado son las siguientes:

- Muerta y Viva para la condición de vigas que dan arriostramiento, por tanto, se considera una referencia de 1.5 m para vigas canal C.13.3.2.2
- Carga de muro culata sobre vigas canal, incluyendo el efecto torsor.

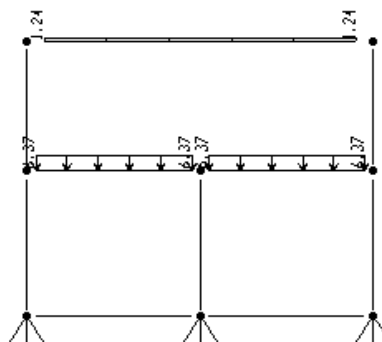
#### 5.1.3.4.3 Cargas en Pórticos: Aferencia de 0.9 mt

##### PORTICO 1

CARGA MUERTA

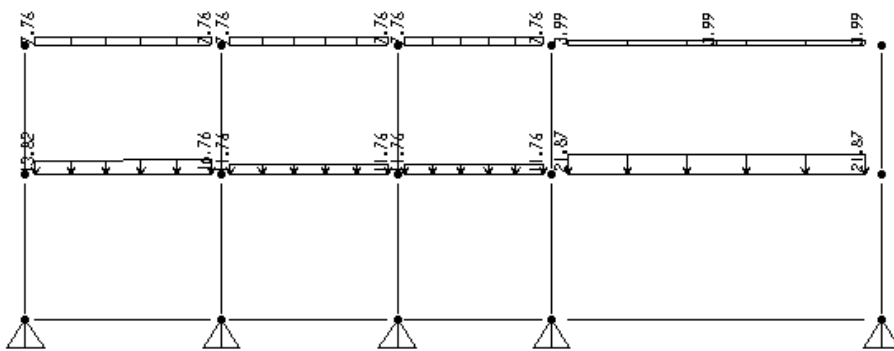


CARGA VIVA

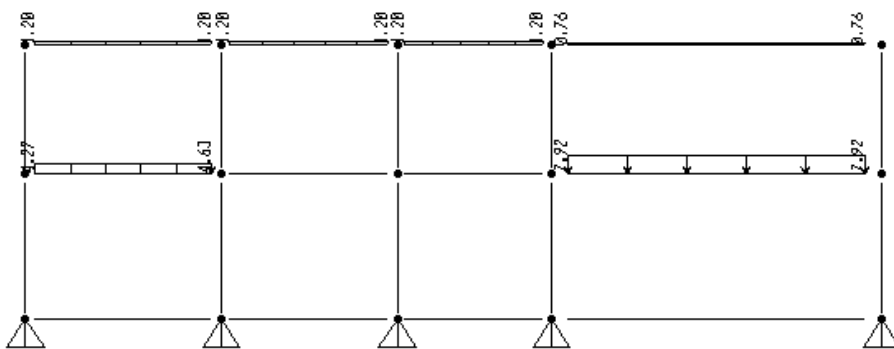


## PORTICO 1'

### CARGA MUERTA

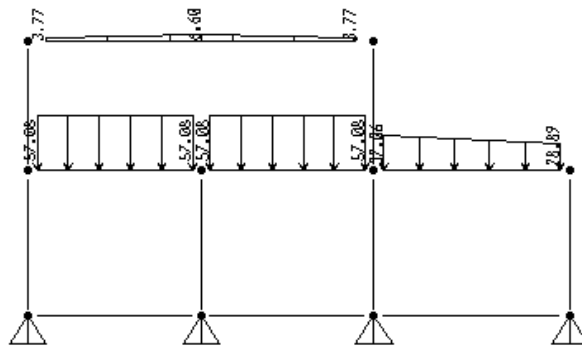


### CARGA VIVA

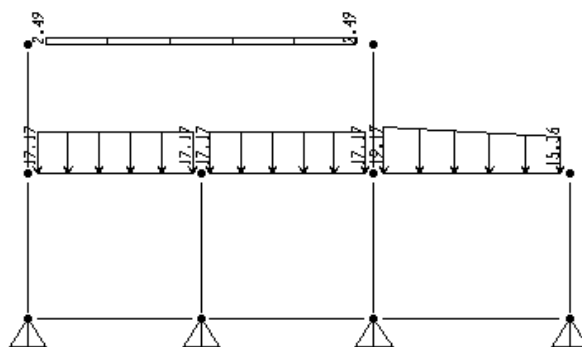


## PORTICO 2

### CARGA MUERTA

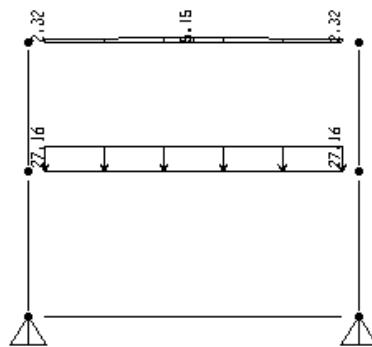


### CARGA VIVA

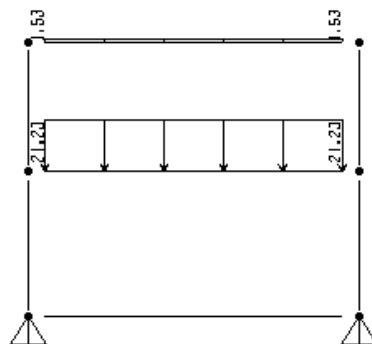


## PORTICO 2'

### CARGA MUERTA

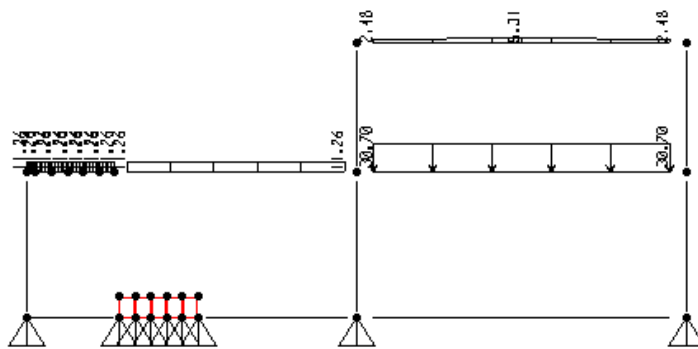


### CARGA VIVA

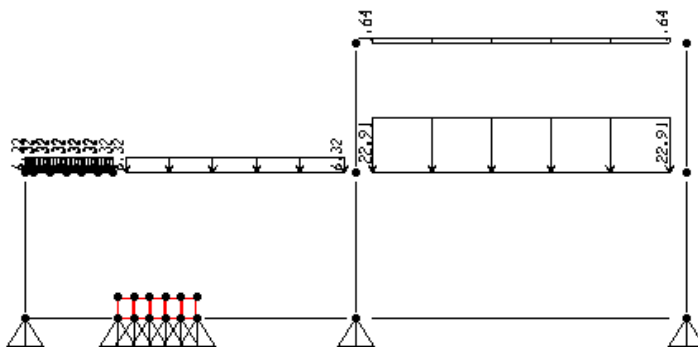


## PORTICO 2''

### CARGA MUERTA

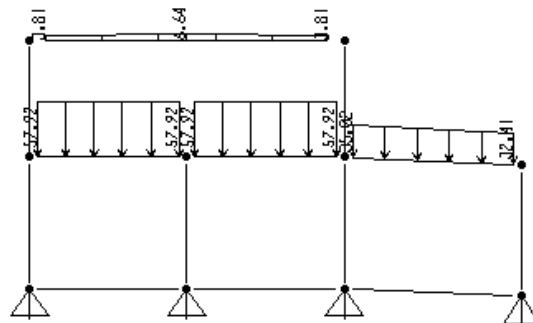


### CARGA VIVA

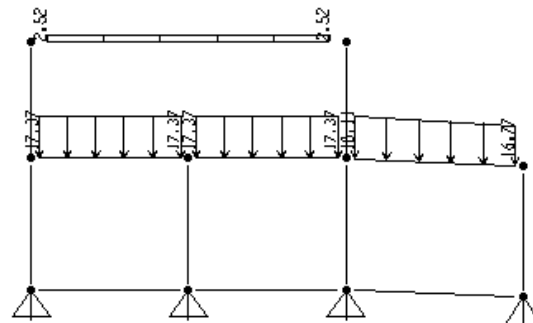


### PORTICO 3

#### CARGA MUERTA



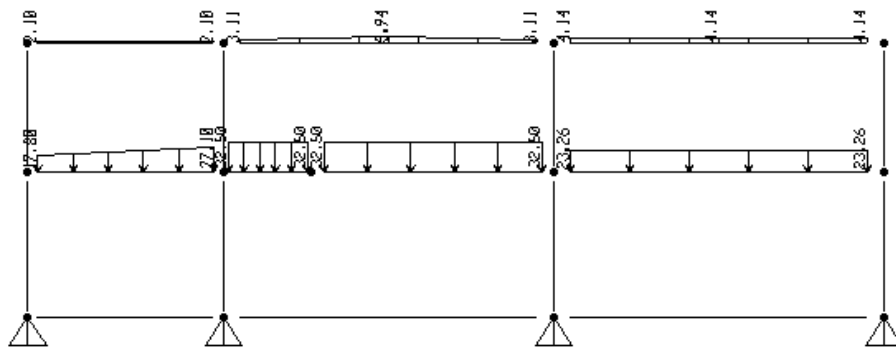
#### CARGA VIVA



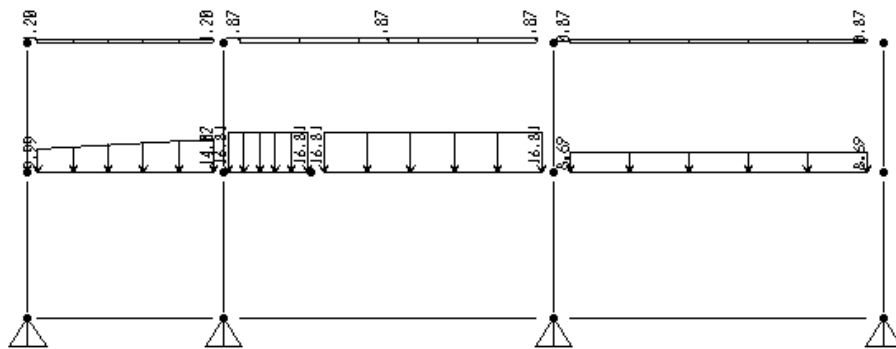


### PORTICO 3'

#### CARGA MUERTA

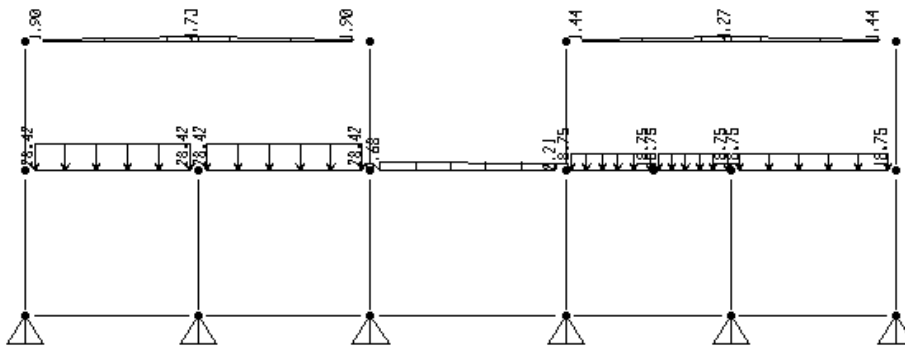


#### CARGA VIVA

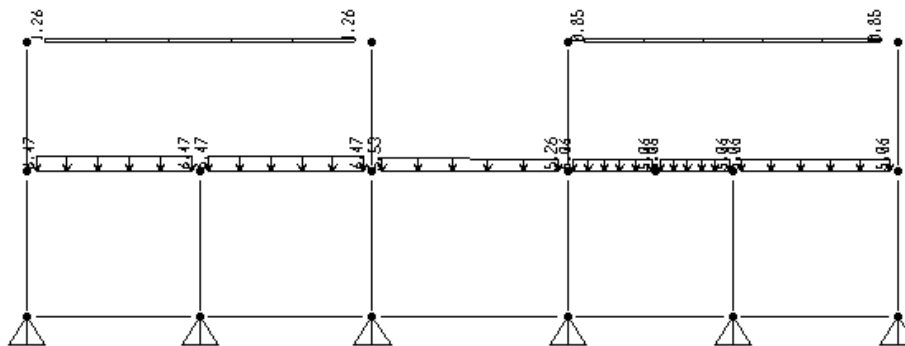


## PORTICO 4

### CARGA MUERTA

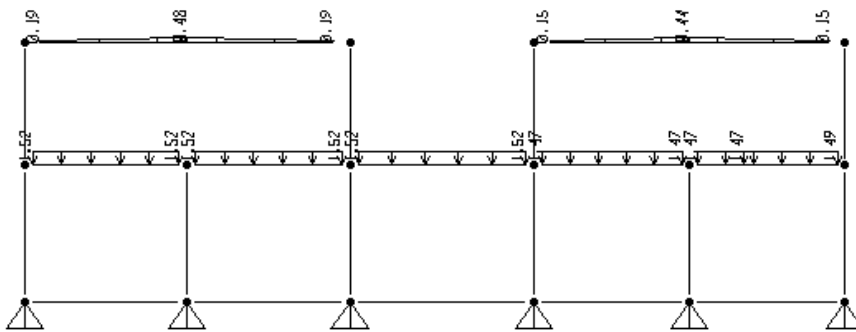


### CARGA VIVA

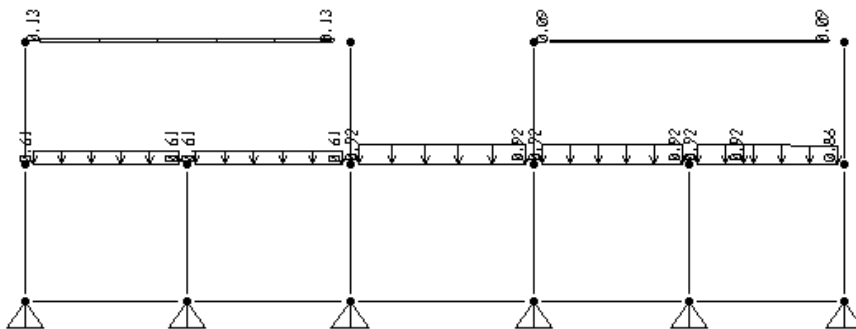


## PORTICO 4'

### CARGA MUERTA

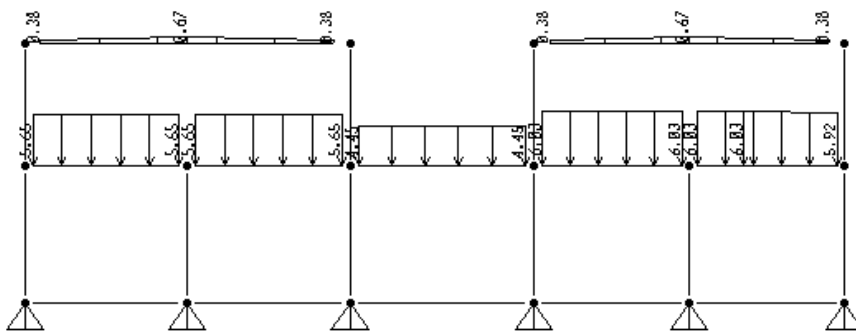


### CARGA VIVA

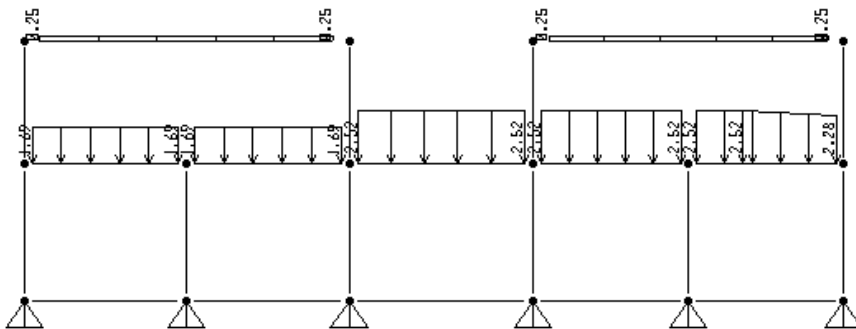


## PORTICO 5

### CARGA MUERTA

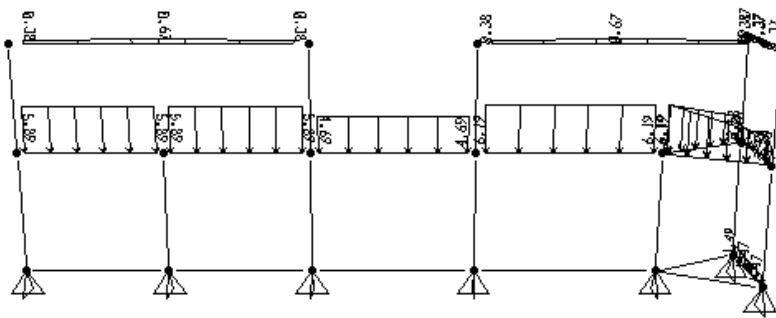


### CARGA VIVA

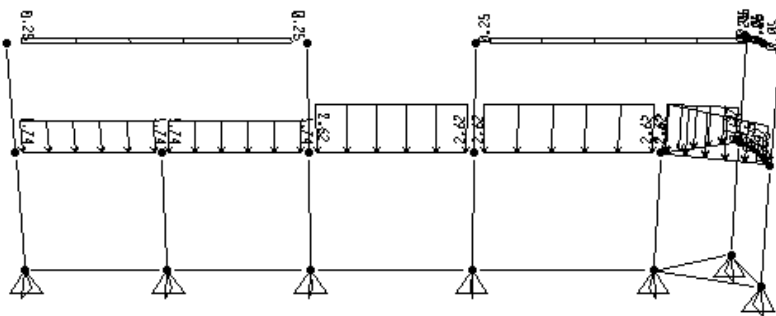


## PORTICO 6

### CARGA MUERTA

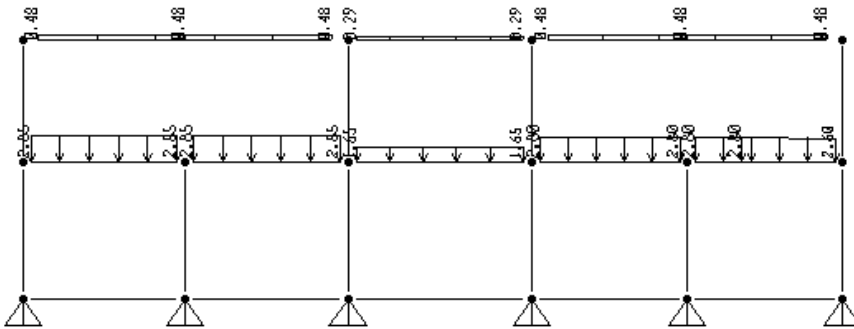


### CARGA VIVA

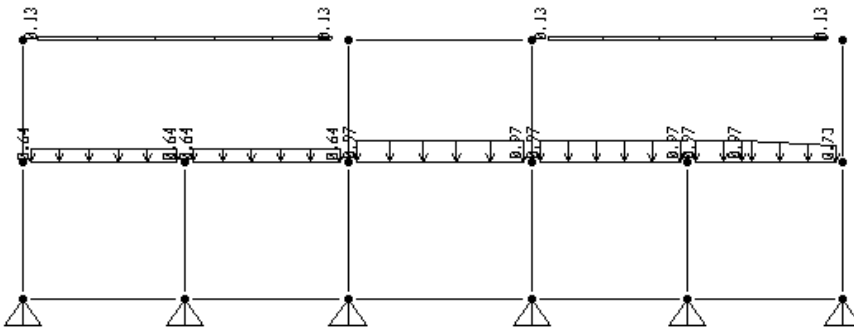


## PORTICO 7

### CARGA MUERTA



### CARGA VIVA



### 5.1.4 Fuerzas Sísmicas.

**5.1.4.1 Método de análisis para evaluación de carga sísmica.** Se utiliza el Análisis

Dinámico Elástico y se realiza una comparación con el método de Fuerza Horizontal

Equivalente, utilizando diafragma rígido

### 5.1.4.2 Centro de Masa.

#### 5.1.4.2.1 Bloque I

Nivel + 2.95

| CM                     | CARGAS |       |           | TOTAL |
|------------------------|--------|-------|-----------|-------|
|                        | MUERTA | VIVA  |           |       |
|                        |        | Losa  | Escaleras |       |
| $X_{CM}$               | 11.86  | 14.02 | 13.3      | 12.21 |
| $Y_{CM}$               | 12.12  | 12.20 | 12.7      | 12.13 |
| <b>Peso Total(KNw)</b> | 3709   | 709   | 11        | 4429  |

Nota: El centro de masas fue evaluado con las características de la carga permanente.

Nivel + 5.90

En el nivel de cubierta se utiliza diafragma flexible, por tanto se trabaja con las aferencias de cada nudo (esto se ha resuelto creando una membrana que simula el efecto de la cubierta, solo aportando una carga aferente a cada nudo sin implicar de esta manera que ella trabaje como diafragma ya que para evitar este efecto se dispuso de un material con un modulo de elasticidad  $\approx 0$ , con lo cual se contrarresta; este ultimo análisis solo tiene incidencia en la parte de análisis sísmico, por tanto posee una masa equivalente a la del peso propio).

#### 5.1.4.2.2 Bloque II

### Nivel + 2.95

| CM                     | CARGAS |       | TOTAL |
|------------------------|--------|-------|-------|
|                        | MUERTA | VIVA  |       |
| $X_{CM}$               | 10.41  | 11.13 | 10.52 |
| $Y_{CM}$               | 10.40  | 10.40 | 10.40 |
| <b>Peso Total(KNw)</b> | 3599   | 644   | 4243  |

Nota: El centro de masas fue evaluado con las características de la carga permanente.

### Nivel + 5.90

En el nivel de cubierta se utiliza diafragma flexible, por tanto se trabaja con las aferencias de cada nudo (esto se ha resuelto creando una membrana que simula el efecto de la cubierta, solo aportando una carga aferente a cada nudo sin implicar de esta manera que ella trabaje como diafragma ya que para evitar este efecto se dispuso de un material con un modulo de elasticidad  $\approx 0$ , con lo cual se contrarresta; este ultimo análisis solo tiene incidencia en la parte de análisis sísmico, por tanto posee una masa equivalente a la del peso propio).

#### 5.1.4.3 Zona de Amenaza Sísmica: Alta ( $A_a = 0.3$ )

#### 5.1.4.4 Efectos Locales.

Perfil del suelo tipo : S3

Coefficiente de Sitio : 1.5

#### 5.1.4.5 Coeficiente de Importancia.



Estructura de ocupación especial : (Grupo II)

Coefficiente de Importancia : 1.1

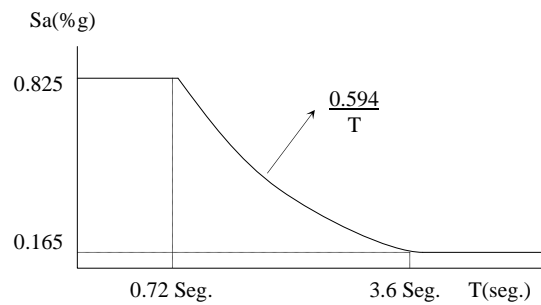
#### 5.1.4.6 Espectro de Diseño.

$$S_{a_{\max}} = 2.5 A_a I = 0.825 \%g$$

$$S_{a_{\min}} = A_a I/2 = 0.165 \%g$$

$$T_c = 0.48 S = 0.72 \text{ Seg.}$$

$$T_L = 2.4 S = 3.6 \text{ Seg.}$$



#### 5.1.4.7 Período Fundamental Aproximado ( $T_a$ )

$$T_a = 0.08 * 5.9^{3/4} = 0.30 \text{ Seg.}$$

#### 5.1.4.8 Cortante Sísmico en la Base ( $V_s$ )

##### 5.1.4.8.1 BLOQUE I

$$V_s = S_a W_p$$

$$V_s = 0.825 * 6782.98 = 5595.96 \text{ KNw}$$

##### 5.1.4.8.2 BLOQUE II

$$V_s = S_a W_p$$

$$V_s = 0.825 * 6076.50 = 5013.11 \text{ KNw}$$

### **5.1.4.9 Análisis Dinámico Elástico.**

#### **5.1.4.9.1 Modelo Matemático a emplear.**

Modelo Tridimensional con diafragma rígido y flexible.

Se tiene en cuenta los siguientes puntos:

- Efectos directos en la dirección bajo estudio.
- Torsión Natural.
- Torsión accidental (Tomando el 5% en la dirección perpendicular a la de estudio para el nivel +2.95)

#### **BLOQUE I**

$$e_{ax} = 0.05 * 27.3 = 1.36 \text{ m}$$

$$e_{ay} = 0.05 * 21.45 = 1.07 \text{ m}$$

#### **BLOQUE II**

$$e_{ax} = 0.05 * 19.8 = 0.99 \text{ m}$$

$$e_{ay} = 0.05 * 21.45 = 1.04 \text{ m}$$

- Efectos direccionales (Tomando 30% de incidencia en la dirección perpendicular a la de estudio).

#### **5.1.4.9.2 Masa de la Edificación**

##### **BLOQUE I**

Tenemos una masa concentrada en el nivel de entrepiso de:

$$W_p = 5366.59 \text{ KNw}$$

$$\text{Masa concentrada} = 5366.59/9.81 = 547.05 \text{ KNw Seg}^2/\text{m}$$

En el nivel de Cubierta por el hecho de que a la estructura se le haya considerado un diafragma flexible entonces la masa concentrada será repartida por área aferente, este efecto se ha logrado ubicando sobre el nivel de cubierta una losa con la carga permanente de la estructura, repartiéndose de esta manera la masa de la misma, sin tener en cuenta la rigidez que dicho elemento le produce a la estructura.

$$W_p = 1209.87 \text{ KNw}$$

$$\text{Masa concentrada} = 1167.32/9.81 = 123.33 \text{ KNw Seg}^2/\text{m}$$

## **BLOQUE II**

Tenemos una masa concentrada en el nivel de entrepiso de:

$$W_p = 4841.59 \text{ KNw}$$

$$\text{Masa concentrada} = 4841.59/9.81 = 493.54 \text{ KNw Seg}^2/\text{m}$$

En el nivel de Cubierta por el hecho de que a la estructura se le haya considerado un diafragma flexible entonces la masa concentrada será repartida por área aferente, este efecto se ha logrado ubicando sobre el nivel de cubierta una losa con la carga permanente de la estructura, repartiéndose de esta manera la masa de la misma, sin tener en cuenta la rigidez que dicho elemento le produce a la estructura.

$$W_p = 1089.98 \text{ KNw}$$

$$\text{Masa concentrada} = 1089.98/9.81 = 111.11 \text{ KNw Seg}^2/\text{m}$$

### **5.1.4.9.3 Representación de los Movimientos Sísmicos.**

Procedimiento espectral (NSR-98)

#### **5.1.4.10 Metodología de Análisis.**

##### **5.1.4.10.1 Modos de Vibración.**

###### **BLOQUE I**

El número de modos empleados es de 2 tal que por lo menos 90 % de la masa participe en el cálculo de la respuesta sísmica, esto equivale a que participen mas de 622292 Kgm.. Después de el análisis, con los dos modos de vibración se obtiene un 96.56 % de participación en el sentido X y de 96.85 % en el sentido Y.

###### **BLOQUE II**

El número de modos empleados es de 2 tal que por lo menos 90 % de la masa participe en el cálculo de la respuesta sísmica, esto equivale a que participen mas de 557477 Kgm.. Después de el análisis, con los dos modos de vibración se obtiene un 96.59 % de participación en el sentido X y de 97.49 % en el sentido Y.

Como se aprecia, estos 2 bloques de acuerdo a relación de la distribución de masas y rigideces son muy constantes. Se hizo una distribución de rigideces acorde a la estructura, eliminando de esta manera la torsión natural de la misma para las condiciones de carga analizadas, dando pie a que los posibles cambios de centro de masas establecidos con la excentricidad accidental no generen alteraciones prioritarias dentro de la torsión inducida.

##### **5.1.4.10.2 Respuesta Espectral Modal.**

La respuesta máxima espectral se obtiene utilizando las ordenadas del espectro de diseño para el período de cada modo de vibración.

#### **5.1.4.10.3 Respuesta Total.**

Todas las respuestas del análisis se combinan de acuerdo a las características de todos los modos de vibración. Los métodos empleados son:

- Combinación Cuadrática Completa (CQC): Con una razón de amortiguamiento del 5%. Para el caso este es el método más apropiado por las características de la estructura.
- Raíz Cuadrada de la Suma de los Cuadrados (SRSS)

#### **5.1.4.10.4 Comparación con Fuerza Horizontal Equivalente.**

##### **BLOQUE I**

Por ser una estructura irregular  $V_t \geq V_s$  A.5.4.5(a)

$5400.51 \text{ KNw} < 5595.96 \text{ KNw} \Rightarrow$  no cumple

Como resultado del análisis dinámico tenemos que el cortante basal modal ( $V_t$ ) es inferior al cortante sísmico en la base ( $V_s$ ) entonces hay la necesidad de modificar los factores de amplificación para carga sísmica en  $5595.96/5400.51 = 1.0362$

##### **BLOQUE II**

Por ser una estructura regular  $V_t \geq 0.80V_s$  A.5.4.5(b)

4841.59 KNw <math>\leq 0.80 \cdot 5013.91 \text{ KNw}</math>

4841.59 > 4011.13  $\Rightarrow$  cumple

#### 5.1.4.10.5 Evaluación de las Derivas.

Se verifica las derivas para cada modo de vibración que no exceda 0.01 hpi

#### BLOQUE I

##### PISO 1

| Dirección | Deriva (cm) | 0.01hpi (cm) | Observación |
|-----------|-------------|--------------|-------------|
| <b>X</b>  | 2.55        | 3.15         | Cumple      |
| <b>Y</b>  | 2.96        | 3.15         |             |

##### PISO 2

| Dirección | Deriva (cm) | 0.01hpi (cm) | Observación |
|-----------|-------------|--------------|-------------|
| <b>X</b>  | 1.29        | 2.95         | Cumple      |
| <b>Y</b>  | 1.30        | 2.95         |             |

#### - BLOQUE II

##### PISO 1

| Dirección | Deriva (cm) | 0.01hpi (cm) | Observación |
|-----------|-------------|--------------|-------------|
| <b>X</b>  | 2.74        | 3.15         | Cumple      |
| <b>Y</b>  | 2.64        | 3.15         |             |

##### PISO2

| Dirección | Deriva (cm) | 0.01hpi (cm) | Observación |
|-----------|-------------|--------------|-------------|
| <b>X</b>  | 1.87        | 2.95         | Cumple      |
| <b>Y</b>  | 1.32        | 2.95         |             |

#### 5.1.4.10.6 Fuerzas de Diseño de los Elementos

Las fuerzas combinadas de los modos en el análisis dinámico son reducidas por el coeficiente de disipación de energía.

## **5.1.5 Combinaciones de las Diferentes Solicitaciones: ANEXO**

### **5.1.5.1 Coeficiente de Capacidad de Disipación de Energía (R)**

#### **BLOQUE I**

$$R = R_o \phi_a \phi_p$$

$$R_o = 7 \quad \text{Tabla A.3-3}$$

$$\phi_a = 1$$

$$\phi_p = 0.9 ; \text{ Tipo 5P Tabla A.3-6}$$

$$R = 6.3$$

Debido a que es necesario preservar el concepto de columna fuerte y viga débil, se ha considerado un coeficiente de capacidad de disipación de energía de 5.25 para columnas.

#### **BLOQUE II**

$$R = R_o \phi_a \phi_p$$

$$R_o = 7 \quad \text{Tabla A.3-3}$$

$$\phi_a = 1$$

$$\phi_p = 1$$

$$R = 7$$

Debido a que es necesario preservar el concepto de columna fuerte y viga débil, se ha considerado un coeficiente de capacidad de disipación de energía de 5.83 para columnas.

### 5.1.6 Evaluación del Índice de Estabilidad (Qi).

$$Q_i = \frac{P_i \Delta_{cm}}{V_i h_{pi}} \quad A.6-3$$

#### BLOQUE I

##### Índice de Estabilidad (Sentido X)

| Piso | P (KNw) |      | Vx (KNw) | hp (m) | Δcm (m) | Qi    | Observación      |
|------|---------|------|----------|--------|---------|-------|------------------|
|      | Pm      | Pv   |          |        |         |       |                  |
| 1    | 5898    | 1841 | 5561     | 3.15   | 0.0255  | 0.011 | Piso arriostrado |

##### Índice de Estabilidad (Sentido Y)

| Piso | P (KNw) |      | Vy (KNw) | hp (m) | Δcm (m) | Qi    | Observación      |
|------|---------|------|----------|--------|---------|-------|------------------|
|      | Pm      | Pv   |          |        |         |       |                  |
| 1    | 5898    | 1841 | 5568     | 3.15   | 0.0296  | 0.013 | Piso arriostrado |

#### BLOQUE II

##### Índice de Estabilidad (Sentido X)

| Piso | P (KNw) |      | Vx (KNw) | hp (m) | Δcm (m) | Qi    | Observación      |
|------|---------|------|----------|--------|---------|-------|------------------|
|      | Pm      | Pv   |          |        |         |       |                  |
| 1    | 5563    | 1672 | 4842     | 3.15   | 0.0274  | 0.013 | Piso arriostrado |

##### Índice de Estabilidad (Sentido Y)

| Piso | P (KNw) |      | Vy (KNw) | hp (m) | Δcm (m) | Qi    | Observación      |
|------|---------|------|----------|--------|---------|-------|------------------|
|      | Pm      | Pv   |          |        |         |       |                  |
| 1    | 5563    | 1672 | 4886     | 3.15   | 0.0264  | 0.012 | Piso arriostrado |

**5.1.7. Diseño de la Losa de Entrepiso.** El propósito de la losa aligerada es: servir de losa de entrepiso; para cumplir su primer objetivo se ha dispuesto de un espesor de loseta superior de 70 mm y además por las consideraciones de carga y facilidad de ejecución en obra se ha dispuesto de un ancho de nervios de 120 mm.



**5.1.7.1 Envoltentes de Diseño.** Usando el programa de análisis estructural SAP 2000 se resuelven los cuatro tipos de nervios; se introducen combinaciones de tipo envolvente en las cuales se ha considerado el estado Cu con las posible formas de combinación de carga viva, estos datos se los emplea tanto para cargar los pórticos como para diseñar el acero de refuerzo (longitudinal y transversal) teniendo en cuenta las especificaciones de la norma NSR – 98.

### ENVOLVENTE NERVIO I y VI

#### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE  |
|----------|------|--------|--------|-------|--------|
| ENVOLVEN | ENVE |        |        |       | COMB12 |
|          |      | COMB1  | 1.0000 | COMBO |        |
|          |      | COMB2  | 1.0000 | COMBO |        |
|          |      | COMB3  | 1.0000 | COMBO |        |
|          |      | COMB4  | 1.0000 | COMBO |        |
|          |      | COMB5  | 1.0000 | COMBO |        |
|          |      | COMB6  | 1.0000 | COMBO |        |
|          |      | COMB7  | 1.0000 | COMBO |        |
|          |      | COMB8  | 1.0000 | COMBO |        |
|          |      | COMB9  | 1.0000 | COMBO |        |
|          |      | COMB10 | 1.0000 | COMBO |        |
|          |      | COMB11 | 1.0000 | COMBO |        |

#### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2     | V3   | T    | M2   | M3        |
|-------|--------------|-----|------|--------|------|------|------|-----------|
| 1     | ENVOLVEN MAX |     |      |        |      |      |      |           |
|       | 1.8E-01      |     | 0.00 | -18.11 | 0.00 | 0.00 | 0.00 | 5.14      |
|       | 1.86         |     | 0.00 | -5.82  | 0.00 | 0.00 | 0.00 | 38.33     |
|       | 3.54         |     | 0.00 | 7.96   | 0.00 | 0.00 | 0.00 | 42.21     |
|       | 5.22         |     | 0.00 | 25.39  | 0.00 | 0.00 | 0.00 | 16.79     |
|       | 6.90         |     | 0.00 | 42.82  | 0.00 | 0.00 | 0.00 | -29.52    |
| 1     | ENVOLVEN MIN |     |      |        |      |      |      |           |
|       | 1.8E-01      |     | 0.00 | -28.46 | 0.00 | 0.00 | 0.00 | 3.28      |
|       | 1.86         |     | 0.00 | -11.02 | 0.00 | 0.00 | 0.00 | 23.39     |
|       | 3.54         |     | 0.00 | 4.92   | 0.00 | 0.00 | 0.00 | 22.85     |
|       | 5.22         |     | 0.00 | 17.20  | 0.00 | 0.00 | 0.00 | 1.65      |
|       | 6.90         |     | 0.00 | 29.49  | 0.00 | 0.00 | 0.00 | -48.63    |
| 2     | ENVOLVEN MAX |     |      |        |      |      |      |           |
|       | 1.8E-01      |     | 0.00 | -22.69 | 0.00 | 0.00 | 0.00 | -30.71    |
|       | 1.88         |     | 0.00 | -10.26 | 0.00 | 0.00 | 0.00 | 5.16      |
|       | 3.58         |     | 0.00 | 2.16   | 0.00 | 0.00 | 0.00 | 19.82     |
|       | 5.28         |     | 0.00 | 19.77  | 0.00 | 0.00 | 0.00 | 4.51      |
|       | 6.98         |     | 0.00 | 37.39  | 0.00 | 0.00 | 0.00 | -32.28    |
| 2     | ENVOLVEN MIN |     |      |        |      |      |      |           |
|       | 1.8E-01      |     | 0.00 | -36.91 | 0.00 | 0.00 | 0.00 | -49.67    |
|       | 1.88         |     | 0.00 | -19.28 | 0.00 | 0.00 | 0.00 | -9.77     |
|       | 3.58         |     | 0.00 | -1.66  | 0.00 | 0.00 | 0.00 | 2.627E-01 |

|   |              |      |        |      |      |      |           |
|---|--------------|------|--------|------|------|------|-----------|
|   | 5.28         | 0.00 | 10.78  | 0.00 | 0.00 | 0.00 | -10.83    |
|   | 6.98         | 0.00 | 23.21  | 0.00 | 0.00 | 0.00 | -51.51    |
| 3 | ENVOLVEN MAX |      |        |      |      |      |           |
|   | 1.8E-01      | 0.00 | -30.17 | 0.00 | 0.00 | 0.00 | -31.06    |
|   | 1.89         | 0.00 | -17.61 | 0.00 | 0.00 | 0.00 | 17.25     |
|   | 3.61         | 0.00 | -5.05  | 0.00 | 0.00 | 0.00 | 43.88     |
|   | 5.33         | 0.00 | 11.24  | 0.00 | 0.00 | 0.00 | 39.87     |
|   | 7.05         | 0.00 | 29.06  | 0.00 | 0.00 | 0.00 | 5.24      |
| 3 | ENVOLVEN MIN |      |        |      |      |      |           |
|   | 1.8E-01      | 0.00 | -43.70 | 0.00 | 0.00 | 0.00 | -50.41    |
|   | 1.89         | 0.00 | -25.88 | 0.00 | 0.00 | 0.00 | 2.12      |
|   | 3.61         | 0.00 | -8.06  | 0.00 | 0.00 | 0.00 | 24.12     |
|   | 5.33         | 0.00 | 6.04   | 0.00 | 0.00 | 0.00 | 24.54     |
|   | 7.05         | 0.00 | 18.60  | 0.00 | 0.00 | 0.00 | 3.37      |
| 5 | ENVOLVEN MAX |      |        |      |      |      |           |
|   | 1.8E-01      | 0.00 | -22.43 | 0.00 | 0.00 | 0.00 | -28.00    |
|   | 1.88         | 0.00 | -10.01 | 0.00 | 0.00 | 0.00 | 6.96      |
|   | 3.58         | 0.00 | 2.42   | 0.00 | 0.00 | 0.00 | 21.18     |
|   | 5.28         | 0.00 | 19.96  | 0.00 | 0.00 | 0.00 | 5.42      |
|   | 6.98         | 0.00 | 37.59  | 0.00 | 0.00 | 0.00 | -32.16    |
| 5 | ENVOLVEN MIN |      |        |      |      |      |           |
|   | 1.8E-01      | 0.00 | -36.37 | 0.00 | 0.00 | 0.00 | -45.89    |
|   | 1.88         | 0.00 | -18.75 | 0.00 | 0.00 | 0.00 | -6.43     |
|   | 3.58         | 0.00 | -1.12  | 0.00 | 0.00 | 0.00 | 2.70      |
|   | 5.28         | 0.00 | 11.38  | 0.00 | 0.00 | 0.00 | -9.30     |
|   | 6.98         | 0.00 | 23.81  | 0.00 | 0.00 | 0.00 | -50.54    |
| 6 | ENVOLVEN MAX |      |        |      |      |      |           |
|   | 1.8E-01      | 0.00 | -29.72 | 0.00 | 0.00 | 0.00 | -31.12    |
|   | 1.86         | 0.00 | -17.44 | 0.00 | 0.00 | 0.00 | 15.54     |
|   | 3.54         | 0.00 | -5.15  | 0.00 | 0.00 | 0.00 | 41.36     |
|   | 5.22         | 0.00 | 10.79  | 0.00 | 0.00 | 0.00 | 37.88     |
|   | 6.90         | 0.00 | 28.22  | 0.00 | 0.00 | 0.00 | 5.10      |
| 6 | ENVOLVEN MIN |      |        |      |      |      |           |
|   | 1.8E-01      | 0.00 | -42.96 | 0.00 | 0.00 | 0.00 | -49.60    |
|   | 1.86         | 0.00 | -25.53 | 0.00 | 0.00 | 0.00 | 9.529E-01 |
|   | 3.54         | 0.00 | -8.10  | 0.00 | 0.00 | 0.00 | 22.38     |
|   | 5.22         | 0.00 | 5.69   | 0.00 | 0.00 | 0.00 | 23.15     |
|   | 6.90         | 0.00 | 17.97  | 0.00 | 0.00 | 0.00 | 3.26      |
| 8 | ENVOLVEN MAX |      |        |      |      |      |           |
|   | 0.00         | 0.00 | -17.43 | 0.00 | 0.00 | 0.00 | 0.00      |
|   | 1.56         | 0.00 | -6.01  | 0.00 | 0.00 | 0.00 | 30.91     |
|   | 3.13         | 0.00 | 6.28   | 0.00 | 0.00 | 0.00 | 36.48     |
|   | 4.69         | 0.00 | 22.49  | 0.00 | 0.00 | 0.00 | 16.70     |
|   | 6.25         | 0.00 | 38.70  | 0.00 | 0.00 | 0.00 | -23.02    |
| 8 | ENVOLVEN MIN |      |        |      |      |      |           |
|   | 0.00         | 0.00 | -27.87 | 0.00 | 0.00 | 0.00 | 0.00      |
|   | 1.56         | 0.00 | -11.67 | 0.00 | 0.00 | 0.00 | 18.32     |
|   | 3.13         | 0.00 | 3.68   | 0.00 | 0.00 | 0.00 | 18.79     |
|   | 4.69         | 0.00 | 15.11  | 0.00 | 0.00 | 0.00 | 1.39      |
|   | 6.25         | 0.00 | 26.53  | 0.00 | 0.00 | 0.00 | -39.27    |

## ENVOLVENTE NERVIO II y VII

### LOAD COMBINATION MULTIPLIERS

| COMBO | TYPE | CASE | FACTOR | TYPE | TITLE |
|-------|------|------|--------|------|-------|
|-------|------|------|--------|------|-------|

ENVOLVEN ENVE

|        |        |       |
|--------|--------|-------|
| COMB1  | 1.0000 | COMBO |
| COMB2  | 1.0000 | COMBO |
| COMB3  | 1.0000 | COMBO |
| COMB4  | 1.0000 | COMBO |
| COMB5  | 1.0000 | COMBO |
| COMB6  | 1.0000 | COMBO |
| COMB7  | 1.0000 | COMBO |
| COMB8  | 1.0000 | COMBO |
| COMB9  | 1.0000 | COMBO |
| COMB10 | 1.0000 | COMBO |
| COMB11 | 1.0000 | COMBO |
| COMB12 | 1.0000 | COMBO |
| COMB13 | 1.0000 | COMBO |
| COMB14 | 1.0000 | COMBO |

Envolvente para diseño de Nervio II

FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2         | V3   | T    | M2   | M3         |
|-------|--------------|-----|------|------------|------|------|------|------------|
| 1     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | 3.82       | 0.00 | 0.00 | 0.00 | 1.41       |
|       | 8.7E-01      |     | 0.00 | 8.90       | 0.00 | 0.00 | 0.00 | 3.43       |
|       | 1.57         |     | 0.00 | 14.39      | 0.00 | 0.00 | 0.00 | -2.974E-01 |
|       | 2.26         |     | 0.00 | 22.66      | 0.00 | 0.00 | 0.00 | -9.77      |
|       | 2.96         |     | 0.00 | 30.93      | 0.00 | 0.00 | 0.00 | -23.53     |
| 1     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -7.04      | 0.00 | 0.00 | 0.00 | -5.560E-01 |
|       | 8.7E-01      |     | 0.00 | 1.23       | 0.00 | 0.00 | 0.00 | -4.97      |
|       | 1.57         |     | 0.00 | 8.60       | 0.00 | 0.00 | 0.00 | -12.92     |
|       | 2.26         |     | 0.00 | 13.68      | 0.00 | 0.00 | 0.00 | -24.40     |
|       | 2.96         |     | 0.00 | 18.76      | 0.00 | 0.00 | 0.00 | -39.46     |
| 2     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 2.2E-01      |     | 0.00 | -24.39     | 0.00 | 0.00 | 0.00 | -21.31     |
|       | 1.91         |     | 0.00 | -12.04     | 0.00 | 0.00 | 0.00 | 16.75      |
|       | 3.60         |     | 0.00 | 9.254E-01  | 0.00 | 0.00 | 0.00 | 33.96      |
|       | 5.29         |     | 0.00 | 21.04      | 0.00 | 0.00 | 0.00 | 17.16      |
|       | 6.99         |     | 0.00 | 40.11      | 0.00 | 0.00 | 0.00 | -20.60     |
| 2     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 2.2E-01      |     | 0.00 | -40.35     | 0.00 | 0.00 | 0.00 | -35.78     |
|       | 1.91         |     | 0.00 | -20.24     | 0.00 | 0.00 | 0.00 | 8.17       |
|       | 3.60         |     | 0.00 | -1.12      | 0.00 | 0.00 | 0.00 | 19.39      |
|       | 5.29         |     | 0.00 | 11.23      | 0.00 | 0.00 | 0.00 | 8.40       |
|       | 6.99         |     | 0.00 | 24.24      | 0.00 | 0.00 | 0.00 | -34.95     |
| 4     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -15.26     | 0.00 | 0.00 | 0.00 | -22.11     |
|       | 9.5E-01      |     | 0.00 | -9.63      | 0.00 | 0.00 | 0.00 | -8.85      |
|       | 1.72         |     | 0.00 | -4.01      | 0.00 | 0.00 | 0.00 | -1.13      |
|       | 2.49         |     | 0.00 | 3.72       | 0.00 | 0.00 | 0.00 | -4.729E-01 |
|       | 3.26         |     | 0.00 | 12.88      | 0.00 | 0.00 | 0.00 | -2.99      |
| 4     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -28.49     | 0.00 | 0.00 | 0.00 | -37.15     |
|       | 9.5E-01      |     | 0.00 | -19.33     | 0.00 | 0.00 | 0.00 | -23.05     |
|       | 1.72         |     | 0.00 | -10.40     | 0.00 | 0.00 | 0.00 | -13.37     |
|       | 2.49         |     | 0.00 | -4.78      | 0.00 | 0.00 | 0.00 | -8.02      |
|       | 3.26         |     | 0.00 | 8.506E-01  | 0.00 | 0.00 | 0.00 | -9.87      |
| 5     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -13.46     | 0.00 | 0.00 | 0.00 | -7.791E-01 |
|       | 1.04         |     | 0.00 | -7.16      | 0.00 | 0.00 | 0.00 | 11.68      |
|       | 1.90         |     | 0.00 | -8.544E-01 | 0.00 | 0.00 | 0.00 | 17.78      |
|       | 2.76         |     | 0.00 | 8.32       | 0.00 | 0.00 | 0.00 | 15.03      |
|       | 3.63         |     | 0.00 | 18.58      | 0.00 | 0.00 | 0.00 | 3.43       |
| 5     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -23.48     | 0.00 | 0.00 | 0.00 | -6.96      |

|         |              |        |      |      |      |            |
|---------|--------------|--------|------|------|------|------------|
| 1.04    | 0.00         | -13.22 | 0.00 | 0.00 | 0.00 | 3.71       |
| 1.90    | 0.00         | -2.96  | 0.00 | 0.00 | 0.00 | 8.54       |
| 2.76    | 0.00         | 3.85   | 0.00 | 0.00 | 0.00 | 7.93       |
| 3.63    | 0.00         | 10.16  | 0.00 | 0.00 | 0.00 | 1.89       |
| 6       | ENVOLVEN MAX |        |      |      |      |            |
| 1.6E-01 | 0.00         | -15.73 | 0.00 | 0.00 | 0.00 | 5.14       |
| 1.73    | 0.00         | -4.30  | 0.00 | 0.00 | 0.00 | 38.48      |
| 3.29    | 0.00         | 9.13   | 0.00 | 0.00 | 0.00 | 42.74      |
| 4.85    | 0.00         | 27.73  | 0.00 | 0.00 | 0.00 | 17.92      |
| 6.42    | 0.00         | 46.33  | 0.00 | 0.00 | 0.00 | -25.51     |
| 6       | ENVOLVEN MIN |        |      |      |      |            |
| 1.6E-01 | 0.00         | -30.63 | 0.00 | 0.00 | 0.00 | 2.66       |
| 1.73    | 0.00         | -12.02 | 0.00 | 0.00 | 0.00 | 18.31      |
| 3.29    | 0.00         | 4.57   | 0.00 | 0.00 | 0.00 | 16.10      |
| 4.85    | 0.00         | 16.00  | 0.00 | 0.00 | 0.00 | -3.97      |
| 6.42    | 0.00         | 27.42  | 0.00 | 0.00 | 0.00 | -52.38     |
| 7       | ENVOLVEN MAX |        |      |      |      |            |
| 1.8E-01 | 0.00         | -21.39 | 0.00 | 0.00 | 0.00 | -26.21     |
| 1.88    | 0.00         | -8.97  | 0.00 | 0.00 | 0.00 | 10.91      |
| 3.58    | 0.00         | 3.45   | 0.00 | 0.00 | 0.00 | 27.15      |
| 5.28    | 0.00         | 23.60  | 0.00 | 0.00 | 0.00 | 9.00       |
| 6.98    | 0.00         | 43.82  | 0.00 | 0.00 | 0.00 | -31.33     |
| 7       | ENVOLVEN MIN |        |      |      |      |            |
| 1.8E-01 | 0.00         | -42.21 | 0.00 | 0.00 | 0.00 | -52.51     |
| 1.88    | 0.00         | -21.99 | 0.00 | 0.00 | 0.00 | -9.25      |
| 3.58    | 0.00         | -1.76  | 0.00 | 0.00 | 0.00 | -6.080E-01 |
| 5.28    | 0.00         | 10.75  | 0.00 | 0.00 | 0.00 | -13.09     |
| 6.98    | 0.00         | 23.17  | 0.00 | 0.00 | 0.00 | -58.89     |
| 8       | ENVOLVEN MAX |        |      |      |      |            |
| 1.8E-01 | 0.00         | -29.59 | 0.00 | 0.00 | 0.00 | -30.21     |
| 1.86    | 0.00         | -17.30 | 0.00 | 0.00 | 0.00 | 19.75      |
| 3.54    | 0.00         | -5.02  | 0.00 | 0.00 | 0.00 | 48.77      |
| 5.22    | 0.00         | 12.75  | 0.00 | 0.00 | 0.00 | 44.16      |
| 6.90    | 0.00         | 32.75  | 0.00 | 0.00 | 0.00 | 5.91       |
| 8       | ENVOLVEN MIN |        |      |      |      |            |
| 1.8E-01 | 0.00         | -49.44 | 0.00 | 0.00 | 0.00 | -57.91     |
| 1.86    | 0.00         | -29.44 | 0.00 | 0.00 | 0.00 | -2.14      |
| 3.54    | 0.00         | -9.43  | 0.00 | 0.00 | 0.00 | 20.28      |
| 5.22    | 0.00         | 5.09   | 0.00 | 0.00 | 0.00 | 22.04      |
| 6.90    | 0.00         | 17.38  | 0.00 | 0.00 | 0.00 | 3.15       |

### ENVOLVENTE NERVIO III

#### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE                               |
|----------|------|--------|--------|-------|-------------------------------------|
| ENVOLVEN | ENVE |        |        |       | Envolvente para diseño de Nervio II |
|          |      | COMB1  | 1.0000 | COMBO |                                     |
|          |      | COMB2  | 1.0000 | COMBO |                                     |
|          |      | COMB3  | 1.0000 | COMBO |                                     |
|          |      | COMB4  | 1.0000 | COMBO |                                     |
|          |      | COMB5  | 1.0000 | COMBO |                                     |
|          |      | COMB6  | 1.0000 | COMBO |                                     |
|          |      | COMB7  | 1.0000 | COMBO |                                     |
|          |      | COMB8  | 1.0000 | COMBO |                                     |
|          |      | COMB9  | 1.0000 | COMBO |                                     |
|          |      | COMB10 | 1.0000 | COMBO |                                     |
|          |      | COMB11 | 1.0000 | COMBO |                                     |
|          |      | COMB12 | 1.0000 | COMBO |                                     |
|          |      | COMB13 | 1.0000 | COMBO |                                     |
|          |      | COMB14 | 1.0000 | COMBO |                                     |

FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2        | V3   | T    | M2   | M3         |
|-------|--------------|-----|------|-----------|------|------|------|------------|
| 1     | ENVOLVEN MAX |     |      |           |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -2.01     | 0.00 | 0.00 | 0.00 | 2.16       |
|       | 8.7E-01      |     | 0.00 | 3.07      | 0.00 | 0.00 | 0.00 | 7.13       |
|       | 1.57         |     | 0.00 | 8.57      | 0.00 | 0.00 | 0.00 | 6.36       |
|       | 2.26         |     | 0.00 | 16.84     | 0.00 | 0.00 | 0.00 | -1.539E-01 |
|       | 2.96         |     | 0.00 | 25.11     | 0.00 | 0.00 | 0.00 | -11.98     |
| 1     | ENVOLVEN MIN |     |      |           |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -11.29    | 0.00 | 0.00 | 0.00 | 4.630E-01  |
|       | 8.7E-01      |     | 0.00 | -3.03     | 0.00 | 0.00 | 0.00 | 9.217E-02  |
|       | 1.57         |     | 0.00 | 4.69      | 0.00 | 0.00 | 0.00 | -3.81      |
|       | 2.26         |     | 0.00 | 9.77      | 0.00 | 0.00 | 0.00 | -11.24     |
|       | 2.96         |     | 0.00 | 14.85     | 0.00 | 0.00 | 0.00 | -22.26     |
| 2     | ENVOLVEN MAX |     |      |           |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -17.54    | 0.00 | 0.00 | 0.00 | -11.51     |
|       | 1.50         |     | 0.00 | -7.89     | 0.00 | 0.00 | 0.00 | 10.36      |
|       | 2.82         |     | 0.00 | 1.76      | 0.00 | 0.00 | 0.00 | 19.94      |
|       | 4.14         |     | 0.00 | 17.31     | 0.00 | 0.00 | 0.00 | 8.78       |
|       | 5.46         |     | 0.00 | 33.01     | 0.00 | 0.00 | 0.00 | -15.62     |
| 2     | ENVOLVEN MIN |     |      |           |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -30.81    | 0.00 | 0.00 | 0.00 | -21.29     |
|       | 1.50         |     | 0.00 | -15.11    | 0.00 | 0.00 | 0.00 | 3.71       |
|       | 2.82         |     | 0.00 | 2.050E-01 | 0.00 | 0.00 | 0.00 | 7.90       |
|       | 4.14         |     | 0.00 | 9.85      | 0.00 | 0.00 | 0.00 | -6.427E-01 |
|       | 5.46         |     | 0.00 | 19.50     | 0.00 | 0.00 | 0.00 | -27.21     |
| 3     | ENVOLVEN MAX |     |      |           |      |      |      |            |
|       | 5.7E-01      |     | 0.00 | -14.31    | 0.00 | 0.00 | 0.00 | -8.40      |
|       | 1.62         |     | 0.00 | -5.51     | 0.00 | 0.00 | 0.00 | 8.29       |
|       | 2.68         |     | 0.00 | 2.20      | 0.00 | 0.00 | 0.00 | 13.60      |
|       | 3.73         |     | 0.00 | 13.78     | 0.00 | 0.00 | 0.00 | 5.68       |
|       | 4.79         |     | 0.00 | 26.33     | 0.00 | 0.00 | 0.00 | -8.52      |
| 3     | ENVOLVEN MIN |     |      |           |      |      |      |            |
|       | 5.7E-01      |     | 0.00 | -25.02    | 0.00 | 0.00 | 0.00 | -19.04     |
|       | 1.62         |     | 0.00 | -14.63    | 0.00 | 0.00 | 0.00 | -3.24      |
|       | 2.68         |     | 0.00 | -2.18     | 0.00 | 0.00 | 0.00 | 2.53       |
|       | 3.73         |     | 0.00 | 5.52      | 0.00 | 0.00 | 0.00 | -1.30      |
|       | 4.79         |     | 0.00 | 13.23     | 0.00 | 0.00 | 0.00 | -17.29     |
| 5     | ENVOLVEN MAX |     |      |           |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -15.49    | 0.00 | 0.00 | 0.00 | -8.12      |
|       | 1.04         |     | 0.00 | -9.18     | 0.00 | 0.00 | 0.00 | 5.40       |
|       | 1.90         |     | 0.00 | -2.88     | 0.00 | 0.00 | 0.00 | 13.47      |
|       | 2.76         |     | 0.00 | 6.05      | 0.00 | 0.00 | 0.00 | 12.68      |
|       | 3.63         |     | 0.00 | 16.31     | 0.00 | 0.00 | 0.00 | 3.04       |
| 5     | ENVOLVEN MIN |     |      |           |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -26.28    | 0.00 | 0.00 | 0.00 | -17.09     |
|       | 1.04         |     | 0.00 | -16.02    | 0.00 | 0.00 | 0.00 | -4.25      |
|       | 1.90         |     | 0.00 | -5.76     | 0.00 | 0.00 | 0.00 | 3.06       |
|       | 2.76         |     | 0.00 | 9.729E-01 | 0.00 | 0.00 | 0.00 | 4.94       |
|       | 3.63         |     | 0.00 | 7.28      | 0.00 | 0.00 | 0.00 | 1.39       |

ENVOLVENTE NERVIO IV Y VIIa

LOAD COMBINATION MULTIPLIERS

| COMBO | TYPE | CASE | FACTOR | TYPE | TITLE |
|-------|------|------|--------|------|-------|
|-------|------|------|--------|------|-------|

ENVOLVEN ENVE

|        |        |       |
|--------|--------|-------|
| COMB1  | 1.0000 | COMBO |
| COMB2  | 1.0000 | COMBO |
| COMB3  | 1.0000 | COMBO |
| COMB4  | 1.0000 | COMBO |
| COMB5  | 1.0000 | COMBO |
| COMB6  | 1.0000 | COMBO |
| COMB7  | 1.0000 | COMBO |
| COMB8  | 1.0000 | COMBO |
| COMB9  | 1.0000 | COMBO |
| COMB10 | 1.0000 | COMBO |
| COMB11 | 1.0000 | COMBO |

Envolvente para diseño de Nervio III

F R A M E   E L E M E N T   F O R C E S

| FRAME | LOAD         | LOC | P    | V2         | V3   | T    | M2   | M3         |
|-------|--------------|-----|------|------------|------|------|------|------------|
| 1     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -12.15     | 0.00 | 0.00 | 0.00 | 3.99       |
|       | 1.33         |     | 0.00 | -3.74      | 0.00 | 0.00 | 0.00 | 21.17      |
|       | 2.48         |     | 0.00 | 6.35       | 0.00 | 0.00 | 0.00 | 22.61      |
|       | 3.63         |     | 0.00 | 20.03      | 0.00 | 0.00 | 0.00 | 8.32       |
|       | 4.78         |     | 0.00 | 33.72      | 0.00 | 0.00 | 0.00 | -15.57     |
| 1     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -21.78     | 0.00 | 0.00 | 0.00 | 2.24       |
|       | 1.33         |     | 0.00 | -8.09      | 0.00 | 0.00 | 0.00 | 11.37      |
|       | 2.48         |     | 0.00 | 3.90       | 0.00 | 0.00 | 0.00 | 10.84      |
|       | 3.63         |     | 0.00 | 12.30      | 0.00 | 0.00 | 0.00 | 6.473E-01  |
|       | 4.78         |     | 0.00 | 20.71      | 0.00 | 0.00 | 0.00 | -25.35     |
| 2     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -17.69     | 0.00 | 0.00 | 0.00 | -16.10     |
|       | 1.04         |     | 0.00 | -11.38     | 0.00 | 0.00 | 0.00 | 2.705E-01  |
|       | 1.90         |     | 0.00 | -5.08      | 0.00 | 0.00 | 0.00 | 9.94       |
|       | 2.76         |     | 0.00 | 4.19       | 0.00 | 0.00 | 0.00 | 10.75      |
|       | 3.63         |     | 0.00 | 14.45      | 0.00 | 0.00 | 0.00 | 2.71       |
| 2     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -28.80     | 0.00 | 0.00 | 0.00 | -26.21     |
|       | 1.04         |     | 0.00 | -18.53     | 0.00 | 0.00 | 0.00 | -9.64      |
|       | 1.90         |     | 0.00 | -8.27      | 0.00 | 0.00 | 0.00 | -6.393E-01 |
|       | 2.76         |     | 0.00 | -9.759E-01 | 0.00 | 0.00 | 0.00 | 2.92       |
|       | 3.63         |     | 0.00 | 5.33       | 0.00 | 0.00 | 0.00 | 1.04       |
| 3     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 1.6E-01      |     | 0.00 | -15.04     | 0.00 | 0.00 | 0.00 | 5.03       |
|       | 1.73         |     | 0.00 | -3.62      | 0.00 | 0.00 | 0.00 | 37.30      |
|       | 3.29         |     | 0.00 | 9.82       | 0.00 | 0.00 | 0.00 | 40.49      |
|       | 4.85         |     | 0.00 | 28.42      | 0.00 | 0.00 | 0.00 | 14.60      |
|       | 6.42         |     | 0.00 | 47.02      | 0.00 | 0.00 | 0.00 | -29.90     |
| 3     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 1.6E-01      |     | 0.00 | -29.94     | 0.00 | 0.00 | 0.00 | 2.54       |
|       | 1.73         |     | 0.00 | -11.34     | 0.00 | 0.00 | 0.00 | 17.13      |
|       | 3.29         |     | 0.00 | 5.25       | 0.00 | 0.00 | 0.00 | 13.85      |
|       | 4.85         |     | 0.00 | 16.68      | 0.00 | 0.00 | 0.00 | -7.29      |
|       | 6.42         |     | 0.00 | 28.10      | 0.00 | 0.00 | 0.00 | -56.77     |
| 4     | ENVOLVEN MAX |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -25.73     | 0.00 | 0.00 | 0.00 | -29.96     |
|       | 1.88         |     | 0.00 | -13.30     | 0.00 | 0.00 | 0.00 | 14.53      |
|       | 3.58         |     | 0.00 | 6.53       | 0.00 | 0.00 | 0.00 | 34.47      |
|       | 5.28         |     | 0.00 | 26.67      | 0.00 | 0.00 | 0.00 | 11.10      |
|       | 6.98         |     | 0.00 | 46.90      | 0.00 | 0.00 | 0.00 | -34.46     |
| 4     | ENVOLVEN MIN |     |      |            |      |      |      |            |
|       | 1.8E-01      |     | 0.00 | -46.55     | 0.00 | 0.00 | 0.00 | -56.25     |
|       | 1.88         |     | 0.00 | -26.32     | 0.00 | 0.00 | 0.00 | -5.63      |
|       | 3.58         |     | 0.00 | 1.31       | 0.00 | 0.00 | 0.00 | 6.71       |
|       | 5.28         |     | 0.00 | 13.82      | 0.00 | 0.00 | 0.00 | -10.99     |
|       | 6.98         |     | 0.00 | 26.24      | 0.00 | 0.00 | 0.00 | -62.02     |

|   |              |      |        |      |      |      |        |
|---|--------------|------|--------|------|------|------|--------|
| 5 | ENVOLVEN MAX |      |        |      |      |      |        |
|   | 1.8E-01      | 0.00 | -30.11 | 0.00 | 0.00 | 0.00 | -33.78 |
|   | 1.86         | 0.00 | -17.82 | 0.00 | 0.00 | 0.00 | 17.05  |
|   | 3.54         | 0.00 | -5.54  | 0.00 | 0.00 | 0.00 | 46.94  |
|   | 5.22         | 0.00 | 12.23  | 0.00 | 0.00 | 0.00 | 43.20  |
|   | 6.90         | 0.00 | 32.23  | 0.00 | 0.00 | 0.00 | 5.82   |
| 5 | ENVOLVEN MIN |      |        |      |      |      |        |
|   | 1.8E-01      | 0.00 | -49.96 | 0.00 | 0.00 | 0.00 | -61.48 |
|   | 1.86         | 0.00 | -29.96 | 0.00 | 0.00 | 0.00 | -4.85  |
|   | 3.54         | 0.00 | -9.95  | 0.00 | 0.00 | 0.00 | 18.45  |
|   | 5.22         | 0.00 | 4.58   | 0.00 | 0.00 | 0.00 | 21.08  |
|   | 6.90         | 0.00 | 16.86  | 0.00 | 0.00 | 0.00 | 3.06   |

## ENVOLVENTE NERVIO V

### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE  | FACTOR | TYPE  | TITLE                               |
|----------|------|-------|--------|-------|-------------------------------------|
| ENVOLVEN | ENVE |       |        |       | Envolvente para diseño de Nervio IV |
|          |      | COMB1 | 1.0000 | COMBO |                                     |
|          |      | COMB2 | 1.0000 | COMBO |                                     |
|          |      | COMB3 | 1.0000 | COMBO |                                     |
|          |      | COMB4 | 1.0000 | COMBO |                                     |
|          |      | COMB5 | 1.0000 | COMBO |                                     |
|          |      | COMB6 | 1.0000 | COMBO |                                     |
|          |      | COMB7 | 1.0000 | COMBO |                                     |

### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2     | V3   | T    | M2   | M3     |
|-------|--------------|-----|------|--------|------|------|------|--------|
| 1     | ENVOLVEN MAX |     |      |        |      |      |      |        |
|       | 1.8E-01      |     | 0.00 | -10.00 | 0.00 | 0.00 | 0.00 | 4.14   |
|       | 1.18         |     | 0.00 | -2.69  | 0.00 | 0.00 | 0.00 | 19.93  |
|       | 2.18         |     | 0.00 | 6.47   | 0.00 | 0.00 | 0.00 | 22.30  |
|       | 3.18         |     | 0.00 | 19.89  | 0.00 | 0.00 | 0.00 | 11.23  |
|       | 4.18         |     | 0.00 | 33.32  | 0.00 | 0.00 | 0.00 | -7.76  |
| 1     | ENVOLVEN MIN |     |      |        |      |      |      |        |
|       | 1.8E-01      |     | 0.00 | -22.50 | 0.00 | 0.00 | 0.00 | 1.86   |
|       | 1.18         |     | 0.00 | -9.08  | 0.00 | 0.00 | 0.00 | 8.21   |
|       | 2.18         |     | 0.00 | 2.50   | 0.00 | 0.00 | 0.00 | 7.25   |
|       | 3.18         |     | 0.00 | 9.81   | 0.00 | 0.00 | 0.00 | -1.02  |
|       | 4.18         |     | 0.00 | 17.11  | 0.00 | 0.00 | 0.00 | -22.09 |
| 2     | ENVOLVEN MAX |     |      |        |      |      |      |        |
|       | 1.8E-01      |     | 0.00 | -10.70 | 0.00 | 0.00 | 0.00 | -8.88  |
|       | 1.19         |     | 0.00 | -3.30  | 0.00 | 0.00 | 0.00 | 4.60   |
|       | 2.20         |     | 0.00 | 4.10   | 0.00 | 0.00 | 0.00 | 10.68  |
|       | 3.21         |     | 0.00 | 17.57  | 0.00 | 0.00 | 0.00 | 2.99   |
|       | 4.23         |     | 0.00 | 31.16  | 0.00 | 0.00 | 0.00 | -13.39 |
| 2     | ENVOLVEN MIN |     |      |        |      |      |      |        |
|       | 1.8E-01      |     | 0.00 | -28.67 | 0.00 | 0.00 | 0.00 | -22.91 |
|       | 1.19         |     | 0.00 | -15.08 | 0.00 | 0.00 | 0.00 | -7.15  |
|       | 2.20         |     | 0.00 | -1.48  | 0.00 | 0.00 | 0.00 | -5.25  |
|       | 3.21         |     | 0.00 | 6.05   | 0.00 | 0.00 | 0.00 | -10.84 |
|       | 4.23         |     | 0.00 | 13.45  | 0.00 | 0.00 | 0.00 | -29.00 |
| 3     | ENVOLVEN MAX |     |      |        |      |      |      |        |
|       | 1.8E-01      |     | 0.00 | -20.01 | 0.00 | 0.00 | 0.00 | -12.24 |
|       | 1.33         |     | 0.00 | -11.61 | 0.00 | 0.00 | 0.00 | 12.52  |
|       | 2.48         |     | 0.00 | -3.20  | 0.00 | 0.00 | 0.00 | 27.66  |
|       | 3.63         |     | 0.00 | 10.00  | 0.00 | 0.00 | 0.00 | 25.04  |

|   |              |      |        |      |      |      |           |
|---|--------------|------|--------|------|------|------|-----------|
|   | 4.78         | 0.00 | 25.44  | 0.00 | 0.00 | 0.00 | 4.66      |
| 3 | ENVOLVEN MIN |      |        |      |      |      |           |
|   | 1.8E-01      | 0.00 | -37.89 | 0.00 | 0.00 | 0.00 | -27.82    |
|   | 1.33         | 0.00 | -22.44 | 0.00 | 0.00 | 0.00 | 2.905E-01 |
|   | 2.48         | 0.00 | -7.00  | 0.00 | 0.00 | 0.00 | 10.60     |
|   | 3.63         | 0.00 | 3.64   | 0.00 | 0.00 | 0.00 | 11.24     |
|   | 4.78         | 0.00 | 12.05  | 0.00 | 0.00 | 0.00 | 2.22      |

## ENVOLVENTE NERVIOS VIII

### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE                                |
|----------|------|--------|--------|-------|--------------------------------------|
| ENVOLVEN | ENVE |        |        |       | Envolvente para diseño de Nervio III |
|          |      | COMB1  | 1.0000 | COMBO |                                      |
|          |      | COMB2  | 1.0000 | COMBO |                                      |
|          |      | COMB3  | 1.0000 | COMBO |                                      |
|          |      | COMB4  | 1.0000 | COMBO |                                      |
|          |      | COMB5  | 1.0000 | COMBO |                                      |
|          |      | COMB6  | 1.0000 | COMBO |                                      |
|          |      | COMB7  | 1.0000 | COMBO |                                      |
|          |      | COMB8  | 1.0000 | COMBO |                                      |
|          |      | COMB9  | 1.0000 | COMBO |                                      |
|          |      | COMB10 | 1.0000 | COMBO |                                      |
|          |      | COMB11 | 1.0000 | COMBO |                                      |

### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC  | P      | V2   | V3   | T    | M2   | M3     |
|-------|--------------|------|--------|------|------|------|------|--------|
| 1     | ENVOLVEN MAX |      |        |      |      |      |      |        |
|       | 1.4E-01      | 0.00 | -4.44  | 0.00 | 0.00 | 0.00 | 0.00 | -6.48  |
|       | 7.9E-01      | 0.00 | 3.03   | 0.00 | 0.00 | 0.00 | 0.00 | -5.92  |
|       | 1.44         | 0.00 | 10.80  | 0.00 | 0.00 | 0.00 | 0.00 | -7.85  |
|       | 2.10         | 0.00 | 18.58  | 0.00 | 0.00 | 0.00 | 0.00 | -12.75 |
|       | 2.75         | 0.00 | 26.35  | 0.00 | 0.00 | 0.00 | 0.00 | -18.20 |
| 1     | ENVOLVEN MIN |      |        |      |      |      |      |        |
|       | 1.4E-01      | 0.00 | -11.79 | 0.00 | 0.00 | 0.00 | 0.00 | -23.24 |
|       | 7.9E-01      | 0.00 | -6.70  | 0.00 | 0.00 | 0.00 | 0.00 | -17.29 |
|       | 1.44         | 0.00 | -1.93  | 0.00 | 0.00 | 0.00 | 0.00 | -17.07 |
|       | 2.10         | 0.00 | 2.85   | 0.00 | 0.00 | 0.00 | 0.00 | -22.07 |
|       | 2.75         | 0.00 | 7.62   | 0.00 | 0.00 | 0.00 | 0.00 | -34.72 |
| 2     | ENVOLVEN MAX |      |        |      |      |      |      |        |
|       | 0.00         | 0.00 | -24.02 | 0.00 | 0.00 | 0.00 | 0.00 | -18.20 |
|       | 1.35         | 0.00 | -14.12 | 0.00 | 0.00 | 0.00 | 0.00 | 10.51  |
|       | 2.71         | 0.00 | -4.22  | 0.00 | 0.00 | 0.00 | 0.00 | 31.33  |
|       | 4.06         | 0.00 | 8.80   | 0.00 | 0.00 | 0.00 | 0.00 | 30.33  |
|       | 5.42         | 0.00 | 24.91  | 0.00 | 0.00 | 0.00 | 0.00 | 7.50   |
| 2     | ENVOLVEN MIN |      |        |      |      |      |      |        |
|       | 0.00         | 0.00 | -40.00 | 0.00 | 0.00 | 0.00 | 0.00 | -34.72 |
|       | 1.35         | 0.00 | -23.88 | 0.00 | 0.00 | 0.00 | 0.00 | 5.67   |
|       | 2.71         | 0.00 | -7.77  | 0.00 | 0.00 | 0.00 | 0.00 | 18.71  |
|       | 4.06         | 0.00 | 5.22   | 0.00 | 0.00 | 0.00 | 0.00 | 18.34  |
|       | 5.42         | 0.00 | 15.12  | 0.00 | 0.00 | 0.00 | 0.00 | 4.56   |
| 3     | ENVOLVEN MAX |      |        |      |      |      |      |        |
|       | 1.6E-01      | 0.00 | -16.21 | 0.00 | 0.00 | 0.00 | 0.00 | 4.93   |
|       | 1.73         | 0.00 | -4.78  | 0.00 | 0.00 | 0.00 | 0.00 | 36.21  |
|       | 3.29         | 0.00 | 8.88   | 0.00 | 0.00 | 0.00 | 0.00 | 38.41  |
|       | 4.85         | 0.00 | 27.48  | 0.00 | 0.00 | 0.00 | 0.00 | 11.53  |



|   |              |      |        |      |      |      |        |
|---|--------------|------|--------|------|------|------|--------|
|   | 6.42         | 0.00 | 46.08  | 0.00 | 0.00 | 0.00 | -32.28 |
| 3 | ENVOLVEN MIN |      |        |      |      |      |        |
|   | 1.6E-01      | 0.00 | -29.31 | 0.00 | 0.00 | 0.00 | 2.73   |
|   | 1.73         | 0.00 | -10.71 | 0.00 | 0.00 | 0.00 | 19.14  |
|   | 3.29         | 0.00 | 5.63   | 0.00 | 0.00 | 0.00 | 17.68  |
|   | 4.85         | 0.00 | 17.05  | 0.00 | 0.00 | 0.00 | -1.63  |
|   | 6.42         | 0.00 | 28.48  | 0.00 | 0.00 | 0.00 | -50.77 |
| 4 | ENVOLVEN MAX |      |        |      |      |      |        |
|   | 1.4E-01      | 0.00 | -27.65 | 0.00 | 0.00 | 0.00 | -33.03 |
|   | 1.51         | 0.00 | -17.62 | 0.00 | 0.00 | 0.00 | 5.13   |
|   | 2.89         | 0.00 | -6.72  | 0.00 | 0.00 | 0.00 | 25.83  |
|   | 4.26         | 0.00 | 17.02  | 0.00 | 0.00 | 0.00 | 15.12  |
|   | 5.63         | 0.00 | 33.36  | 0.00 | 0.00 | 0.00 | -4.87  |
| 4 | ENVOLVEN MIN |      |        |      |      |      |        |
|   | 1.4E-01      | 0.00 | -42.90 | 0.00 | 0.00 | 0.00 | -52.24 |
|   | 1.51         | 0.00 | -26.56 | 0.00 | 0.00 | 0.00 | -11.56 |
|   | 2.89         | 0.00 | -11.27 | 0.00 | 0.00 | 0.00 | 10.55  |
|   | 4.26         | 0.00 | 6.17   | 0.00 | 0.00 | 0.00 | 9.91   |
|   | 5.63         | 0.00 | 16.21  | 0.00 | 0.00 | 0.00 | -20.03 |

### 5.1.7.2 Cálculo de Refuerzo.

#### - Refuerzo transversal:

En la placa superior e inferior se coloca refuerzos para efectos de retracción y temperatura, se utiliza una cuantía mínima:

$$\rho = 0.0018 \quad A_s = 0.0018 * 1.5 * b * h$$

El espaciamiento no debe exceder 3 veces el espesor de la placa ni 500 mm.

#### - Refuerzo longitudinal:

En los nervios el cálculo del refuerzo longitudinal se parte del diseño de envolvente y se compara con el  $\rho_{min}$  y  $\rho_{max}$  especificado en la norma sismoresistente.

$$K = M / (bd^2) \quad \rho_{min} = 1.4 / F_y \quad \rho_{max} = \rho_{bal} * 0.75$$

$$\rho_{bal} = (0.85\beta_1 F'_c / F_y) (600 / 600 + F_y)$$

$$F'_c = 21 \text{ Mpa}$$

$$F_y = 420 \text{ Mpa}$$

$$\beta_1 = 0.85$$

- **Esfuerzo cortante.** Debido a que los esfuerzos inducidos son bajos en relación a la capacidad de resistencia del concreto a cortante, el refuerzo para controlar este tipo de esfuerzos se basa en requerimientos mínimos que son:

- Estribos en acero corrugado de 420 Mpa N° 2.
- Separación de estribos en zona de confinamiento (2d en 44 cm.). El primer estribo se coloca a 5° mm. A partir de la cara del apoyo con separación a  $d/4 \cong 6$  cm.
- Separación en el resto de la luz a  $d/2 \cong 12$  cm.

$$v_c = \sqrt{f'_c} / 6 \quad v_u = V_u / bd \quad v_u \leq \phi(v_c + v_s) \quad A_{v,min} = b s / 3F_y$$

con b y s en mm, Fy en Mpa

$$s = A_v f_y / b v_s$$

## REFUERZO NERVIO I Y VI

CONCRETE DESIGN OUTPUT (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | REQUIRED REINFORCING |        |        |       |       |        |
|------------|---------------|---------------|----------------------|--------|--------|-------|-------|--------|
|            |               |               | TOP                  | COMBO  | BOTTOM | COMBO | SHEAR | COMBO  |
| 1          | 14X50         | 17.500        | 0.000                | COMB11 | 0.388  | COMB1 | 0.000 | COMB11 |
| 1          | 14X50         | 185.625       | 0.784                | COMB1  | 2.283  | COMB7 | 0.000 | COMB11 |
| 1          | 14X50         | 353.750       | 0.784                | COMB1  | 2.526  | COMB7 | 0.000 | COMB11 |
| 1          | 14X50         | 521.875       | 0.784                | COMB1  | 1.135  | COMB1 | 0.000 | COMB11 |
| 1          | 14X50         | 690.000       | 2.933                | COMB9  | 1.586  | COMB1 | 0.007 | COMB9  |
| 2          | 14X50         | 17.500        | 2.999                | COMB9  | 1.693  | COMB1 | 0.007 | COMB9  |
| 2          | 14X50         | 187.500       | 0.837                | COMB1  | 0.837  | COMB1 | 0.000 | COMB11 |
| 2          | 14X50         | 357.500       | 0.837                | COMB1  | 1.542  | COMB2 | 0.000 | COMB11 |
| 2          | 14X50         | 527.500       | 0.837                | COMB1  | 0.837  | COMB1 | 0.000 | COMB11 |
| 2          | 14X50         | 697.500       | 3.118                | COMB10 | 1.772  | COMB3 | 0.007 | COMB10 |

|   |       |         |       |        |       |        |       |        |
|---|-------|---------|-------|--------|-------|--------|-------|--------|
| 3 | 14X50 | 17.500  | 3.047 | COMB10 | 1.615 | COMB2  | 0.008 | COMB10 |
| 3 | 14X50 | 189.375 | 0.799 | COMB2  | 1.182 | COMB3  | 0.000 | COMB11 |
| 3 | 14X50 | 361.250 | 0.799 | COMB2  | 2.631 | COMB7  | 0.000 | COMB11 |
| 3 | 14X50 | 533.125 | 0.799 | COMB2  | 2.380 | COMB7  | 0.000 | COMB11 |
| 3 | 14X50 | 705.000 | 0.000 | COMB11 | 0.397 | COMB3  | 0.000 | COMB11 |
| 5 | 14X50 | 17.500  | 2.758 | COMB9  | 1.791 | COMB9  | 0.006 | COMB9  |
| 5 | 14X50 | 187.500 | 0.885 | COMB9  | 0.885 | COMB9  | 0.000 | COMB11 |
| 5 | 14X50 | 357.500 | 0.885 | COMB9  | 1.650 | COMB5  | 0.000 | COMB11 |
| 5 | 14X50 | 527.500 | 0.885 | COMB9  | 0.885 | COMB9  | 0.000 | COMB11 |
| 5 | 14X50 | 697.500 | 3.055 | COMB10 | 1.978 | COMB10 | 0.007 | COMB10 |
| 6 | 14X50 | 17.500  | 2.995 | COMB10 | 1.940 | COMB10 | 0.007 | COMB10 |
| 6 | 14X50 | 185.625 | 0.957 | COMB10 | 1.069 | COMB6  | 0.000 | COMB11 |
| 6 | 14X50 | 353.750 | 0.957 | COMB10 | 2.473 | COMB8  | 0.000 | COMB11 |
| 6 | 14X50 | 521.875 | 0.957 | COMB10 | 2.256 | COMB8  | 0.000 | COMB11 |
| 6 | 14X50 | 690.000 | 0.000 | COMB11 | 0.386 | COMB6  | 0.000 | COMB11 |
| 8 | 14X50 | 0.000   | 0.000 | COMB7  | 0.000 | COMB5  | 0.000 | COMB11 |
| 8 | 14X50 | 156.338 | 0.756 | COMB9  | 2.193 | COMB4  | 0.000 | COMB11 |
| 8 | 14X50 | 312.677 | 0.756 | COMB9  | 2.193 | COMB4  | 0.000 | COMB11 |
| 8 | 14X50 | 469.015 | 0.756 | COMB9  | 1.134 | COMB4  | 0.000 | COMB11 |
| 8 | 14X50 | 625.354 | 2.342 | COMB9  | 1.527 | COMB9  | 0.003 | COMB9  |

## REFUERZO NERVIO II Y VII

CONCRETE DESIGN OUTPUT (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |        |        |       |       |        |
|------------|---------------|---------------|---------------------------------|--------|--------|-------|-------|--------|
|            |               |               | TOP                             | COMBO  | BOTTOM | COMBO | SHEAR | COMBO  |
| 1          | 14X50         | 17.500        | 0.037                           | COMB2  | 0.108  | COMB1 | 0.013 | COMB4  |
| 1          | 14X50         | 87.000        | 0.736                           | COMB2  | 0.736  | COMB2 | 0.015 | COMB3  |
| 1          | 14X50         | 156.500       | 0.950                           | COMB2  | 0.736  | COMB2 | 0.018 | COMB3  |
| 1          | 14X50         | 226.000       | 1.837                           | COMB2  | 0.736  | COMB2 | 0.021 | COMB3  |
| 1          | 14X50         | 295.500       | 2.354                           | COMB14 | 1.487  | COMB2 | 0.024 | COMB3  |
| 2          | 14X50         | 22.256        | 2.193                           | COMB2  | 1.294  | COMB2 | 0.006 | COMB14 |
| 2          | 14X50         | 191.317       | 0.641                           | COMB2  | 1.297  | COMB2 | 0.000 | COMB14 |
| 2          | 14X50         | 360.378       | 0.641                           | COMB2  | 2.193  | COMB2 | 0.000 | COMB14 |
| 2          | 14X50         | 529.439       | 0.641                           | COMB2  | 1.155  | COMB2 | 0.000 | COMB14 |
| 2          | 14X50         | 698.500       | 2.193                           | COMB2  | 1.270  | COMB2 | 0.006 | COMB12 |

|   |       |         |       |        |       |        |           |        |
|---|-------|---------|-------|--------|-------|--------|-----------|--------|
| 4 | 14X50 | 17.500  | 2.210 | COMB14 | 1.359 | COMB2  | 0.023     | COMB3  |
| 4 | 14X50 | 94.500  | 1.598 | COMB2  | 0.673 | COMB2  | 0.019     | COMB3  |
| 4 | 14X50 | 171.500 | 0.797 | COMB2  | 0.673 | COMB2  | 0.016     | COMB3  |
| 4 | 14X50 | 248.500 | 0.673 | COMB2  | 0.673 | COMB2  | 0.013     | COMB5  |
| 4 | 14X50 | 325.500 | 0.760 | COMB5  | 0.378 | COMB5  | 0.016     | COMB5  |
| 5 | 14X50 | 17.500  | 0.503 | COMB4  | 0.251 | COMB4  | 0.000     | COMB14 |
| 5 | 14X50 | 103.750 | 0.125 | COMB4  | 0.901 | COMB12 | 0.000     | COMB14 |
| 5 | 14X50 | 190.000 | 0.125 | COMB4  | 1.228 | COMB5  | 0.000     | COMB14 |
| 5 | 14X50 | 276.250 | 0.125 | COMB4  | 1.081 | COMB5  | 0.000     | COMB14 |
| 5 | 14X50 | 362.500 | 0.000 | COMB14 | 0.249 | COMB5  | 0.000     | COMB14 |
| 6 | 14X50 | 16.273  | 0.000 | COMB14 | 0.386 | COMB6  | 8.170E-04 | COMB12 |
| 6 | 14X50 | 172.612 | 0.772 | COMB6  | 2.293 | COMB12 | 0.000     | COMB14 |
| 6 | 14X50 | 328.950 | 0.772 | COMB6  | 2.559 | COMB12 | 0.000     | COMB14 |
| 6 | 14X50 | 485.288 | 0.772 | COMB6  | 1.145 | COMB6  | 0.000     | COMB14 |
| 6 | 14X50 | 641.627 | 3.173 | COMB13 | 1.561 | COMB6  | 0.010     | COMB13 |
| 7 | 14X50 | 17.500  | 3.182 | COMB13 | 1.666 | COMB6  | 0.011     | COMB13 |
| 7 | 14X50 | 187.500 | 0.959 | COMB8  | 0.959 | COMB8  | 0.000     | COMB14 |
| 7 | 14X50 | 357.500 | 0.959 | COMB8  | 2.129 | COMB7  | 0.000     | COMB14 |
| 7 | 14X50 | 527.500 | 0.959 | COMB8  | 0.959 | COMB8  | 1.107E-04 | COMB11 |
| 7 | 14X50 | 697.500 | 3.597 | COMB11 | 1.944 | COMB8  | 0.012     | COMB11 |
| 8 | 14X50 | 17.500  | 3.532 | COMB11 | 1.765 | COMB7  | 0.012     | COMB11 |
| 8 | 14X50 | 185.625 | 0.872 | COMB7  | 1.338 | COMB8  | 3.426E-04 | COMB11 |
| 8 | 14X50 | 353.750 | 0.872 | COMB7  | 2.942 | COMB12 | 0.000     | COMB14 |
| 8 | 14X50 | 521.875 | 0.872 | COMB7  | 2.649 | COMB12 | 0.000     | COMB14 |
| 8 | 14X50 | 690.000 | 0.000 | COMB14 | 0.447 | COMB8  | 0.002     | COMB12 |

### REFUERZO NERVIO III

CONCRETE DESIGN OUTPUT (ACI 318-95)  
 FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |        |        |        |           |        |
|------------|---------------|---------------|---------------------------------|--------|--------|--------|-----------|--------|
|            |               |               | TOP                             | COMBO  | BOTTOM | COMBO  | SHEAR     | COMBO  |
| 1          | 14X50         | 17.500        | 0.000                           | COMB14 | 0.156  | COMB1  | 0.013     | COMB4  |
| 1          | 14X50         | 87.000        | 0.425                           | COMB2  | 0.504  | COMB1  | 0.010     | COMB4  |
| 1          | 14X50         | 156.500       | 0.425                           | COMB2  | 0.410  | COMB1  | 0.013     | COMB5  |
| 1          | 14X50         | 226.000       | 0.866                           | COMB2  | 0.425  | COMB2  | 0.016     | COMB5  |
| 1          | 14X50         | 295.500       | 1.732                           | COMB2  | 0.856  | COMB2  | 0.019     | COMB5  |
| 2          | 14X50         | 17.500        | 1.552                           | COMB2  | 0.768  | COMB2  | 9.822E-04 | COMB2  |
| 2          | 14X50         | 149.500       | 0.443                           | COMB2  | 0.798  | COMB2  | 0.000     | COMB14 |
| 2          | 14X50         | 281.500       | 0.443                           | COMB2  | 1.551  | COMB2  | 0.000     | COMB14 |
| 2          | 14X50         | 413.500       | 0.443                           | COMB2  | 0.675  | COMB2  | 0.000     | COMB14 |
| 2          | 14X50         | 545.500       | 1.804                           | COMB2  | 0.891  | COMB2  | 0.002     | COMB10 |
| 3          | 14X50         | 56.732        | 1.377                           | COMB2  | 0.682  | COMB2  | 0.000     | COMB14 |
| 3          | 14X50         | 162.174       | 0.339                           | COMB2  | 0.637  | COMB13 | 0.000     | COMB14 |
| 3          | 14X50         | 267.616       | 0.339                           | COMB2  | 0.948  | COMB4  | 0.000     | COMB14 |
| 3          | 14X50         | 373.058       | 0.339                           | COMB2  | 0.339  | COMB2  | 0.000     | COMB14 |
| 3          | 14X50         | 478.500       | 1.119                           | COMB4  | 0.555  | COMB4  | 0.000     | COMB14 |
| 5          | 14X50         | 17.500        | 1.230                           | COMB4  | 0.610  | COMB4  | 0.000     | COMB14 |
| 5          | 14X50         | 103.750       | 0.304                           | COMB4  | 0.414  | COMB12 | 0.000     | COMB14 |
| 5          | 14X50         | 190.000       | 0.304                           | COMB4  | 0.981  | COMB5  | 0.000     | COMB14 |
| 5          | 14X50         | 276.250       | 0.304                           | COMB4  | 0.946  | COMB5  | 0.000     | COMB14 |
| 5          | 14X50         | 362.500       | 0.000                           | COMB14 | 0.227  | COMB5  | 0.000     | COMB14 |

## REFUERZO NERVIO IV Y VIIa

CONCRETE DESIGN OUTPUT (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |        |        |       |       |        |
|------------|---------------|---------------|---------------------------------|--------|--------|-------|-------|--------|
|            |               |               | TOP                             | COMBO  | BOTTOM | COMBO | SHEAR | COMBO  |
| 1          | 14X50         | 17.500        | 0.000                           | COMB11 | 0.306  | COMB1 | 0.000 | COMB11 |
| 1          | 14X50         | 132.500       | 0.416                           | COMB1  | 1.650  | COMB1 | 0.000 | COMB11 |
| 1          | 14X50         | 247.500       | 0.416                           | COMB1  | 1.765  | COMB1 | 0.000 | COMB11 |
| 1          | 14X50         | 362.500       | 0.416                           | COMB1  | 0.639  | COMB1 | 0.000 | COMB11 |
| 1          | 14X50         | 477.500       | 1.693                           | COMB1  | 0.837  | COMB1 | 0.002 | COMB8  |
| 2          | 14X50         | 17.500        | 1.881                           | COMB1  | 0.929  | COMB1 | 0.001 | COMB8  |
| 2          | 14X50         | 103.750       | 0.742                           | COMB1  | 0.461  | COMB1 | 0.000 | COMB11 |
| 2          | 14X50         | 190.000       | 0.461                           | COMB1  | 0.765  | COMB2 | 0.000 | COMB11 |
| 2          | 14X50         | 276.250       | 0.461                           | COMB1  | 0.828  | COMB2 | 0.000 | COMB11 |
| 2          | 14X50         | 362.500       | 0.000                           | COMB11 | 0.207  | COMB2 | 0.000 | COMB11 |

|   |       |         |       |        |       |        |           |        |
|---|-------|---------|-------|--------|-------|--------|-----------|--------|
| 3 | 14X50 | 16.273  | 0.000 | COMB11 | 0.377 | COMB3  | 9.534E-04 | COMB10 |
| 3 | 14X50 | 172.612 | 0.893 | COMB4  | 2.220 | COMB10 | 0.000     | COMB11 |
| 3 | 14X50 | 328.950 | 0.893 | COMB4  | 2.418 | COMB10 | 0.000     | COMB11 |
| 3 | 14X50 | 485.288 | 0.893 | COMB4  | 0.885 | COMB3  | 3.128E-05 | COMB9  |
| 3 | 14X50 | 641.627 | 3.458 | COMB9  | 1.807 | COMB4  | 0.011     | COMB9  |
| 4 | 14X50 | 17.500  | 3.424 | COMB9  | 1.815 | COMB3  | 0.015     | COMB9  |
| 4 | 14X50 | 187.500 | 1.020 | COMB5  | 1.124 | COMB4  | 0.002     | COMB9  |
| 4 | 14X50 | 357.500 | 1.020 | COMB5  | 2.193 | COMB4  | 0.000     | COMB11 |
| 4 | 14X50 | 527.500 | 1.020 | COMB5  | 1.020 | COMB5  | 0.003     | COMB8  |
| 4 | 14X50 | 697.500 | 3.803 | COMB8  | 2.070 | COMB5  | 0.015     | COMB8  |
| 5 | 14X50 | 17.500  | 3.767 | COMB8  | 1.948 | COMB5  | 0.013     | COMB8  |
| 5 | 14X50 | 185.625 | 0.961 | COMB5  | 1.125 | COMB5  | 0.001     | COMB8  |
| 5 | 14X50 | 353.750 | 0.961 | COMB5  | 2.825 | COMB10 | 0.000     | COMB11 |
| 5 | 14X50 | 521.875 | 0.961 | COMB5  | 2.588 | COMB10 | 0.000     | COMB11 |
| 5 | 14X50 | 690.000 | 0.000 | COMB11 | 0.440 | COMB5  | 0.002     | COMB10 |

## REFUERZO NERVIO V

CONCRETE DESIGN OUTPUT (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |       |        |       |       |       |
|------------|---------------|---------------|---------------------------------|-------|--------|-------|-------|-------|
|            |               |               | TOP                             | COMBO | BOTTOM | COMBO | SHEAR | COMBO |
| 1          | 14X50         | 17.500        | 0.000                           | COMB7 | 0.308  | COMB1 | 0.000 | COMB7 |
| 1          | 14X50         | 117.500       | 0.423                           | COMB5 | 1.489  | COMB1 | 0.000 | COMB7 |
| 1          | 14X50         | 217.500       | 0.423                           | COMB5 | 1.625  | COMB1 | 0.000 | COMB7 |
| 1          | 14X50         | 317.500       | 0.423                           | COMB5 | 0.702  | COMB1 | 0.000 | COMB7 |
| 1          | 14X50         | 417.500       | 1.723                           | COMB5 | 0.851  | COMB5 | 0.002 | COMB5 |
| 2          | 14X50         | 17.500        | 1.466                           | COMB1 | 0.726  | COMB1 | 0.020 | COMB1 |

|   |       |         |       |       |       |       |       |       |
|---|-------|---------|-------|-------|-------|-------|-------|-------|
| 2 | 14X50 | 118.750 | 0.480 | COMB1 | 0.488 | COMB3 | 0.016 | COMB1 |
| 2 | 14X50 | 220.000 | 0.488 | COMB3 | 0.823 | COMB2 | 0.012 | COMB4 |
| 2 | 14X50 | 321.250 | 0.777 | COMB3 | 0.488 | COMB3 | 0.016 | COMB4 |
| 2 | 14X50 | 422.500 | 1.994 | COMB3 | 0.983 | COMB3 | 0.021 | COMB4 |
| 3 | 14X50 | 17.500  | 2.184 | COMB6 | 1.076 | COMB6 | 0.005 | COMB6 |
| 3 | 14X50 | 132.500 | 0.534 | COMB6 | 0.855 | COMB3 | 0.000 | COMB7 |
| 3 | 14X50 | 247.500 | 0.534 | COMB6 | 2.092 | COMB3 | 0.000 | COMB7 |
| 3 | 14X50 | 362.500 | 0.534 | COMB6 | 1.917 | COMB3 | 0.000 | COMB7 |
| 3 | 14X50 | 477.500 | 0.000 | COMB7 | 0.351 | COMB3 | 0.000 | COMB7 |

## REFUERZO NERVIO VIII

CONCRETE DESIGN OUTPUT (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | ←-----REQUIRED REINFORCING-----→ |        |        |       |       |        |
|------------|---------------|---------------|----------------------------------|--------|--------|-------|-------|--------|
|            |               |               | TOP                              | COMBO  | BOTTOM | COMBO | SHEAR | COMBO  |
| 1          | 14X50         | 13.604        | 1.815                            | COMB4  | 0.896  | COMB4 | 0.024 | COMB8  |
| 1          | 14X50         | 78.953        | 1.342                            | COMB4  | 0.652  | COMB5 | 0.021 | COMB7  |
| 1          | 14X50         | 144.302       | 1.120                            | COMB4  | 0.652  | COMB5 | 0.024 | COMB10 |
| 1          | 14X50         | 209.651       | 1.610                            | COMB5  | 0.652  | COMB5 | 0.028 | COMB10 |
| 1          | 14X50         | 275.000       | 2.193                            | COMB5  | 1.315  | COMB5 | 0.033 | COMB10 |
| 2          | 14X50         | 0.000         | 2.193                            | COMB5  | 1.315  | COMB5 | 0.006 | COMB10 |
| 2          | 14X50         | 135.451       | 0.652                            | COMB5  | 0.705  | COMB5 | 0.000 | COMB11 |
| 2          | 14X50         | 270.901       | 0.652                            | COMB5  | 2.193  | COMB5 | 0.000 | COMB11 |
| 2          | 14X50         | 406.352       | 0.652                            | COMB5  | 2.193  | COMB5 | 0.000 | COMB11 |
| 2          | 14X50         | 541.802       | 0.000                            | COMB11 | 0.569  | COMB5 | 0.000 | COMB11 |
| 3          | 14X50         | 16.273        | 0.000                            | COMB11 | 0.377  | COMB3 | 0.000 | COMB11 |
| 3          | 14X50         | 172.612       | 0.856                            | COMB3  | 2.193  | COMB3 | 0.000 | COMB11 |
| 3          | 14X50         | 328.950       | 0.856                            | COMB3  | 2.288  | COMB3 | 0.000 | COMB11 |

|   |       |         |       |       |       |       |           |        |
|---|-------|---------|-------|-------|-------|-------|-----------|--------|
| 3 | 14X50 | 485.288 | 0.856 | COMB3 | 0.889 | COMB3 | 0.000     | COMB11 |
| 3 | 14X50 | 641.627 | 3.070 | COMB9 | 1.733 | COMB3 | 0.010     | COMB9  |
| 4 | 14X50 | 14.135  | 3.164 | COMB9 | 1.854 | COMB3 | 0.010     | COMB9  |
| 4 | 14X50 | 151.442 | 0.915 | COMB3 | 0.915 | COMB3 | 4.104E-04 | COMB9  |
| 4 | 14X50 | 288.750 | 0.915 | COMB3 | 1.997 | COMB4 | 0.000     | COMB11 |
| 4 | 14X50 | 426.058 | 0.915 | COMB3 | 1.126 | COMB4 | 0.000     | COMB11 |
| 4 | 14X50 | 563.365 | 1.559 | COMB4 | 0.771 | COMB4 | 0.005     | COMB7  |

## 5.1.8. Diseño de Elementos Estructurales.

### 5.1.8.1 Diseño de Vigas

Para el diseño de las vigas se hizo un predimensionamiento. En primer lugar se determinó la altura según la tabla C.9-1 del código sismo - resistente; para no tener que calcular deflexiones.

A partir de la distribución estructural y arquitectónica se calcularon las cargas; para luego introducir todos los datos al programa para obtener las envolventes.

**5.1.8.1.1 Envolventes de Diseño.** Obtenida de los momentos más críticos que resultan de las combinaciones de cargas. Se comparan con la cuantía máxima y mínima especificadas en la norma.

## BLOQUE A

```
LOAD COMBINATION MULTIPLIERS
COMBO  TYPE  CASE  FACTOR  TYPE  TITLE
```



| ENVOLVIG | ENVE |        |        |       | Envolvente para Vigas |
|----------|------|--------|--------|-------|-----------------------|
|          |      | CJ     | 1.0000 | COMBO |                       |
|          |      | VIGAS1 | 1.0000 | COMBO |                       |
|          |      | VIGAS2 | 1.0000 | COMBO |                       |
|          |      | VIGAS3 | 1.0000 | COMBO |                       |
|          |      | VIGAS4 | 1.0000 | COMBO |                       |

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FR A M E E L E M E N T F O R C E S

| FRAME | LOAD         | LOC | P    | V2         | V3         | T         | M2         | M3     |
|-------|--------------|-----|------|------------|------------|-----------|------------|--------|
| 1     | ENVOLVIG MAX |     |      |            |            |           |            |        |
|       | 1.8E-01      |     | 0.00 | 1.81       | 6.292E-03  | 7.08      | 1.406E-02  | 29.66  |
|       | 1.08         |     | 0.00 | 8.49       | 6.292E-03  | 7.08      | 8.394E-03  | 25.03  |
|       | 1.98         |     | 0.00 | 15.17      | 6.292E-03  | 7.08      | 2.732E-03  | 14.94  |
|       | 2.88         |     | 0.00 | 22.77      | 6.292E-03  | 7.08      | 1.226E-02  | 4.35   |
|       | 3.78         |     | 0.00 | 30.57      | 6.292E-03  | 7.08      | 3.609E-02  | 5.94   |
| 1     | ENVOLVIG MIN |     |      |            |            |           |            |        |
|       | 1.8E-01      |     | 0.00 | -27.83     | -2.648E-02 | -2.10     | -5.924E-02 | -39.22 |
|       | 1.08         |     | 0.00 | -20.03     | -2.648E-02 | -2.10     | -3.541E-02 | -17.68 |
|       | 1.98         |     | 0.00 | -12.24     | -2.648E-02 | -2.10     | -1.158E-02 | -3.72  |
|       | 2.88         |     | 0.00 | -5.37      | -2.648E-02 | -2.10     | -2.931E-03 | -2.27  |
|       | 3.78         |     | 0.00 | 1.31       | -2.648E-02 | -2.10     | -8.593E-03 | -26.05 |
| 2     | ENVOLVIG MAX |     |      |            |            |           |            |        |
|       | 1.5E-01      |     | 0.00 | -2.33      | 6.642E-03  | 2.01      | 9.010E-03  | 4.72   |
|       | 1.05         |     | 0.00 | 4.35       | 6.642E-03  | 2.01      | 3.033E-03  | 4.04   |
|       | 1.95         |     | 0.00 | 11.03      | 6.642E-03  | 2.01      | 1.262E-02  | 14.69  |
|       | 2.85         |     | 0.00 | 18.67      | 6.642E-03  | 2.01      | 3.799E-02  | 24.18  |
|       | 3.75         |     | 0.00 | 26.46      | 6.642E-03  | 2.01      | 6.336E-02  | 27.51  |
| 2     | ENVOLVIG MIN |     |      |            |            |           |            |        |
|       | 1.5E-01      |     | 0.00 | -30.03     | -2.819E-02 | -6.61     | -3.812E-02 | -25.34 |
|       | 1.05         |     | 0.00 | -22.24     | -2.819E-02 | -6.61     | -1.275E-02 | -2.05  |
|       | 1.95         |     | 0.00 | -14.44     | -2.819E-02 | -6.61     | -2.945E-03 | -3.11  |
|       | 2.85         |     | 0.00 | -7.61      | -2.819E-02 | -6.61     | -8.922E-03 | -16.04 |
|       | 3.75         |     | 0.00 | -9.258E-01 | -2.819E-02 | -6.61     | -1.490E-02 | -35.84 |
| 3     | ENVOLVIG MAX |     |      |            |            |           |            |        |
|       | 1.8E-01      |     | 0.00 | 2.651E-01  | 9.475E-03  | 3.13      | 1.783E-02  | 22.38  |
|       | 1.08         |     | 0.00 | 6.95       | 9.475E-03  | 3.13      | 9.306E-03  | 19.13  |
|       | 1.98         |     | 0.00 | 13.63      | 9.475E-03  | 3.13      | 7.782E-04  | 9.87   |
|       | 2.88         |     | 0.00 | 20.31      | 9.475E-03  | 3.13      | 3.263E-02  | 20.74  |
|       | 3.78         |     | 0.00 | 26.99      | 9.475E-03  | 3.13      | 6.858E-02  | 37.05  |
| 3     | ENVOLVIG MIN |     |      |            |            |           |            |        |
|       | 1.8E-01      |     | 0.00 | -45.40     | -3.994E-02 | -4.53     | -7.521E-02 | -70.28 |
|       | 1.08         |     | 0.00 | -37.61     | -3.994E-02 | -4.53     | -3.926E-02 | -32.93 |
|       | 1.98         |     | 0.00 | -29.81     | -3.994E-02 | -4.53     | -3.315E-03 | -2.59  |
|       | 2.88         |     | 0.00 | -22.02     | -3.994E-02 | -4.53     | -7.749E-03 | -5.40  |
|       | 3.78         |     | 0.00 | -14.23     | -3.994E-02 | -4.53     | -1.628E-02 | -26.68 |
| 4     | ENVOLVIG MAX |     |      |            |            |           |            |        |
|       | 1.8E-01      |     | 0.00 | -2.375E-01 | 8.405E-03  | 1.47      | 1.700E-02  | 22.21  |
|       | 1.08         |     | 0.00 | 6.44       | 8.405E-03  | 1.47      | 9.431E-03  | 19.42  |
|       | 1.98         |     | 0.00 | 13.12      | 8.405E-03  | 1.47      | 1.866E-03  | 10.61  |
|       | 2.88         |     | 0.00 | 19.80      | 8.405E-03  | 1.47      | 2.263E-02  | 20.84  |
|       | 3.78         |     | 0.00 | 26.49      | 8.405E-03  | 1.47      | 5.388E-02  | 38.45  |
| 4     | ENVOLVIG MIN |     |      |            |            |           |            |        |
|       | 1.8E-01      |     | 0.00 | -46.84     | -3.472E-02 | 8.464E-01 | -7.112E-02 | -74.07 |
|       | 1.08         |     | 0.00 | -39.05     | -3.472E-02 | 8.464E-01 | -3.987E-02 | -35.42 |
|       | 1.98         |     | 0.00 | -31.26     | -3.472E-02 | 8.464E-01 | -8.624E-03 | -3.78  |
|       | 2.88         |     | 0.00 | -23.46     | -3.472E-02 | 8.464E-01 | -5.698E-03 | -4.21  |
|       | 3.78         |     | 0.00 | -15.67     | -3.472E-02 | 8.464E-01 | -1.326E-02 | -25.04 |
| 5     | ENVOLVIG MAX |     |      |            |            |           |            |        |
|       | 1.8E-01      |     | 0.00 | 1.531E-01  | 3.696E-03  | 3.30      | 7.923E-03  | 26.81  |
|       | 1.20         |     | 0.00 | 7.76       | 3.696E-03  | 3.30      | 4.135E-03  | 22.83  |
|       | 2.23         |     | 0.00 | 15.39      | 3.696E-03  | 3.30      | 1.081E-03  | 11.60  |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 3.25         | 0.00 | 24.27      | 3.696E-03  | 3.30       | 1.807E-02  | 12.26      |
|    | 4.28         | 0.00 | 33.15      | 3.696E-03  | 3.30       | 3.554E-02  | 13.14      |
| 5  | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -30.03     | -1.704E-02 | -1.89      | -3.432E-02 | -39.12     |
|    | 1.20         | 0.00 | -21.15     | -1.704E-02 | -1.89      | -1.685E-02 | -12.97     |
|    | 2.23         | 0.00 | -12.30     | -1.704E-02 | -1.89      | -1.247E-04 | 3.53       |
|    | 3.25         | 0.00 | -4.69      | -1.704E-02 | -1.89      | -3.442E-03 | -8.76      |
|    | 4.28         | 0.00 | 2.92       | -1.704E-02 | -1.89      | -7.230E-03 | -38.15     |
| 6  | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -3.96      | 7.146E-03  | 10.07      | 1.107E-02  | 9.89       |
|    | 1.09         | 0.00 | 2.82       | 7.146E-03  | 10.07      | 4.554E-03  | 11.13      |
|    | 2.00         | 0.00 | 10.32      | 7.146E-03  | 10.07      | 5.881E-03  | 7.14       |
|    | 2.91         | 0.00 | 18.22      | 7.146E-03  | 10.07      | 3.489E-02  | 12.71      |
|    | 3.83         | 0.00 | 26.12      | 7.146E-03  | 10.07      | 6.390E-02  | 14.42      |
| 6  | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -27.11     | -3.179E-02 | -3.73      | -5.214E-02 | -29.66     |
|    | 1.09         | 0.00 | -19.20     | -3.179E-02 | -3.73      | -2.313E-02 | -9.25      |
|    | 2.00         | 0.00 | -12.03     | -3.179E-02 | -3.73      | -1.967E-03 | 4.75       |
|    | 2.91         | 0.00 | -5.26      | -3.179E-02 | -3.73      | -8.488E-03 | -7.70      |
|    | 3.83         | 0.00 | 1.52       | -3.179E-02 | -3.73      | -1.501E-02 | -27.93     |
| 7  | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 7.79       | 9.136E-03  | 3.46       | 1.682E-02  | 20.76      |
|    | 9.6E-01      | 0.00 | 13.63      | 9.136E-03  | 3.46       | 9.626E-03  | 12.84      |
|    | 1.75         | 0.00 | 19.48      | 9.136E-03  | 3.46       | 2.432E-03  | 3.21       |
|    | 2.54         | 0.00 | 25.32      | 9.136E-03  | 3.46       | 2.283E-02  | 11.15      |
|    | 3.33         | 0.00 | 31.26      | 9.136E-03  | 3.46       | 5.386E-02  | 13.78      |
| 7  | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -27.21     | -3.940E-02 | -10.82     | -7.025E-02 | -28.95     |
|    | 9.6E-01      | 0.00 | -20.39     | -3.940E-02 | -10.82     | -3.922E-02 | -10.73     |
|    | 1.75         | 0.00 | -13.57     | -3.940E-02 | -10.82     | -8.193E-03 | -7.078E-01 |
|    | 2.54         | 0.00 | -6.75      | -3.940E-02 | -10.82     | -4.763E-03 | -18.35     |
|    | 3.33         | 0.00 | -1.783E-02 | -3.940E-02 | -10.82     | -1.196E-02 | -40.59     |
| 8  | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -20.79     | 2.345E-03  | 1.361E-01  | 6.719E-03  | -10.40     |
|    | 1.96         | 0.00 | -7.52      | 2.345E-03  | 1.361E-01  | 2.527E-03  | 14.90      |
|    | 3.75         | 0.00 | 6.48       | 2.345E-03  | 1.361E-01  | 6.152E-03  | 27.51      |
|    | 5.54         | 0.00 | 21.96      | 2.345E-03  | 1.361E-01  | 2.424E-02  | 24.69      |
|    | 7.33         | 0.00 | 41.25      | 2.345E-03  | 1.361E-01  | 4.234E-02  | 2.09       |
| 8  | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -41.32     | -1.012E-02 | -3.244E-01 | -3.003E-02 | -54.51     |
|    | 1.96         | 0.00 | -22.01     | -1.012E-02 | -3.244E-01 | -1.194E-02 | -1.33      |
|    | 3.75         | 0.00 | -7.26      | -1.012E-02 | -3.244E-01 | -1.666E-03 | 16.48      |
|    | 5.54         | 0.00 | 6.01       | -1.012E-02 | -3.244E-01 | -5.858E-03 | -8.34      |
|    | 7.33         | 0.00 | 19.28      | -1.012E-02 | -3.244E-01 | -1.005E-02 | -61.43     |
| 9  | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 9.758E-01  | 9.891E-03  | 4.78       | 1.542E-02  | 9.55       |
|    | 8.7E-01      | 0.00 | 6.13       | 9.891E-03  | 4.78       | 8.560E-03  | 7.08       |
|    | 1.56         | 0.00 | 11.28      | 9.891E-03  | 4.78       | 1.699E-03  | 4.49       |
|    | 2.26         | 0.00 | 16.43      | 9.891E-03  | 4.78       | 2.193E-02  | 23.88      |
|    | 2.95         | 0.00 | 21.57      | 9.891E-03  | 4.78       | 5.092E-02  | 39.10      |
| 9  | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -42.97     | -4.179E-02 | -4.05      | -6.506E-02 | -46.79     |
|    | 8.7E-01      | 0.00 | -36.96     | -4.179E-02 | -4.05      | -3.606E-02 | -19.07     |
|    | 1.56         | 0.00 | -30.95     | -4.179E-02 | -4.05      | -7.069E-03 | 1.05       |
|    | 2.26         | 0.00 | -24.94     | -4.179E-02 | -4.05      | -5.163E-03 | -8.56      |
|    | 2.95         | 0.00 | -18.93     | -4.179E-02 | -4.05      | -1.202E-02 | -21.74     |
| 10 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 6.70       | 7.445E-03  | 1.06       | 1.097E-02  | 13.26      |
|    | 8.7E-01      | 0.00 | 11.85      | 7.445E-03  | 1.06       | 5.809E-03  | 6.82       |
|    | 1.56         | 0.00 | 17.00      | 7.445E-03  | 1.06       | 1.205E-03  | 4.93       |
|    | 2.26         | 0.00 | 22.15      | 7.445E-03  | 1.06       | 2.372E-02  | 24.44      |
|    | 2.95         | 0.00 | 27.30      | 7.445E-03  | 1.06       | 4.734E-02  | 39.77      |
| 10 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -43.13     | -3.405E-02 | -2.45      | -4.714E-02 | -46.58     |
|    | 8.7E-01      | 0.00 | -37.13     | -3.405E-02 | -2.45      | -2.352E-02 | -18.74     |
|    | 1.56         | 0.00 | -31.12     | -3.405E-02 | -2.45      | -4.603E-04 | -3.19      |

|    |              |      |            |            |           |            |            |
|----|--------------|------|------------|------------|-----------|------------|------------|
|    | 2.26         | 0.00 | -25.11     | -3.405E-02 | -2.45     | -4.521E-03 | -16.76     |
|    | 2.95         | 0.00 | -19.10     | -3.405E-02 | -2.45     | -9.686E-03 | -33.91     |
| 11 | ENVOLVIG MAX |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | 9.64       | 1.146E-02  | 7.146E-01 | 1.360E-02  | 28.10      |
|    | 8.7E-01      | 0.00 | 14.79      | 1.146E-02  | 7.146E-01 | 5.649E-03  | 19.66      |
|    | 1.56         | 0.00 | 19.94      | 1.146E-02  | 7.146E-01 | 1.058E-03  | 7.71       |
|    | 2.26         | 0.00 | 25.09      | 1.146E-02  | 7.146E-01 | 2.074E-02  | 10.06      |
|    | 2.95         | 0.00 | 30.24      | 1.146E-02  | 7.146E-01 | 4.364E-02  | 29.40      |
| 11 | ENVOLVIG MIN |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | -48.94     | -3.301E-02 | -1.13     | -4.797E-02 | -73.11     |
|    | 8.7E-01      | 0.00 | -42.93     | -3.301E-02 | -1.13     | -2.507E-02 | -41.27     |
|    | 1.56         | 0.00 | -36.92     | -3.301E-02 | -1.13     | -5.522E-03 | -13.67     |
|    | 2.26         | 0.00 | -30.92     | -3.301E-02 | -1.13     | -1.025E-02 | -8.11      |
|    | 2.95         | 0.00 | -24.91     | -3.301E-02 | -1.13     | -1.819E-02 | -27.29     |
| 12 | ENVOLVIG MAX |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | 2.406E-01  | 8.829E-03  | 2.94      | 1.366E-02  | 23.66      |
|    | 1.17         | 0.00 | 7.62       | 8.829E-03  | 2.94      | 4.882E-03  | 19.76      |
|    | 2.16         | 0.00 | 14.99      | 8.829E-03  | 2.94      | 1.080E-02  | 8.53       |
|    | 3.16         | 0.00 | 22.37      | 8.829E-03  | 2.94      | 4.247E-02  | 31.64      |
|    | 4.15         | 0.00 | 29.75      | 8.829E-03  | 2.94      | 7.414E-02  | 52.66      |
| 12 | ENVOLVIG MIN |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | -51.27     | -3.187E-02 | -5.35     | -5.253E-02 | -82.71     |
|    | 1.17         | 0.00 | -42.66     | -3.187E-02 | -5.35     | -2.087E-02 | -36.04     |
|    | 2.16         | 0.00 | -34.06     | -3.187E-02 | -5.35     | -3.892E-03 | 2.08       |
|    | 3.16         | 0.00 | -25.45     | -3.187E-02 | -5.35     | -1.267E-02 | -10.04     |
|    | 4.15         | 0.00 | -16.84     | -3.187E-02 | -5.35     | -2.144E-02 | -35.94     |
| 13 | ENVOLVIG MAX |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | -4.037E-02 | 1.054E-02  | 3.72      | 2.176E-02  | 22.29      |
|    | 1.17         | 0.00 | 7.34       | 1.054E-02  | 3.72      | 1.128E-02  | 18.66      |
|    | 2.16         | 0.00 | 14.71      | 1.054E-02  | 3.72      | 8.080E-04  | 8.01       |
|    | 3.16         | 0.00 | 22.09      | 1.054E-02  | 3.72      | 4.330E-02  | 33.76      |
|    | 4.15         | 0.00 | 29.47      | 1.054E-02  | 3.72      | 8.837E-02  | 54.57      |
| 13 | ENVOLVIG MIN |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | -51.06     | -4.535E-02 | 3.969E-01 | -9.190E-02 | -79.98     |
|    | 1.17         | 0.00 | -42.45     | -4.535E-02 | 3.969E-01 | -4.683E-02 | -33.51     |
|    | 2.16         | 0.00 | -33.85     | -4.535E-02 | 3.969E-01 | -1.765E-03 | 4.40       |
|    | 3.16         | 0.00 | -25.24     | -4.535E-02 | 3.969E-01 | -9.668E-03 | -10.58     |
|    | 4.15         | 0.00 | -16.64     | -4.535E-02 | 3.969E-01 | -2.014E-02 | -36.19     |
| 14 | ENVOLVIG MAX |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | 2.55       | 4.690E-03  | 8.92      | 7.935E-03  | 30.23      |
|    | 1.08         | 0.00 | 9.23       | 4.690E-03  | 8.92      | 3.714E-03  | 24.93      |
|    | 1.98         | 0.00 | 15.91      | 4.690E-03  | 8.92      | 1.660E-03  | 13.62      |
|    | 2.88         | 0.00 | 23.30      | 4.690E-03  | 8.92      | 1.893E-02  | 6.29       |
|    | 3.78         | 0.00 | 31.10      | 4.690E-03  | 8.92      | 3.619E-02  | 10.86      |
| 14 | ENVOLVIG MIN |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | -31.09     | -1.918E-02 | -3.36     | -3.287E-02 | -46.45     |
|    | 1.08         | 0.00 | -23.29     | -1.918E-02 | -3.36     | -1.560E-02 | -21.98     |
|    | 1.98         | 0.00 | -15.50     | -1.918E-02 | -3.36     | -5.073E-04 | -4.52      |
|    | 2.88         | 0.00 | -8.42      | -1.918E-02 | -3.36     | -4.729E-03 | -4.08      |
|    | 3.78         | 0.00 | -1.73      | -1.918E-02 | -3.36     | -8.950E-03 | -28.56     |
| 15 | ENVOLVIG MAX |      |            |            |           |            |            |
|    | 1.5E-01      | 0.00 | -4.66      | 4.610E-03  | 2.12      | 8.854E-03  | 3.21       |
|    | 1.05         | 0.00 | 2.02       | 4.610E-03  | 2.12      | 4.705E-03  | 5.26       |
|    | 1.95         | 0.00 | 8.70       | 4.610E-03  | 2.12      | 7.598E-04  | 9.82       |
|    | 2.85         | 0.00 | 16.25      | 4.610E-03  | 2.12      | 1.890E-02  | 13.25      |
|    | 3.75         | 0.00 | 24.05      | 4.610E-03  | 2.12      | 3.814E-02  | 9.67       |
| 15 | ENVOLVIG MIN |      |            |            |           |            |            |
|    | 1.5E-01      | 0.00 | -23.30     | -2.137E-02 | -8.83     | -3.880E-02 | -18.09     |
|    | 1.05         | 0.00 | -15.51     | -2.137E-02 | -8.83     | -1.956E-02 | -1.49      |
|    | 1.95         | 0.00 | -7.71      | -2.137E-02 | -8.83     | -5.336E-04 | -4.229E-01 |
|    | 2.85         | 0.00 | -7.905E-01 | -2.137E-02 | -8.83     | -3.593E-03 | -11.26     |
|    | 3.75         | 0.00 | 5.89       | -2.137E-02 | -8.83     | -7.741E-03 | -28.11     |
| 16 | ENVOLVIG MAX |      |            |            |           |            |            |
|    | 1.8E-01      | 0.00 | -4.31      | 5.332E-03  | 1.46      | 9.247E-03  | 13.77      |
|    | 1.20         | 0.00 | 3.30       | 5.332E-03  | 1.46      | 3.782E-03  | 14.29      |

|    |              |      |        |            |            |            |        |
|----|--------------|------|--------|------------|------------|------------|--------|
|    | 2.23         | 0.00 | 11.55  | 5.332E-03  | 1.46       | 9.760E-04  | 8.80   |
|    | 3.25         | 0.00 | 20.43  | 5.332E-03  | 1.46       | 1.442E-02  | 15.85  |
|    | 4.28         | 0.00 | 29.31  | 5.332E-03  | 1.46       | 2.979E-02  | 16.93  |
| 16 | ENVOLVIG MIN |      |        |            |            |            |        |
|    | 1.8E-01      | 0.00 | -29.58 | -1.499E-02 | -2.42      | -3.169E-02 | -35.86 |
|    | 1.20         | 0.00 | -20.70 | -1.499E-02 | -2.42      | -1.632E-02 | -10.09 |
|    | 2.23         | 0.00 | -12.47 | -1.499E-02 | -2.42      | -3.614E-03 | 6.55   |
|    | 3.25         | 0.00 | -4.86  | -1.499E-02 | -2.42      | -7.149E-03 | -9.77  |
|    | 4.28         | 0.00 | 2.75   | -1.499E-02 | -2.42      | -1.261E-02 | -35.26 |
| 17 | ENVOLVIG MAX |      |        |            |            |            |        |
|    | 2.0E-01      | 0.00 | -15.49 | 3.902E-03  | 2.817E-01  | 1.486E-02  | 9.63   |
|    | 1.98         | 0.00 | -2.32  | 3.902E-03  | 2.817E-01  | 7.929E-03  | 25.43  |
|    | 3.75         | 0.00 | 11.20  | 3.902E-03  | 2.817E-01  | 1.446E-03  | 18.74  |
|    | 5.53         | 0.00 | 26.57  | 3.902E-03  | 2.817E-01  | 2.529E-02  | 25.50  |
|    | 7.30         | 0.00 | 41.94  | 3.902E-03  | 2.817E-01  | 5.152E-02  | 8.88   |
| 17 | ENVOLVIG MIN |      |        |            |            |            |        |
|    | 2.0E-01      | 0.00 | -40.81 | -1.478E-02 | -8.158E-02 | -5.341E-02 | -75.81 |
|    | 1.98         | 0.00 | -25.43 | -1.478E-02 | -8.158E-02 | -2.718E-02 | -17.02 |
|    | 3.75         | 0.00 | -10.40 | -1.478E-02 | -8.158E-02 | -1.389E-03 | 13.60  |
|    | 5.53         | 0.00 | 2.78   | -1.478E-02 | -8.158E-02 | -5.924E-03 | -19.92 |
|    | 7.30         | 0.00 | 15.95  | -1.478E-02 | -8.158E-02 | -1.285E-02 | -80.73 |
| 18 | ENVOLVIG MAX |      |        |            |            |            |        |
|    | 1.8E-01      | 0.00 | -1.31  | 8.647E-03  | 3.70       | 1.181E-02  | 11.35  |
|    | 9.8E-01      | 0.00 | 4.67   | 8.647E-03  | 3.70       | 4.840E-03  | 10.00  |
|    | 1.79         | 0.00 | 10.66  | 8.647E-03  | 3.70       | 9.004E-03  | 5.57   |
|    | 2.59         | 0.00 | 16.64  | 8.647E-03  | 3.70       | 3.859E-02  | 21.73  |
|    | 3.40         | 0.00 | 22.63  | 8.647E-03  | 3.70       | 6.819E-02  | 33.78  |
| 18 | ENVOLVIG MIN |      |        |            |            |            |        |
|    | 1.8E-01      | 0.00 | -39.38 | -3.670E-02 | -4.31      | -5.018E-02 | -48.19 |
|    | 9.8E-01      | 0.00 | -32.40 | -3.670E-02 | -4.31      | -2.059E-02 | -19.25 |
|    | 1.79         | 0.00 | -25.42 | -3.670E-02 | -4.31      | -2.132E-03 | 3.57   |
|    | 2.59         | 0.00 | -18.43 | -3.670E-02 | -4.31      | -9.103E-03 | -7.19  |
|    | 3.40         | 0.00 | -11.45 | -3.670E-02 | -4.31      | -1.608E-02 | -23.02 |
| 19 | ENVOLVIG MAX |      |        |            |            |            |        |
|    | 1.8E-01      | 0.00 | -14.87 | 2.981E-03  | 7.973E-01  | 2.008E-03  | -5.81  |
|    | 1.49         | 0.00 | -5.08  | 2.981E-03  | 7.973E-01  | 1.192E-03  | 7.40   |
|    | 2.81         | 0.00 | 4.71   | 2.981E-03  | 7.973E-01  | 1.865E-02  | 17.88  |
|    | 4.13         | 0.00 | 14.67  | 2.981E-03  | 7.973E-01  | 4.263E-02  | 19.85  |
|    | 5.45         | 0.00 | 27.36  | 2.981E-03  | 7.973E-01  | 6.662E-02  | 7.68   |
| 19 | ENVOLVIG MIN |      |        |            |            |            |        |
|    | 1.8E-01      | 0.00 | -33.55 | -1.841E-02 | -1.53      | -3.218E-02 | -33.99 |
|    | 1.49         | 0.00 | -19.32 | -1.841E-02 | -1.53      | -1.102E-02 | -1.04  |
|    | 2.81         | 0.00 | -7.90  | -1.841E-02 | -1.53      | -8.132E-03 | 7.58   |
|    | 4.13         | 0.00 | 3.35   | -1.841E-02 | -1.53      | -1.176E-02 | -5.09  |
|    | 5.45         | 0.00 | 13.14  | -1.841E-02 | -1.53      | -1.540E-02 | -30.66 |
| 20 | ENVOLVIG MAX |      |        |            |            |            |        |
|    | 2.0E-01      | 0.00 | -2.19  | 6.687E-03  | 3.10       | 1.710E-02  | 14.39  |
|    | 1.20         | 0.00 | 5.23   | 6.687E-03  | 3.10       | 1.158E-02  | 12.87  |
|    | 2.20         | 0.00 | 12.66  | 6.687E-03  | 3.10       | 1.357E-02  | 10.56  |
|    | 3.20         | 0.00 | 20.08  | 6.687E-03  | 3.10       | 5.848E-02  | 38.94  |
|    | 4.20         | 0.00 | 27.50  | 6.687E-03  | 3.10       | 1.098E-01  | 59.15  |
| 20 | ENVOLVIG MIN |      |        |            |            |            |        |
|    | 2.0E-01      | 0.00 | -50.52 | -5.137E-02 | -1.54      | -9.846E-02 | -73.65 |
|    | 1.20         | 0.00 | -41.86 | -5.137E-02 | -1.54      | -4.825E-02 | -27.46 |
|    | 2.20         | 0.00 | -33.20 | -5.137E-02 | -1.54      | -5.560E-03 | 3.92   |
|    | 3.20         | 0.00 | -24.54 | -5.137E-02 | -1.54      | -5.785E-03 | -12.44 |
|    | 4.20         | 0.00 | -15.88 | -5.137E-02 | -1.54      | -1.246E-02 | -36.23 |
| 21 | ENVOLVIG MAX |      |        |            |            |            |        |
|    | 2.0E-01      | 0.00 | -2.36  | 1.098E-02  | 3.002E-01  | 2.082E-02  | 14.78  |
|    | 1.20         | 0.00 | 5.06   | 1.098E-02  | 3.002E-01  | 9.840E-03  | 13.43  |
|    | 2.20         | 0.00 | 12.48  | 1.098E-02  | 3.002E-01  | 1.390E-03  | 8.73   |
|    | 3.20         | 0.00 | 19.90  | 1.098E-02  | 3.002E-01  | 4.437E-02  | 34.62  |
|    | 4.20         | 0.00 | 27.33  | 1.098E-02  | 3.002E-01  | 8.799E-02  | 53.56  |
| 21 | ENVOLVIG MIN |      |        |            |            |            |        |
|    | 2.0E-01      | 0.00 | -49.24 | -4.362E-02 | -3.617E-01 | -8.649E-02 | -74.14 |
|    | 1.20         | 0.00 | -40.58 | -4.362E-02 | -3.617E-01 | -4.287E-02 | -29.22 |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 2.20         | 0.00 | -31.92     | -4.362E-02 | -3.617E-01 | -1.781E-03 | 4.66       |
|    | 3.20         | 0.00 | -23.26     | -4.362E-02 | -3.617E-01 | -1.212E-02 | -11.53     |
|    | 4.20         | 0.00 | -14.60     | -4.362E-02 | -3.617E-01 | -2.310E-02 | -35.15     |
| 22 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -21.75     | 2.014E-03  | 2.786E-01  | 5.796E-03  | -13.93     |
|    | 1.88         | 0.00 | -9.13      | 2.014E-03  | 2.786E-01  | 2.372E-03  | 12.32      |
|    | 3.58         | 0.00 | 3.49       | 2.014E-03  | 2.786E-01  | 6.378E-04  | 26.83      |
|    | 5.28         | 0.00 | 16.44      | 2.014E-03  | 2.786E-01  | 9.143E-03  | 23.47      |
|    | 6.98         | 0.00 | 34.38      | 2.014E-03  | 2.786E-01  | 1.880E-02  | 1.29       |
| 22 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -44.14     | -5.678E-03 | -2.114E-01 | -1.982E-02 | -60.19     |
|    | 1.88         | 0.00 | -24.51     | -5.678E-03 | -2.114E-01 | -1.016E-02 | -7.28      |
|    | 3.58         | 0.00 | -9.04      | -5.678E-03 | -2.114E-01 | -2.201E-03 | 17.10      |
|    | 5.28         | 0.00 | 5.35       | -5.678E-03 | -2.114E-01 | -4.477E-03 | 4.454E-01  |
|    | 6.98         | 0.00 | 17.97      | -5.678E-03 | -2.114E-01 | -7.902E-03 | -37.67     |
| 23 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -1.40      | 8.304E-03  | 4.81       | 1.571E-02  | 10.78      |
|    | 9.8E-01      | 0.00 | 4.58       | 8.304E-03  | 4.81       | 9.017E-03  | 9.50       |
|    | 1.79         | 0.00 | 10.57      | 8.304E-03  | 4.81       | 2.322E-03  | 6.20       |
|    | 2.59         | 0.00 | 16.55      | 8.304E-03  | 4.81       | 1.758E-02  | 23.97      |
|    | 3.40         | 0.00 | 22.54      | 8.304E-03  | 4.81       | 4.538E-02  | 37.19      |
| 23 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -40.84     | -3.449E-02 | -3.70      | -6.585E-02 | -49.47     |
|    | 9.8E-01      | 0.00 | -33.86     | -3.449E-02 | -3.70      | -3.804E-02 | -19.36     |
|    | 1.79         | 0.00 | -26.87     | -3.449E-02 | -3.70      | -1.023E-02 | 3.39       |
|    | 2.59         | 0.00 | -19.89     | -3.449E-02 | -3.70      | -4.373E-03 | -7.55      |
|    | 3.40         | 0.00 | -12.91     | -3.449E-02 | -3.70      | -1.107E-02 | -23.31     |
| 24 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -4.75      | 4.312E-01  | 12.73      | 1.405E-01  | 1.37       |
|    | 6.6E-01      | 0.00 | -1.17      | 4.312E-01  | 12.73      | 1.567E-02  | 2.79       |
|    | 1.14         | 0.00 | 2.40       | 4.312E-01  | 12.73      | 1.098E-01  | 2.50       |
|    | 1.62         | 0.00 | 5.97       | 4.312E-01  | 12.73      | 2.039E-01  | 2.04       |
|    | 2.10         | 0.00 | 9.54       | 4.312E-01  | 12.73      | 2.980E-01  | 8.05       |
| 24 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -27.08     | -1.956E-01 | -13.91     | -7.847E-02 | -28.03     |
|    | 6.6E-01      | 0.00 | -22.91     | -1.956E-01 | -13.91     | -6.705E-02 | -16.00     |
|    | 1.14         | 0.00 | -18.74     | -1.956E-01 | -13.91     | -2.746E-01 | -5.98      |
|    | 1.62         | 0.00 | -14.58     | -1.956E-01 | -13.91     | -4.821E-01 | 4.825E-01  |
|    | 2.10         | 0.00 | -10.41     | -1.956E-01 | -13.91     | -6.896E-01 | -3.25      |
| 25 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 0.00         | 0.00 | 8.21       | 5.33       | 14.89      | 2.10       | 5.50       |
|    | 9.0E-02      | 0.00 | 8.98       | 5.33       | 14.89      | 1.62       | 4.72       |
|    | 1.8E-01      | 0.00 | 9.76       | 5.33       | 14.89      | 1.14       | 3.88       |
|    | 2.7E-01      | 0.00 | 10.54      | 5.33       | 14.89      | 6.610E-01  | 2.97       |
|    | 3.6E-01      | 0.00 | 11.32      | 5.33       | 14.89      | 1.903E-01  | 1.98       |
| 25 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 0.00         | 0.00 | -5.56      | -2.20      | -1.84      | -8.761E-01 | -2.60      |
|    | 9.0E-02      | 0.00 | -4.89      | -2.20      | -1.84      | -6.781E-01 | -2.13      |
|    | 1.8E-01      | 0.00 | -4.22      | -2.20      | -1.84      | -4.801E-01 | -1.72      |
|    | 2.7E-01      | 0.00 | -3.55      | -2.20      | -1.84      | -2.821E-01 | -1.37      |
|    | 3.6E-01      | 0.00 | -2.88      | -2.20      | -1.84      | -9.317E-02 | -1.08      |
| 26 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 0.00         | 0.00 | -3.945E-02 | 3.323E-01  | 30.02      | 8.545E-02  | 2.621E-01  |
|    | 9.0E-02      | 0.00 | 6.286E-01  | 3.323E-01  | 30.02      | 6.661E-02  | 5.143E-01  |
|    | 1.8E-01      | 0.00 | 1.30       | 3.323E-01  | 30.02      | 5.551E-02  | 6.964E-01  |
|    | 2.7E-01      | 0.00 | 1.96       | 3.323E-01  | 30.02      | 6.042E-02  | 8.084E-01  |
|    | 3.6E-01      | 0.00 | 2.69       | 3.323E-01  | 30.02      | 8.016E-02  | 8.504E-01  |
| 26 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 0.00         | 0.00 | -3.39      | -2.883E-01 | -6.98      | -4.886E-02 | -2.117E-01 |
|    | 9.0E-02      | 0.00 | -2.61      | -2.883E-01 | -6.98      | -3.398E-02 | -2.208E-01 |
|    | 1.8E-01      | 0.00 | -1.83      | -2.883E-01 | -6.98      | -2.684E-02 | -2.900E-01 |
|    | 2.7E-01      | 0.00 | -1.05      | -2.883E-01 | -6.98      | -3.572E-02 | -4.194E-01 |
|    | 3.6E-01      | 0.00 | -3.293E-01 | -2.883E-01 | -6.98      | -5.942E-02 | -6.090E-01 |
| 27 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 0.00         | 0.00 | 3.936E-01  | 3.414E-01  | 33.20      | 5.642E-02  | 3.267E-01  |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 9.0E-02      | 0.00 | 1.06       | 3.414E-01  | 33.20      | 2.645E-02  | 2.640E-01  |
|    | 1.8E-01      | 0.00 | 1.73       | 3.414E-01  | 33.20      | 1.377E-02  | 1.414E-01  |
|    | 2.7E-01      | 0.00 | 2.40       | 3.414E-01  | 33.20      | 4.809E-02  | 1.418E-01  |
|    | 3.6E-01      | 0.00 | 3.11       | 3.414E-01  | 33.20      | 8.622E-02  | 2.956E-01  |
| 27 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 0.00         | 0.00 | -4.45      | -4.240E-01 | -8.04      | -7.167E-02 | -7.799E-01 |
|    | 9.0E-02      | 0.00 | -3.67      | -4.240E-01 | -8.04      | -3.428E-02 | -4.169E-01 |
|    | 1.8E-01      | 0.00 | -2.90      | -4.240E-01 | -8.04      | -1.417E-02 | -1.243E-01 |
|    | 2.7E-01      | 0.00 | -2.12      | -4.240E-01 | -8.04      | -4.106E-02 | -8.489E-02 |
|    | 3.6E-01      | 0.00 | -1.38      | -4.240E-01 | -8.04      | -7.176E-02 | -3.291E-01 |
| 28 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 0.00         | 0.00 | 1.966E-01  | 3.235E-01  | 29.78      | 7.313E-02  | 6.889E-01  |
|    | 9.0E-02      | 0.00 | 9.761E-01  | 3.235E-01  | 29.78      | 4.529E-02  | 8.564E-01  |
|    | 1.8E-01      | 0.00 | 1.76       | 3.235E-01  | 29.78      | 2.528E-02  | 9.667E-01  |
|    | 2.7E-01      | 0.00 | 2.53       | 3.235E-01  | 29.78      | 3.559E-02  | 1.02       |
|    | 3.6E-01      | 0.00 | 3.31       | 3.235E-01  | 29.78      | 7.334E-02  | 1.01       |
| 28 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 0.00         | 0.00 | -2.25      | -4.198E-01 | -7.57      | -8.700E-02 | -1.43      |
|    | 9.0E-02      | 0.00 | -1.58      | -4.198E-01 | -7.57      | -5.051E-02 | -1.48      |
|    | 1.8E-01      | 0.00 | -9.135E-01 | -4.198E-01 | -7.57      | -2.183E-02 | -1.60      |
|    | 2.7E-01      | 0.00 | -2.454E-01 | -4.198E-01 | -7.57      | -2.348E-02 | -1.79      |
|    | 3.6E-01      | 0.00 | 4.227E-01  | -4.198E-01 | -7.57      | -5.258E-02 | -2.06      |
| 29 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 0.00         | 0.00 | 34.78      | 4.55       | 15.79      | -3.610E-03 | 2.62       |
|    | 9.0E-02      | 0.00 | 35.56      | 4.55       | 15.79      | 9.619E-02  | 4.38       |
|    | 1.8E-01      | 0.00 | 36.34      | 4.55       | 15.79      | 2.075E-01  | 6.09       |
|    | 2.7E-01      | 0.00 | 37.12      | 4.55       | 15.79      | 3.188E-01  | 7.74       |
|    | 3.6E-01      | 0.00 | 37.89      | 4.55       | 15.79      | 4.301E-01  | 9.32       |
| 29 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 0.00         | 0.00 | -19.97     | -1.24      | -5.80      | -1.648E-01 | -5.52      |
|    | 9.0E-02      | 0.00 | -19.31     | -1.24      | -5.80      | -5.627E-01 | -8.68      |
|    | 1.8E-01      | 0.00 | -18.64     | -1.24      | -5.80      | -9.720E-01 | -11.91     |
|    | 2.7E-01      | 0.00 | -17.97     | -1.24      | -5.80      | -1.38      | -15.22     |
|    | 3.6E-01      | 0.00 | -17.30     | -1.24      | -5.80      | -1.79      | -18.59     |
| 30 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 0.00         | 0.00 | 4.56       | 1.288E-01  | 2.17       | 3.512E-01  | 11.54      |
|    | 8.5E-01      | 0.00 | 10.87      | 1.288E-01  | 2.17       | 2.417E-01  | 4.98       |
|    | 1.70         | 0.00 | 17.18      | 1.288E-01  | 2.17       | 1.323E-01  | 14.27      |
|    | 2.55         | 0.00 | 23.49      | 1.288E-01  | 2.17       | 3.637E-02  | 23.03      |
|    | 3.40         | 0.00 | 29.80      | 1.288E-01  | 2.17       | 4.672E-02  | 25.52      |
| 30 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 0.00         | 0.00 | -28.70     | -4.055E-02 | -9.01      | -9.634E-02 | -22.00     |
|    | 8.5E-01      | 0.00 | -21.34     | -4.055E-02 | -9.01      | -6.188E-02 | -7.370E-01 |
|    | 1.70         | 0.00 | -13.98     | -4.055E-02 | -9.01      | -2.743E-02 | -6.93      |
|    | 2.55         | 0.00 | -6.62      | -4.055E-02 | -9.01      | -6.520E-03 | -24.22     |
|    | 3.40         | 0.00 | 7.442E-01  | -4.055E-02 | -9.01      | -9.188E-02 | -46.86     |
| 31 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -16.83     | 2.095E-03  | 1.164E-01  | 7.042E-03  | 2.54       |
|    | 1.98         | 0.00 | -3.65      | 2.095E-03  | 1.164E-01  | 3.325E-03  | 20.72      |
|    | 3.75         | 0.00 | 11.39      | 2.095E-03  | 1.164E-01  | 2.772E-03  | 21.79      |
|    | 5.53         | 0.00 | 26.76      | 2.095E-03  | 1.164E-01  | 2.691E-02  | 24.92      |
|    | 7.30         | 0.00 | 43.85      | 2.095E-03  | 1.164E-01  | 5.547E-02  | 5.75       |
| 31 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -38.13     | -1.665E-02 | -5.156E-01 | -6.350E-02 | -60.84     |
|    | 1.98         | 0.00 | -22.47     | -1.665E-02 | -5.156E-01 | -3.394E-02 | -7.31      |
|    | 3.75         | 0.00 | -8.97      | -1.665E-02 | -5.156E-01 | -7.552E-03 | 13.74      |
|    | 5.53         | 0.00 | 4.21       | -1.665E-02 | -5.156E-01 | -5.849E-03 | -20.12     |
|    | 7.30         | 0.00 | 17.39      | -1.665E-02 | -5.156E-01 | -8.569E-03 | -81.26     |
| 32 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -6.62      | 4.280E-03  | 3.067E-01  | 2.246E-03  | 13.97      |
|    | 1.26         | 0.00 | 1.46       | 4.280E-03  | 3.067E-01  | 1.570E-03  | 18.10      |
|    | 2.35         | 0.00 | 10.11      | 4.280E-03  | 3.067E-01  | 2.242E-02  | 13.25      |
|    | 3.44         | 0.00 | 19.54      | 4.280E-03  | 3.067E-01  | 5.115E-02  | 9.85       |
|    | 4.53         | 0.00 | 28.96      | 4.280E-03  | 3.067E-01  | 7.988E-02  | 4.51       |
| 32 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -25.59     | -2.676E-02 | -1.64      | -3.860E-02 | -27.55     |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 1.26         | 0.00 | -16.16     | -2.676E-02 | -1.64      | -1.346E-02 | -6.15      |
|    | 2.35         | 0.00 | -7.31      | -2.676E-02 | -1.64      | -9.846E-03 | 6.19       |
|    | 3.44         | 0.00 | 7.750E-01  | -2.676E-02 | -1.64      | -1.410E-02 | -4.00      |
|    | 4.53         | 0.00 | 8.86       | -2.676E-02 | -1.64      | -1.837E-02 | -30.30     |
| 33 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 6.54       | 6.675E-03  | 10.72      | 9.921E-03  | 34.59      |
|    | 1.07         | 0.00 | 13.18      | 6.675E-03  | 10.72      | 3.956E-03  | 25.78      |
|    | 1.96         | 0.00 | 19.81      | 6.675E-03  | 10.72      | 1.075E-02  | 11.25      |
|    | 2.86         | 0.00 | 27.52      | 6.675E-03  | 10.72      | 3.827E-02  | 11.98      |
|    | 3.75         | 0.00 | 35.26      | 6.675E-03  | 10.72      | 6.578E-02  | 19.11      |
| 33 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -33.44     | -3.078E-02 | -4.67      | -4.427E-02 | -46.85     |
|    | 1.07         | 0.00 | -25.70     | -3.078E-02 | -4.67      | -1.676E-02 | -20.42     |
|    | 1.96         | 0.00 | -17.96     | -3.078E-02 | -4.67      | -2.010E-03 | -1.12      |
|    | 2.86         | 0.00 | -11.30     | -3.078E-02 | -4.67      | -7.975E-03 | -9.93      |
|    | 3.75         | 0.00 | -4.66      | -3.078E-02 | -4.67      | -1.394E-02 | -37.99     |
| 34 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 5.094E-01  | 1.007E-02  | 5.18       | 1.794E-02  | 14.01      |
|    | 1.07         | 0.00 | 7.14       | 1.007E-02  | 5.18       | 8.933E-03  | 11.51      |
|    | 1.96         | 0.00 | 13.98      | 1.007E-02  | 5.18       | 5.371E-04  | 7.76       |
|    | 2.86         | 0.00 | 21.72      | 1.007E-02  | 5.18       | 2.048E-02  | 15.33      |
|    | 3.75         | 0.00 | 29.46      | 1.007E-02  | 5.18       | 5.020E-02  | 17.20      |
| 34 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -27.83     | -3.325E-02 | -8.52      | -6.868E-02 | -28.16     |
|    | 1.07         | 0.00 | -20.09     | -3.325E-02 | -8.52      | -3.896E-02 | -7.67      |
|    | 1.96         | 0.00 | -12.55     | -3.325E-02 | -8.52      | -9.849E-03 | 1.22       |
|    | 2.86         | 0.00 | -5.91      | -3.325E-02 | -8.52      | -9.075E-03 | -14.05     |
|    | 3.75         | 0.00 | 7.233E-01  | -3.325E-02 | -8.52      | -1.808E-02 | -36.47     |
| 35 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -13.24     | 4.812E-03  | 1.51       | 1.939E-02  | -1.259E-01 |
|    | 1.33         | 0.00 | -4.71      | 4.812E-03  | 1.51       | 1.386E-02  | 10.20      |
|    | 2.48         | 0.00 | 3.83       | 4.812E-03  | 1.51       | 8.335E-03  | 10.91      |
|    | 3.63         | 0.00 | 12.37      | 4.812E-03  | 1.51       | 8.432E-03  | 7.74       |
|    | 4.78         | 0.00 | 22.00      | 4.812E-03  | 1.51       | 3.308E-02  | 2.54       |
| 35 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -32.17     | -2.320E-02 | 8.044E-01  | -7.504E-02 | -45.78     |
|    | 1.33         | 0.00 | -20.46     | -2.320E-02 | 8.044E-01  | -4.836E-02 | -16.52     |
|    | 2.48         | 0.00 | -10.50     | -2.320E-02 | 8.044E-01  | -2.169E-02 | 1.08       |
|    | 3.63         | 0.00 | -5.444E-01 | -2.320E-02 | 8.044E-01  | -6.354E-04 | 1.28       |
|    | 4.78         | 0.00 | 8.32       | -2.320E-02 | 8.044E-01  | -4.136E-03 | -17.74     |
| 36 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -9.43      | 3.012E-03  | 1.27       | 7.762E-03  | 8.03       |
|    | 1.34         | 0.00 | -9.364E-01 | 3.012E-03  | 1.27       | 4.318E-03  | 13.96      |
|    | 2.49         | 0.00 | 7.55       | 3.012E-03  | 1.27       | 1.983E-03  | 10.17      |
|    | 3.63         | 0.00 | 16.04      | 3.012E-03  | 1.27       | 1.788E-02  | 18.82      |
|    | 4.78         | 0.00 | 24.53      | 3.012E-03  | 1.27       | 4.928E-02  | 25.38      |
| 36 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -40.40     | -2.817E-02 | -7.772E-01 | -7.961E-02 | -68.83     |
|    | 1.34         | 0.00 | -30.50     | -2.817E-02 | -7.772E-01 | -4.739E-02 | -28.29     |
|    | 2.49         | 0.00 | -20.59     | -2.817E-02 | -7.772E-01 | -1.628E-02 | 9.320E-01  |
|    | 3.63         | 0.00 | -10.69     | -2.817E-02 | -7.772E-01 | -3.400E-03 | -3.32      |
|    | 4.78         | 0.00 | -7.828E-01 | -2.817E-02 | -7.772E-01 | -6.018E-03 | -26.53     |
| 37 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -7.36      | 9.335E-03  | -1.482E-01 | 2.166E-02  | 10.36      |
|    | 1.34         | 0.00 | 1.13       | 9.335E-03  | -1.482E-01 | 1.098E-02  | 13.92      |
|    | 2.49         | 0.00 | 9.62       | 9.335E-03  | -1.482E-01 | 3.042E-03  | 13.81      |
|    | 3.63         | 0.00 | 18.11      | 9.335E-03  | -1.482E-01 | 4.547E-02  | 40.25      |
|    | 4.78         | 0.00 | 26.60      | 9.335E-03  | -1.482E-01 | 8.845E-02  | 57.39      |
| 37 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -49.66     | -3.757E-02 | -3.39      | -8.344E-02 | -79.16     |
|    | 1.34         | 0.00 | -39.75     | -3.757E-02 | -3.39      | -4.047E-02 | -28.03     |
|    | 2.49         | 0.00 | -29.85     | -3.757E-02 | -3.39      | -2.329E-04 | 7.77       |
|    | 3.63         | 0.00 | -19.94     | -3.757E-02 | -3.39      | -1.037E-02 | -8.09      |
|    | 4.78         | 0.00 | -10.04     | -3.757E-02 | -3.39      | -2.105E-02 | -33.66     |
| 38 | ENVOLVIG MAX |      |            |            |            |            |            |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 1.8E-01      | 0.00 | -2.413E-01 | 8.404E-03  | 4.38       | 1.085E-02  | 12.06      |
|    | 9.4E-01      | 0.00 | 5.47       | 8.404E-03  | 4.38       | 4.392E-03  | 10.05      |
|    | 1.71         | 0.00 | 11.17      | 8.404E-03  | 4.38       | 9.224E-03  | 3.66       |
|    | 2.48         | 0.00 | 16.88      | 8.404E-03  | 4.38       | 3.608E-02  | 17.78      |
|    | 3.25         | 0.00 | 22.58      | 8.404E-03  | 4.38       | 6.294E-02  | 29.71      |
| 38 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -38.82     | -3.494E-02 | -4.61      | -4.450E-02 | -48.72     |
|    | 9.4E-01      | 0.00 | -32.16     | -3.494E-02 | -4.61      | -1.764E-02 | -21.44     |
|    | 1.71         | 0.00 | -25.51     | -3.494E-02 | -4.61      | -2.069E-03 | 7.268E-01  |
|    | 2.48         | 0.00 | -18.85     | -3.494E-02 | -4.61      | -8.529E-03 | -7.12      |
|    | 3.25         | 0.00 | -12.19     | -3.494E-02 | -4.61      | -1.499E-02 | -22.29     |
| 39 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -3.70      | 9.262E-03  | 2.53       | 1.652E-02  | 6.32       |
|    | 9.4E-01      | 0.00 | 2.00       | 9.262E-03  | 2.53       | 9.399E-03  | 6.97       |
|    | 1.71         | 0.00 | 7.71       | 9.262E-03  | 2.53       | 5.492E-03  | 3.24       |
|    | 2.48         | 0.00 | 13.42      | 9.262E-03  | 2.53       | 2.391E-02  | 14.19      |
|    | 3.25         | 0.00 | 19.12      | 9.262E-03  | 2.53       | 4.564E-02  | 30.89      |
| 39 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -45.04     | -2.826E-02 | -1.12      | -4.127E-02 | -66.67     |
|    | 9.4E-01      | 0.00 | -38.38     | -2.826E-02 | -1.12      | -1.954E-02 | -34.60     |
|    | 1.71         | 0.00 | -31.73     | -2.826E-02 | -1.12      | -1.028E-03 | -7.66      |
|    | 2.48         | 0.00 | -25.07     | -2.826E-02 | -1.12      | -4.843E-03 | -4.89      |
|    | 3.25         | 0.00 | -18.41     | -2.826E-02 | -1.12      | -1.196E-02 | -17.39     |
| 40 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 1.27       | 4.590E-03  | 8.847E-01  | 8.216E-03  | 29.63      |
|    | 1.20         | 0.00 | 8.87       | 4.590E-03  | 8.847E-01  | 3.511E-03  | 25.35      |
|    | 2.23         | 0.00 | 16.56      | 4.590E-03  | 8.847E-01  | 1.945E-04  | 12.93      |
|    | 3.25         | 0.00 | 25.44      | 4.590E-03  | 8.847E-01  | 9.853E-03  | 5.97       |
|    | 4.28         | 0.00 | 34.31      | 4.590E-03  | 8.847E-01  | 2.349E-02  | 2.68       |
| 40 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -26.62     | -1.331E-02 | -6.751E-01 | -3.107E-02 | -34.94     |
|    | 1.20         | 0.00 | -17.74     | -1.331E-02 | -6.751E-01 | -1.743E-02 | -13.12     |
|    | 2.23         | 0.00 | -8.94      | -1.331E-02 | -6.751E-01 | -5.177E-03 | -5.283E-02 |
|    | 3.25         | 0.00 | -1.34      | -1.331E-02 | -6.751E-01 | -5.899E-03 | -9.35      |
|    | 4.28         | 0.00 | 6.27       | -1.331E-02 | -6.751E-01 | -1.060E-02 | -39.22     |
| 41 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -21.71     | 1.921E-03  | 1.10       | 7.127E-03  | -15.96     |
|    | 1.96         | 0.00 | -8.45      | 1.921E-03  | 1.10       | 3.713E-03  | 11.57      |
|    | 3.75         | 0.00 | 4.95       | 1.921E-03  | 1.10       | 1.228E-03  | 25.43      |
|    | 5.54         | 0.00 | 22.34      | 1.921E-03  | 1.10       | 7.396E-03  | 12.03      |
|    | 7.33         | 0.00 | 42.98      | 1.921E-03  | 1.10       | 1.374E-02  | -19.18     |
| 41 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -39.58     | -3.549E-03 | -4.843E-01 | -1.164E-02 | -42.32     |
|    | 1.96         | 0.00 | -18.94     | -3.549E-03 | -4.843E-01 | -5.312E-03 | 2.89       |
|    | 3.75         | 0.00 | -2.52      | -3.549E-03 | -4.843E-01 | 1.527E-04  | 14.23      |
|    | 5.54         | 0.00 | 10.75      | -3.549E-03 | -4.843E-01 | -3.172E-03 | -6.25      |
|    | 7.33         | 0.00 | 24.02      | -3.549E-03 | -4.843E-01 | -6.605E-03 | -56.46     |
| 42 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -20.23     | 2.713E-03  | 2.67       | 8.487E-03  | -7.72      |
|    | 1.96         | 0.00 | -6.96      | 2.713E-03  | 2.67       | 3.637E-03  | 18.63      |
|    | 3.75         | 0.00 | 7.48       | 2.713E-03  | 2.67       | 7.558E-03  | 28.33      |
|    | 5.54         | 0.00 | 22.96      | 2.713E-03  | 2.67       | 2.672E-02  | 25.24      |
|    | 7.33         | 0.00 | 41.22      | 2.713E-03  | 2.67       | 4.588E-02  | 5.30       |
| 42 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -41.34     | -1.072E-02 | -5.936E-01 | -3.077E-02 | -59.03     |
|    | 1.96         | 0.00 | -23.05     | -1.072E-02 | -5.936E-01 | -1.161E-02 | -6.03      |
|    | 3.75         | 0.00 | -8.75      | -1.072E-02 | -5.936E-01 | -1.215E-03 | 17.17      |
|    | 5.54         | 0.00 | 4.52       | -1.072E-02 | -5.936E-01 | -6.063E-03 | -8.11      |
|    | 7.33         | 0.00 | 17.79      | -1.072E-02 | -5.936E-01 | -1.091E-02 | -62.98     |
| 43 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -7.954E-01 | 9.641E-03  | 4.86       | 1.678E-02  | 11.58      |
|    | 1.04         | 0.00 | 5.61       | 9.641E-03  | 4.86       | 8.466E-03  | 9.51       |
|    | 1.90         | 0.00 | 12.01      | 9.641E-03  | 4.86       | 1.512E-04  | 16.20      |
|    | 2.76         | 0.00 | 18.41      | 9.641E-03  | 4.86       | 3.428E-02  | 43.13      |
|    | 3.63         | 0.00 | 24.81      | 9.641E-03  | 4.86       | 6.939E-02  | 63.61      |
| 43 | ENVOLVIG MIN |      |            |            |            |            |            |



|                 |      |            |            |            |            |            |
|-----------------|------|------------|------------|------------|------------|------------|
| 1.8E-01         | 0.00 | -49.89     | -4.070E-02 | -3.75      | -7.103E-02 | -56.98     |
| 1.04            | 0.00 | -42.42     | -4.070E-02 | -3.75      | -3.592E-02 | -17.17     |
| 1.90            | 0.00 | -34.95     | -4.070E-02 | -3.75      | -8.200E-04 | 1.91       |
| 2.76            | 0.00 | -27.48     | -4.070E-02 | -3.75      | -8.164E-03 | -11.21     |
| 3.63            | 0.00 | -20.01     | -4.070E-02 | -3.75      | -1.648E-02 | -29.85     |
| 44 ENVOLVIG MAX |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | 3.44       | 8.336E-03  | 4.732E-01  | 1.181E-02  | 15.03      |
| 1.03            | 0.00 | 9.80       | 8.336E-03  | 4.732E-01  | 4.675E-03  | 9.36       |
| 1.89            | 0.00 | 16.15      | 8.336E-03  | 4.732E-01  | 6.906E-03  | 23.85      |
| 2.74            | 0.00 | 22.51      | 8.336E-03  | 4.732E-01  | 3.989E-02  | 55.95      |
| 3.60            | 0.00 | 28.86      | 8.336E-03  | 4.732E-01  | 7.286E-02  | 81.70      |
| 44 ENVOLVIG MIN |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | -56.03     | -3.852E-02 | -1.27      | -5.905E-02 | -59.41     |
| 1.03            | 0.00 | -48.62     | -3.852E-02 | -1.27      | -2.607E-02 | -14.62     |
| 1.89            | 0.00 | -41.20     | -3.852E-02 | -1.27      | -2.463E-03 | -1.76      |
| 2.74            | 0.00 | -33.78     | -3.852E-02 | -1.27      | -9.600E-03 | -18.31     |
| 3.60            | 0.00 | -26.37     | -3.852E-02 | -1.27      | -1.674E-02 | -40.30     |
| 45 ENVOLVIG MAX |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | 9.786E-01  | 1.014E-02  | 1.43       | 1.667E-02  | 7.89       |
| 1.03            | 0.00 | 7.33       | 1.014E-02  | 1.43       | 7.990E-03  | 4.35       |
| 1.89            | 0.00 | 13.69      | 1.014E-02  | 1.43       | 1.254E-02  | 26.60      |
| 2.74            | 0.00 | 20.05      | 1.014E-02  | 1.43       | 3.986E-02  | 57.66      |
| 3.60            | 0.00 | 26.40      | 1.014E-02  | 1.43       | 6.749E-02  | 82.43      |
| 45 ENVOLVIG MIN |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | -54.91     | -3.227E-02 | -2.81      | -4.304E-02 | -54.88     |
| 1.03            | 0.00 | -47.49     | -3.227E-02 | -2.81      | -1.541E-02 | -11.06     |
| 1.89            | 0.00 | -40.08     | -3.227E-02 | -2.81      | -1.010E-03 | -4.82      |
| 2.74            | 0.00 | -32.66     | -3.227E-02 | -2.81      | -9.372E-03 | -19.19     |
| 3.60            | 0.00 | -25.25     | -3.227E-02 | -2.81      | -1.805E-02 | -39.05     |
| 46 ENVOLVIG MAX |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | -1.442E-01 | 8.441E-03  | -6.789E-01 | 1.369E-02  | 10.71      |
| 1.04            | 0.00 | 6.26       | 8.441E-03  | -6.789E-01 | 6.415E-03  | 8.08       |
| 1.90            | 0.00 | 12.66      | 8.441E-03  | -6.789E-01 | 8.198E-03  | 16.06      |
| 2.76            | 0.00 | 19.06      | 8.441E-03  | -6.789E-01 | 3.521E-02  | 45.43      |
| 3.63            | 0.00 | 25.47      | 8.441E-03  | -6.789E-01 | 6.245E-02  | 68.36      |
| 46 ENVOLVIG MIN |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | -52.73     | -3.159E-02 | -1.48      | -4.653E-02 | -62.00     |
| 1.04            | 0.00 | -45.26     | -3.159E-02 | -1.48      | -1.928E-02 | -19.75     |
| 1.90            | 0.00 | -37.79     | -3.159E-02 | -1.48      | -1.101E-03 | -8.465E-02 |
| 2.76            | 0.00 | -30.32     | -3.159E-02 | -1.48      | -8.146E-03 | -13.76     |
| 3.63            | 0.00 | -22.85     | -3.159E-02 | -1.48      | -1.543E-02 | -32.97     |
| 47 ENVOLVIG MAX |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | 6.17       | 8.498E-03  | 7.65       | 1.536E-02  | 34.36      |
| 1.07            | 0.00 | 12.80      | 8.498E-03  | 7.65       | 7.763E-03  | 26.68      |
| 1.96            | 0.00 | 20.03      | 8.498E-03  | 7.65       | 1.675E-04  | 12.24      |
| 2.86            | 0.00 | 27.77      | 8.498E-03  | 7.65       | 3.176E-02  | 11.31      |
| 3.75            | 0.00 | 35.51      | 8.498E-03  | 7.65       | 6.395E-02  | 16.41      |
| 47 ENVOLVIG MIN |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | -30.55     | -3.603E-02 | -3.80      | -6.484E-02 | -39.73     |
| 1.07            | 0.00 | -22.81     | -3.603E-02 | -3.80      | -3.264E-02 | -16.69     |
| 1.96            | 0.00 | -15.66     | -3.603E-02 | -3.80      | -4.406E-04 | 2.754E-01  |
| 2.86            | 0.00 | -9.03      | -3.603E-02 | -3.80      | -7.428E-03 | -9.12      |
| 3.75            | 0.00 | -2.39      | -3.603E-02 | -3.80      | -1.502E-02 | -37.40     |
| 48 ENVOLVIG MAX |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | 2.75       | 1.004E-02  | 2.49       | 1.684E-02  | 16.14      |
| 1.06            | 0.00 | 9.34       | 1.004E-02  | 2.49       | 7.923E-03  | 11.50      |
| 1.95            | 0.00 | 16.54      | 1.004E-02  | 2.49       | 3.283E-03  | 7.94       |
| 2.84            | 0.00 | 24.23      | 1.004E-02  | 2.49       | 4.011E-02  | 16.91      |
| 3.73            | 0.00 | 31.91      | 1.004E-02  | 2.49       | 7.694E-02  | 20.72      |
| 48 ENVOLVIG MIN |      |            |            |            |            |            |
| 1.8E-01         | 0.00 | -28.93     | -4.150E-02 | -5.23      | -7.038E-02 | -29.78     |
| 1.06            | 0.00 | -21.25     | -4.150E-02 | -5.23      | -3.355E-02 | -8.24      |
| 1.95            | 0.00 | -14.17     | -4.150E-02 | -5.23      | -9.910E-04 | -4.478E-01 |
| 2.84            | 0.00 | -7.58      | -4.150E-02 | -5.23      | -9.905E-03 | -17.86     |
| 3.73            | 0.00 | -9.956E-01 | -4.150E-02 | -5.23      | -1.882E-02 | -42.77     |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
| 49 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | 1.78       | 8.699E-03  | 3.871E-01  | 1.791E-02  | 25.62      |
|    | 1.21         | 0.00 | 9.30       | 8.699E-03  | 3.871E-01  | 9.103E-03  | 20.84      |
|    | 2.23         | 0.00 | 17.33      | 8.699E-03  | 3.871E-01  | 1.055E-03  | 9.87       |
|    | 3.24         | 0.00 | 26.10      | 8.699E-03  | 3.871E-01  | 3.881E-02  | 18.08      |
|    | 4.25         | 0.00 | 34.87      | 8.699E-03  | 3.871E-01  | 7.694E-02  | 22.43      |
| 49 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -32.58     | -3.766E-02 | -2.924E-01 | -7.559E-02 | -41.14     |
|    | 1.21         | 0.00 | -23.81     | -3.766E-02 | -2.924E-01 | -3.746E-02 | -13.43     |
|    | 2.23         | 0.00 | -15.56     | -3.766E-02 | -2.924E-01 | -8.286E-05 | 6.13       |
|    | 3.24         | 0.00 | -8.05      | -3.766E-02 | -2.924E-01 | -8.513E-03 | -14.26     |
|    | 4.25         | 0.00 | -5.294E-01 | -3.766E-02 | -2.924E-01 | -1.732E-02 | -45.13     |
| 50 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | 3.86       | 1.018E-02  | 5.58       | 1.803E-02  | 23.84      |
|    | 1.04         | 0.00 | 10.12      | 1.018E-02  | 5.58       | 9.434E-03  | 18.74      |
|    | 1.89         | 0.00 | 16.98      | 1.018E-02  | 5.58       | 8.419E-04  | 7.49       |
|    | 2.73         | 0.00 | 24.29      | 1.018E-02  | 5.58       | 3.186E-02  | 9.74       |
|    | 3.58         | 0.00 | 31.60      | 1.018E-02  | 5.58       | 6.943E-02  | 14.75      |
| 50 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -29.34     | -4.454E-02 | -3.59      | -8.087E-02 | -37.00     |
|    | 1.04         | 0.00 | -22.03     | -4.454E-02 | -3.59      | -4.330E-02 | -16.12     |
|    | 1.89         | 0.00 | -15.32     | -4.454E-02 | -3.59      | -5.720E-03 | -5.444E-01 |
|    | 2.73         | 0.00 | -9.06      | -4.454E-02 | -3.59      | -7.751E-03 | -9.92      |
|    | 3.58         | 0.00 | -2.80      | -4.454E-02 | -3.59      | -1.634E-02 | -33.49     |
| 51 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 4.40       | 9.356E-03  | 4.76       | 1.542E-02  | 18.71      |
|    | 1.03         | 0.00 | 10.71      | 9.356E-03  | 4.76       | 7.470E-03  | 12.95      |
|    | 1.88         | 0.00 | 17.73      | 9.356E-03  | 4.76       | 3.660E-03  | 10.94      |
|    | 2.73         | 0.00 | 25.09      | 9.356E-03  | 4.76       | 3.770E-02  | 23.40      |
|    | 3.58         | 0.00 | 32.45      | 9.356E-03  | 4.76       | 7.174E-02  | 31.01      |
| 51 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -32.43     | -4.006E-02 | -8.21      | -6.445E-02 | -31.67     |
|    | 1.03         | 0.00 | -25.06     | -4.006E-02 | -8.21      | -3.040E-02 | -7.90      |
|    | 1.88         | 0.00 | -18.41     | -4.006E-02 | -8.21      | -4.930E-04 | 4.995E-01  |
|    | 2.73         | 0.00 | -12.10     | -4.006E-02 | -8.21      | -8.435E-03 | -17.19     |
|    | 3.58         | 0.00 | -5.79      | -4.006E-02 | -8.21      | -1.639E-02 | -41.65     |
| 85 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -32.34     | 0.00       | 5.62       | 0.00       | 18.20      |
|    | 1.08         | 0.00 | -6.76      | 0.00       | 5.62       | 0.00       | 41.50      |
|    | 1.98         | 0.00 | 20.93      | 0.00       | 5.62       | 0.00       | 39.40      |
|    | 2.88         | 0.00 | 58.43      | 0.00       | 5.62       | 0.00       | 8.23       |
|    | 3.78         | 0.00 | 107.98     | 0.00       | 5.62       | 0.00       | -19.57     |
| 85 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -90.19     | 0.00       | -1.30      | 0.00       | -62.53     |
|    | 1.08         | 0.00 | -44.75     | 0.00       | -1.30      | 0.00       | -11.24     |
|    | 1.98         | 0.00 | -9.69      | 0.00       | -1.30      | 0.00       | 8.99       |
|    | 2.88         | 0.00 | 15.89      | 0.00       | -1.30      | 0.00       | 1.80       |
|    | 3.78         | 0.00 | 41.48      | 0.00       | -1.30      | 0.00       | -66.92     |
| 86 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -41.66     | 0.00       | 1.16       | 0.00       | -19.85     |
|    | 1.05         | 0.00 | -16.08     | 0.00       | 1.16       | 0.00       | 7.87       |
|    | 1.95         | 0.00 | 9.51       | 0.00       | 1.16       | 0.00       | 38.76      |
|    | 2.85         | 0.00 | 44.42      | 0.00       | 1.16       | 0.00       | 40.69      |
|    | 3.75         | 0.00 | 90.11      | 0.00       | 1.16       | 0.00       | 17.00      |
| 86 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -108.06    | 0.00       | -6.50      | 0.00       | -67.46     |
|    | 1.05         | 0.00 | -58.52     | 0.00       | -6.50      | 0.00       | 1.65       |
|    | 1.95         | 0.00 | -20.72     | 0.00       | -6.50      | 0.00       | 9.08       |
|    | 2.85         | 0.00 | 7.11       | 0.00       | -6.50      | 0.00       | -10.98     |
|    | 3.75         | 0.00 | 32.69      | 0.00       | -6.50      | 0.00       | -61.91     |
| 87 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -25.10     | 0.00       | 2.14       | 0.00       | 15.18      |
|    | 1.08         | 0.00 | -4.25      | 0.00       | 2.14       | 0.00       | 28.39      |
|    | 1.98         | 0.00 | 16.59      | 0.00       | 2.14       | 0.00       | 27.12      |
|    | 2.88         | 0.00 | 40.61      | 0.00       | 2.14       | 0.00       | 22.61      |
|    | 3.78         | 0.00 | 69.06      | 0.00       | 2.14       | 0.00       | 9.14       |

|    |              |      |            |      |            |      |         |
|----|--------------|------|------------|------|------------|------|---------|
| 87 | ENVOLVIG MIN |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -85.17     | 0.00 | -3.20      | 0.00 | -86.37  |
|    | 1.08         | 0.00 | -54.57     | 0.00 | -3.20      | 0.00 | -24.46  |
|    | 1.98         | 0.00 | -26.12     | 0.00 | -3.20      | 0.00 | 7.57    |
|    | 2.88         | 0.00 | -8.461E-01 | 0.00 | -3.20      | 0.00 | -1.52   |
|    | 3.78         | 0.00 | 20.00      | 0.00 | -3.20      | 0.00 | -46.02  |
| 88 | ENVOLVIG MAX |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -24.98     | 0.00 | 4.28       | 0.00 | 15.29   |
|    | 1.08         | 0.00 | -4.13      | 0.00 | 4.28       | 0.00 | 28.39   |
|    | 1.98         | 0.00 | 16.71      | 0.00 | 4.28       | 0.00 | 33.79   |
|    | 2.88         | 0.00 | 41.48      | 0.00 | 4.28       | 0.00 | 35.66   |
|    | 3.78         | 0.00 | 72.00      | 0.00 | 4.28       | 0.00 | 23.40   |
| 88 | ENVOLVIG MIN |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -95.50     | 0.00 | 1.72       | 0.00 | -92.34  |
|    | 1.08         | 0.00 | -62.67     | 0.00 | 1.72       | 0.00 | -22.21  |
|    | 1.98         | 0.00 | -32.15     | 0.00 | 1.72       | 0.00 | 12.94   |
|    | 2.88         | 0.00 | -5.56      | 0.00 | 1.72       | 0.00 | -1.70   |
|    | 3.78         | 0.00 | 15.29      | 0.00 | 1.72       | 0.00 | -44.88  |
| 89 | ENVOLVIG MAX |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -14.91     | 0.00 | 9.637E-01  | 0.00 | 23.45   |
|    | 1.20         | 0.00 | 1.52       | 0.00 | 9.637E-01  | 0.00 | 35.96   |
|    | 2.23         | 0.00 | 19.07      | 0.00 | 9.637E-01  | 0.00 | 35.16   |
|    | 3.25         | 0.00 | 45.56      | 0.00 | 9.637E-01  | 0.00 | 24.72   |
|    | 4.28         | 0.00 | 74.64      | 0.00 | 9.637E-01  | 0.00 | 8.42    |
| 89 | ENVOLVIG MIN |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -65.24     | 0.00 | -1.61      | 0.00 | -59.47  |
|    | 1.20         | 0.00 | -40.42     | 0.00 | -1.61      | 0.00 | -10.85  |
|    | 2.23         | 0.00 | -15.26     | 0.00 | -1.61      | 0.00 | 13.58   |
|    | 3.25         | 0.00 | 2.42       | 0.00 | -1.61      | 0.00 | -7.91   |
|    | 4.28         | 0.00 | 20.72      | 0.00 | -1.61      | 0.00 | -64.05  |
| 90 | ENVOLVIG MAX |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -13.59     | 0.00 | 3.98       | 0.00 | 6.77    |
|    | 1.09         | 0.00 | -1.03      | 0.00 | 3.98       | 0.00 | 13.44   |
|    | 2.00         | 0.00 | 11.53      | 0.00 | 3.98       | 0.00 | 12.53   |
|    | 2.91         | 0.00 | 24.09      | 0.00 | 3.98       | 0.00 | 23.17   |
|    | 3.83         | 0.00 | 37.52      | 0.00 | 3.98       | 0.00 | 23.77   |
| 90 | ENVOLVIG MIN |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -51.95     | 0.00 | -1.59      | 0.00 | -58.87  |
|    | 1.09         | 0.00 | -37.30     | 0.00 | -1.59      | 0.00 | -18.15  |
|    | 2.00         | 0.00 | -22.64     | 0.00 | -1.59      | 0.00 | 8.23    |
|    | 2.91         | 0.00 | -7.99      | 0.00 | -1.59      | 0.00 | -7.61   |
|    | 3.83         | 0.00 | 5.81       | 0.00 | -1.59      | 0.00 | -35.32  |
| 91 | ENVOLVIG MAX |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | 20.24      | 0.00 | -2.841E-02 | 0.00 | 34.22   |
|    | 9.6E-01      | 0.00 | 32.89      | 0.00 | -2.841E-02 | 0.00 | 14.63   |
|    | 1.75         | 0.00 | 45.53      | 0.00 | -2.841E-02 | 0.00 | -6.21   |
|    | 2.54         | 0.00 | 58.18      | 0.00 | -2.841E-02 | 0.00 | -4.60   |
|    | 3.33         | 0.00 | 70.83      | 0.00 | -2.841E-02 | 0.00 | -11.49  |
| 91 | ENVOLVIG MIN |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -29.19     | 0.00 | -6.36      | 0.00 | -35.14  |
|    | 9.6E-01      | 0.00 | -18.35     | 0.00 | -6.36      | 0.00 | -17.75  |
|    | 1.75         | 0.00 | -7.51      | 0.00 | -6.36      | 0.00 | -21.93  |
|    | 2.54         | 0.00 | 3.33       | 0.00 | -6.36      | 0.00 | -58.41  |
|    | 3.33         | 0.00 | 14.17      | 0.00 | -6.36      | 0.00 | -109.21 |
| 92 | ENVOLVIG MAX |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -77.38     | 0.00 | 4.527E-03  | 0.00 | -67.69  |
|    | 1.96         | 0.00 | -36.51     | 0.00 | 4.527E-03  | 0.00 | 53.13   |
|    | 3.75         | 0.00 | 4.36       | 0.00 | 4.527E-03  | 0.00 | 142.51  |
|    | 5.54         | 0.00 | 81.46      | 0.00 | 4.527E-03  | 0.00 | 75.23   |
|    | 7.33         | 0.00 | 169.10     | 0.00 | 4.527E-03  | 0.00 | -43.36  |
| 92 | ENVOLVIG MIN |      |            |      |            |      |         |
|    | 1.8E-01      | 0.00 | -181.47    | 0.00 | -2.229E-01 | 0.00 | -192.91 |
|    | 1.96         | 0.00 | -93.82     | 0.00 | -2.229E-01 | 0.00 | 13.81   |
|    | 3.75         | 0.00 | -11.70     | 0.00 | -2.229E-01 | 0.00 | 62.84   |
|    | 5.54         | 0.00 | 31.10      | 0.00 | -2.229E-01 | 0.00 | 18.53   |
|    | 7.33         | 0.00 | 71.97      | 0.00 | -2.229E-01 | 0.00 | -148.71 |

|    |              |      |         |      |            |      |         |
|----|--------------|------|---------|------|------------|------|---------|
| 93 | ENVOLVIG MAX |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -23.97  | 0.00 | 7.16       | 0.00 | -8.47   |
|    | 8.7E-01      | 0.00 | -7.90   | 0.00 | 7.16       | 0.00 | 2.59    |
|    | 1.56         | 0.00 | 8.16    | 0.00 | 7.16       | 0.00 | 15.06   |
|    | 2.26         | 0.00 | 24.23   | 0.00 | 7.16       | 0.00 | 37.60   |
|    | 2.95         | 0.00 | 42.59   | 0.00 | 7.16       | 0.00 | 44.93   |
| 93 | ENVOLVIG MIN |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -88.30  | 0.00 | -7.328E-01 | 0.00 | -75.67  |
|    | 8.7E-01      | 0.00 | -65.39  | 0.00 | -7.328E-01 | 0.00 | -22.70  |
|    | 1.56         | 0.00 | -43.46  | 0.00 | -7.328E-01 | 0.00 | 2.50    |
|    | 2.26         | 0.00 | -21.53  | 0.00 | -7.328E-01 | 0.00 | -8.74   |
|    | 2.95         | 0.00 | -1.89   | 0.00 | -7.328E-01 | 0.00 | -31.12  |
| 94 | ENVOLVIG MAX |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -7.22   | 0.00 | 8.779E-01  | 0.00 | 6.09    |
|    | 8.7E-01      | 0.00 | 8.85    | 0.00 | 8.779E-01  | 0.00 | 5.52    |
|    | 1.56         | 0.00 | 24.92   | 0.00 | 8.779E-01  | 0.00 | -1.33   |
|    | 2.26         | 0.00 | 42.50   | 0.00 | 8.779E-01  | 0.00 | 11.99   |
|    | 2.95         | 0.00 | 66.03   | 0.00 | 8.779E-01  | 0.00 | 14.16   |
| 94 | ENVOLVIG MIN |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -80.22  | 0.00 | -1.87      | 0.00 | -81.68  |
|    | 8.7E-01      | 0.00 | -56.69  | 0.00 | -1.87      | 0.00 | -34.19  |
|    | 1.56         | 0.00 | -33.17  | 0.00 | -1.87      | 0.00 | -7.88   |
|    | 2.26         | 0.00 | -11.16  | 0.00 | -1.87      | 0.00 | -29.21  |
|    | 2.95         | 0.00 | 4.91    | 0.00 | -1.87      | 0.00 | -66.85  |
| 95 | ENVOLVIG MAX |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | 5.33    | 0.00 | -4.16      | 0.00 | 26.60   |
|    | 8.7E-01      | 0.00 | 14.06   | 0.00 | -4.16      | 0.00 | 20.05   |
|    | 1.56         | 0.00 | 22.78   | 0.00 | -4.16      | 0.00 | 7.69    |
|    | 2.26         | 0.00 | 34.59   | 0.00 | -4.16      | 0.00 | 3.40    |
|    | 2.95         | 0.00 | 49.54   | 0.00 | -4.16      | 0.00 | 10.95   |
| 95 | ENVOLVIG MIN |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -57.05  | 0.00 | -10.61     | 0.00 | -70.69  |
|    | 8.7E-01      | 0.00 | -42.09  | 0.00 | -10.61     | 0.00 | -36.47  |
|    | 1.56         | 0.00 | -27.14  | 0.00 | -10.61     | 0.00 | -12.88  |
|    | 2.26         | 0.00 | -15.26  | 0.00 | -10.61     | 0.00 | -13.79  |
|    | 2.95         | 0.00 | -6.53   | 0.00 | -10.61     | 0.00 | -42.96  |
| 96 | ENVOLVIG MAX |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -26.11  | 0.00 | 6.15       | 0.00 | 15.67   |
|    | 1.17         | 0.00 | -3.10   | 0.00 | 6.15       | 0.00 | 30.45   |
|    | 2.16         | 0.00 | 19.92   | 0.00 | 6.15       | 0.00 | 43.09   |
|    | 3.16         | 0.00 | 50.91   | 0.00 | 6.15       | 0.00 | 43.24   |
|    | 4.15         | 0.00 | 86.88   | 0.00 | 6.15       | 0.00 | 23.75   |
| 96 | ENVOLVIG MIN |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -106.08 | 0.00 | -3.210E-01 | 0.00 | -100.26 |
|    | 1.17         | 0.00 | -66.12  | 0.00 | -3.210E-01 | 0.00 | -16.94  |
|    | 2.16         | 0.00 | -30.14  | 0.00 | -3.210E-01 | 0.00 | 19.48   |
|    | 3.16         | 0.00 | -2.14   | 0.00 | -3.210E-01 | 0.00 | -9.41   |
|    | 4.15         | 0.00 | 20.88   | 0.00 | -3.210E-01 | 0.00 | -67.70  |
| 97 | ENVOLVIG MAX |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -27.19  | 0.00 | 7.374E-01  | 0.00 | 13.76   |
|    | 1.17         | 0.00 | -4.18   | 0.00 | 7.374E-01  | 0.00 | 30.01   |
|    | 2.16         | 0.00 | 18.84   | 0.00 | 7.374E-01  | 0.00 | 44.03   |
|    | 3.16         | 0.00 | 49.88   | 0.00 | 7.374E-01  | 0.00 | 43.32   |
|    | 4.15         | 0.00 | 85.85   | 0.00 | 7.374E-01  | 0.00 | 22.83   |
| 97 | ENVOLVIG MIN |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -106.26 | 0.00 | -2.00      | 0.00 | -97.94  |
|    | 1.17         | 0.00 | -65.37  | 0.00 | -2.00      | 0.00 | -15.77  |
|    | 2.16         | 0.00 | -29.39  | 0.00 | -2.00      | 0.00 | 19.97   |
|    | 3.16         | 0.00 | -1.44   | 0.00 | -2.00      | 0.00 | -8.10   |
|    | 4.15         | 0.00 | 21.58   | 0.00 | -2.00      | 0.00 | -65.06  |
| 98 | ENVOLVIG MAX |      |         |      |            |      |         |
|    | 1.8E-01      | 0.00 | -74.25  | 0.00 | 6.30       | 0.00 | 5.47    |
|    | 1.08         | 0.00 | -25.15  | 0.00 | 6.30       | 0.00 | 64.91   |
|    | 1.98         | 0.00 | 27.97   | 0.00 | 6.30       | 0.00 | 85.69   |
|    | 2.88         | 0.00 | 119.31  | 0.00 | 6.30       | 0.00 | 24.51   |

|     |              |      |         |      |            |      |         |
|-----|--------------|------|---------|------|------------|------|---------|
|     | 3.78         | 0.00 | 221.95  | 0.00 | 6.30       | 0.00 | -45.21  |
| 98  | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -188.63 | 0.00 | -2.92      | 0.00 | -89.77  |
|     | 1.08         | 0.00 | -85.98  | 0.00 | -2.92      | 0.00 | 2.14    |
|     | 1.98         | 0.00 | -7.01   | 0.00 | -2.92      | 0.00 | 30.53   |
|     | 2.88         | 0.00 | 42.09   | 0.00 | -2.92      | 0.00 | 7.08    |
|     | 3.78         | 0.00 | 91.19   | 0.00 | -2.92      | 0.00 | -129.06 |
| 99  | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 1.5E-01      | 0.00 | -90.06  | 0.00 | 2.943E-01  | 0.00 | -50.54  |
|     | 1.05         | 0.00 | -40.97  | 0.00 | 2.943E-01  | 0.00 | 11.83   |
|     | 1.95         | 0.00 | 9.53    | 0.00 | 2.943E-01  | 0.00 | 58.36   |
|     | 2.85         | 0.00 | 102.27  | 0.00 | 2.943E-01  | 0.00 | 24.39   |
|     | 3.75         | 0.00 | 204.91  | 0.00 | 2.943E-01  | 0.00 | -32.16  |
| 99  | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.5E-01      | 0.00 | -205.67 | 0.00 | -9.91      | 0.00 | -127.08 |
|     | 1.05         | 0.00 | -103.02 | 0.00 | -9.91      | 0.00 | 3.10    |
|     | 1.95         | 0.00 | -11.49  | 0.00 | -9.91      | 0.00 | 23.17   |
|     | 2.85         | 0.00 | 37.61   | 0.00 | -9.91      | 0.00 | -6.23   |
|     | 3.75         | 0.00 | 86.71   | 0.00 | -9.91      | 0.00 | -125.72 |
| 100 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -65.80  | 0.00 | 2.89       | 0.00 | -23.88  |
|     | 1.20         | 0.00 | -29.52  | 0.00 | 2.89       | 0.00 | 35.17   |
|     | 2.23         | 0.00 | 5.03    | 0.00 | 2.89       | 0.00 | 90.44   |
|     | 3.25         | 0.00 | 60.36   | 0.00 | 2.89       | 0.00 | 69.39   |
|     | 4.28         | 0.00 | 136.49  | 0.00 | 2.89       | 0.00 | 12.79   |
| 100 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -193.41 | 0.00 | -4.581E-01 | 0.00 | -125.42 |
|     | 1.20         | 0.00 | -104.59 | 0.00 | -4.581E-01 | 0.00 | -5.10   |
|     | 2.23         | 0.00 | -28.41  | 0.00 | -4.581E-01 | 0.00 | 34.78   |
|     | 3.25         | 0.00 | 11.03   | 0.00 | -4.581E-01 | 0.00 | 15.10   |
|     | 4.28         | 0.00 | 42.10   | 0.00 | -4.581E-01 | 0.00 | -50.17  |
| 101 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 2.0E-01      | 0.00 | -90.28  | 0.00 | 1.326E-01  | 0.00 | -56.07  |
|     | 1.98         | 0.00 | -39.36  | 0.00 | 1.326E-01  | 0.00 | 110.91  |
|     | 3.75         | 0.00 | 11.56   | 0.00 | 1.326E-01  | 0.00 | 240.47  |
|     | 5.53         | 0.00 | 141.91  | 0.00 | 1.326E-01  | 0.00 | 115.74  |
|     | 7.30         | 0.00 | 285.17  | 0.00 | 1.326E-01  | 0.00 | -51.66  |
| 101 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 2.0E-01      | 0.00 | -287.89 | 0.00 | -1.265E-01 | 0.00 | -272.95 |
|     | 1.98         | 0.00 | -144.62 | 0.00 | -1.265E-01 | 0.00 | 16.27   |
|     | 3.75         | 0.00 | -13.15  | 0.00 | -1.265E-01 | 0.00 | 83.66   |
|     | 5.53         | 0.00 | 38.21   | 0.00 | -1.265E-01 | 0.00 | 17.95   |
|     | 7.30         | 0.00 | 89.13   | 0.00 | -1.265E-01 | 0.00 | -263.30 |
| 102 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -20.07  | 0.00 | 8.398E-01  | 0.00 | 12.48   |
|     | 9.8E-01      | 0.00 | -1.40   | 0.00 | 8.398E-01  | 0.00 | 21.14   |
|     | 1.79         | 0.00 | 17.27   | 0.00 | 8.398E-01  | 0.00 | 20.17   |
|     | 2.59         | 0.00 | 39.76   | 0.00 | 8.398E-01  | 0.00 | 18.06   |
|     | 3.40         | 0.00 | 65.24   | 0.00 | 8.398E-01  | 0.00 | 6.19    |
| 102 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -72.10  | 0.00 | -5.78      | 0.00 | -62.28  |
|     | 9.8E-01      | 0.00 | -45.96  | 0.00 | -5.78      | 0.00 | -14.96  |
|     | 1.79         | 0.00 | -20.47  | 0.00 | -5.78      | 0.00 | 8.11    |
|     | 2.59         | 0.00 | 1.21    | 0.00 | -5.78      | 0.00 | -6.73   |
|     | 3.40         | 0.00 | 19.88   | 0.00 | -5.78      | 0.00 | -45.69  |
| 103 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -26.78  | 0.00 | 9.95       | 0.00 | -13.17  |
|     | 1.49         | 0.00 | -10.19  | 0.00 | 9.95       | 0.00 | 15.83   |
|     | 2.81         | 0.00 | 6.39    | 0.00 | 9.95       | 0.00 | 41.15   |
|     | 4.13         | 0.00 | 36.98   | 0.00 | 9.95       | 0.00 | 25.53   |
|     | 5.45         | 0.00 | 74.88   | 0.00 | 9.95       | 0.00 | -4.78   |
| 103 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -76.74  | 0.00 | 2.67       | 0.00 | -61.29  |
|     | 1.49         | 0.00 | -38.84  | 0.00 | 2.67       | 0.00 | 1.95    |
|     | 2.81         | 0.00 | -7.19   | 0.00 | 2.67       | 0.00 | 13.72   |
|     | 4.13         | 0.00 | 9.99    | 0.00 | 2.67       | 0.00 | -5.65   |

|     |              |      |         |      |            |      |         |
|-----|--------------|------|---------|------|------------|------|---------|
|     | 5.45         | 0.00 | 26.58   | 0.00 | 2.67       | 0.00 | -63.34  |
| 104 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 2.0E-01      | 0.00 | -31.56  | 0.00 | -1.10      | 0.00 | -1.83   |
|     | 1.20         | 0.00 | -8.40   | 0.00 | -1.10      | 0.00 | 18.16   |
|     | 2.20         | 0.00 | 14.76   | 0.00 | -1.10      | 0.00 | 32.28   |
|     | 3.20         | 0.00 | 43.85   | 0.00 | -1.10      | 0.00 | 42.52   |
|     | 4.20         | 0.00 | 80.05   | 0.00 | -1.10      | 0.00 | 27.23   |
| 104 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 2.0E-01      | 0.00 | -115.41 | 0.00 | -7.33      | 0.00 | -119.64 |
|     | 1.20         | 0.00 | -72.15  | 0.00 | -7.33      | 0.00 | -29.38  |
|     | 2.20         | 0.00 | -35.95  | 0.00 | -7.33      | 0.00 | 14.97   |
|     | 3.20         | 0.00 | -5.68   | 0.00 | -7.33      | 0.00 | -11.36  |
|     | 4.20         | 0.00 | 17.49   | 0.00 | -7.33      | 0.00 | -63.93  |
| 105 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 2.0E-01      | 0.00 | -31.73  | 0.00 | 2.955E-01  | 0.00 | -2.05   |
|     | 1.20         | 0.00 | -8.57   | 0.00 | 2.955E-01  | 0.00 | 18.09   |
|     | 2.20         | 0.00 | 14.59   | 0.00 | 2.955E-01  | 0.00 | 31.94   |
|     | 3.20         | 0.00 | 44.30   | 0.00 | 2.955E-01  | 0.00 | 39.58   |
|     | 4.20         | 0.00 | 80.50   | 0.00 | 2.955E-01  | 0.00 | 23.22   |
| 105 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 2.0E-01      | 0.00 | -113.43 | 0.00 | -3.396E-01 | 0.00 | -115.04 |
|     | 1.20         | 0.00 | -69.64  | 0.00 | -3.396E-01 | 0.00 | -27.30  |
|     | 2.20         | 0.00 | -33.44  | 0.00 | -3.396E-01 | 0.00 | 15.08   |
|     | 3.20         | 0.00 | -3.78   | 0.00 | -3.396E-01 | 0.00 | -11.09  |
|     | 4.20         | 0.00 | 19.38   | 0.00 | -3.396E-01 | 0.00 | -64.92  |
| 106 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -74.68  | 0.00 | -1.227E-01 | 0.00 | -64.33  |
|     | 1.88         | 0.00 | -35.31  | 0.00 | -1.227E-01 | 0.00 | 36.35   |
|     | 3.58         | 0.00 | 4.07    | 0.00 | -1.227E-01 | 0.00 | 110.19  |
|     | 5.28         | 0.00 | 70.78   | 0.00 | -1.227E-01 | 0.00 | 55.20   |
|     | 6.98         | 0.00 | 147.63  | 0.00 | -1.227E-01 | 0.00 | -48.08  |
| 106 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -159.79 | 0.00 | -1.27      | 0.00 | -171.77 |
|     | 1.88         | 0.00 | -82.93  | 0.00 | -1.27      | 0.00 | 8.27    |
|     | 3.58         | 0.00 | -10.91  | 0.00 | -1.27      | 0.00 | 55.34   |
|     | 5.28         | 0.00 | 30.74   | 0.00 | -1.27      | 0.00 | 15.33   |
|     | 6.98         | 0.00 | 70.11   | 0.00 | -1.27      | 0.00 | -130.46 |
| 107 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -29.91  | 0.00 | 5.65       | 0.00 | -9.41   |
|     | 9.8E-01      | 0.00 | -11.23  | 0.00 | 5.65       | 0.00 | 7.18    |
|     | 1.79         | 0.00 | 7.44    | 0.00 | 5.65       | 0.00 | 23.50   |
|     | 2.59         | 0.00 | 26.11   | 0.00 | 5.65       | 0.00 | 40.87   |
|     | 3.40         | 0.00 | 50.44   | 0.00 | 5.65       | 0.00 | 39.80   |
| 107 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -92.92  | 0.00 | -1.88      | 0.00 | -79.21  |
|     | 9.8E-01      | 0.00 | -62.39  | 0.00 | -1.88      | 0.00 | -18.63  |
|     | 1.79         | 0.00 | -36.90  | 0.00 | -1.88      | 0.00 | 8.71    |
|     | 2.59         | 0.00 | -11.42  | 0.00 | -1.88      | 0.00 | -4.82   |
|     | 3.40         | 0.00 | 8.42    | 0.00 | -1.88      | 0.00 | -33.40  |
| 108 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -83.99  | 0.00 | 47.57      | 0.00 | -40.62  |
|     | 1.8E-01      | 0.00 | -83.90  | 0.00 | 47.57      | 0.00 | -39.65  |
|     | 1.9E-01      | 0.00 | -83.81  | 0.00 | 47.57      | 0.00 | -38.68  |
|     | 1.9E-01      | 0.00 | -83.72  | 0.00 | 47.57      | 0.00 | -37.71  |
|     | 2.0E-01      | 0.00 | -83.63  | 0.00 | 47.57      | 0.00 | -36.73  |
| 108 | ENVOLVIG MIN |      |         |      |            |      |         |
|     | 1.8E-01      | 0.00 | -294.68 | 0.00 | -3.19      | 0.00 | -186.61 |
|     | 1.8E-01      | 0.00 | -294.48 | 0.00 | -3.19      | 0.00 | -184.76 |
|     | 1.9E-01      | 0.00 | -294.27 | 0.00 | -3.19      | 0.00 | -182.92 |
|     | 1.9E-01      | 0.00 | -294.06 | 0.00 | -3.19      | 0.00 | -181.09 |
|     | 2.0E-01      | 0.00 | -293.86 | 0.00 | -3.19      | 0.00 | -179.25 |
| 109 | ENVOLVIG MAX |      |         |      |            |      |         |
|     | 0.00         | 0.00 | -58.89  | 0.00 | 28.60      | 0.00 | -29.19  |
|     | 9.0E-02      | 0.00 | -57.60  | 0.00 | 28.60      | 0.00 | -23.95  |
|     | 1.8E-01      | 0.00 | -56.30  | 0.00 | 28.60      | 0.00 | -18.82  |

|     |              |      |           |      |            |      |         |
|-----|--------------|------|-----------|------|------------|------|---------|
|     | 2.7E-01      | 0.00 | -55.01    | 0.00 | 28.60      | 0.00 | -13.81  |
|     | 3.6E-01      | 0.00 | -53.72    | 0.00 | 28.60      | 0.00 | -8.92   |
| 109 | ENVOLVIG MIN |      |           |      |            |      |         |
|     | 0.00         | 0.00 | -194.35   | 0.00 | -4.11      | 0.00 | -155.16 |
|     | 9.0E-02      | 0.00 | -191.37   | 0.00 | -4.11      | 0.00 | -137.80 |
|     | 1.8E-01      | 0.00 | -188.40   | 0.00 | -4.11      | 0.00 | -122.88 |
|     | 2.7E-01      | 0.00 | -185.42   | 0.00 | -4.11      | 0.00 | -108.26 |
|     | 3.6E-01      | 0.00 | -182.44   | 0.00 | -4.11      | 0.00 | -93.85  |
| 110 | ENVOLVIG MAX |      |           |      |            |      |         |
|     | 0.00         | 0.00 | -6.93     | 0.00 | 3.67       | 0.00 | -5.80   |
|     | 9.0E-02      | 0.00 | -5.63     | 0.00 | 3.67       | 0.00 | -5.23   |
|     | 1.8E-01      | 0.00 | -4.34     | 0.00 | 3.67       | 0.00 | -4.78   |
|     | 2.7E-01      | 0.00 | -3.04     | 0.00 | 3.67       | 0.00 | -4.45   |
|     | 3.6E-01      | 0.00 | -1.75     | 0.00 | 3.67       | 0.00 | -4.23   |
| 110 | ENVOLVIG MIN |      |           |      |            |      |         |
|     | 0.00         | 0.00 | -142.16   | 0.00 | -8.22      | 0.00 | -76.53  |
|     | 9.0E-02      | 0.00 | -139.93   | 0.00 | -8.22      | 0.00 | -63.84  |
|     | 1.8E-01      | 0.00 | -137.70   | 0.00 | -8.22      | 0.00 | -51.35  |
|     | 2.7E-01      | 0.00 | -135.46   | 0.00 | -8.22      | 0.00 | -39.05  |
|     | 3.6E-01      | 0.00 | -133.23   | 0.00 | -8.22      | 0.00 | -26.96  |
| 111 | ENVOLVIG MAX |      |           |      |            |      |         |
|     | 0.00         | 0.00 | 17.33     | 0.00 | -5.299E-01 | 0.00 | -5.55   |
|     | 9.0E-02      | 0.00 | 18.62     | 0.00 | -5.299E-01 | 0.00 | -1.05   |
|     | 1.8E-01      | 0.00 | 19.92     | 0.00 | -5.299E-01 | 0.00 | 9.22    |
|     | 2.7E-01      | 0.00 | 21.21     | 0.00 | -5.299E-01 | 0.00 | 19.80   |
|     | 3.6E-01      | 0.00 | 22.51     | 0.00 | -5.299E-01 | 0.00 | 30.18   |
| 111 | ENVOLVIG MIN |      |           |      |            |      |         |
|     | 0.00         | 0.00 | -123.16   | 0.00 | -23.12     | 0.00 | -14.30  |
|     | 9.0E-02      | 0.00 | -120.93   | 0.00 | -23.12     | 0.00 | -7.68   |
|     | 1.8E-01      | 0.00 | -118.70   | 0.00 | -23.12     | 0.00 | -8.90   |
|     | 2.7E-01      | 0.00 | -116.46   | 0.00 | -23.12     | 0.00 | -10.75  |
|     | 3.6E-01      | 0.00 | -114.23   | 0.00 | -23.12     | 0.00 | -12.72  |
| 112 | ENVOLVIG MAX |      |           |      |            |      |         |
|     | 0.00         | 0.00 | 23.57     | 0.00 | 4.220E-03  | 0.00 | 42.81   |
|     | 9.0E-02      | 0.00 | 24.87     | 0.00 | 4.220E-03  | 0.00 | 52.47   |
|     | 1.8E-01      | 0.00 | 26.16     | 0.00 | 4.220E-03  | 0.00 | 61.93   |
|     | 2.7E-01      | 0.00 | 27.46     | 0.00 | 4.220E-03  | 0.00 | 71.18   |
|     | 3.6E-01      | 0.00 | 28.75     | 0.00 | 4.220E-03  | 0.00 | 80.24   |
| 112 | ENVOLVIG MIN |      |           |      |            |      |         |
|     | 0.00         | 0.00 | -108.42   | 0.00 | -37.00     | 0.00 | -15.68  |
|     | 9.0E-02      | 0.00 | -106.19   | 0.00 | -37.00     | 0.00 | -17.86  |
|     | 1.8E-01      | 0.00 | -103.96   | 0.00 | -37.00     | 0.00 | -20.15  |
|     | 2.7E-01      | 0.00 | -101.72   | 0.00 | -37.00     | 0.00 | -22.57  |
|     | 3.6E-01      | 0.00 | -99.49    | 0.00 | -37.00     | 0.00 | -25.10  |
| 113 | ENVOLVIG MAX |      |           |      |            |      |         |
|     | 0.00         | 0.00 | 10.00     | 0.00 | -4.690E-01 | 0.00 | 90.94   |
|     | 9.0E-02      | 0.00 | 11.29     | 0.00 | -4.690E-01 | 0.00 | 98.26   |
|     | 1.8E-01      | 0.00 | 12.59     | 0.00 | -4.690E-01 | 0.00 | 105.39  |
|     | 2.7E-01      | 0.00 | 13.88     | 0.00 | -4.690E-01 | 0.00 | 112.31  |
|     | 3.6E-01      | 0.00 | 15.17     | 0.00 | -4.690E-01 | 0.00 | 119.03  |
| 113 | ENVOLVIG MIN |      |           |      |            |      |         |
|     | 0.00         | 0.00 | -82.48    | 0.00 | -50.23     | 0.00 | -27.86  |
|     | 9.0E-02      | 0.00 | -80.25    | 0.00 | -50.23     | 0.00 | -28.81  |
|     | 1.8E-01      | 0.00 | -78.01    | 0.00 | -50.23     | 0.00 | -29.89  |
|     | 2.7E-01      | 0.00 | -75.78    | 0.00 | -50.23     | 0.00 | -31.08  |
|     | 3.6E-01      | 0.00 | -73.54    | 0.00 | -50.23     | 0.00 | -32.39  |
| 114 | ENVOLVIG MAX |      |           |      |            |      |         |
|     | 0.00         | 0.00 | 8.97      | 0.00 | 4.57       | 0.00 | 132.86  |
|     | 1.33         | 0.00 | 36.51     | 0.00 | 4.57       | 0.00 | 106.29  |
|     | 2.65         | 0.00 | 69.41     | 0.00 | 4.57       | 0.00 | 43.62   |
|     | 3.98         | 0.00 | 105.49    | 0.00 | 4.57       | 0.00 | 5.37    |
|     | 5.30         | 0.00 | 149.36    | 0.00 | 4.57       | 0.00 | -33.41  |
| 114 | ENVOLVIG MIN |      |           |      |            |      |         |
|     | 0.00         | 0.00 | -42.76    | 0.00 | 1.13       | 0.00 | -29.70  |
|     | 1.33         | 0.00 | -18.35    | 0.00 | 1.13       | 0.00 | 7.23    |
|     | 2.65         | 0.00 | 7.011E-01 | 0.00 | 1.13       | 0.00 | 18.91   |

|     |              |      |         |      |            |      |           |
|-----|--------------|------|---------|------|------------|------|-----------|
|     | 3.98         | 0.00 | 19.75   | 0.00 | 1.13       | 0.00 | -77.64    |
|     | 5.30         | 0.00 | 38.80   | 0.00 | 1.13       | 0.00 | -235.95   |
| 115 | ENVOLVIG MAX |      |         |      |            |      |           |
|     | 2.0E-01      | 0.00 | -108.76 | 0.00 | 1.414E-01  | 0.00 | -104.31   |
|     | 1.98         | 0.00 | -52.19  | 0.00 | 1.414E-01  | 0.00 | 77.86     |
|     | 3.75         | 0.00 | 4.38    | 0.00 | 1.414E-01  | 0.00 | 242.09    |
|     | 5.53         | 0.00 | 143.17  | 0.00 | 1.414E-01  | 0.00 | 127.41    |
|     | 7.30         | 0.00 | 300.31  | 0.00 | 1.414E-01  | 0.00 | -57.72    |
| 115 | ENVOLVIG MIN |      |         |      |            |      |           |
|     | 2.0E-01      | 0.00 | -328.22 | 0.00 | -2.662E-01 | 0.00 | -365.28   |
|     | 1.98         | 0.00 | -171.09 | 0.00 | -2.662E-01 | 0.00 | 12.35     |
|     | 3.75         | 0.00 | -20.22  | 0.00 | -2.662E-01 | 0.00 | 80.93     |
|     | 5.53         | 0.00 | 41.45   | 0.00 | -2.662E-01 | 0.00 | 22.96     |
|     | 7.30         | 0.00 | 98.02   | 0.00 | -2.662E-01 | 0.00 | -266.18   |
| 116 | ENVOLVIG MAX |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -44.52  | 0.00 | -4.28      | 0.00 | 7.74      |
|     | 1.26         | 0.00 | -5.98   | 0.00 | -4.28      | 0.00 | 51.15     |
|     | 2.35         | 0.00 | 41.14   | 0.00 | -4.28      | 0.00 | 65.69     |
|     | 3.44         | 0.00 | 118.11  | 0.00 | -4.28      | 0.00 | 20.87     |
|     | 4.53         | 0.00 | 206.71  | 0.00 | -4.28      | 0.00 | -30.82    |
| 116 | ENVOLVIG MIN |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -156.63 | 0.00 | -14.02     | 0.00 | -93.10    |
|     | 1.26         | 0.00 | -67.79  | 0.00 | -14.02     | 0.00 | 2.61      |
|     | 2.35         | 0.00 | -8.29   | 0.00 | -14.02     | 0.00 | 20.98     |
|     | 3.44         | 0.00 | 29.06   | 0.00 | -14.02     | 0.00 | -38.02    |
|     | 4.53         | 0.00 | 65.82   | 0.00 | -14.02     | 0.00 | -192.61   |
| 117 | ENVOLVIG MAX |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -67.43  | 0.00 | 13.16      | 0.00 | 20.45     |
|     | 1.07         | 0.00 | -17.05  | 0.00 | 13.16      | 0.00 | 74.87     |
|     | 1.96         | 0.00 | 39.50   | 0.00 | 13.16      | 0.00 | 87.25     |
|     | 2.86         | 0.00 | 129.13  | 0.00 | 13.16      | 0.00 | 23.75     |
|     | 3.75         | 0.00 | 233.89  | 0.00 | 13.16      | 0.00 | -41.28    |
| 117 | ENVOLVIG MIN |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -185.15 | 0.00 | -3.37      | 0.00 | -89.49    |
|     | 1.07         | 0.00 | -81.51  | 0.00 | -3.37      | 0.00 | 1.81      |
|     | 1.96         | 0.00 | -9.11   | 0.00 | -3.37      | 0.00 | 32.38     |
|     | 2.86         | 0.00 | 41.27   | 0.00 | -3.37      | 0.00 | -1.38     |
|     | 3.75         | 0.00 | 91.65   | 0.00 | -3.37      | 0.00 | -143.57   |
| 118 | ENVOLVIG MAX |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -93.79  | 0.00 | 9.64       | 0.00 | -48.04    |
|     | 1.07         | 0.00 | -43.41  | 0.00 | 9.64       | 0.00 | 16.28     |
|     | 1.96         | 0.00 | 6.97    | 0.00 | 9.64       | 0.00 | 67.90     |
|     | 2.86         | 0.00 | 93.25   | 0.00 | 9.64       | 0.00 | 40.03     |
|     | 3.75         | 0.00 | 198.01  | 0.00 | 9.64       | 0.00 | -15.36    |
| 118 | ENVOLVIG MIN |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -221.03 | 0.00 | -4.13      | 0.00 | -139.94   |
|     | 1.07         | 0.00 | -116.27 | 0.00 | -4.13      | 0.00 | -3.01     |
|     | 1.96         | 0.00 | -22.39  | 0.00 | -4.13      | 0.00 | 29.55     |
|     | 2.86         | 0.00 | 29.84   | 0.00 | -4.13      | 0.00 | 8.092E-01 |
|     | 3.75         | 0.00 | 80.22   | 0.00 | -4.13      | 0.00 | -102.89   |
| 119 | ENVOLVIG MAX |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -23.83  | 0.00 | 4.69       | 0.00 | -4.22     |
|     | 1.33         | 0.00 | -9.36   | 0.00 | 4.69       | 0.00 | 14.87     |
|     | 2.48         | 0.00 | 5.10    | 0.00 | 4.69       | 0.00 | 30.21     |
|     | 3.63         | 0.00 | 26.70   | 0.00 | 4.69       | 0.00 | 22.72     |
|     | 4.78         | 0.00 | 57.13   | 0.00 | 4.69       | 0.00 | 4.34      |
| 119 | ENVOLVIG MIN |      |         |      |            |      |           |
|     | 1.8E-01      | 0.00 | -75.09  | 0.00 | -2.929E-01 | 0.00 | -73.58    |
|     | 1.33         | 0.00 | -42.04  | 0.00 | -2.929E-01 | 0.00 | -13.13    |
|     | 2.48         | 0.00 | -15.37  | 0.00 | -2.929E-01 | 0.00 | 9.15      |
|     | 3.63         | 0.00 | 2.29    | 0.00 | -2.929E-01 | 0.00 | 2.63      |
|     | 4.78         | 0.00 | 16.75   | 0.00 | -2.929E-01 | 0.00 | -34.89    |
| 120 | ENVOLVIG MAX |      |         |      |            |      |           |
|     | 0.00         | 0.00 | -10.67  | 0.00 | 8.83       | 0.00 | -2.48     |
|     | 1.24         | 0.00 | -6.73   | 0.00 | 8.83       | 0.00 | 8.63      |



|     |              |      |            |      |            |      |            |
|-----|--------------|------|------------|------|------------|------|------------|
|     | 2.48         | 0.00 | -2.79      | 0.00 | 8.83       | 0.00 | 17.83      |
|     | 3.71         | 0.00 | 1.15       | 0.00 | 8.83       | 0.00 | 39.64      |
|     | 4.95         | 0.00 | 5.08       | 0.00 | 8.83       | 0.00 | 56.52      |
| 120 | ENVOLVIG MIN |      |            |      |            |      |            |
|     | 0.00         | 0.00 | -35.07     | 0.00 | 9.297E-01  | 0.00 | -63.55     |
|     | 1.24         | 0.00 | -28.95     | 0.00 | 9.297E-01  | 0.00 | -26.45     |
|     | 2.48         | 0.00 | -23.37     | 0.00 | 9.297E-01  | 0.00 | 2.00       |
|     | 3.71         | 0.00 | -18.77     | 0.00 | 9.297E-01  | 0.00 | 12.81      |
|     | 4.95         | 0.00 | -14.18     | 0.00 | 9.297E-01  | 0.00 | 9.16       |
| 121 | ENVOLVIG MAX |      |            |      |            |      |            |
|     | 2.0E-01      | 0.00 | -45.23     | 0.00 | -2.19      | 0.00 | -16.56     |
|     | 1.34         | 0.00 | -18.74     | 0.00 | -2.19      | 0.00 | 20.03      |
|     | 2.49         | 0.00 | 7.75       | 0.00 | -2.19      | 0.00 | 49.18      |
|     | 3.63         | 0.00 | 43.57      | 0.00 | -2.19      | 0.00 | 40.34      |
|     | 4.78         | 0.00 | 94.47      | 0.00 | -2.19      | 0.00 | 7.20       |
| 121 | ENVOLVIG MIN |      |            |      |            |      |            |
|     | 2.0E-01      | 0.00 | -126.36    | 0.00 | -8.58      | 0.00 | -120.20    |
|     | 1.34         | 0.00 | -71.16     | 0.00 | -8.58      | 0.00 | -19.33     |
|     | 2.49         | 0.00 | -26.08     | 0.00 | -8.58      | 0.00 | 20.90      |
|     | 3.63         | 0.00 | 5.99       | 0.00 | -8.58      | 0.00 | 2.30       |
|     | 4.78         | 0.00 | 32.48      | 0.00 | -8.58      | 0.00 | -60.08     |
| 122 | ENVOLVIG MAX |      |            |      |            |      |            |
|     | 2.0E-01      | 0.00 | -45.55     | 0.00 | 3.38       | 0.00 | -16.48     |
|     | 1.34         | 0.00 | -19.05     | 0.00 | 3.38       | 0.00 | 20.46      |
|     | 2.49         | 0.00 | 7.44       | 0.00 | 3.38       | 0.00 | 59.23      |
|     | 3.63         | 0.00 | 40.69      | 0.00 | 3.38       | 0.00 | 62.41      |
|     | 4.78         | 0.00 | 86.21      | 0.00 | 3.38       | 0.00 | 32.07      |
| 122 | ENVOLVIG MIN |      |            |      |            |      |            |
|     | 2.0E-01      | 0.00 | -134.62    | 0.00 | -4.616E-01 | 0.00 | -130.73    |
|     | 1.34         | 0.00 | -79.41     | 0.00 | -4.616E-01 | 0.00 | -18.99     |
|     | 2.49         | 0.00 | -35.59     | 0.00 | -4.616E-01 | 0.00 | 27.11      |
|     | 3.63         | 0.00 | -9.393E-01 | 0.00 | -4.616E-01 | 0.00 | 3.45       |
|     | 4.78         | 0.00 | 25.55      | 0.00 | -4.616E-01 | 0.00 | -50.50     |
| 123 | ENVOLVIG MAX |      |            |      |            |      |            |
|     | 1.8E-01      | 0.00 | -18.42     | 0.00 | 1.84       | 0.00 | 11.66      |
|     | 9.4E-01      | 0.00 | -6.108E-01 | 0.00 | 1.84       | 0.00 | 18.97      |
|     | 1.71         | 0.00 | 17.19      | 0.00 | 1.84       | 0.00 | 14.85      |
|     | 2.48         | 0.00 | 37.73      | 0.00 | 1.84       | 0.00 | 14.56      |
|     | 3.25         | 0.00 | 62.03      | 0.00 | 1.84       | 0.00 | 6.70       |
| 123 | ENVOLVIG MIN |      |            |      |            |      |            |
|     | 1.8E-01      | 0.00 | -72.27     | 0.00 | -6.20      | 0.00 | -68.05     |
|     | 9.4E-01      | 0.00 | -47.97     | 0.00 | -6.20      | 0.00 | -21.83     |
|     | 1.71         | 0.00 | -23.67     | 0.00 | -6.20      | 0.00 | 3.46       |
|     | 2.48         | 0.00 | -2.10      | 0.00 | -6.20      | 0.00 | -7.47      |
|     | 3.25         | 0.00 | 15.70      | 0.00 | -6.20      | 0.00 | -43.18     |
| 124 | ENVOLVIG MAX |      |            |      |            |      |            |
|     | 1.8E-01      | 0.00 | -29.20     | 0.00 | 3.32       | 0.00 | -16.43     |
|     | 9.4E-01      | 0.00 | -11.40     | 0.00 | 3.32       | 0.00 | -8.249E-01 |
|     | 1.71         | 0.00 | 6.41       | 0.00 | 3.32       | 0.00 | 1.10       |
|     | 2.48         | 0.00 | 24.21      | 0.00 | 3.32       | 0.00 | 21.28      |
|     | 3.25         | 0.00 | 46.58      | 0.00 | 3.32       | 0.00 | 30.77      |
| 124 | ENVOLVIG MIN |      |            |      |            |      |            |
|     | 1.8E-01      | 0.00 | -107.51    | 0.00 | -3.261E-01 | 0.00 | -127.46    |
|     | 9.4E-01      | 0.00 | -77.52     | 0.00 | -3.261E-01 | 0.00 | -57.84     |
|     | 1.71         | 0.00 | -51.46     | 0.00 | -3.261E-01 | 0.00 | -8.27      |
|     | 2.48         | 0.00 | -25.39     | 0.00 | -3.261E-01 | 0.00 | -10.68     |
|     | 3.25         | 0.00 | -3.89      | 0.00 | -3.261E-01 | 0.00 | -36.13     |
| 125 | ENVOLVIG MAX |      |            |      |            |      |            |
|     | 1.8E-01      | 0.00 | -11.36     | 0.00 | 3.71       | 0.00 | 35.67      |
|     | 1.20         | 0.00 | 10.73      | 0.00 | 3.71       | 0.00 | 46.49      |
|     | 2.23         | 0.00 | 47.18      | 0.00 | 3.71       | 0.00 | 20.98      |
|     | 3.25         | 0.00 | 100.14     | 0.00 | 3.71       | 0.00 | -7.03      |
|     | 4.28         | 0.00 | 167.07     | 0.00 | 3.71       | 0.00 | -45.15     |
| 125 | ENVOLVIG MIN |      |            |      |            |      |            |
|     | 1.8E-01      | 0.00 | -73.14     | 0.00 | 3.551E-01  | 0.00 | -56.55     |

|     |              |      |            |      |            |      |         |
|-----|--------------|------|------------|------|------------|------|---------|
|     | 1.20         | 0.00 | -33.50     | 0.00 | 3.551E-01  | 0.00 | -11.91  |
|     | 2.23         | 0.00 | -2.71      | 0.00 | 3.551E-01  | 0.00 | 3.36    |
|     | 3.25         | 0.00 | 23.34      | 0.00 | 3.551E-01  | 0.00 | -51.44  |
|     | 4.28         | 0.00 | 51.36      | 0.00 | 3.551E-01  | 0.00 | -185.91 |
| 126 | ENVOLVIG MAX |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -115.35    | 0.00 | 8.10       | 0.00 | -98.04  |
|     | 6.3E-01      | 0.00 | -100.07    | 0.00 | 8.10       | 0.00 | -48.90  |
|     | 1.09         | 0.00 | -84.79     | 0.00 | 8.10       | 0.00 | -6.72   |
|     | 1.54         | 0.00 | -69.51     | 0.00 | 8.10       | 0.00 | 38.10   |
|     | 2.00         | 0.00 | -54.23     | 0.00 | 8.10       | 0.00 | 99.04   |
| 126 | ENVOLVIG MIN |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -269.43    | 0.00 | -3.44      | 0.00 | -258.32 |
|     | 6.3E-01      | 0.00 | -232.62    | 0.00 | -3.44      | 0.00 | -143.79 |
|     | 1.09         | 0.00 | -195.81    | 0.00 | -3.44      | 0.00 | -46.71  |
|     | 1.54         | 0.00 | -159.00    | 0.00 | -3.44      | 0.00 | 4.62    |
|     | 2.00         | 0.00 | -122.20    | 0.00 | -3.44      | 0.00 | 33.32   |
| 127 | ENVOLVIG MAX |      |            |      |            |      |         |
|     | 0.00         | 0.00 | -48.89     | 0.00 | 3.57       | 0.00 | 71.82   |
|     | 1.33         | 0.00 | -4.31      | 0.00 | 3.57       | 0.00 | 186.20  |
|     | 2.66         | 0.00 | 75.18      | 0.00 | 3.57       | 0.00 | 157.60  |
|     | 3.99         | 0.00 | 182.58     | 0.00 | 3.57       | 0.00 | 7.65    |
|     | 5.33         | 0.00 | 289.98     | 0.00 | 3.57       | 0.00 | -115.23 |
| 127 | ENVOLVIG MIN |      |            |      |            |      |         |
|     | 0.00         | 0.00 | -139.62    | 0.00 | -3.68      | 0.00 | 20.18   |
|     | 1.33         | 0.00 | -32.22     | 0.00 | -3.68      | 0.00 | 75.36   |
|     | 2.66         | 0.00 | 25.43      | 0.00 | -3.68      | 0.00 | 58.70   |
|     | 3.99         | 0.00 | 70.02      | 0.00 | -3.68      | 0.00 | -26.60  |
|     | 5.33         | 0.00 | 114.60     | 0.00 | -3.68      | 0.00 | -328.52 |
| 128 | ENVOLVIG MAX |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -90.27     | 0.00 | 4.91       | 0.00 | -99.60  |
|     | 1.96         | 0.00 | -45.27     | 0.00 | 4.91       | 0.00 | 21.90   |
|     | 3.75         | 0.00 | -2.637E-01 | 0.00 | 4.91       | 0.00 | 137.27  |
|     | 5.54         | 0.00 | 73.68      | 0.00 | 4.91       | 0.00 | 91.73   |
|     | 7.33         | 0.00 | 170.09     | 0.00 | 4.91       | 0.00 | -26.72  |
| 128 | ENVOLVIG MIN |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -215.55    | 0.00 | 4.977E-01  | 0.00 | -288.65 |
|     | 1.96         | 0.00 | -119.14    | 0.00 | 4.977E-01  | 0.00 | -6.57   |
|     | 3.75         | 0.00 | -26.29     | 0.00 | 4.977E-01  | 0.00 | 62.22   |
|     | 5.54         | 0.00 | 26.26      | 0.00 | 4.977E-01  | 0.00 | 22.47   |
|     | 7.33         | 0.00 | 71.26      | 0.00 | 4.977E-01  | 0.00 | -130.11 |
| 129 | ENVOLVIG MAX |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -29.81     | 0.00 | 3.77       | 0.00 | -7.21   |
|     | 1.04         | 0.00 | -9.84      | 0.00 | 3.77       | 0.00 | 9.90    |
|     | 1.90         | 0.00 | 10.14      | 0.00 | 3.77       | 0.00 | 33.67   |
|     | 2.76         | 0.00 | 30.12      | 0.00 | 3.77       | 0.00 | 54.82   |
|     | 3.63         | 0.00 | 56.56      | 0.00 | 3.77       | 0.00 | 53.17   |
| 129 | ENVOLVIG MIN |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -97.35     | 0.00 | -2.40      | 0.00 | -81.35  |
|     | 1.04         | 0.00 | -66.26     | 0.00 | -2.40      | 0.00 | -12.45  |
|     | 1.90         | 0.00 | -38.99     | 0.00 | -2.40      | 0.00 | 9.73    |
|     | 2.76         | 0.00 | -11.73     | 0.00 | -2.40      | 0.00 | -7.61   |
|     | 3.63         | 0.00 | 9.07       | 0.00 | -2.40      | 0.00 | -42.19  |
| 130 | ENVOLVIG MAX |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -24.72     | 0.00 | -6.034E-01 | 0.00 | 3.72    |
|     | 1.03         | 0.00 | -4.89      | 0.00 | -6.034E-01 | 0.00 | 16.44   |
|     | 1.89         | 0.00 | 14.94      | 0.00 | -6.034E-01 | 0.00 | 39.51   |
|     | 2.74         | 0.00 | 34.77      | 0.00 | -6.034E-01 | 0.00 | 63.70   |
|     | 3.60         | 0.00 | 63.52      | 0.00 | -6.034E-01 | 0.00 | 65.61   |
| 130 | ENVOLVIG MIN |      |            |      |            |      |         |
|     | 1.8E-01      | 0.00 | -104.33    | 0.00 | -1.70      | 0.00 | -91.41  |
|     | 1.03         | 0.00 | -74.85     | 0.00 | -1.70      | 0.00 | -14.93  |
|     | 1.89         | 0.00 | -45.81     | 0.00 | -1.70      | 0.00 | 11.90   |
|     | 2.74         | 0.00 | -16.78     | 0.00 | -1.70      | 0.00 | -9.31   |
|     | 3.60         | 0.00 | 3.34       | 0.00 | -1.70      | 0.00 | -47.55  |
| 131 | ENVOLVIG MAX |      |            |      |            |      |         |

|     |              |      |           |      |            |      |            |
|-----|--------------|------|-----------|------|------------|------|------------|
|     | 1.8E-01      | 0.00 | -8.47     | 0.00 | -2.67      | 0.00 | 5.47       |
|     | 1.03         | 0.00 | 2.30      | 0.00 | -2.67      | 0.00 | 8.13       |
|     | 1.89         | 0.00 | 13.07     | 0.00 | -2.67      | 0.00 | 28.00      |
|     | 2.74         | 0.00 | 23.84     | 0.00 | -2.67      | 0.00 | 53.42      |
|     | 3.60         | 0.00 | 41.59     | 0.00 | -2.67      | 0.00 | 63.09      |
| 131 | ENVOLVIG MIN |      |           |      |            |      |            |
|     | 1.8E-01      | 0.00 | -76.04    | 0.00 | -9.05      | 0.00 | -71.17     |
|     | 1.03         | 0.00 | -57.58    | 0.00 | -9.05      | 0.00 | -14.00     |
|     | 1.89         | 0.00 | -39.12    | 0.00 | -9.05      | 0.00 | 9.495E-01  |
|     | 2.74         | 0.00 | -20.66    | 0.00 | -9.05      | 0.00 | -14.68     |
|     | 3.60         | 0.00 | -9.18     | 0.00 | -9.05      | 0.00 | -39.59     |
| 132 | ENVOLVIG MAX |      |           |      |            |      |            |
|     | 0.00         | 0.00 | 13.91     | 0.00 | -7.30      | 0.00 | 60.12      |
|     | 9.5E-01      | 0.00 | 17.44     | 0.00 | -7.30      | 0.00 | 46.38      |
|     | 1.90         | 0.00 | 21.52     | 0.00 | -7.30      | 0.00 | 28.16      |
|     | 2.85         | 0.00 | 26.23     | 0.00 | -7.30      | 0.00 | 14.35      |
|     | 3.80         | 0.00 | 30.93     | 0.00 | -7.30      | 0.00 | 4.06       |
| 132 | ENVOLVIG MIN |      |           |      |            |      |            |
|     | 0.00         | 0.00 | -2.16     | 0.00 | -18.71     | 0.00 | 15.99      |
|     | 9.5E-01      | 0.00 | 8.610E-01 | 0.00 | -18.71     | 0.00 | 13.92      |
|     | 1.90         | 0.00 | 3.88      | 0.00 | -18.71     | 0.00 | 5.67       |
|     | 2.85         | 0.00 | 6.91      | 0.00 | -18.71     | 0.00 | -7.62      |
|     | 3.80         | 0.00 | 9.93      | 0.00 | -18.71     | 0.00 | -30.26     |
| 133 | ENVOLVIG MAX |      |           |      |            |      |            |
|     | 1.8E-01      | 0.00 | -27.31    | 0.00 | 2.61       | 0.00 | -9.752E-01 |
|     | 1.04         | 0.00 | -7.33     | 0.00 | 2.61       | 0.00 | 13.97      |
|     | 1.90         | 0.00 | 12.64     | 0.00 | 2.61       | 0.00 | 31.73      |
|     | 2.76         | 0.00 | 32.62     | 0.00 | 2.61       | 0.00 | 54.72      |
|     | 3.63         | 0.00 | 61.43     | 0.00 | 2.61       | 0.00 | 56.07      |
| 133 | ENVOLVIG MIN |      |           |      |            |      |            |
|     | 1.8E-01      | 0.00 | -106.31   | 0.00 | -6.142E-02 | 0.00 | -100.67    |
|     | 1.04         | 0.00 | -74.67    | 0.00 | -6.142E-02 | 0.00 | -23.65     |
|     | 1.90         | 0.00 | -45.43    | 0.00 | -6.142E-02 | 0.00 | 11.60      |
|     | 2.76         | 0.00 | -16.18    | 0.00 | -6.142E-02 | 0.00 | -7.85      |
|     | 3.63         | 0.00 | 4.22      | 0.00 | -6.142E-02 | 0.00 | -44.59     |
| 134 | ENVOLVIG MAX |      |           |      |            |      |            |
|     | 1.8E-01      | 0.00 | -28.56    | 0.00 | 5.00       | 0.00 | 22.56      |
|     | 1.07         | 0.00 | -2.86     | 0.00 | 5.00       | 0.00 | 43.50      |
|     | 1.96         | 0.00 | 25.33     | 0.00 | 5.00       | 0.00 | 40.77      |
|     | 2.86         | 0.00 | 62.69     | 0.00 | 5.00       | 0.00 | 16.40      |
|     | 3.75         | 0.00 | 109.43    | 0.00 | 5.00       | 0.00 | -8.82      |
| 134 | ENVOLVIG MIN |      |           |      |            |      |            |
|     | 1.8E-01      | 0.00 | -89.83    | 0.00 | -2.66      | 0.00 | -62.19     |
|     | 1.07         | 0.00 | -47.99    | 0.00 | -2.66      | 0.00 | -9.51      |
|     | 1.96         | 0.00 | -13.11    | 0.00 | -2.66      | 0.00 | 13.69      |
|     | 2.86         | 0.00 | 12.60     | 0.00 | -2.66      | 0.00 | -4.25      |
|     | 3.75         | 0.00 | 38.30     | 0.00 | -2.66      | 0.00 | -74.50     |
| 135 | ENVOLVIG MAX |      |           |      |            |      |            |
|     | 1.8E-01      | 0.00 | -36.39    | 0.00 | 2.70       | 0.00 | -7.93      |
|     | 1.06         | 0.00 | -10.87    | 0.00 | 2.70       | 0.00 | 14.94      |
|     | 1.95         | 0.00 | 15.08     | 0.00 | 2.70       | 0.00 | 30.86      |
|     | 2.84         | 0.00 | 52.18     | 0.00 | 2.70       | 0.00 | 26.81      |
|     | 3.73         | 0.00 | 97.71     | 0.00 | 2.70       | 0.00 | 7.06       |
| 135 | ENVOLVIG MIN |      |           |      |            |      |            |
|     | 1.8E-01      | 0.00 | -100.15   | 0.00 | -3.57      | 0.00 | -67.59     |
|     | 1.06         | 0.00 | -54.01    | 0.00 | -3.57      | 0.00 | -5.10      |
|     | 1.95         | 0.00 | -17.33    | 0.00 | -3.57      | 0.00 | 11.36      |
|     | 2.84         | 0.00 | 8.20      | 0.00 | -3.57      | 0.00 | -12.97     |
|     | 3.73         | 0.00 | 33.72     | 0.00 | -3.57      | 0.00 | -74.59     |
| 136 | ENVOLVIG MAX |      |           |      |            |      |            |
|     | 2.0E-01      | 0.00 | -4.23     | 0.00 | 2.064E-02  | 0.00 | 23.45      |
|     | 1.21         | 0.00 | 7.60      | 0.00 | 2.064E-02  | 0.00 | 25.26      |
|     | 2.23         | 0.00 | 20.03     | 0.00 | 2.064E-02  | 0.00 | 19.80      |
|     | 3.24         | 0.00 | 40.04     | 0.00 | 2.064E-02  | 0.00 | 20.94      |
|     | 4.25         | 0.00 | 59.62     | 0.00 | 2.064E-02  | 0.00 | 19.91      |
| 136 | ENVOLVIG MIN |      |           |      |            |      |            |

|         |              |            |            |            |            |        |
|---------|--------------|------------|------------|------------|------------|--------|
| 2.0E-01 | 0.00         | -57.84     | 0.00       | -2.074E-01 | 0.00       | -60.57 |
| 1.21    | 0.00         | -36.95     | 0.00       | -2.074E-01 | 0.00       | -16.16 |
| 2.23    | 0.00         | -17.41     | 0.00       | -2.074E-01 | 0.00       | 7.27   |
| 3.24    | 0.00         | -6.19      | 0.00       | -2.074E-01 | 0.00       | -16.90 |
| 4.25    | 0.00         | 4.72       | 0.00       | -2.074E-01 | 0.00       | -65.64 |
| 137     | ENVOLVIG MAX |            |            |            |            |        |
| 2.0E-01 | 0.00         | -18.80     | 0.00       | 14.62      | 0.00       | 13.85  |
| 6.5E-01 | 0.00         | -9.78      | 0.00       | 14.62      | 0.00       | 20.29  |
| 1.10    | 0.00         | -7.522E-01 | 0.00       | 14.62      | 0.00       | 24.23  |
| 1.55    | 0.00         | 8.27       | 0.00       | 14.62      | 0.00       | 26.28  |
| 2.00    | 0.00         | 17.30      | 0.00       | 14.62      | 0.00       | 26.68  |
| 137     | ENVOLVIG MIN |            |            |            |            |        |
| 2.0E-01 | 0.00         | -73.62     | 0.00       | 1.53       | 0.00       | -65.07 |
| 6.5E-01 | 0.00         | -60.07     | 0.00       | 1.53       | 0.00       | -35.02 |
| 1.10    | 0.00         | -46.64     | 0.00       | 1.53       | 0.00       | -12.58 |
| 1.55    | 0.00         | -33.20     | 0.00       | 1.53       | 0.00       | 1.64   |
| 2.00    | 0.00         | -19.77     | 0.00       | 1.53       | 0.00       | 11.42  |
| 138     | ENVOLVIG MAX |            |            |            |            |        |
| 0.00    | 0.00         | 38.28      | 0.00       | 5.59       | 0.00       | 45.38  |
| 3.9E-01 | 0.00         | 50.03      | 0.00       | 5.59       | 0.00       | 30.81  |
| 7.9E-01 | 0.00         | 61.78      | 0.00       | 5.59       | 0.00       | 17.87  |
| 1.18    | 0.00         | 76.18      | 0.00       | 5.59       | 0.00       | 8.06   |
| 1.58    | 0.00         | 91.85      | 0.00       | 5.59       | 0.00       | -1.89  |
| 138     | ENVOLVIG MIN |            |            |            |            |        |
| 0.00    | 0.00         | -2.53      | 0.00       | -15.64     | 0.00       | 18.98  |
| 3.9E-01 | 0.00         | 5.37       | 0.00       | -15.64     | 0.00       | 10.71  |
| 7.9E-01 | 0.00         | 13.27      | 0.00       | -15.64     | 0.00       | -5.43  |
| 1.18    | 0.00         | 21.16      | 0.00       | -15.64     | 0.00       | -29.05 |
| 1.58    | 0.00         | 29.06      | 0.00       | -15.64     | 0.00       | -60.26 |
| 139     | ENVOLVIG MAX |            |            |            |            |        |
| 1.8E-01 | 0.00         | -18.75     | 0.00       | 1.63       | 0.00       | 2.32   |
| 1.03    | 0.00         | -1.70      | 0.00       | 1.63       | 0.00       | 12.00  |
| 1.88    | 0.00         | 15.34      | 0.00       | 1.63       | 0.00       | 23.70  |
| 2.73    | 0.00         | 38.92      | 0.00       | 1.63       | 0.00       | 33.02  |
| 3.58    | 0.00         | 64.30      | 0.00       | 1.63       | 0.00       | 25.96  |
| 139     | ENVOLVIG MIN |            |            |            |            |        |
| 1.8E-01 | 0.00         | -74.55     | 0.00       | -5.06      | 0.00       | -60.05 |
| 1.03    | 0.00         | -49.18     | 0.00       | -5.06      | 0.00       | -8.45  |
| 1.88    | 0.00         | -23.81     | 0.00       | -5.06      | 0.00       | 5.08   |
| 2.73    | 0.00         | -4.97      | 0.00       | -5.06      | 0.00       | -15.08 |
| 3.58    | 0.00         | 12.08      | 0.00       | -5.06      | 0.00       | -54.91 |
| 163     | ENVOLVIG MAX |            |            |            |            |        |
| 1.8E-01 | -13.64       | -24.43     | 2.751E-01  | 1.49       | 1.09       | -12.45 |
| 2.05    | -13.64       | -10.51     | 2.751E-01  | 1.49       | 5.737E-01  | 26.44  |
| 3.93    | -13.64       | 3.49       | 2.751E-01  | 1.49       | 1.082E-01  | 49.85  |
| 5.80    | -13.64       | 25.91      | 2.751E-01  | 1.49       | 4.951E-02  | 25.27  |
| 7.68    | -13.64       | 51.50      | 2.751E-01  | 1.49       | 5.891E-02  | -13.49 |
| 163     | ENVOLVIG MIN |            |            |            |            |        |
| 1.8E-01 | -28.40       | -50.88     | -2.182E-02 | 5.541E-01  | -1.047E-01 | -45.91 |
| 2.05    | -28.40       | -25.28     | -2.182E-02 | 5.541E-01  | -6.388E-02 | 8.15   |
| 3.93    | -28.40       | -3.11      | -2.182E-02 | 5.541E-01  | -7.322E-02 | 26.96  |
| 5.80    | -28.40       | 10.80      | -2.182E-02 | 5.541E-01  | -4.894E-01 | 7.56   |
| 7.68    | -28.40       | 24.72      | -2.182E-02 | 5.541E-01  | -9.736E-01 | -47.70 |
| 164     | ENVOLVIG MAX |            |            |            |            |        |
| 1.8E-01 | -5.87        | -6.13      | 2.034E-01  | 9.07       | 1.292E-01  | 3.98   |
| 1.08    | -5.87        | -3.284E-01 | 2.034E-01  | 7.61       | 2.790E-02  | 6.89   |
| 1.98    | -5.87        | 5.48       | 2.034E-01  | 6.15       | 3.059E-01  | 5.10   |
| 2.88    | -5.87        | 11.31      | 2.034E-01  | 4.69       | 9.090E-01  | 7.87   |
| 3.78    | -5.87        | 18.69      | 2.034E-01  | 3.22       | 1.52       | 6.08   |
| 164     | ENVOLVIG MIN |            |            |            |            |        |
| 1.8E-01 | -13.51       | -23.80     | -7.043E-01 | 5.06       | -1.06      | -26.51 |
| 1.08    | -13.51       | -16.42     | -7.043E-01 | 4.12       | -5.123E-01 | -8.41  |
| 1.98    | -13.51       | -9.04      | -7.043E-01 | 3.18       | -3.395E-01 | 2.99   |
| 2.88    | -13.51       | -1.70      | -7.043E-01 | 2.24       | -4.918E-01 | -2.97  |
| 3.78    | -13.51       | 4.10       | -7.043E-01 | 1.30       | -6.543E-01 | -15.76 |

|     |              |        |            |            |            |            |            |
|-----|--------------|--------|------------|------------|------------|------------|------------|
| 165 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -17.25     | 0.00       | -3.56      | 0.00       | -4.75      |
|     | 1.86         | 0.00   | -6.41      | 0.00       | -1.77      | 0.00       | 16.26      |
|     | 3.54         | 0.00   | 4.43       | 0.00       | 2.824E-01  | 0.00       | 27.13      |
|     | 5.22         | 0.00   | 19.31      | 0.00       | 2.98       | 0.00       | 12.56      |
|     | 6.90         | 0.00   | 37.69      | 0.00       | 5.71       | 0.00       | -13.30     |
| 165 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -35.82     | 0.00       | -5.21      | 0.00       | -35.63     |
|     | 1.86         | 0.00   | -17.44     | 0.00       | -2.48      | 0.00       | 2.48       |
|     | 3.54         | 0.00   | -2.66      | 0.00       | -2.445E-01 | 0.00       | 15.45      |
|     | 5.22         | 0.00   | 8.55       | 0.00       | 1.51       | 0.00       | 2.314E-01  |
|     | 6.90         | 0.00   | 19.39      | 0.00       | 3.27       | 0.00       | -38.99     |
| 166 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -14.12     | 0.00       | 3.41       | 0.00       | 3.15       |
|     | 1.20         | 0.00   | -3.70      | 0.00       | 3.41       | 0.00       | 12.58      |
|     | 2.23         | 0.00   | 6.72       | 0.00       | 3.41       | 0.00       | 15.51      |
|     | 3.25         | 0.00   | 20.07      | 0.00       | 3.41       | 0.00       | 9.17       |
|     | 4.28         | 0.00   | 36.89      | 0.00       | 3.41       | 0.00       | -2.25      |
| 166 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -36.31     | 0.00       | -1.05      | 0.00       | -30.11     |
|     | 1.20         | 0.00   | -19.64     | 0.00       | -1.05      | 0.00       | -3.25      |
|     | 2.23         | 0.00   | -5.91      | 0.00       | -1.05      | 0.00       | 7.74       |
|     | 3.25         | 0.00   | 4.89       | 0.00       | -1.05      | 0.00       | -1.50      |
|     | 4.28         | 0.00   | 15.31      | 0.00       | -1.05      | 0.00       | -28.03     |
| 167 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -12.82     | 0.00       | 4.842E-01  | 0.00       | -1.14      |
|     | 1.09         | 0.00   | -3.55      | 0.00       | 4.842E-01  | 0.00       | 7.27       |
|     | 2.00         | 0.00   | 6.77       | 0.00       | 4.842E-01  | 0.00       | 8.97       |
|     | 2.91         | 0.00   | 18.99      | 0.00       | 4.842E-01  | 0.00       | 6.28       |
|     | 3.83         | 0.00   | 34.09      | 0.00       | 4.842E-01  | 0.00       | -1.36      |
| 167 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -31.07     | 0.00       | -1.55      | 0.00       | -23.74     |
|     | 1.09         | 0.00   | -16.72     | 0.00       | -1.55      | 0.00       | -3.85      |
|     | 2.00         | 0.00   | -5.55      | 0.00       | -1.55      | 0.00       | 5.29       |
|     | 2.91         | 0.00   | 3.73       | 0.00       | -1.55      | 0.00       | -5.08      |
|     | 3.83         | 0.00   | 13.01      | 0.00       | -1.55      | 0.00       | -27.98     |
| 168 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -9.77      | 0.00       | 4.186E-01  | 0.00       | -3.116E-01 |
|     | 9.6E-01      | 0.00   | -1.76      | 0.00       | 4.186E-01  | 0.00       | 4.23       |
|     | 1.75         | 0.00   | 6.24       | 0.00       | 4.186E-01  | 0.00       | 7.14       |
|     | 2.54         | 0.00   | 14.25      | 0.00       | 4.186E-01  | 0.00       | 10.60      |
|     | 3.33         | 0.00   | 24.36      | 0.00       | 4.186E-01  | 0.00       | 7.11       |
| 168 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -33.53     | 0.00       | -1.85      | 0.00       | -28.76     |
|     | 9.6E-01      | 0.00   | -21.93     | 0.00       | -1.85      | 0.00       | -7.33      |
|     | 1.75         | 0.00   | -11.39     | 0.00       | -1.85      | 0.00       | 2.42       |
|     | 2.54         | 0.00   | -8.426E-01 | 0.00       | -1.85      | 0.00       | -5.60      |
|     | 3.33         | 0.00   | 7.59       | 0.00       | -1.85      | 0.00       | -19.98     |
| 169 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -22.07 | -21.78     | 1.689E-01  | 4.618E-02  | 6.501E-01  | -18.21     |
|     | 1.96         | -22.07 | -9.68      | 1.689E-01  | 4.618E-02  | 3.507E-01  | 11.17      |
|     | 3.75         | -22.07 | 2.93       | 1.689E-01  | 4.618E-02  | 5.120E-02  | 27.98      |
|     | 5.54         | -22.07 | 21.57      | 1.689E-01  | 4.618E-02  | 2.942E-01  | 12.37      |
|     | 7.33         | -22.07 | 42.71      | 1.689E-01  | 4.618E-02  | 6.645E-01  | -15.09     |
| 169 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -49.24 | -41.85     | -2.072E-01 | -2.843E-01 | -8.334E-01 | -46.07     |
|     | 1.96         | -49.24 | -20.71     | -2.072E-01 | -2.843E-01 | -4.656E-01 | 2.35       |
|     | 3.75         | -49.24 | -2.80      | -2.072E-01 | -2.843E-01 | -9.781E-02 | 16.37      |
|     | 5.54         | -49.24 | 9.31       | -2.072E-01 | -2.843E-01 | -2.724E-01 | 6.683E-01  |
|     | 7.33         | -49.24 | 21.41      | -2.072E-01 | -2.843E-01 | -5.744E-01 | -49.12     |
| 170 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -4.68      | 0.00       | -4.66      | 0.00       | -1.27      |
|     | 8.7E-01      | 0.00   | -6.603E-01 | 0.00       | -4.66      | 0.00       | 6.078E-01  |
|     | 1.56         | 0.00   | 3.36       | 0.00       | -4.66      | 0.00       | 3.617E-01  |
|     | 2.26         | 0.00   | 7.38       | 0.00       | -4.66      | 0.00       | 8.63       |
|     | 2.95         | 0.00   | 12.44      | 0.00       | -4.66      | 0.00       | 12.71      |

|     |              |        |            |            |            |            |            |
|-----|--------------|--------|------------|------------|------------|------------|------------|
| 170 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -27.66     | 0.00       | -11.08     | 0.00       | -29.64     |
|     | 8.7E-01      | 0.00   | -21.44     | 0.00       | -11.08     | 0.00       | -12.64     |
|     | 1.56         | 0.00   | -15.23     | 0.00       | -11.08     | 0.00       | -6.073E-01 |
|     | 2.26         | 0.00   | -9.01      | 0.00       | -11.08     | 0.00       | -4.19      |
|     | 2.95         | 0.00   | -3.84      | 0.00       | -11.08     | 0.00       | -10.69     |
| 171 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -5.76      | 0.00       | 3.191E-01  | 0.00       | 4.88       |
|     | 1.17         | 0.00   | -8.023E-03 | 0.00       | 3.191E-01  | 0.00       | 7.75       |
|     | 2.16         | 0.00   | 5.75       | 0.00       | 3.191E-01  | 0.00       | 9.00       |
|     | 3.16         | 0.00   | 13.06      | 0.00       | 3.191E-01  | 0.00       | 10.78      |
|     | 4.15         | 0.00   | 21.96      | 0.00       | 3.191E-01  | 0.00       | 7.17       |
| 171 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -26.98     | 0.00       | -2.95      | 0.00       | -29.30     |
|     | 1.17         | 0.00   | -17.89     | 0.00       | -2.95      | 0.00       | -7.10      |
|     | 2.16         | 0.00   | -8.99      | 0.00       | -2.95      | 0.00       | 3.91       |
|     | 3.16         | 0.00   | -1.64      | 0.00       | -2.95      | 0.00       | -3.69      |
|     | 4.15         | 0.00   | 4.12       | 0.00       | -2.95      | 0.00       | -18.71     |
| 172 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -5.52  | -8.43      | 2.381E-01  | 5.57       | 5.467E-01  | 1.53       |
|     | 1.17         | -5.52  | -2.02      | 2.381E-01  | 3.96       | 3.101E-01  | 6.73       |
|     | 2.16         | -5.52  | 4.39       | 2.381E-01  | 2.35       | 8.850E-02  | 8.42       |
|     | 3.16         | -5.52  | 10.81      | 2.381E-01  | 8.546E-01  | 2.605E-01  | 9.32       |
|     | 4.15         | -5.52  | 18.95      | 2.381E-01  | -3.558E-01 | 5.566E-01  | 4.48       |
| 172 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -13.26 | -24.85     | -2.979E-01 | 2.54       | -6.277E-01 | -24.72     |
|     | 1.17         | -13.26 | -15.49     | -2.979E-01 | 1.50       | -3.316E-01 | -5.28      |
|     | 2.16         | -13.26 | -7.34      | -2.979E-01 | 4.647E-01  | -5.058E-02 | 5.06       |
|     | 3.16         | -13.26 | 7.907E-01  | -2.979E-01 | -5.728E-01 | -1.632E-01 | -1.99      |
|     | 4.15         | -13.26 | 7.20       | -2.979E-01 | -1.61      | -3.998E-01 | -15.90     |
| 173 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -13.69 | -27.48     | 3.495E-01  | -3.549E-01 | 1.28       | -20.58     |
|     | 2.05         | -13.69 | -13.80     | 3.495E-01  | -3.549E-01 | 6.285E-01  | 27.09      |
|     | 3.93         | -13.69 | 2.17       | 3.495E-01  | -3.549E-01 | 7.896E-02  | 63.38      |
|     | 5.80         | -13.69 | 30.09      | 3.495E-01  | -3.549E-01 | 1.762E-01  | 37.14      |
|     | 7.68         | -13.69 | 59.30      | 3.495E-01  | -3.549E-01 | 3.070E-01  | -10.22     |
| 173 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -44.36 | -64.66     | -6.975E-02 | -1.17      | -2.161E-01 | -67.32     |
|     | 2.05         | -44.36 | -35.45     | -6.975E-02 | -1.17      | -8.540E-02 | 6.95       |
|     | 3.93         | -44.36 | -5.40      | -6.975E-02 | -1.17      | -6.051E-02 | 29.73      |
|     | 5.80         | -44.36 | 11.35      | -6.975E-02 | -1.17      | -6.824E-01 | 10.35      |
|     | 7.68         | -44.36 | 25.03      | -6.975E-02 | -1.17      | -1.34      | -48.71     |
| 174 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 2.0E-01      | -27.11 | -19.50     | 2.003E-01  | 5.795E-02  | 7.344E-01  | -14.05     |
|     | 1.98         | -27.11 | -8.84      | 2.003E-01  | 5.795E-02  | 3.789E-01  | 11.42      |
|     | 3.75         | -27.11 | 3.96       | 2.003E-01  | 5.795E-02  | 2.341E-02  | 24.14      |
|     | 5.53         | -27.11 | 24.10      | 2.003E-01  | 5.795E-02  | 3.875E-01  | 11.81      |
|     | 7.30         | -27.11 | 45.31      | 2.003E-01  | 5.795E-02  | 8.104E-01  | -13.18     |
| 174 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 2.0E-01      | -77.29 | -46.17     | -2.408E-01 | -1.828E-01 | -9.031E-01 | -62.51     |
|     | 1.98         | -77.29 | -24.96     | -2.408E-01 | -1.828E-01 | -4.757E-01 | -6.49      |
|     | 3.75         | -77.29 | -4.42      | -2.408E-01 | -1.828E-01 | -4.834E-02 | 15.97      |
|     | 5.53         | -77.29 | 8.57       | -2.408E-01 | -1.828E-01 | -3.406E-01 | -5.25      |
|     | 7.30         | -77.29 | 19.23      | -2.408E-01 | -1.828E-01 | -6.916E-01 | -59.46     |
| 175 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 2.0E-01      | 0.00   | -6.96      | 0.00       | 2.34       | 0.00       | 1.34       |
|     | 1.20         | 0.00   | -1.17      | 0.00       | 2.34       | 0.00       | 5.41       |
|     | 2.20         | 0.00   | 4.62       | 0.00       | 2.34       | 0.00       | 8.09       |
|     | 3.20         | 0.00   | 11.82      | 0.00       | 2.34       | 0.00       | 11.90      |
|     | 4.20         | 0.00   | 20.78      | 0.00       | 2.34       | 0.00       | 9.21       |
| 175 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 2.0E-01      | 0.00   | -28.80     | 0.00       | 1.722E-01  | 0.00       | -32.17     |
|     | 1.20         | 0.00   | -19.17     | 0.00       | 1.722E-01  | 0.00       | -8.52      |
|     | 2.20         | 0.00   | -10.21     | 0.00       | 1.722E-01  | 0.00       | 3.67       |
|     | 3.20         | 0.00   | -2.65      | 0.00       | 1.722E-01  | 0.00       | -3.83      |
|     | 4.20         | 0.00   | 3.14       | 0.00       | 1.722E-01  | 0.00       | -17.68     |

|     |              |        |           |            |            |            |            |
|-----|--------------|--------|-----------|------------|------------|------------|------------|
| 176 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 2.0E-01      | -5.02  | -9.22     | 1.554E-01  | 2.65       | 3.590E-01  | -8.075E-01 |
|     | 1.20         | -5.02  | -2.77     | 1.554E-01  | 1.02       | 2.077E-01  | 5.19       |
|     | 2.20         | -5.02  | 3.68      | 1.554E-01  | -1.139E-01 | 8.311E-02  | 8.74       |
|     | 3.20         | -5.02  | 10.39     | 1.554E-01  | -1.16      | 2.391E-01  | 10.36      |
|     | 4.20         | -5.02  | 18.59     | 1.554E-01  | -2.20      | 4.099E-01  | 5.93       |
| 176 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 2.0E-01      | -13.08 | -25.65    | -1.709E-01 | 1.81       | -3.091E-01 | -25.57     |
|     | 1.20         | -13.08 | -16.07    | -1.709E-01 | 6.843E-01  | -1.424E-01 | -5.39      |
|     | 2.20         | -13.08 | -7.88     | -1.709E-01 | -6.001E-01 | 1.036E-02  | 4.73       |
|     | 3.20         | -13.08 | 5.810E-02 | -1.709E-01 | -2.22      | -1.427E-01 | -2.17      |
|     | 4.20         | -13.08 | 6.51      | -1.709E-01 | -3.85      | -2.981E-01 | -15.52     |
| 177 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 1.8E-01      | -9.45  | -19.78    | 1.549E-01  | -3.42      | 5.115E-01  | -17.84     |
|     | 1.88         | -9.45  | -8.82     | 1.549E-01  | -1.64      | 2.482E-01  | 6.47       |
|     | 3.58         | -9.45  | 2.15      | 1.549E-01  | 1.367E-01  | 1.970E-01  | 20.60      |
|     | 5.28         | -9.45  | 16.85     | 1.549E-01  | 2.77       | 6.741E-01  | 10.48      |
|     | 6.98         | -9.45  | 35.44     | 1.549E-01  | 5.53       | 1.15       | -13.63     |
| 177 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | -17.28 | -38.90    | -2.814E-01 | -5.51      | -7.610E-01 | -48.47     |
|     | 1.88         | -17.28 | -20.32    | -2.814E-01 | -2.75      | -2.826E-01 | -3.38      |
|     | 3.58         | -17.28 | -4.08     | -2.814E-01 | -1.232E-01 | -1.644E-02 | 12.04      |
|     | 5.28         | -17.28 | 7.55      | -2.814E-01 | 1.65       | -2.785E-01 | -8.271E-01 |
|     | 6.98         | -17.28 | 18.51     | -2.814E-01 | 3.43       | -5.419E-01 | -36.93     |
| 178 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 1.8E-01      | 0.00   | -18.37    | 0.00       | 2.917E-01  | 0.00       | -14.80     |
|     | 1.88         | 0.00   | -8.53     | 0.00       | 2.917E-01  | 0.00       | 10.48      |
|     | 3.58         | 0.00   | 1.32      | 0.00       | 2.917E-01  | 0.00       | 29.29      |
|     | 5.28         | 0.00   | 18.88     | 0.00       | 2.917E-01  | 0.00       | 14.46      |
|     | 6.98         | 0.00   | 39.19     | 0.00       | 2.917E-01  | 0.00       | -11.05     |
| 178 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | 0.00   | -42.06    | 0.00       | -1.430E-01 | 0.00       | -44.66     |
|     | 1.88         | 0.00   | -21.75    | 0.00       | -1.430E-01 | 0.00       | 1.48       |
|     | 3.58         | 0.00   | -2.96     | 0.00       | -1.430E-01 | 0.00       | 13.82      |
|     | 5.28         | 0.00   | 7.39      | 0.00       | -1.430E-01 | 0.00       | 3.50       |
|     | 6.98         | 0.00   | 17.23     | 0.00       | -1.430E-01 | 0.00       | -34.91     |
| 179 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 2.0E-01      | -27.78 | -18.26    | 1.936E-01  | 2.567E-01  | 7.246E-01  | -5.63      |
|     | 1.98         | -27.78 | -7.34     | 1.936E-01  | 2.567E-01  | 3.810E-01  | 17.71      |
|     | 3.75         | -27.78 | 6.47      | 1.936E-01  | 2.567E-01  | 4.968E-02  | 29.63      |
|     | 5.53         | -27.78 | 27.36     | 1.936E-01  | 2.567E-01  | 4.406E-01  | 12.09      |
|     | 7.30         | -27.78 | 49.30     | 1.936E-01  | 2.567E-01  | 8.970E-01  | -13.88     |
| 179 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 2.0E-01      | -79.52 | -45.10    | -2.571E-01 | -5.920E-02 | -9.287E-01 | -56.54     |
|     | 1.98         | -79.52 | -23.16    | -2.571E-01 | -5.920E-02 | -4.723E-01 | -2.35      |
|     | 3.75         | -79.52 | -4.07     | -2.571E-01 | -5.920E-02 | -2.809E-02 | 16.78      |
|     | 5.53         | -79.52 | 8.99      | -2.571E-01 | -5.920E-02 | -3.062E-01 | -5.25      |
|     | 7.30         | -79.52 | 19.91     | -2.571E-01 | -5.920E-02 | -6.498E-01 | -65.54     |
| 180 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 1.8E-01      | -15.74 | -26.97    | 2.278E-01  | 1.04       | 7.968E-01  | -18.58     |
|     | 2.05         | -15.74 | -13.22    | 2.278E-01  | 1.04       | 3.887E-01  | 27.35      |
|     | 3.93         | -15.74 | 2.81      | 2.278E-01  | 1.04       | 9.101E-02  | 63.32      |
|     | 5.80         | -15.74 | 30.56     | 2.278E-01  | 1.04       | 2.189E-01  | 36.37      |
|     | 7.68         | -15.74 | 59.98     | 2.278E-01  | 1.04       | 4.247E-01  | -8.56      |
| 180 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | -43.06 | -64.79    | -1.109E-01 | 3.441E-01  | -5.039E-01 | -67.11     |
|     | 2.05         | -43.06 | -35.37    | -1.109E-01 | 3.441E-01  | -3.151E-01 | 6.13       |
|     | 3.93         | -43.06 | -5.75     | -1.109E-01 | 3.441E-01  | -2.367E-01 | 29.58      |
|     | 5.80         | -43.06 | 10.94     | -1.109E-01 | 3.441E-01  | -5.838E-01 | 8.94       |
|     | 7.68         | -43.06 | 24.69     | -1.109E-01 | 3.441E-01  | -1.01      | -52.33     |
| 181 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 2.0E-01      | 0.00   | -11.68    | 0.00       | 3.978E-01  | 0.00       | -4.59      |
|     | 1.34         | 0.00   | -5.05     | 0.00       | 3.978E-01  | 0.00       | 4.98       |
|     | 2.49         | 0.00   | 1.57      | 0.00       | 3.978E-01  | 0.00       | 13.43      |
|     | 3.63         | 0.00   | 9.65      | 0.00       | 3.978E-01  | 0.00       | 14.72      |

|     |              |        |            |            |            |            |            |
|-----|--------------|--------|------------|------------|------------|------------|------------|
|     | 4.78         | 0.00   | 20.44      | 0.00       | 3.978E-01  | 0.00       | 8.27       |
| 181 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 2.0E-01      | 0.00   | -34.23     | 0.00       | -1.83      | 0.00       | -36.29     |
|     | 1.34         | 0.00   | -20.56     | 0.00       | -1.83      | 0.00       | -7.57      |
|     | 2.49         | 0.00   | -9.74      | 0.00       | -1.83      | 0.00       | 5.69       |
|     | 3.63         | 0.00   | -9.460E-01 | 0.00       | -1.83      | 0.00       | 1.38       |
|     | 4.78         | 0.00   | 5.68       | 0.00       | -1.83      | 0.00       | -11.78     |
| 182 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 2.0E-01      | -7.68  | -12.48     | 2.700E-01  | 1.65       | 5.798E-01  | -4.72      |
|     | 1.34         | -7.68  | -5.10      | 2.700E-01  | 4.592E-01  | 2.710E-01  | 5.33       |
|     | 2.49         | -7.68  | 2.27       | 2.700E-01  | -7.349E-01 | 7.947E-02  | 11.57      |
|     | 3.63         | -7.68  | 10.93      | 2.700E-01  | -1.93      | 2.612E-01  | 11.05      |
|     | 4.78         | -7.68  | 21.67      | 2.700E-01  | -3.12      | 4.550E-01  | 3.91       |
| 182 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 2.0E-01      | -19.94 | -28.35     | -1.694E-01 | 9.942E-01  | -3.200E-01 | -27.56     |
|     | 1.34         | -19.94 | -15.94     | -1.694E-01 | -5.005E-01 | -1.263E-01 | -3.96      |
|     | 2.49         | -19.94 | -6.56      | -1.694E-01 | -2.36      | -4.972E-02 | 6.95       |
|     | 3.63         | -19.94 | 1.53       | -1.694E-01 | -4.22      | -3.465E-01 | 1.318E-01  |
|     | 4.78         | -19.94 | 8.91       | -1.694E-01 | -6.07      | -6.553E-01 | -16.56     |
| 183 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -3.92      | 0.00       | 8.99       | 0.00       | 2.17       |
|     | 9.4E-01      | 0.00   | 5.320E-01  | 0.00       | 8.99       | 0.00       | 3.48       |
|     | 1.71         | 0.00   | 4.98       | 0.00       | 8.99       | 0.00       | 2.29       |
|     | 2.48         | 0.00   | 9.89       | 0.00       | 8.99       | 0.00       | 6.79       |
|     | 3.25         | 0.00   | 16.78      | 0.00       | 8.99       | 0.00       | 6.90       |
| 183 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -24.23     | 0.00       | 3.65       | 0.00       | -25.26     |
|     | 9.4E-01      | 0.00   | -17.34     | 0.00       | 3.65       | 0.00       | -9.29      |
|     | 1.71         | 0.00   | -10.45     | 0.00       | 3.65       | 0.00       | 4.930E-01  |
|     | 2.48         | 0.00   | -4.01      | 0.00       | 3.65       | 0.00       | -4.19      |
|     | 3.25         | 0.00   | 4.378E-01  | 0.00       | 3.65       | 0.00       | -13.18     |
| 184 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -3.16      | 0.00       | 2.502E-01  | 0.00       | 7.01       |
|     | 1.20         | 0.00   | 2.04       | 0.00       | 2.502E-01  | 0.00       | 7.58       |
|     | 2.23         | 0.00   | 7.24       | 0.00       | 2.502E-01  | 0.00       | 2.84       |
|     | 3.25         | 0.00   | 14.16      | 0.00       | 2.502E-01  | 0.00       | 6.268E-01  |
|     | 4.28         | 0.00   | 21.79      | 0.00       | 2.502E-01  | 0.00       | -1.37      |
| 184 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -21.84     | 0.00       | -3.370E-01 | 0.00       | -31.90     |
|     | 1.20         | 0.00   | -14.21     | 0.00       | -3.370E-01 | 0.00       | -13.43     |
|     | 2.23         | 0.00   | -6.57      | 0.00       | -3.370E-01 | 0.00       | -2.79      |
|     | 3.25         | 0.00   | -6.622E-01 | 0.00       | -3.370E-01 | 0.00       | -7.84      |
|     | 4.28         | 0.00   | 4.54       | 0.00       | -3.370E-01 | 0.00       | -26.25     |
| 185 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -22.70     | 0.00       | 8.756E-02  | 0.00       | -18.14     |
|     | 1.96         | 0.00   | -10.71     | 0.00       | 8.756E-02  | 0.00       | 18.04      |
|     | 3.75         | 0.00   | 3.76       | 0.00       | 8.756E-02  | 0.00       | 39.68      |
|     | 5.54         | 0.00   | 29.74      | 0.00       | 8.756E-02  | 0.00       | 13.17      |
|     | 7.33         | 0.00   | 54.07      | 0.00       | 8.756E-02  | 0.00       | -24.64     |
| 185 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | 0.00   | -50.00     | 0.00       | -1.148E-01 | 0.00       | -50.10     |
|     | 1.96         | 0.00   | -25.67     | 0.00       | -1.148E-01 | 0.00       | 6.26       |
|     | 3.75         | 0.00   | -1.02      | 0.00       | -1.148E-01 | 0.00       | 18.83      |
|     | 5.54         | 0.00   | 13.14      | 0.00       | -1.148E-01 | 0.00       | -2.907E-01 |
|     | 7.33         | 0.00   | 25.13      | 0.00       | -1.148E-01 | 0.00       | -64.62     |
| 186 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -20.46 | -22.22     | 1.642E-01  | 2.054E-01  | 6.676E-01  | -18.99     |
|     | 1.96         | -20.46 | -9.88      | 1.642E-01  | 2.054E-01  | 3.741E-01  | 10.53      |
|     | 3.75         | -20.46 | 2.53       | 1.642E-01  | 2.054E-01  | 1.007E-01  | 28.30      |
|     | 5.54         | -20.46 | 20.59      | 1.642E-01  | 2.054E-01  | 3.468E-01  | 15.04      |
|     | 7.33         | -20.46 | 42.44      | 1.642E-01  | 2.054E-01  | 7.328E-01  | -10.71     |
| 186 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -42.98 | -44.96     | -2.160E-01 | -1.092E-01 | -8.113E-01 | -54.33     |
|     | 1.96         | -42.98 | -23.11     | -2.160E-01 | -1.092E-01 | -4.252E-01 | -1.60      |
|     | 3.75         | -42.98 | -4.48      | -2.160E-01 | -1.092E-01 | -5.942E-02 | 16.32      |
|     | 5.54         | -42.98 | 7.87       | -2.160E-01 | -1.092E-01 | -2.131E-01 | 8.661E-01  |



|     |               |        |            |            |            |            |           |
|-----|---------------|--------|------------|------------|------------|------------|-----------|
|     | 7.33          | -42.98 | 20.22      | -2.160E-01 | -1.092E-01 | -5.066E-01 | -46.95    |
| 187 | ENNVOLVIG MAX |        |            |            |            |            |           |
|     | 1.8E-01       | 0.00   | -21.53     | 0.00       | -3.63      | 0.00       | -19.51    |
|     | 1.89          | 0.00   | -10.44     | 0.00       | -1.83      | 0.00       | 8.06      |
|     | 3.61          | 0.00   | 6.381E-01  | 0.00       | -3.654E-02 | 0.00       | 29.20     |
|     | 5.33          | 0.00   | 13.72      | 0.00       | 1.96       | 0.00       | 22.71     |
|     | 7.05          | 0.00   | 32.51      | 0.00       | 4.75       | 0.00       | 6.986E-02 |
| 187 | ENNVOLVIG MIN |        |            |            |            |            |           |
|     | 1.8E-01       | 0.00   | -42.65     | 0.00       | -6.41      | 0.00       | -52.82    |
|     | 1.89          | 0.00   | -23.86     | 0.00       | -3.62      | 0.00       | -1.65     |
|     | 3.61          | 0.00   | -7.06      | 0.00       | -8.282E-01 | 0.00       | 16.40     |
|     | 5.33          | 0.00   | 5.21       | 0.00       | 1.27       | 0.00       | 5.78      |
|     | 7.05          | 0.00   | 16.29      | 0.00       | 3.14       | 0.00       | -25.45    |
| 188 | ENNVOLVIG MAX |        |            |            |            |            |           |
|     | 1.8E-01       | -3.87  | -3.34      | 1.81       | -1.87      | 4.03       | 2.984E-01 |
|     | 1.03          | -3.87  | 1.154E-01  | 1.81       | -1.87      | 2.50       | 1.69      |
|     | 1.89          | -3.87  | 3.57       | 1.81       | -1.87      | 9.650E-01  | 3.89      |
|     | 2.74          | -3.87  | 7.03       | 1.81       | -1.87      | 3.454E-01  | 13.78     |
|     | 3.60          | -3.87  | 10.48      | 1.81       | -1.87      | 9.038E-01  | 19.73     |
| 188 | ENNVOLVIG MIN |        |            |            |            |            |           |
|     | 1.8E-01       | -8.79  | -23.08     | -6.532E-01 | -4.22      | -1.39      | -27.74    |
|     | 1.03          | -8.79  | -18.47     | -6.532E-01 | -4.22      | -8.448E-01 | -9.96     |
|     | 1.89          | -8.79  | -13.86     | -6.532E-01 | -4.22      | -3.017E-01 | 9.432E-02 |
|     | 2.74          | -8.79  | -9.25      | -6.532E-01 | -4.22      | -6.716E-01 | -4.44     |
|     | 3.60          | -8.79  | -4.64      | -6.532E-01 | -4.22      | -2.22      | -11.94    |
| 189 | ENNVOLVIG MAX |        |            |            |            |            |           |
|     | 1.8E-01       | -5.66  | 1.61       | 2.96       | 2.13       | 6.11       | 11.23     |
|     | 1.03          | -5.66  | 5.06       | 2.96       | 2.13       | 3.58       | 8.42      |
|     | 1.89          | -5.66  | 8.52       | 2.96       | 2.13       | 1.05       | 5.72      |
|     | 2.74          | -5.66  | 12.86      | 2.96       | 2.13       | 3.403E-01  | 10.05     |
|     | 3.60          | -5.66  | 17.47      | 2.96       | 2.13       | 9.160E-01  | 11.64     |
| 189 | ENNVOLVIG MIN |        |            |            |            |            |           |
|     | 1.8E-01       | -14.89 | -17.13     | -6.724E-01 | -4.569E-01 | -1.39      | -16.18    |
|     | 1.03          | -14.89 | -12.52     | -6.724E-01 | -4.569E-01 | -8.113E-01 | -3.54     |
|     | 1.89          | -14.89 | -7.91      | -6.724E-01 | -4.569E-01 | -2.355E-01 | 2.51      |
|     | 2.74          | -14.89 | -4.18      | -6.724E-01 | -4.569E-01 | -1.49      | -6.22     |
|     | 3.60          | -14.89 | -7.259E-01 | -6.724E-01 | -4.569E-01 | -4.02      | -18.69    |
| 190 | ENNVOLVIG MAX |        |            |            |            |            |           |
|     | 1.8E-01       | -5.38  | -4.09      | 2.68       | -5.661E-02 | 5.66       | 6.81      |
|     | 1.04          | -5.38  | 1.48       | 2.68       | -9.571E-01 | 3.35       | 8.33      |
|     | 1.90          | -5.38  | 7.04       | 2.68       | -1.86      | 1.04       | 8.92      |
|     | 2.76          | -5.38  | 13.79      | 2.68       | -2.76      | 3.181E-01  | 10.99     |
|     | 3.63          | -5.38  | 20.86      | 2.68       | -3.66      | 9.254E-01  | 8.81      |
| 190 | ENNVOLVIG MIN |        |            |            |            |            |           |
|     | 1.8E-01       | -14.39 | -21.38     | -7.041E-01 | -5.861E-01 | -1.50      | -16.90    |
|     | 1.04          | -14.39 | -14.31     | -7.041E-01 | -1.91      | -8.965E-01 | -1.89     |
|     | 1.90          | -14.39 | -7.24      | -7.041E-01 | -3.31      | -2.892E-01 | 4.26      |
|     | 2.76          | -14.39 | -1.36      | -7.041E-01 | -4.71      | -1.27      | -4.20     |
|     | 3.63          | -14.39 | 4.21       | -7.041E-01 | -6.11      | -3.58      | -18.19    |
| 191 | ENNVOLVIG MAX |        |            |            |            |            |           |
|     | 1.8E-01       | -11.77 | -19.56     | 1.862E-01  | -8.051E-01 | 6.800E-01  | -10.12    |
|     | 2.04          | -11.77 | -9.07      | 1.862E-01  | -8.051E-01 | 3.463E-01  | 22.65     |
|     | 3.91          | -11.77 | 3.95       | 1.862E-01  | -8.051E-01 | 2.112E-01  | 44.23     |
|     | 5.78          | -11.77 | 24.55      | 1.862E-01  | -8.051E-01 | 7.531E-01  | 22.64     |
|     | 7.65          | -11.77 | 44.91      | 1.862E-01  | -8.051E-01 | 1.33       | -9.72     |
| 191 | ENNVOLVIG MIN |        |            |            |            |            |           |
|     | 1.8E-01       | -26.62 | -43.49     | -3.075E-01 | -1.80      | -9.708E-01 | -41.98    |
|     | 2.04          | -26.62 | -23.18     | -3.075E-01 | -1.80      | -4.103E-01 | 6.24      |
|     | 3.91          | -26.62 | -3.24      | -3.075E-01 | -1.80      | -4.850E-02 | 22.38     |
|     | 5.78          | -26.62 | 9.55       | -3.075E-01 | -1.80      | -3.638E-01 | 3.21      |
|     | 7.65          | -26.62 | 20.06      | -3.075E-01 | -1.80      | -7.117E-01 | -47.99    |
| 192 | ENNVOLVIG MAX |        |            |            |            |            |           |
|     | 2.0E-01       | -9.87  | -17.52     | 2.142E-01  | 1.932E-01  | 7.325E-01  | -6.61     |
|     | 1.98          | -9.87  | -8.23      | 2.142E-01  | 1.932E-01  | 3.510E-01  | 19.91     |
|     | 3.76          | -9.87  | 3.22       | 2.142E-01  | 1.932E-01  | 1.558E-02  | 36.67     |

|     |              |        |        |            |           |            |        |
|-----|--------------|--------|--------|------------|-----------|------------|--------|
|     | 5.54         | -9.87  | 20.05  | 2.142E-01  | 1.932E-01 | 1.53       | 18.93  |
|     | 7.33         | -9.87  | 37.03  | 2.142E-01  | 1.932E-01 | 3.06       | -7.69  |
| 192 | ENVOLVIG MIN |        |        |            |           |            |        |
|     | 2.0E-01      | -20.40 | -37.71 | -8.544E-01 | 2.627E-02 | -3.03      | -38.92 |
|     | 1.98         | -20.40 | -20.67 | -8.544E-01 | 2.627E-02 | -1.51      | 3.07   |
|     | 3.76         | -20.40 | -3.52  | -8.544E-01 | 2.627E-02 | -3.304E-02 | 19.63  |
|     | 5.54         | -20.40 | 8.03   | -8.544E-01 | 2.627E-02 | -4.119E-01 | 5.18   |
|     | 7.33         | -20.40 | 17.29  | -8.544E-01 | 2.627E-02 | -7.934E-01 | -35.46 |

## BLOQUE B

### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE                 |
|----------|------|--------|--------|-------|-----------------------|
| ENVOLVIG | ENVE |        |        |       | Envolvente para Vigas |
|          |      | CJ     | 1.0000 | COMBO |                       |
|          |      | VIGAS1 | 1.0000 | COMBO |                       |
|          |      | VIGAS2 | 1.0000 | COMBO |                       |
|          |      | VIGAS3 | 1.0000 | COMBO |                       |
|          |      | VIGAS4 | 1.0000 | COMBO |                       |

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### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2        | V3         | T          | M2         | M3        |
|-------|--------------|-----|------|-----------|------------|------------|------------|-----------|
| 1     | ENVOLVIG MAX |     |      |           |            |            |            |           |
|       | 1.8E-01      |     | 0.00 | 5.55      | 2.106E-02  | 4.06       | 3.560E-02  | 32.68     |
|       | 1.07         |     | 0.00 | 12.18     | 2.106E-02  | 4.06       | 1.678E-02  | 24.75     |
|       | 1.96         |     | 0.00 | 18.82     | 2.106E-02  | 4.06       | 2.232E-03  | 11.42     |
|       | 2.86         |     | 0.00 | 26.47     | 2.106E-02  | 4.06       | 2.283E-02  | 12.24     |
|       | 3.75         |     | 0.00 | 34.21     | 2.106E-02  | 4.06       | 4.344E-02  | 17.37     |
| 1     | ENVOLVIG MIN |     |      |           |            |            |            |           |
|       | 1.8E-01      |     | 0.00 | -31.38    | -2.305E-02 | -3.35      | -3.897E-02 | -40.78    |
|       | 1.07         |     | 0.00 | -23.64    | -2.305E-02 | -3.35      | -1.837E-02 | -16.19    |
|       | 1.96         |     | 0.00 | -15.90    | -2.305E-02 | -3.35      | -2.039E-03 | 9.599E-01 |
|       | 2.86         |     | 0.00 | -9.18     | -2.305E-02 | -3.35      | -2.086E-02 | -8.88     |
|       | 3.75         |     | 0.00 | -2.55     | -2.305E-02 | -3.35      | -3.968E-02 | -35.89    |
| 2     | ENVOLVIG MAX |     |      |           |            |            |            |           |
|       | 1.8E-01      |     | 0.00 | -1.74     | 1.768E-02  | 3.29       | 3.571E-02  | 11.12     |
|       | 1.07         |     | 0.00 | 4.89      | 1.768E-02  | 3.29       | 1.991E-02  | 10.01     |
|       | 1.96         |     | 0.00 | 11.53     | 1.768E-02  | 3.29       | 4.106E-03  | 6.69      |
|       | 2.86         |     | 0.00 | 18.96     | 1.768E-02  | 3.29       | 1.280E-02  | 14.41     |
|       | 3.75         |     | 0.00 | 26.70     | 1.768E-02  | 3.29       | 3.010E-02  | 15.68     |
| 2     | ENVOLVIG MIN |     |      |           |            |            |            |           |
|       | 1.8E-01      |     | 0.00 | -28.09    | -1.935E-02 | -4.00      | -3.909E-02 | -29.78    |
|       | 1.07         |     | 0.00 | -20.35    | -1.935E-02 | -4.00      | -2.179E-02 | -8.43     |
|       | 1.96         |     | 0.00 | -12.61    | -1.935E-02 | -4.00      | -4.495E-03 | 2.37      |
|       | 2.86         |     | 0.00 | -5.67     | -1.935E-02 | -4.00      | -1.169E-02 | -10.89    |
|       | 3.75         |     | 0.00 | 9.614E-01 | -1.935E-02 | -4.00      | -2.749E-02 | -30.46    |
| 3     | ENVOLVIG MAX |     |      |           |            |            |            |           |
|       | 1.8E-01      |     | 0.00 | -4.20     | 8.233E-03  | 3.154E-01  | 1.702E-02  | 12.89     |
|       | 1.20         |     | 0.00 | 3.41      | 8.233E-03  | 3.154E-01  | 8.586E-03  | 13.29     |
|       | 2.23         |     | 0.00 | 11.02     | 8.233E-03  | 3.154E-01  | 1.466E-04  | 8.76      |
|       | 3.25         |     | 0.00 | 19.72     | 8.233E-03  | 3.154E-01  | 9.078E-03  | 14.08     |
|       | 4.28         |     | 0.00 | 28.59     | 8.233E-03  | 3.154E-01  | 1.832E-02  | 14.04     |
| 3     | ENVOLVIG MIN |     |      |           |            |            |            |           |
|       | 1.8E-01      |     | 0.00 | -29.45    | -9.014E-03 | -2.638E-01 | -1.864E-02 | -35.55    |
|       | 1.20         |     | 0.00 | -20.58    | -9.014E-03 | -2.638E-01 | -9.399E-03 | -9.91     |
|       | 2.23         |     | 0.00 | -11.70    | -9.014E-03 | -2.638E-01 | -1.605E-04 | 5.88      |
|       | 3.25         |     | 0.00 | -3.91     | -9.014E-03 | -2.638E-01 | -8.292E-03 | -9.30     |
|       | 4.28         |     | 0.00 | 3.70      | -9.014E-03 | -2.638E-01 | -1.673E-02 | -33.92    |

|   |              |      |            |            |       |            |            |
|---|--------------|------|------------|------------|-------|------------|------------|
| 4 | ENVOLVIG MAX |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | 6.851E-02  | 1.837E-02  | 4.80  | 2.720E-02  | 16.27      |
|   | 1.03         | 0.00 | 6.38       | 1.837E-02  | 4.80  | 1.159E-02  | 13.98      |
|   | 1.88         | 0.00 | 12.69      | 1.837E-02  | 4.80  | 4.413E-03  | 6.37       |
|   | 2.73         | 0.00 | 19.99      | 1.837E-02  | 4.80  | 2.151E-02  | 10.29      |
|   | 3.58         | 0.00 | 27.35      | 1.837E-02  | 4.80  | 3.861E-02  | 12.68      |
| 4 | ENVOLVIG MIN |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | -27.69     | -2.011E-02 | -4.04 | -2.978E-02 | -32.17     |
|   | 1.03         | 0.00 | -20.33     | -2.011E-02 | -4.04 | -1.268E-02 | -12.21     |
|   | 1.88         | 0.00 | -12.97     | -2.011E-02 | -4.04 | -4.031E-03 | 1.45       |
|   | 2.73         | 0.00 | -6.60      | -2.011E-02 | -4.04 | -1.965E-02 | -8.04      |
|   | 3.58         | 0.00 | -2.930E-01 | -2.011E-02 | -4.04 | -3.527E-02 | -27.61     |
| 5 | ENVOLVIG MAX |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | 4.01       | 2.259E-02  | 3.83  | 3.997E-02  | 17.66      |
|   | 1.03         | 0.00 | 10.32      | 2.259E-02  | 3.83  | 2.077E-02  | 11.57      |
|   | 1.88         | 0.00 | 16.63      | 2.259E-02  | 3.83  | 1.572E-03  | 11.47      |
|   | 2.73         | 0.00 | 23.89      | 2.259E-02  | 3.83  | 1.930E-02  | 25.93      |
|   | 3.58         | 0.00 | 31.25      | 2.259E-02  | 3.83  | 4.031E-02  | 35.36      |
| 5 | ENVOLVIG MIN |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | -35.42     | -2.473E-02 | -4.54 | -4.376E-02 | -36.24     |
|   | 1.03         | 0.00 | -28.06     | -2.473E-02 | -4.54 | -2.274E-02 | -9.26      |
|   | 1.88         | 0.00 | -20.70     | -2.473E-02 | -4.54 | -1.721E-03 | 1.143E-01  |
|   | 2.73         | 0.00 | -14.29     | -2.473E-02 | -4.54 | -1.763E-02 | -16.70     |
|   | 3.58         | 0.00 | -7.98      | -2.473E-02 | -4.54 | -3.682E-02 | -40.10     |
| 6 | ENVOLVIG MAX |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | 8.14       | 2.724E-02  | 3.55  | 3.925E-02  | 28.66      |
|   | 9.1E-01      | 0.00 | 13.61      | 2.724E-02  | 3.55  | 1.920E-02  | 21.02      |
|   | 1.65         | 0.00 | 19.15      | 2.724E-02  | 3.55  | 9.331E-04  | 9.27       |
|   | 2.38         | 0.00 | 25.53      | 2.724E-02  | 3.55  | 2.289E-02  | 10.30      |
|   | 3.12         | 0.00 | 31.90      | 2.724E-02  | 3.55  | 4.484E-02  | 16.08      |
| 6 | ENVOLVIG MIN |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | -29.04     | -2.983E-02 | -5.78 | -4.297E-02 | -32.72     |
|   | 9.1E-01      | 0.00 | -22.67     | -2.983E-02 | -5.78 | -2.102E-02 | -14.06     |
|   | 1.65         | 0.00 | -16.38     | -2.983E-02 | -5.78 | -8.523E-04 | 3.452E-03  |
|   | 2.38         | 0.00 | -10.91     | -2.983E-02 | -5.78 | -2.090E-02 | -7.43      |
|   | 3.12         | 0.00 | -5.45      | -2.983E-02 | -5.78 | -4.096E-02 | -28.32     |
| 7 | ENVOLVIG MAX |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | 8.72       | 2.404E-02  | 5.44  | 3.120E-02  | 29.52      |
|   | 9.1E-01      | 0.00 | 14.18      | 2.404E-02  | 5.44  | 1.351E-02  | 21.46      |
|   | 1.65         | 0.00 | 19.68      | 2.404E-02  | 5.44  | 4.585E-03  | 9.32       |
|   | 2.38         | 0.00 | 26.06      | 2.404E-02  | 5.44  | 2.396E-02  | 10.91      |
|   | 3.12         | 0.00 | 32.43      | 2.404E-02  | 5.44  | 4.333E-02  | 17.15      |
| 7 | ENVOLVIG MIN |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | -29.80     | -2.632E-02 | -6.38 | -3.416E-02 | -33.78     |
|   | 9.1E-01      | 0.00 | -23.43     | -2.632E-02 | -6.38 | -1.479E-02 | -14.56     |
|   | 1.65         | 0.00 | -17.09     | -2.632E-02 | -6.38 | -4.188E-03 | 3.316E-02  |
|   | 2.38         | 0.00 | -11.63     | -2.632E-02 | -6.38 | -2.188E-02 | -7.82      |
|   | 3.12         | 0.00 | -6.17      | -2.632E-02 | -6.38 | -3.957E-02 | -29.04     |
| 8 | ENVOLVIG MAX |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | 9.79       | 2.421E-02  | 6.70  | 3.173E-02  | 33.62      |
|   | 9.1E-01      | 0.00 | 15.80      | 2.421E-02  | 6.70  | 1.391E-02  | 24.66      |
|   | 1.65         | 0.00 | 21.88      | 2.421E-02  | 6.70  | 4.279E-03  | 11.13      |
|   | 2.38         | 0.00 | 28.89      | 2.421E-02  | 6.70  | 2.379E-02  | 11.46      |
|   | 3.12         | 0.00 | 35.91      | 2.421E-02  | 6.70  | 4.329E-02  | 18.26      |
| 8 | ENVOLVIG MIN |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | -32.69     | -2.650E-02 | -6.15 | -3.473E-02 | -37.50     |
|   | 9.1E-01      | 0.00 | -25.68     | -2.650E-02 | -6.15 | -1.523E-02 | -16.48     |
|   | 1.65         | 0.00 | -18.74     | -2.650E-02 | -6.15 | -3.909E-03 | -4.796E-01 |
|   | 2.38         | 0.00 | -12.73     | -2.650E-02 | -6.15 | -2.173E-02 | -7.91      |
|   | 3.12         | 0.00 | -6.72      | -2.650E-02 | -6.15 | -3.954E-02 | -31.40     |
| 9 | ENVOLVIG MAX |      |            |            |       |            |            |
|   | 1.8E-01      | 0.00 | 9.37       | 2.447E-02  | 6.35  | 3.818E-02  | 34.70      |
|   | 9.1E-01      | 0.00 | 15.38      | 2.447E-02  | 6.35  | 2.017E-02  | 25.82      |
|   | 1.65         | 0.00 | 21.54      | 2.447E-02  | 6.35  | 2.157E-03  | 12.56      |
|   | 2.38         | 0.00 | 28.55      | 2.447E-02  | 6.35  | 1.736E-02  | 9.35       |

|    |              |      |           |            |       |            |        |
|----|--------------|------|-----------|------------|-------|------------|--------|
|    | 3.12         | 0.00 | 35.56     | 2.447E-02  | 6.35  | 3.708E-02  | 16.41  |
| 9  | ENVOLVIG MIN |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | -32.47    | -2.679E-02 | -4.32 | -4.180E-02 | -39.13 |
|    | 9.1E-01      | 0.00 | -25.46    | -2.679E-02 | -4.32 | -2.208E-02 | -18.03 |
|    | 1.65         | 0.00 | -18.60    | -2.679E-02 | -4.32 | -2.362E-03 | -2.15  |
|    | 2.38         | 0.00 | -12.59    | -2.679E-02 | -4.32 | -1.585E-02 | -5.89  |
|    | 3.12         | 0.00 | -6.58     | -2.679E-02 | -4.32 | -3.387E-02 | -29.48 |
| 10 | ENVOLVIG MAX |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | 7.872E-01 | 1.975E-02  | 4.59  | 3.373E-02  | 10.47  |
|    | 9.1E-01      | 0.00 | 6.23      | 1.975E-02  | 4.59  | 1.924E-02  | 7.95   |
|    | 1.64         | 0.00 | 11.68     | 1.975E-02  | 4.59  | 4.749E-03  | 4.24   |
|    | 2.38         | 0.00 | 17.96     | 1.975E-02  | 4.59  | 1.066E-02  | 10.98  |
|    | 3.11         | 0.00 | 24.31     | 1.975E-02  | 4.59  | 2.652E-02  | 13.83  |
| 10 | ENVOLVIG MIN |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | -25.08    | -2.162E-02 | -4.26 | -3.692E-02 | -23.25 |
|    | 9.1E-01      | 0.00 | -18.72    | -2.162E-02 | -4.26 | -2.106E-02 | -7.23  |
|    | 1.64         | 0.00 | -12.37    | -2.162E-02 | -4.26 | -5.199E-03 | 1.31   |
|    | 2.38         | 0.00 | -6.84     | -2.162E-02 | -4.26 | -9.740E-03 | -9.25  |
|    | 3.11         | 0.00 | -1.40     | -2.162E-02 | -4.26 | -2.423E-02 | -24.59 |
| 11 | ENVOLVIG MAX |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | 1.22      | 1.960E-02  | 5.80  | 3.530E-02  | 11.15  |
|    | 9.1E-01      | 0.00 | 6.67      | 1.960E-02  | 5.80  | 2.091E-02  | 8.25   |
|    | 1.64         | 0.00 | 12.11     | 1.960E-02  | 5.80  | 6.526E-03  | 4.10   |
|    | 2.38         | 0.00 | 18.34     | 1.960E-02  | 5.80  | 8.604E-03  | 11.29  |
|    | 3.11         | 0.00 | 24.70     | 1.960E-02  | 5.80  | 2.435E-02  | 14.54  |
| 11 | ENVOLVIG MIN |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | -25.68    | -2.146E-02 | -5.50 | -3.864E-02 | -24.26 |
|    | 9.1E-01      | 0.00 | -19.33    | -2.146E-02 | -5.50 | -2.289E-02 | -7.75  |
|    | 1.64         | 0.00 | -12.97    | -2.146E-02 | -5.50 | -7.145E-03 | 1.37   |
|    | 2.38         | 0.00 | -7.40     | -2.146E-02 | -5.50 | -7.859E-03 | -9.52  |
|    | 3.11         | 0.00 | -1.95     | -2.146E-02 | -5.50 | -2.224E-02 | -25.13 |
| 12 | ENVOLVIG MAX |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | 8.508E-01 | 2.012E-02  | 6.26  | 3.560E-02  | 11.13  |
|    | 9.1E-01      | 0.00 | 6.84      | 2.012E-02  | 6.26  | 2.083E-02  | 8.31   |
|    | 1.64         | 0.00 | 12.83     | 2.012E-02  | 6.26  | 6.069E-03  | 4.82   |
|    | 2.38         | 0.00 | 19.66     | 2.012E-02  | 6.26  | 9.518E-03  | 12.48  |
|    | 3.11         | 0.00 | 26.65     | 2.012E-02  | 6.26  | 2.568E-02  | 15.78  |
| 12 | ENVOLVIG MIN |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | -27.91    | -2.203E-02 | -6.08 | -3.897E-02 | -25.88 |
|    | 9.1E-01      | 0.00 | -20.92    | -2.203E-02 | -6.08 | -2.281E-02 | -7.96  |
|    | 1.64         | 0.00 | -13.93    | -2.203E-02 | -6.08 | -6.645E-03 | 1.09   |
|    | 2.38         | 0.00 | -7.77     | -2.203E-02 | -6.08 | -8.694E-03 | -10.52 |
|    | 3.11         | 0.00 | -1.78     | -2.203E-02 | -6.08 | -2.346E-02 | -27.31 |
| 13 | ENVOLVIG MAX |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | 9.24      | 3.145E-02  | 4.46  | 4.050E-02  | 16.94  |
|    | 9.0E-01      | 0.00 | 15.18     | 3.145E-02  | 4.46  | 1.762E-02  | 8.36   |
|    | 1.63         | 0.00 | 21.12     | 3.145E-02  | 4.46  | 5.755E-03  | 9.63   |
|    | 2.36         | 0.00 | 27.77     | 3.145E-02  | 4.46  | 3.080E-02  | 21.29  |
|    | 3.09         | 0.00 | 34.70     | 3.145E-02  | 4.46  | 5.585E-02  | 28.10  |
| 13 | ENVOLVIG MIN |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | -33.35    | -3.443E-02 | -3.66 | -4.434E-02 | -28.82 |
|    | 9.0E-01      | 0.00 | -26.42    | -3.443E-02 | -3.66 | -1.929E-02 | -7.37  |
|    | 1.63         | 0.00 | -19.49    | -3.443E-02 | -3.66 | -5.257E-03 | -5.14  |
|    | 2.36         | 0.00 | -13.28    | -3.443E-02 | -3.66 | -2.814E-02 | -22.66 |
|    | 3.09         | 0.00 | -7.34     | -3.443E-02 | -3.66 | -5.101E-02 | -44.70 |
| 14 | ENVOLVIG MAX |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | 4.43      | 1.785E-02  | 4.61  | 2.537E-02  | 29.09  |
|    | 1.07         | 0.00 | 11.06     | 1.785E-02  | 4.61  | 9.418E-03  | 22.17  |
|    | 1.96         | 0.00 | 17.70     | 1.785E-02  | 4.61  | 7.156E-03  | 9.31   |
|    | 2.86         | 0.00 | 24.73     | 1.785E-02  | 4.61  | 2.462E-02  | 11.27  |
|    | 3.75         | 0.00 | 32.47     | 1.785E-02  | 4.61  | 4.209E-02  | 17.93  |
| 14 | ENVOLVIG MIN |      |           |            |       |            |        |
|    | 1.8E-01      | 0.00 | -33.59    | -1.954E-02 | -4.43 | -2.778E-02 | -48.25 |
|    | 1.07         | 0.00 | -25.85    | -1.954E-02 | -4.43 | -1.031E-02 | -21.68 |
|    | 1.96         | 0.00 | -18.11    | -1.954E-02 | -4.43 | -6.537E-03 | -2.03  |
|    | 2.86         | 0.00 | -10.77    | -1.954E-02 | -4.43 | -2.249E-02 | -10.04 |

|    |              |      |            |            |            |            |        |
|----|--------------|------|------------|------------|------------|------------|--------|
|    | 3.75         | 0.00 | -4.14      | -1.954E-02 | -4.43      | -3.845E-02 | -35.60 |
| 15 | ENVOLVIG MAX |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -1.12      | 1.660E-02  | 4.40       | 3.697E-02  | 12.73  |
|    | 1.07         | 0.00 | 5.52       | 1.660E-02  | 4.40       | 2.214E-02  | 11.86  |
|    | 1.96         | 0.00 | 12.15      | 1.660E-02  | 4.40       | 7.303E-03  | 9.14   |
|    | 2.86         | 0.00 | 19.41      | 1.660E-02  | 4.40       | 8.246E-03  | 16.77  |
|    | 3.75         | 0.00 | 27.15      | 1.660E-02  | 4.40       | 2.449E-02  | 17.80  |
| 15 | ENVOLVIG MIN |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -28.24     | -1.817E-02 | -4.57      | -4.048E-02 | -27.82 |
|    | 1.07         | 0.00 | -20.50     | -1.817E-02 | -4.57      | -2.424E-02 | -7.14  |
|    | 1.96         | 0.00 | -12.76     | -1.817E-02 | -4.57      | -7.995E-03 | 2.87   |
|    | 2.86         | 0.00 | -5.65      | -1.817E-02 | -4.57      | -7.532E-03 | -10.96 |
|    | 3.75         | 0.00 | 9.864E-01  | -1.817E-02 | -4.57      | -2.237E-02 | -30.72 |
| 16 | ENVOLVIG MAX |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -3.24      | 3.770E-03  | 1.961E-01  | 7.605E-03  | 14.07  |
|    | 1.20         | 0.00 | 4.36       | 3.770E-03  | 1.961E-01  | 3.741E-03  | 13.50  |
|    | 2.23         | 0.00 | 11.97      | 3.770E-03  | 1.961E-01  | 1.355E-04  | 6.77   |
|    | 3.25         | 0.00 | 20.60      | 3.770E-03  | 1.961E-01  | 4.366E-03  | 14.45  |
|    | 4.28         | 0.00 | 29.48      | 3.770E-03  | 1.961E-01  | 8.597E-03  | 15.51  |
| 16 | ENVOLVIG MIN |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -30.45     | -4.127E-03 | -1.821E-01 | -8.326E-03 | -38.91 |
|    | 1.20         | 0.00 | -21.57     | -4.127E-03 | -1.821E-01 | -4.095E-03 | -12.25 |
|    | 2.23         | 0.00 | -12.69     | -4.127E-03 | -1.821E-01 | -1.238E-04 | 4.85   |
|    | 3.25         | 0.00 | -4.84      | -4.127E-03 | -1.821E-01 | -3.988E-03 | -11.72 |
|    | 4.28         | 0.00 | 2.77       | -4.127E-03 | -1.821E-01 | -7.853E-03 | -37.39 |
| 17 | ENVOLVIG MAX |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -4.338E-01 | 1.502E-02  | 5.58       | 2.006E-02  | 17.55  |
|    | 1.03         | 0.00 | 5.88       | 1.502E-02  | 5.58       | 7.293E-03  | 16.59  |
|    | 1.88         | 0.00 | 12.19      | 1.502E-02  | 5.58       | 5.991E-03  | 9.38   |
|    | 2.73         | 0.00 | 19.53      | 1.502E-02  | 5.58       | 1.997E-02  | 11.32  |
|    | 3.58         | 0.00 | 26.89      | 1.502E-02  | 5.58       | 3.394E-02  | 13.13  |
| 17 | ENVOLVIG MIN |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -27.89     | -1.644E-02 | -5.19      | -2.196E-02 | -31.75 |
|    | 1.03         | 0.00 | -20.53     | -1.644E-02 | -5.19      | -7.984E-03 | -12.53 |
|    | 1.88         | 0.00 | -13.17     | -1.644E-02 | -5.19      | -5.473E-03 | 1.33   |
|    | 2.73         | 0.00 | -6.84      | -1.644E-02 | -5.19      | -1.824E-02 | -5.58  |
|    | 3.58         | 0.00 | -5.338E-01 | -1.644E-02 | -5.19      | -3.100E-02 | -23.99 |
| 18 | ENVOLVIG MAX |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | 9.13       | 2.685E-02  | 3.69       | 4.421E-02  | 20.95  |
|    | 1.02         | 0.00 | 15.45      | 2.685E-02  | 3.69       | 2.155E-02  | 10.61  |
|    | 1.86         | 0.00 | 22.76      | 2.685E-02  | 3.69       | 1.212E-03  | 11.35  |
|    | 2.71         | 0.00 | 30.07      | 2.685E-02  | 3.69       | 2.602E-02  | 26.98  |
|    | 3.55         | 0.00 | 37.37      | 2.685E-02  | 3.69       | 5.082E-02  | 37.32  |
| 18 | ENVOLVIG MIN |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -35.16     | -2.940E-02 | -4.49      | -4.840E-02 | -36.92 |
|    | 1.02         | 0.00 | -27.91     | -2.940E-02 | -4.49      | -2.359E-02 | -10.34 |
|    | 1.86         | 0.00 | -21.65     | -2.940E-02 | -4.49      | -1.107E-03 | -6.29  |
|    | 2.71         | 0.00 | -15.39     | -2.940E-02 | -4.49      | -2.377E-02 | -28.58 |
|    | 3.55         | 0.00 | -9.12      | -2.940E-02 | -4.49      | -4.642E-02 | -57.03 |
| 19 | ENVOLVIG MAX |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -1.916E-01 | 1.955E-02  | 3.51       | 2.551E-02  | 13.34  |
|    | 9.8E-01      | 0.00 | 5.79       | 1.955E-02  | 3.51       | 9.747E-03  | 11.28  |
|    | 1.79         | 0.00 | 11.78      | 1.955E-02  | 3.51       | 6.585E-03  | 5.78   |
|    | 2.59         | 0.00 | 18.76      | 1.955E-02  | 3.51       | 2.384E-02  | 10.47  |
|    | 3.40         | 0.00 | 25.74      | 1.955E-02  | 3.51       | 4.110E-02  | 12.24  |
| 19 | ENVOLVIG MIN |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | -25.40     | -2.140E-02 | -4.71      | -2.793E-02 | -25.62 |
|    | 9.8E-01      | 0.00 | -18.42     | -2.140E-02 | -4.71      | -1.067E-02 | -8.17  |
|    | 1.79         | 0.00 | -11.43     | -2.140E-02 | -4.71      | -6.015E-03 | 3.46   |
|    | 2.59         | 0.00 | -5.45      | -2.140E-02 | -4.71      | -2.178E-02 | -7.91  |
|    | 3.40         | 0.00 | 5.390E-01  | -2.140E-02 | -4.71      | -3.754E-02 | -25.64 |
| 20 | ENVOLVIG MAX |      |            |            |            |            |        |
|    | 1.8E-01      | 0.00 | 2.634E-01  | 1.881E-02  | 5.04       | 2.304E-02  | 13.98  |
|    | 9.8E-01      | 0.00 | 6.25       | 1.881E-02  | 5.04       | 7.871E-03  | 11.56  |
|    | 1.79         | 0.00 | 12.24      | 1.881E-02  | 5.04       | 7.986E-03  | 5.79   |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 2.59         | 0.00 | 19.22      | 1.881E-02  | 5.04       | 2.459E-02  | 10.96      |
|    | 3.40         | 0.00 | 26.20      | 1.881E-02  | 5.04       | 4.119E-02  | 13.13      |
| 20 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -25.88     | -2.059E-02 | -5.61      | -2.522E-02 | -26.29     |
|    | 9.8E-01      | 0.00 | -18.89     | -2.059E-02 | -5.61      | -8.617E-03 | -8.45      |
|    | 1.79         | 0.00 | -11.91     | -2.059E-02 | -5.61      | -7.295E-03 | 3.57       |
|    | 2.59         | 0.00 | -5.93      | -2.059E-02 | -5.61      | -2.246E-02 | -8.38      |
|    | 3.40         | 0.00 | 5.541E-02  | -2.059E-02 | -5.61      | -3.763E-02 | -26.48     |
| 21 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 1.214E-01  | 1.905E-02  | 5.87       | 2.395E-02  | 15.33      |
|    | 9.8E-01      | 0.00 | 6.70       | 1.905E-02  | 5.87       | 8.589E-03  | 12.81      |
|    | 1.79         | 0.00 | 13.29      | 1.905E-02  | 5.87       | 7.414E-03  | 6.36       |
|    | 2.59         | 0.00 | 20.97      | 1.905E-02  | 5.87       | 2.423E-02  | 11.67      |
|    | 3.40         | 0.00 | 28.66      | 1.905E-02  | 5.87       | 4.105E-02  | 13.91      |
| 21 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -28.27     | -2.086E-02 | -5.61      | -2.622E-02 | -28.85     |
|    | 9.8E-01      | 0.00 | -20.59     | -2.086E-02 | -5.61      | -9.403E-03 | -9.37      |
|    | 1.79         | 0.00 | -12.92     | -2.086E-02 | -5.61      | -6.772E-03 | 3.69       |
|    | 2.59         | 0.00 | -6.34      | -2.086E-02 | -5.61      | -2.213E-02 | -8.84      |
|    | 3.40         | 0.00 | 2.473E-01  | -2.086E-02 | -5.61      | -3.749E-02 | -28.64     |
| 22 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -13.63     | 9.450E-03  | 8.928E-01  | 2.866E-02  | 6.60       |
|    | 1.55         | 0.00 | -2.60      | 9.450E-03  | 8.928E-01  | 1.590E-02  | 17.89      |
|    | 2.90         | 0.00 | 8.52       | 9.450E-03  | 8.928E-01  | 3.147E-03  | 17.08      |
|    | 4.25         | 0.00 | 21.38      | 9.450E-03  | 8.928E-01  | 1.052E-02  | 11.97      |
|    | 5.60         | 0.00 | 34.99      | 9.450E-03  | 8.928E-01  | 2.449E-02  | -1.892E-01 |
| 22 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 2.0E-01      | 0.00 | -33.60     | -1.035E-02 | -7.205E-01 | -3.138E-02 | -44.35     |
|    | 1.55         | 0.00 | -20.34     | -1.035E-02 | -7.205E-01 | -1.741E-02 | -8.55      |
|    | 2.90         | 0.00 | -7.58      | -1.035E-02 | -7.205E-01 | -3.446E-03 | 8.53       |
|    | 4.25         | 0.00 | 3.45       | -1.035E-02 | -7.205E-01 | -9.610E-03 | -5.18      |
|    | 5.60         | 0.00 | 14.47      | -1.035E-02 | -7.205E-01 | -2.237E-02 | -42.66     |
| 23 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -3.689E-01 | 1.966E-02  | 4.68       | 3.766E-02  | 12.31      |
|    | 9.8E-01      | 0.00 | 5.62       | 1.966E-02  | 4.68       | 2.180E-02  | 10.37      |
|    | 1.79         | 0.00 | 11.60      | 1.966E-02  | 4.68       | 5.952E-03  | 5.63       |
|    | 2.59         | 0.00 | 18.54      | 1.966E-02  | 4.68       | 1.084E-02  | 11.42      |
|    | 3.40         | 0.00 | 25.53      | 1.966E-02  | 4.68       | 2.819E-02  | 13.58      |
| 23 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -25.94     | -2.153E-02 | -3.58      | -4.123E-02 | -25.99     |
|    | 9.8E-01      | 0.00 | -18.96     | -2.153E-02 | -3.58      | -2.387E-02 | -8.06      |
|    | 1.79         | 0.00 | -11.98     | -2.153E-02 | -3.58      | -6.516E-03 | 3.26       |
|    | 2.59         | 0.00 | -5.95      | -2.153E-02 | -3.58      | -9.900E-03 | -8.51      |
|    | 3.40         | 0.00 | 3.243E-02  | -2.153E-02 | -3.58      | -2.575E-02 | -26.04     |
| 24 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 5.192E-02  | 1.881E-02  | 5.59       | 3.763E-02  | 13.11      |
|    | 9.8E-01      | 0.00 | 6.04       | 1.881E-02  | 5.59       | 2.246E-02  | 10.82      |
|    | 1.79         | 0.00 | 12.02      | 1.881E-02  | 5.59       | 7.294E-03  | 5.66       |
|    | 2.59         | 0.00 | 18.95      | 1.881E-02  | 5.59       | 8.618E-03  | 11.76      |
|    | 3.40         | 0.00 | 25.93      | 1.881E-02  | 5.59       | 2.522E-02  | 14.30      |
| 24 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -26.46     | -2.059E-02 | -5.07      | -4.119E-02 | -26.91     |
|    | 9.8E-01      | 0.00 | -19.48     | -2.059E-02 | -5.07      | -2.459E-02 | -8.56      |
|    | 1.79         | 0.00 | -12.50     | -2.059E-02 | -5.07      | -7.985E-03 | 3.37       |
|    | 2.59         | 0.00 | -6.46      | -2.059E-02 | -5.07      | -7.872E-03 | -8.73      |
|    | 3.40         | 0.00 | -4.733E-01 | -2.059E-02 | -5.07      | -2.304E-02 | -26.57     |
| 25 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -3.880E-01 | 1.960E-02  | 5.63       | 3.808E-02  | 13.63      |
|    | 9.8E-01      | 0.00 | 6.20       | 1.960E-02  | 5.63       | 2.227E-02  | 11.48      |
|    | 1.79         | 0.00 | 12.78      | 1.960E-02  | 5.63       | 6.465E-03  | 6.26       |
|    | 2.59         | 0.00 | 20.41      | 1.960E-02  | 5.63       | 1.023E-02  | 12.73      |
|    | 3.40         | 0.00 | 28.09      | 1.960E-02  | 5.63       | 2.753E-02  | 15.20      |
| 25 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -28.70     | -2.146E-02 | -5.79      | -4.169E-02 | -28.83     |
|    | 9.8E-01      | 0.00 | -21.02     | -2.146E-02 | -5.79      | -2.438E-02 | -8.98      |
|    | 1.79         | 0.00 | -13.34     | -2.146E-02 | -5.79      | -7.078E-03 | 3.64       |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 2.59         | 0.00 | -6.71      | -2.146E-02 | -5.79      | -9.341E-03 | -9.32      |
|    | 3.40         | 0.00 | -1.218E-01 | -2.146E-02 | -5.79      | -2.515E-02 | -28.58     |
| 26 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 2.14       | 1.394E-02  | 3.66       | 2.692E-02  | 15.48      |
|    | 1.09         | 0.00 | 8.90       | 1.394E-02  | 3.66       | 1.421E-02  | 12.25      |
|    | 2.00         | 0.00 | 16.78      | 1.394E-02  | 3.66       | 1.512E-03  | 11.56      |
|    | 2.91         | 0.00 | 24.67      | 1.394E-02  | 3.66       | 1.225E-02  | 19.21      |
|    | 3.82         | 0.00 | 32.56      | 1.394E-02  | 3.66       | 2.616E-02  | 23.11      |
| 26 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -29.09     | -1.526E-02 | -4.11      | -2.947E-02 | -31.31     |
|    | 1.09         | 0.00 | -21.20     | -1.526E-02 | -4.11      | -1.556E-02 | -10.21     |
|    | 2.00         | 0.00 | -14.42     | -1.526E-02 | -4.11      | -1.656E-03 | -4.98      |
|    | 2.91         | 0.00 | -7.66      | -1.526E-02 | -4.11      | -1.119E-02 | -21.45     |
|    | 3.82         | 0.00 | -8.986E-01 | -1.526E-02 | -4.11      | -2.389E-02 | -47.52     |
| 27 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | 4.30       | 1.792E-02  | 4.49       | 2.557E-02  | 28.65      |
|    | 1.07         | 0.00 | 10.94      | 1.792E-02  | 4.49       | 9.551E-03  | 21.84      |
|    | 1.96         | 0.00 | 17.57      | 1.792E-02  | 4.49       | 7.079E-03  | 9.10       |
|    | 2.86         | 0.00 | 24.57      | 1.792E-02  | 4.49       | 2.461E-02  | 11.24      |
|    | 3.75         | 0.00 | 32.31      | 1.792E-02  | 4.49       | 4.215E-02  | 17.90      |
| 27 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -33.63     | -1.962E-02 | -4.48      | -2.799E-02 | -48.44     |
|    | 1.07         | 0.00 | -25.89     | -1.962E-02 | -4.48      | -1.046E-02 | -21.84     |
|    | 1.96         | 0.00 | -18.15     | -1.962E-02 | -4.48      | -6.466E-03 | -2.16      |
|    | 2.86         | 0.00 | -10.77     | -1.962E-02 | -4.48      | -2.248E-02 | -10.21     |
|    | 3.75         | 0.00 | -4.14      | -1.962E-02 | -4.48      | -3.850E-02 | -35.63     |
| 28 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -1.11      | 1.658E-02  | 4.45       | 3.692E-02  | 12.87      |
|    | 1.07         | 0.00 | 5.52       | 1.658E-02  | 4.45       | 2.210E-02  | 12.06      |
|    | 1.96         | 0.00 | 12.16      | 1.658E-02  | 4.45       | 7.288E-03  | 9.36       |
|    | 2.86         | 0.00 | 19.36      | 1.658E-02  | 4.45       | 8.241E-03  | 16.83      |
|    | 3.75         | 0.00 | 27.10      | 1.658E-02  | 4.45       | 2.446E-02  | 17.84      |
| 28 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -28.21     | -1.815E-02 | -4.45      | -4.042E-02 | -27.68     |
|    | 1.07         | 0.00 | -20.47     | -1.815E-02 | -4.45      | -2.420E-02 | -7.08      |
|    | 1.96         | 0.00 | -12.73     | -1.815E-02 | -4.45      | -7.979E-03 | 3.00       |
|    | 2.86         | 0.00 | -5.57      | -1.815E-02 | -4.45      | -7.528E-03 | -10.83     |
|    | 3.75         | 0.00 | 1.07       | -1.815E-02 | -4.45      | -2.234E-02 | -30.58     |
| 29 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -3.21      | 4.089E-03  | 2.304E-01  | 8.037E-03  | 14.01      |
|    | 1.20         | 0.00 | 4.40       | 4.089E-03  | 2.304E-01  | 3.846E-03  | 13.39      |
|    | 2.23         | 0.00 | 12.01      | 4.089E-03  | 2.304E-01  | 3.778E-04  | 6.45       |
|    | 3.25         | 0.00 | 20.78      | 4.089E-03  | 2.304E-01  | 4.966E-03  | 14.62      |
|    | 4.28         | 0.00 | 29.65      | 4.089E-03  | 2.304E-01  | 9.555E-03  | 15.75      |
| 29 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -30.37     | -4.476E-03 | -2.331E-01 | -8.799E-03 | -38.87     |
|    | 1.20         | 0.00 | -21.50     | -4.476E-03 | -2.331E-01 | -4.211E-03 | -12.29     |
|    | 2.23         | 0.00 | -12.62     | -4.476E-03 | -2.331E-01 | -3.451E-04 | 4.48       |
|    | 3.25         | 0.00 | -4.90      | -4.476E-03 | -2.331E-01 | -4.536E-03 | -12.27     |
|    | 4.28         | 0.00 | 2.71       | -4.476E-03 | -2.331E-01 | -8.727E-03 | -38.11     |
| 30 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -1.05      | 1.261E-02  | 3.77       | 1.790E-02  | 17.02      |
|    | 1.03         | 0.00 | 5.26       | 1.261E-02  | 3.77       | 7.183E-03  | 16.92      |
|    | 1.88         | 0.00 | 11.57      | 1.261E-02  | 3.77       | 3.873E-03  | 10.57      |
|    | 2.73         | 0.00 | 18.52      | 1.261E-02  | 3.77       | 1.561E-02  | 9.24       |
|    | 3.58         | 0.00 | 25.88      | 1.261E-02  | 3.77       | 2.735E-02  | 9.71       |
| 30 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -26.32     | -1.381E-02 | -3.81      | -1.960E-02 | -29.77     |
|    | 1.03         | 0.00 | -18.96     | -1.381E-02 | -3.81      | -7.864E-03 | -12.22     |
|    | 1.88         | 0.00 | -11.60     | -1.381E-02 | -3.81      | -3.538E-03 | -3.388E-02 |
|    | 2.73         | 0.00 | -4.87      | -1.381E-02 | -3.81      | -1.426E-02 | -4.49      |
|    | 3.58         | 0.00 | 1.44       | -1.381E-02 | -3.81      | -2.498E-02 | -22.37     |
| 31 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -7.18      | 2.335E-02  | 1.98       | 2.985E-02  | 14.33      |

|    |              |      |            |            |           |            |           |
|----|--------------|------|------------|------------|-----------|------------|-----------|
|    | 7.8E-01      | 0.00 | 5.50       | 2.335E-02  | 1.98      | 1.584E-02  | 16.06     |
|    | 1.38         | 0.00 | 18.18      | 2.335E-02  | 1.98      | 1.828E-03  | 11.11     |
|    | 1.98         | 0.00 | 32.83      | 2.335E-02  | 1.98      | 1.334E-02  | 12.64     |
|    | 2.58         | 0.00 | 47.71      | 2.335E-02  | 1.98      | 2.868E-02  | 10.53     |
| 31 | ENVOLVIG MIN |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -47.67     | -2.557E-02 | -2.18     | -3.268E-02 | -35.46    |
|    | 7.8E-01      | 0.00 | -32.88     | -2.557E-02 | -2.18     | -1.734E-02 | -12.52    |
|    | 1.38         | 0.00 | -18.10     | -2.557E-02 | -2.18     | -2.001E-03 | 6.178E-01 |
|    | 1.98         | 0.00 | -5.22      | -2.557E-02 | -2.18     | -1.218E-02 | -9.21     |
|    | 2.58         | 0.00 | 7.53       | -2.557E-02 | -2.18     | -2.620E-02 | -31.96    |
| 32 | ENVOLVIG MAX |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | 1.82       | 1.214E-02  | 4.41      | 2.476E-02  | 15.05     |
|    | 1.09         | 0.00 | 8.58       | 1.214E-02  | 4.41      | 1.370E-02  | 12.04     |
|    | 2.00         | 0.00 | 16.32      | 1.214E-02  | 4.41      | 2.633E-03  | 11.76     |
|    | 2.91         | 0.00 | 24.21      | 1.214E-02  | 4.41      | 9.231E-03  | 19.33     |
|    | 3.82         | 0.00 | 32.10      | 1.214E-02  | 4.41      | 2.134E-02  | 23.08     |
| 32 | ENVOLVIG MIN |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -29.23     | -1.330E-02 | -4.07     | -2.711E-02 | -31.53    |
|    | 1.09         | 0.00 | -21.34     | -1.330E-02 | -4.07     | -1.500E-02 | -10.22    |
|    | 2.00         | 0.00 | -14.43     | -1.330E-02 | -4.07     | -2.882E-03 | -4.99     |
|    | 2.91         | 0.00 | -7.67      | -1.330E-02 | -4.07     | -8.432E-03 | -20.96    |
|    | 3.82         | 0.00 | -9.086E-01 | -1.330E-02 | -4.07     | -1.950E-02 | -46.45    |
| 33 | ENVOLVIG MAX |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -6.419E-01 | 1.817E-02  | 4.02      | 2.400E-02  | 12.60     |
|    | 9.7E-01      | 0.00 | 5.27       | 1.817E-02  | 4.02      | 9.521E-03  | 10.92     |
|    | 1.77         | 0.00 | 11.22      | 1.817E-02  | 4.02      | 5.430E-03  | 4.93      |
|    | 2.57         | 0.00 | 18.12      | 1.817E-02  | 4.02      | 2.128E-02  | 8.28      |
|    | 3.36         | 0.00 | 25.02      | 1.817E-02  | 4.02      | 3.714E-02  | 9.46      |
| 33 | ENVOLVIG MIN |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -24.29     | -1.989E-02 | -4.41     | -2.628E-02 | -25.03    |
|    | 9.7E-01      | 0.00 | -17.38     | -1.989E-02 | -4.41     | -1.042E-02 | -8.60     |
|    | 1.77         | 0.00 | -10.51     | -1.989E-02 | -4.41     | -4.960E-03 | 2.13      |
|    | 2.57         | 0.00 | -4.59      | -1.989E-02 | -4.41     | -1.944E-02 | -7.08     |
|    | 3.36         | 0.00 | 1.32       | -1.989E-02 | -4.41     | -3.392E-02 | -24.14    |
| 34 | ENVOLVIG MAX |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -1.986E-01 | 1.806E-02  | 5.36      | 2.205E-02  | 13.18     |
|    | 9.7E-01      | 0.00 | 5.72       | 1.806E-02  | 5.36      | 7.659E-03  | 11.14     |
|    | 1.77         | 0.00 | 11.68      | 1.806E-02  | 5.36      | 7.371E-03  | 4.85      |
|    | 2.57         | 0.00 | 18.59      | 1.806E-02  | 5.36      | 2.313E-02  | 8.64      |
|    | 3.36         | 0.00 | 25.49      | 1.806E-02  | 5.36      | 3.888E-02  | 10.24     |
| 34 | ENVOLVIG MIN |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -24.71     | -1.977E-02 | -5.42     | -2.414E-02 | -25.70    |
|    | 9.7E-01      | 0.00 | -17.81     | -1.977E-02 | -5.42     | -8.385E-03 | -8.90     |
|    | 1.77         | 0.00 | -10.96     | -1.977E-02 | -5.42     | -6.733E-03 | 2.19      |
|    | 2.57         | 0.00 | -5.05      | -1.977E-02 | -5.42     | -2.113E-02 | -7.55     |
|    | 3.36         | 0.00 | 8.656E-01  | -1.977E-02 | -5.42     | -3.552E-02 | -25.05    |
| 35 | ENVOLVIG MAX |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -7.927E-01 | 1.863E-02  | 5.72      | 2.393E-02  | 13.73     |
|    | 9.7E-01      | 0.00 | 5.71       | 1.863E-02  | 5.72      | 9.084E-03  | 11.93     |
|    | 1.77         | 0.00 | 12.29      | 1.863E-02  | 5.72      | 6.306E-03  | 5.25      |
|    | 2.57         | 0.00 | 19.88      | 1.863E-02  | 5.72      | 2.256E-02  | 8.74      |
|    | 3.36         | 0.00 | 27.47      | 1.863E-02  | 5.72      | 3.881E-02  | 10.00     |
| 35 | ENVOLVIG MIN |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -26.55     | -2.039E-02 | -5.98     | -2.620E-02 | -27.51    |
|    | 9.7E-01      | 0.00 | -18.96     | -2.039E-02 | -5.98     | -9.945E-03 | -9.54     |
|    | 1.77         | 0.00 | -11.43     | -2.039E-02 | -5.98     | -5.760E-03 | 2.16      |
|    | 2.57         | 0.00 | -4.92      | -2.039E-02 | -5.98     | -2.060E-02 | -7.71     |
|    | 3.36         | 0.00 | 1.58       | -2.039E-02 | -5.98     | -3.545E-02 | -26.51    |
| 36 | ENVOLVIG MAX |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -10.88     | 1.504E-02  | 2.678E-01 | 3.040E-02  | 4.44      |
|    | 1.51         | 0.00 | -1.087E-02 | 1.504E-02  | 2.678E-01 | 1.038E-02  | 11.78     |
|    | 2.84         | 0.00 | 11.02      | 1.504E-02  | 2.678E-01 | 1.055E-02  | 21.18     |
|    | 4.17         | 0.00 | 23.70      | 1.504E-02  | 2.678E-01 | 3.246E-02  | 30.23     |
|    | 5.50         | 0.00 | 36.38      | 1.504E-02  | 2.678E-01 | 5.438E-02  | 26.41     |
| 36 | ENVOLVIG MIN |      |            |            |           |            |           |
|    | 1.8E-01      | 0.00 | -38.69     | -1.646E-02 | -1.55     | -3.328E-02 | -48.73    |



|    |              |      |        |            |       |            |           |
|----|--------------|------|--------|------------|-------|------------|-----------|
|    | 1.51         | 0.00 | -26.01 | -1.646E-02 | -1.55 | -1.136E-02 | -5.75     |
|    | 2.84         | 0.00 | -13.49 | -1.646E-02 | -1.55 | -9.636E-03 | 3.82      |
|    | 4.17         | 0.00 | -2.62  | -1.646E-02 | -1.55 | -2.965E-02 | -17.62    |
|    | 5.50         | 0.00 | 8.25   | -1.646E-02 | -1.55 | -4.967E-02 | -57.54    |
| 37 | ENVOLVIG MAX |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | 2.80   | 2.505E-02  | 5.43  | 4.110E-02  | 14.74     |
|    | 9.7E-01      | 0.00 | 8.72   | 2.505E-02  | 5.43  | 2.114E-02  | 10.37     |
|    | 1.77         | 0.00 | 14.64  | 2.505E-02  | 5.43  | 1.182E-03  | 9.73      |
|    | 2.57         | 0.00 | 21.38  | 2.505E-02  | 5.43  | 2.056E-02  | 21.29     |
|    | 3.36         | 0.00 | 28.28  | 2.505E-02  | 5.43  | 4.241E-02  | 27.94     |
| 37 | ENVOLVIG MIN |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | -31.77 | -2.742E-02 | -3.46 | -4.500E-02 | -29.90    |
|    | 9.7E-01      | 0.00 | -24.86 | -2.742E-02 | -3.46 | -2.315E-02 | -7.55     |
|    | 1.77         | 0.00 | -17.96 | -2.742E-02 | -3.46 | -1.294E-03 | 8.437E-01 |
|    | 2.57         | 0.00 | -11.89 | -2.742E-02 | -3.46 | -1.878E-02 | -13.18    |
|    | 3.36         | 0.00 | -5.97  | -2.742E-02 | -3.46 | -3.874E-02 | -32.49    |
| 38 | ENVOLVIG MAX |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | 3.40   | 2.200E-02  | 6.11  | 3.963E-02  | 15.73     |
|    | 9.7E-01      | 0.00 | 9.31   | 2.200E-02  | 6.11  | 2.210E-02  | 10.94     |
|    | 1.77         | 0.00 | 15.23  | 2.200E-02  | 6.11  | 4.570E-03  | 9.75      |
|    | 2.57         | 0.00 | 22.04  | 2.200E-02  | 6.11  | 1.419E-02  | 21.72     |
|    | 3.36         | 0.00 | 28.94  | 2.200E-02  | 6.11  | 3.338E-02  | 28.86     |
| 38 | ENVOLVIG MIN |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | -32.28 | -2.408E-02 | -5.17 | -4.339E-02 | -30.69    |
|    | 9.7E-01      | 0.00 | -25.37 | -2.408E-02 | -5.17 | -2.419E-02 | -8.00     |
|    | 1.77         | 0.00 | -18.47 | -2.408E-02 | -5.17 | -5.003E-03 | 8.840E-01 |
|    | 2.57         | 0.00 | -12.46 | -2.408E-02 | -5.17 | -1.296E-02 | -13.61    |
|    | 3.36         | 0.00 | -6.55  | -2.408E-02 | -5.17 | -3.049E-02 | -33.49    |
| 39 | ENVOLVIG MAX |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | 3.82   | 2.295E-02  | 5.76  | 3.996E-02  | 16.88     |
|    | 9.7E-01      | 0.00 | 10.32  | 2.295E-02  | 5.76  | 2.167E-02  | 11.57     |
|    | 1.77         | 0.00 | 16.83  | 2.295E-02  | 5.76  | 3.386E-03  | 11.63     |
|    | 2.57         | 0.00 | 24.32  | 2.295E-02  | 5.76  | 1.632E-02  | 25.12     |
|    | 3.36         | 0.00 | 31.91  | 2.295E-02  | 5.76  | 3.634E-02  | 33.28     |
| 39 | ENVOLVIG MIN |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | -35.90 | -2.513E-02 | -6.45 | -4.375E-02 | -33.48    |
|    | 9.7E-01      | 0.00 | -28.30 | -2.513E-02 | -6.45 | -2.373E-02 | -8.22     |
|    | 1.77         | 0.00 | -20.71 | -2.513E-02 | -6.45 | -3.707E-03 | 4.264E-01 |
|    | 2.57         | 0.00 | -14.10 | -2.513E-02 | -6.45 | -1.490E-02 | -15.58    |
|    | 3.36         | 0.00 | -7.60  | -2.513E-02 | -6.45 | -3.319E-02 | -37.50    |
| 40 | ENVOLVIG MAX |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | 5.13   | 2.131E-02  | 3.25  | 3.633E-02  | 31.51     |
|    | 1.07         | 0.00 | 11.76  | 2.131E-02  | 3.25  | 1.728E-02  | 23.96     |
|    | 1.96         | 0.00 | 18.40  | 2.131E-02  | 3.25  | 1.937E-03  | 10.95     |
|    | 2.86         | 0.00 | 25.97  | 2.131E-02  | 3.25  | 2.279E-02  | 12.33     |
|    | 3.75         | 0.00 | 33.71  | 2.131E-02  | 3.25  | 4.365E-02  | 17.76     |
| 40 | ENVOLVIG MIN |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | -31.80 | -2.333E-02 | -4.00 | -3.977E-02 | -41.81    |
|    | 1.07         | 0.00 | -24.06 | -2.333E-02 | -4.00 | -1.892E-02 | -16.84    |
|    | 1.96         | 0.00 | -16.32 | -2.333E-02 | -4.00 | -1.769E-03 | 7.352E-01 |
|    | 2.86         | 0.00 | -9.52  | -2.333E-02 | -4.00 | -2.082E-02 | -8.92     |
|    | 3.75         | 0.00 | -2.89  | -2.333E-02 | -4.00 | -3.987E-02 | -35.48    |
| 41 | ENVOLVIG MAX |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | -1.36  | 1.761E-02  | 3.93  | 3.551E-02  | 11.72     |
|    | 1.07         | 0.00 | 5.28   | 1.761E-02  | 3.93  | 1.977E-02  | 10.29     |
|    | 1.96         | 0.00 | 11.91  | 1.761E-02  | 3.93  | 4.039E-03  | 6.42      |
|    | 2.86         | 0.00 | 19.40  | 1.761E-02  | 3.93  | 1.281E-02  | 13.69     |
|    | 3.75         | 0.00 | 27.14  | 1.761E-02  | 3.93  | 3.003E-02  | 14.63     |
| 41 | ENVOLVIG MIN |      |        |            |       |            |           |
|    | 1.8E-01      | 0.00 | -27.60 | -1.928E-02 | -3.18 | -3.888E-02 | -29.19    |
|    | 1.07         | 0.00 | -19.86 | -1.928E-02 | -3.18 | -2.165E-02 | -8.30     |
|    | 1.96         | 0.00 | -12.12 | -1.928E-02 | -3.18 | -4.422E-03 | 2.28      |
|    | 2.86         | 0.00 | -5.23  | -1.928E-02 | -3.18 | -1.170E-02 | -11.33    |
|    | 3.75         | 0.00 | 1.40   | -1.928E-02 | -3.18 | -2.743E-02 | -31.35    |
| 42 | ENVOLVIG MAX |      |        |            |       |            |           |

|    |              |      |            |            |            |            |           |
|----|--------------|------|------------|------------|------------|------------|-----------|
|    | 1.8E-01      | 0.00 | -4.07      | 8.962E-03  | 2.484E-01  | 1.803E-02  | 13.34     |
|    | 1.20         | 0.00 | 3.53       | 8.962E-03  | 2.484E-01  | 8.844E-03  | 13.62     |
|    | 2.23         | 0.00 | 11.14      | 8.962E-03  | 2.484E-01  | 3.739E-04  | 9.21      |
|    | 3.25         | 0.00 | 19.86      | 8.962E-03  | 2.484E-01  | 1.043E-02  | 14.41     |
|    | 4.28         | 0.00 | 28.74      | 8.962E-03  | 2.484E-01  | 2.049E-02  | 14.29     |
| 42 | ENVOLVIG MIN |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -29.35     | -9.811E-03 | -3.221E-01 | -1.974E-02 | -34.88    |
|    | 1.20         | 0.00 | -20.47     | -9.811E-03 | -3.221E-01 | -9.682E-03 | -9.35     |
|    | 2.23         | 0.00 | -11.59     | -9.811E-03 | -3.221E-01 | -3.415E-04 | 6.09      |
|    | 3.25         | 0.00 | -3.83      | -9.811E-03 | -3.221E-01 | -9.527E-03 | -9.22     |
|    | 4.28         | 0.00 | 3.78       | -9.811E-03 | -3.221E-01 | -1.871E-02 | -33.98    |
| 43 | ENVOLVIG MAX |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -9.209E-01 | 1.461E-02  | 4.22       | 2.419E-02  | 15.04     |
|    | 1.03         | 0.00 | 5.39       | 1.461E-02  | 4.22       | 1.177E-02  | 13.56     |
|    | 1.88         | 0.00 | 11.70      | 1.461E-02  | 4.22       | 7.011E-04  | 6.83      |
|    | 2.73         | 0.00 | 18.96      | 1.461E-02  | 4.22       | 1.429E-02  | 9.41      |
|    | 3.58         | 0.00 | 26.32      | 1.461E-02  | 4.22       | 2.788E-02  | 11.46     |
| 43 | ENVOLVIG MIN |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -27.39     | -1.599E-02 | -5.23      | -2.648E-02 | -32.28    |
|    | 1.03         | 0.00 | -20.03     | -1.599E-02 | -5.23      | -1.289E-02 | -12.54    |
|    | 1.88         | 0.00 | -12.67     | -1.599E-02 | -5.23      | -6.404E-04 | 8.212E-01 |
|    | 2.73         | 0.00 | -6.26      | -1.599E-02 | -5.23      | -1.306E-02 | -6.74     |
|    | 3.58         | 0.00 | 4.934E-02  | -1.599E-02 | -5.23      | -2.547E-02 | -25.41    |
| 44 | ENVOLVIG MAX |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | 8.06       | 3.618E-02  | 3.01       | 4.954E-02  | 21.06     |
|    | 1.02         | 0.00 | 14.33      | 3.618E-02  | 3.01       | 1.901E-02  | 11.62     |
|    | 1.86         | 0.00 | 20.69      | 3.618E-02  | 3.01       | 1.260E-02  | 13.24     |
|    | 2.71         | 0.00 | 27.99      | 3.618E-02  | 3.01       | 4.602E-02  | 29.73     |
|    | 3.55         | 0.00 | 35.30      | 3.618E-02  | 3.01       | 7.943E-02  | 41.18     |
| 44 | ENVOLVIG MIN |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -37.49     | -3.960E-02 | -1.71      | -5.423E-02 | -37.70    |
|    | 1.02         | 0.00 | -30.18     | -3.960E-02 | -1.71      | -2.082E-02 | -9.15     |
|    | 1.86         | 0.00 | -22.97     | -3.960E-02 | -1.71      | -1.151E-02 | -3.11     |
|    | 2.71         | 0.00 | -16.71     | -3.960E-02 | -1.71      | -4.203E-02 | -23.40    |
|    | 3.55         | 0.00 | -10.44     | -3.960E-02 | -1.71      | -7.255E-02 | -50.11    |
| 80 | ENVOLVIG MAX |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -10.59     | 0.00       | 3.08       | 0.00       | 24.86     |
|    | 1.07         | 0.00 | 4.22       | 0.00       | 3.08       | 0.00       | 32.25     |
|    | 1.96         | 0.00 | 20.18      | 0.00       | 3.08       | 0.00       | 25.14     |
|    | 2.86         | 0.00 | 44.27      | 0.00       | 3.08       | 0.00       | 14.81     |
|    | 3.75         | 0.00 | 68.35      | 0.00       | 3.08       | 0.00       | 6.36      |
| 80 | ENVOLVIG MIN |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -62.54     | 0.00       | -2.17      | 0.00       | -56.00    |
|    | 1.07         | 0.00 | -38.45     | 0.00       | -2.17      | 0.00       | -15.41    |
|    | 1.96         | 0.00 | -15.52     | 0.00       | -2.17      | 0.00       | 5.08      |
|    | 2.86         | 0.00 | -7.166E-01 | 0.00       | -2.17      | 0.00       | -6.30     |
|    | 3.75         | 0.00 | 14.09      | 0.00       | -2.17      | 0.00       | -54.16    |
| 81 | ENVOLVIG MAX |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -15.94     | 0.00       | 2.00       | 0.00       | 2.36      |
|    | 1.07         | 0.00 | -1.14      | 0.00       | 2.00       | 0.00       | 10.68     |
|    | 1.96         | 0.00 | 14.44      | 0.00       | 2.00       | 0.00       | 15.59     |
|    | 2.86         | 0.00 | 38.52      | 0.00       | 2.00       | 0.00       | 15.73     |
|    | 3.75         | 0.00 | 65.68      | 0.00       | 2.00       | 0.00       | 7.53      |
| 81 | ENVOLVIG MIN |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -62.78     | 0.00       | -2.91      | 0.00       | -50.12    |
|    | 1.07         | 0.00 | -36.34     | 0.00       | -2.91      | 0.00       | -7.56     |
|    | 1.96         | 0.00 | -13.03     | 0.00       | -2.91      | 0.00       | 4.39      |
|    | 2.86         | 0.00 | 1.78       | 0.00       | -2.91      | 0.00       | -15.13    |
|    | 3.75         | 0.00 | 16.58      | 0.00       | -2.91      | 0.00       | -60.32    |
| 82 | ENVOLVIG MAX |      |            |            |            |            |           |
|    | 1.8E-01      | 0.00 | -20.20     | 0.00       | 7.205E-02  | 0.00       | 9.16      |
|    | 1.20         | 0.00 | -3.22      | 0.00       | 7.205E-02  | 0.00       | 27.20     |
|    | 2.23         | 0.00 | 14.07      | 0.00       | 7.205E-02  | 0.00       | 38.59     |
|    | 3.25         | 0.00 | 45.61      | 0.00       | 7.205E-02  | 0.00       | 26.94     |
|    | 4.28         | 0.00 | 84.28      | 0.00       | 7.205E-02  | 0.00       | 9.92      |
| 82 | ENVOLVIG MIN |      |            |            |            |            |           |

|                 |      |            |      |            |      |            |
|-----------------|------|------------|------|------------|------|------------|
| 1.8E-01         | 0.00 | -83.96     | 0.00 | -8.061E-02 | 0.00 | -64.07     |
| 1.20            | 0.00 | -45.37     | 0.00 | -8.061E-02 | 0.00 | -7.43      |
| 2.23            | 0.00 | -14.13     | 0.00 | -8.061E-02 | 0.00 | 15.60      |
| 3.25            | 0.00 | 2.84       | 0.00 | -8.061E-02 | 0.00 | -7.04      |
| 4.28            | 0.00 | 19.82      | 0.00 | -8.061E-02 | 0.00 | -64.56     |
| 83 ENVOLVIG MAX |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -14.21     | 0.00 | 3.31       | 0.00 | 8.83       |
| 1.03            | 0.00 | -4.902E-01 | 0.00 | 3.31       | 0.00 | 15.25      |
| 1.88            | 0.00 | 13.23      | 0.00 | 3.31       | 0.00 | 16.03      |
| 2.73            | 0.00 | 38.34      | 0.00 | 3.31       | 0.00 | 10.84      |
| 3.58            | 0.00 | 66.67      | 0.00 | 3.31       | 0.00 | 4.78       |
| 83 ENVOLVIG MIN |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -70.60     | 0.00 | -2.37      | 0.00 | -61.63     |
| 1.03            | 0.00 | -41.29     | 0.00 | -2.37      | 0.00 | -15.77     |
| 1.88            | 0.00 | -15.55     | 0.00 | -2.37      | 0.00 | 2.74       |
| 2.73            | 0.00 | -1.20      | 0.00 | -2.37      | 0.00 | -7.41      |
| 3.58            | 0.00 | 12.52      | 0.00 | -2.37      | 0.00 | -49.69     |
| 84 ENVOLVIG MAX |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -11.19     | 0.00 | 2.48       | 0.00 | 8.09       |
| 1.03            | 0.00 | 2.53       | 0.00 | 2.48       | 0.00 | 14.51      |
| 1.88            | 0.00 | 16.27      | 0.00 | 2.48       | 0.00 | 26.50      |
| 2.73            | 0.00 | 39.59      | 0.00 | 2.48       | 0.00 | 35.05      |
| 3.58            | 0.00 | 64.98      | 0.00 | 2.48       | 0.00 | 28.62      |
| 84 ENVOLVIG MIN |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -74.64     | 0.00 | -3.60      | 0.00 | -56.74     |
| 1.03            | 0.00 | -48.82     | 0.00 | -3.60      | 0.00 | -7.05      |
| 1.88            | 0.00 | -23.12     | 0.00 | -3.60      | 0.00 | 3.78       |
| 2.73            | 0.00 | -7.11      | 0.00 | -3.60      | 0.00 | -15.90     |
| 3.58            | 0.00 | 6.74       | 0.00 | -3.60      | 0.00 | -53.77     |
| 85 ENVOLVIG MAX |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -10.69     | 0.00 | 3.51       | 0.00 | 26.96      |
| 9.1E-01         | 0.00 | 6.35       | 0.00 | 3.51       | 0.00 | 31.57      |
| 1.65            | 0.00 | 25.33      | 0.00 | 3.51       | 0.00 | 21.61      |
| 2.38            | 0.00 | 48.59      | 0.00 | 3.51       | 0.00 | 8.34       |
| 3.12            | 0.00 | 71.86      | 0.00 | 3.51       | 0.00 | 1.610E-01  |
| 85 ENVOLVIG MIN |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -59.29     | 0.00 | -3.56      | 0.00 | -45.52     |
| 9.1E-01         | 0.00 | -36.03     | 0.00 | -3.56      | 0.00 | -13.45     |
| 1.65            | 0.00 | -14.69     | 0.00 | -3.56      | 0.00 | 3.52       |
| 2.38            | 0.00 | 2.36       | 0.00 | -3.56      | 0.00 | -5.88      |
| 3.12            | 0.00 | 19.40      | 0.00 | -3.56      | 0.00 | -50.04     |
| 86 ENVOLVIG MAX |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -8.24      | 0.00 | 4.00       | 0.00 | 30.95      |
| 9.1E-01         | 0.00 | 8.81       | 0.00 | 4.00       | 0.00 | 34.95      |
| 1.65            | 0.00 | 29.27      | 0.00 | 4.00       | 0.00 | 22.59      |
| 2.38            | 0.00 | 54.23      | 0.00 | 4.00       | 0.00 | 6.93       |
| 3.12            | 0.00 | 79.18      | 0.00 | 4.00       | 0.00 | -1.46      |
| 86 ENVOLVIG MIN |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -60.66     | 0.00 | -5.22      | 0.00 | -45.19     |
| 9.1E-01         | 0.00 | -35.70     | 0.00 | -5.22      | 0.00 | -13.93     |
| 1.65            | 0.00 | -14.17     | 0.00 | -5.22      | 0.00 | 2.77       |
| 2.38            | 0.00 | 2.88       | 0.00 | -5.22      | 0.00 | -8.14      |
| 3.12            | 0.00 | 19.92      | 0.00 | -5.22      | 0.00 | -57.24     |
| 87 ENVOLVIG MAX |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -7.59      | 0.00 | 5.01       | 0.00 | 32.08      |
| 9.1E-01         | 0.00 | 9.46       | 0.00 | 5.01       | 0.00 | 35.58      |
| 1.65            | 0.00 | 30.07      | 0.00 | 5.01       | 0.00 | 22.64      |
| 2.38            | 0.00 | 55.03      | 0.00 | 5.01       | 0.00 | 7.44       |
| 3.12            | 0.00 | 79.98      | 0.00 | 5.01       | 0.00 | -3.273E-01 |
| 87 ENVOLVIG MIN |      |            |      |            |      |            |
| 1.8E-01         | 0.00 | -61.37     | 0.00 | -4.20      | 0.00 | -46.48     |
| 9.1E-01         | 0.00 | -36.42     | 0.00 | -4.20      | 0.00 | -14.69     |
| 1.65            | 0.00 | -15.03     | 0.00 | -4.20      | 0.00 | 2.64       |
| 2.38            | 0.00 | 2.02       | 0.00 | -4.20      | 0.00 | -8.69      |
| 3.12            | 0.00 | 19.07      | 0.00 | -4.20      | 0.00 | -58.36     |

|    |              |      |            |      |            |      |        |
|----|--------------|------|------------|------|------------|------|--------|
| 88 | ENVOLVIG MAX |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -11.50     | 0.00 | 3.66       | 0.00 | 27.47  |
|    | 9.1E-01      | 0.00 | 5.55       | 0.00 | 3.66       | 0.00 | 33.71  |
|    | 1.65         | 0.00 | 24.24      | 0.00 | 3.66       | 0.00 | 25.15  |
|    | 2.38         | 0.00 | 49.20      | 0.00 | 3.66       | 0.00 | 12.46  |
|    | 3.12         | 0.00 | 74.15      | 0.00 | 3.66       | 0.00 | 4.73   |
| 88 | ENVOLVIG MIN |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -65.52     | 0.00 | -3.77      | 0.00 | -49.56 |
|    | 9.1E-01      | 0.00 | -40.57     | 0.00 | -3.77      | 0.00 | -14.57 |
|    | 1.65         | 0.00 | -17.26     | 0.00 | -3.77      | 0.00 | 4.31   |
|    | 2.38         | 0.00 | -2.135E-01 | 0.00 | -3.77      | 0.00 | -3.60  |
|    | 3.12         | 0.00 | 16.83      | 0.00 | -3.77      | 0.00 | -47.37 |
| 89 | ENVOLVIG MAX |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -23.27     | 0.00 | 7.09       | 0.00 | -4.15  |
|    | 9.1E-01      | 0.00 | -6.28      | 0.00 | 7.09       | 0.00 | 6.70   |
|    | 1.64         | 0.00 | 10.72      | 0.00 | 7.09       | 0.00 | 16.82  |
|    | 2.38         | 0.00 | 32.03      | 0.00 | 7.09       | 0.00 | 23.19  |
|    | 3.11         | 0.00 | 55.22      | 0.00 | 7.09       | 0.00 | 15.52  |
| 89 | ENVOLVIG MIN |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -69.54     | 0.00 | -3.360E-02 | 0.00 | -47.15 |
|    | 9.1E-01      | 0.00 | -43.55     | 0.00 | -3.360E-02 | 0.00 | -6.69  |
|    | 1.64         | 0.00 | -20.36     | 0.00 | -3.360E-02 | 0.00 | 5.07   |
|    | 2.38         | 0.00 | -1.48      | 0.00 | -3.360E-02 | 0.00 | -9.03  |
|    | 3.11         | 0.00 | 15.52      | 0.00 | -3.360E-02 | 0.00 | -38.52 |
| 90 | ENVOLVIG MAX |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -24.74     | 0.00 | 6.63       | 0.00 | -6.45  |
|    | 9.1E-01      | 0.00 | -7.75      | 0.00 | 6.63       | 0.00 | 5.47   |
|    | 1.64         | 0.00 | 9.25       | 0.00 | 6.63       | 0.00 | 18.66  |
|    | 2.38         | 0.00 | 30.20      | 0.00 | 6.63       | 0.00 | 27.76  |
|    | 3.11         | 0.00 | 55.08      | 0.00 | 6.63       | 0.00 | 20.00  |
| 90 | ENVOLVIG MIN |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -79.49     | 0.00 | -3.05      | 0.00 | -54.75 |
|    | 9.1E-01      | 0.00 | -49.92     | 0.00 | -3.05      | 0.00 | -9.00  |
|    | 1.64         | 0.00 | -25.04     | 0.00 | -3.05      | 0.00 | 4.91   |
|    | 2.38         | 0.00 | -4.12      | 0.00 | -3.05      | 0.00 | -8.11  |
|    | 3.11         | 0.00 | 12.87      | 0.00 | -3.05      | 0.00 | -34.85 |
| 91 | ENVOLVIG MAX |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -24.15     | 0.00 | 3.33       | 0.00 | -5.60  |
|    | 9.1E-01      | 0.00 | -7.15      | 0.00 | 3.33       | 0.00 | 5.88   |
|    | 1.64         | 0.00 | 9.84       | 0.00 | 3.33       | 0.00 | 18.73  |
|    | 2.38         | 0.00 | 30.44      | 0.00 | 3.33       | 0.00 | 28.43  |
|    | 3.11         | 0.00 | 55.32      | 0.00 | 3.33       | 0.00 | 20.71  |
| 91 | ENVOLVIG MIN |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -79.89     | 0.00 | -6.33      | 0.00 | -55.91 |
|    | 9.1E-01      | 0.00 | -50.76     | 0.00 | -6.33      | 0.00 | -9.54  |
|    | 1.64         | 0.00 | -25.88     | 0.00 | -6.33      | 0.00 | 4.90   |
|    | 2.38         | 0.00 | -4.60      | 0.00 | -6.33      | 0.00 | -8.56  |
|    | 3.11         | 0.00 | 12.39      | 0.00 | -6.33      | 0.00 | -35.15 |
| 92 | ENVOLVIG MAX |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -10.63     | 0.00 | 1.811E-01  | 0.00 | 5.57   |
|    | 9.0E-01      | 0.00 | 6.22       | 0.00 | 1.811E-01  | 0.00 | 7.17   |
|    | 1.63         | 0.00 | 24.08      | 0.00 | 1.811E-01  | 0.00 | 12.67  |
|    | 2.36         | 0.00 | 48.75      | 0.00 | 1.811E-01  | 0.00 | 17.71  |
|    | 3.09         | 0.00 | 73.41      | 0.00 | 1.811E-01  | 0.00 | 12.17  |
| 92 | ENVOLVIG MIN |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -65.98     | 0.00 | -6.23      | 0.00 | -47.44 |
|    | 9.0E-01      | 0.00 | -41.31     | 0.00 | -6.23      | 0.00 | -8.42  |
|    | 1.63         | 0.00 | -17.65     | 0.00 | -6.23      | 0.00 | -3.48  |
|    | 2.36         | 0.00 | -8.048E-01 | 0.00 | -6.23      | 0.00 | -28.31 |
|    | 3.09         | 0.00 | 16.05      | 0.00 | -6.23      | 0.00 | -72.74 |
| 93 | ENVOLVIG MAX |      |            |      |            |      |        |
|    | 1.8E-01      | 0.00 | -66.35     | 0.00 | 3.44       | 0.00 | 15.02  |
|    | 1.07         | 0.00 | -18.93     | 0.00 | 3.44       | 0.00 | 69.37  |
|    | 1.96         | 0.00 | 33.25      | 0.00 | 3.44       | 0.00 | 85.78  |
|    | 2.86         | 0.00 | 117.58     | 0.00 | 3.44       | 0.00 | 27.40  |
|    | 3.75         | 0.00 | 216.47     | 0.00 | 3.44       | 0.00 | -35.00 |

|    |              |      |            |      |            |      |            |
|----|--------------|------|------------|------|------------|------|------------|
| 93 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -179.12    | 0.00 | -3.17      | 0.00 | -86.07     |
|    | 1.07         | 0.00 | -80.22     | 0.00 | -3.17      | 0.00 | 1.80       |
|    | 1.96         | 0.00 | -9.99      | 0.00 | -3.17      | 0.00 | 31.92      |
|    | 2.86         | 0.00 | 37.44      | 0.00 | -3.17      | 0.00 | 2.19       |
|    | 3.75         | 0.00 | 84.86      | 0.00 | -3.17      | 0.00 | -124.39    |
| 94 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -81.55     | 0.00 | 3.05       | 0.00 | -39.47     |
|    | 1.07         | 0.00 | -34.12     | 0.00 | 3.05       | 0.00 | 14.27      |
|    | 1.96         | 0.00 | 16.16      | 0.00 | 3.05       | 0.00 | 50.20      |
|    | 2.86         | 0.00 | 102.11     | 0.00 | 3.05       | 0.00 | 22.38      |
|    | 3.75         | 0.00 | 201.01     | 0.00 | 3.05       | 0.00 | -28.50     |
| 94 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -194.58    | 0.00 | -3.32      | 0.00 | -120.83    |
|    | 1.07         | 0.00 | -95.68     | 0.00 | -3.32      | 0.00 | -3.01      |
|    | 1.96         | 0.00 | -14.21     | 0.00 | -3.32      | 0.00 | 21.53      |
|    | 2.86         | 0.00 | 33.22      | 0.00 | -3.32      | 0.00 | -14.62     |
|    | 3.75         | 0.00 | 80.64      | 0.00 | -3.32      | 0.00 | -132.33    |
| 95 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -71.21     | 0.00 | 2.932E-02  | 0.00 | -18.79     |
|    | 1.20         | 0.00 | -27.67     | 0.00 | 2.932E-02  | 0.00 | 48.83      |
|    | 2.23         | 0.00 | 16.55      | 0.00 | 2.932E-02  | 0.00 | 99.03      |
|    | 3.25         | 0.00 | 111.30     | 0.00 | 2.932E-02  | 0.00 | 47.70      |
|    | 4.28         | 0.00 | 222.09     | 0.00 | 2.932E-02  | 0.00 | -17.88     |
| 95 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -221.10    | 0.00 | -4.667E-02 | 0.00 | -128.66    |
|    | 1.20         | 0.00 | -110.30    | 0.00 | -4.667E-02 | 0.00 | -1.65      |
|    | 2.23         | 0.00 | -16.49     | 0.00 | -4.667E-02 | 0.00 | 37.56      |
|    | 3.25         | 0.00 | 27.05      | 0.00 | -4.667E-02 | 0.00 | -6.382E-01 |
|    | 4.28         | 0.00 | 70.59      | 0.00 | -4.667E-02 | 0.00 | -129.82    |
| 96 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -82.42     | 0.00 | 3.64       | 0.00 | -28.35     |
|    | 1.03         | 0.00 | -34.44     | 0.00 | 3.64       | 0.00 | 21.32      |
|    | 1.88         | 0.00 | 13.54      | 0.00 | 3.64       | 0.00 | 55.45      |
|    | 2.73         | 0.00 | 105.98     | 0.00 | 3.64       | 0.00 | 16.16      |
|    | 3.58         | 0.00 | 216.33     | 0.00 | 3.64       | 0.00 | -36.40     |
| 96 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -225.07    | 0.00 | -3.78      | 0.00 | -139.57    |
|    | 1.03         | 0.00 | -114.72    | 0.00 | -3.78      | 0.00 | -13.47     |
|    | 1.88         | 0.00 | -17.42     | 0.00 | -3.78      | 0.00 | 20.06      |
|    | 2.73         | 0.00 | 33.21      | 0.00 | -3.78      | 0.00 | -1.69      |
|    | 3.58         | 0.00 | 81.19      | 0.00 | -3.78      | 0.00 | -124.72    |
| 97 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -81.76     | 0.00 | 1.61       | 0.00 | -29.85     |
|    | 1.02         | 0.00 | -34.13     | 0.00 | 1.61       | 0.00 | 27.83      |
|    | 1.86         | 0.00 | 13.42      | 0.00 | 1.61       | 0.00 | 88.40      |
|    | 2.71         | 0.00 | 88.12      | 0.00 | 1.61       | 0.00 | 74.15      |
|    | 3.55         | 0.00 | 193.53     | 0.00 | 1.61       | 0.00 | 21.89      |
| 97 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -238.78    | 0.00 | -4.73      | 0.00 | -129.77    |
|    | 1.02         | 0.00 | -129.24    | 0.00 | -4.73      | 0.00 | 1.62       |
|    | 1.86         | 0.00 | -37.58     | 0.00 | -4.73      | 0.00 | 27.76      |
|    | 2.71         | 0.00 | 15.70      | 0.00 | -4.73      | 0.00 | -3.52      |
|    | 3.55         | 0.00 | 62.69      | 0.00 | -4.73      | 0.00 | -92.33     |
| 98 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -19.42     | 0.00 | 5.964E-01  | 0.00 | 13.45      |
|    | 9.8E-01      | 0.00 | -7.450E-01 | 0.00 | 5.964E-01  | 0.00 | 24.70      |
|    | 1.79         | 0.00 | 19.97      | 0.00 | 5.964E-01  | 0.00 | 21.04      |
|    | 2.59         | 0.00 | 45.46      | 0.00 | 5.964E-01  | 0.00 | 8.19       |
|    | 3.40         | 0.00 | 76.64      | 0.00 | 5.964E-01  | 0.00 | -7.14      |
| 98 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.8E-01      | 0.00 | -59.29     | 0.00 | -5.96      | 0.00 | -39.63     |
|    | 9.8E-01      | 0.00 | -32.44     | 0.00 | -5.96      | 0.00 | -6.32      |
|    | 1.79         | 0.00 | -9.00      | 0.00 | -5.96      | 0.00 | 8.46       |
|    | 2.59         | 0.00 | 9.67       | 0.00 | -5.96      | 0.00 | -7.51      |
|    | 3.40         | 0.00 | 28.35      | 0.00 | -5.96      | 0.00 | -54.43     |

|     |              |      |           |      |            |      |           |
|-----|--------------|------|-----------|------|------------|------|-----------|
| 99  | ENVOLVIG MAX |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -16.95    | 0.00 | 2.97       | 0.00 | 17.73     |
|     | 9.8E-01      | 0.00 | 1.72      | 0.00 | 2.97       | 0.00 | 29.03     |
|     | 1.79         | 0.00 | 24.49     | 0.00 | 2.97       | 0.00 | 22.53     |
|     | 2.59         | 0.00 | 51.83     | 0.00 | 2.97       | 0.00 | 6.83      |
|     | 3.40         | 0.00 | 86.81     | 0.00 | 2.97       | 0.00 | -9.53     |
| 99  | ENVOLVIG MIN |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -58.99    | 0.00 | -5.88      | 0.00 | -36.43    |
|     | 9.8E-01      | 0.00 | -30.96    | 0.00 | -5.88      | 0.00 | -5.61     |
|     | 1.79         | 0.00 | -7.71     | 0.00 | -5.88      | 0.00 | 8.14      |
|     | 2.59         | 0.00 | 10.96     | 0.00 | -5.88      | 0.00 | -10.46    |
|     | 3.40         | 0.00 | 29.63     | 0.00 | -5.88      | 0.00 | -63.26    |
| 100 | ENVOLVIG MAX |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -16.44    | 0.00 | 5.60       | 0.00 | 18.56     |
|     | 9.8E-01      | 0.00 | 2.24      | 0.00 | 5.60       | 0.00 | 29.79     |
|     | 1.79         | 0.00 | 25.39     | 0.00 | 5.60       | 0.00 | 22.67     |
|     | 2.59         | 0.00 | 52.73     | 0.00 | 5.60       | 0.00 | 7.40      |
|     | 3.40         | 0.00 | 87.31     | 0.00 | 5.60       | 0.00 | -8.53     |
| 100 | ENVOLVIG MIN |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -58.49    | 0.00 | -3.25      | 0.00 | -36.51    |
|     | 9.8E-01      | 0.00 | -31.11    | 0.00 | -3.25      | 0.00 | -5.91     |
|     | 1.79         | 0.00 | -8.26     | 0.00 | -3.25      | 0.00 | 8.27      |
|     | 2.59         | 0.00 | 10.42     | 0.00 | -3.25      | 0.00 | -11.15    |
|     | 3.40         | 0.00 | 29.09     | 0.00 | -3.25      | 0.00 | -64.68    |
| 101 | ENVOLVIG MAX |      |           |      |            |      |           |
|     | 2.0E-01      | 0.00 | -53.45    | 0.00 | -6.809E-01 | 0.00 | -22.73    |
|     | 1.55         | 0.00 | -22.19    | 0.00 | -6.809E-01 | 0.00 | 35.10     |
|     | 2.90         | 0.00 | 9.39      | 0.00 | -6.809E-01 | 0.00 | 68.58     |
|     | 4.25         | 0.00 | 61.62     | 0.00 | -6.809E-01 | 0.00 | 30.14     |
|     | 5.60         | 0.00 | 122.65    | 0.00 | -6.809E-01 | 0.00 | -27.19    |
| 101 | ENVOLVIG MIN |      |           |      |            |      |           |
|     | 2.0E-01      | 0.00 | -121.47   | 0.00 | -2.50      | 0.00 | -97.00    |
|     | 1.55         | 0.00 | -60.44    | 0.00 | -2.50      | 0.00 | 4.112E-01 |
|     | 2.90         | 0.00 | -8.82     | 0.00 | -2.50      | 0.00 | 32.99     |
|     | 4.25         | 0.00 | 22.45     | 0.00 | -2.50      | 0.00 | 3.81      |
|     | 5.60         | 0.00 | 53.72     | 0.00 | -2.50      | 0.00 | -97.80    |
| 102 | ENVOLVIG MAX |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -28.09    | 0.00 | 6.19       | 0.00 | -7.11     |
|     | 9.8E-01      | 0.00 | -9.41     | 0.00 | 6.19       | 0.00 | 8.01      |
|     | 1.79         | 0.00 | 9.26      | 0.00 | 6.19       | 0.00 | 20.49     |
|     | 2.59         | 0.00 | 32.74     | 0.00 | 6.19       | 0.00 | 24.43     |
|     | 3.40         | 0.00 | 59.47     | 0.00 | 6.19       | 0.00 | 13.39     |
| 102 | ENVOLVIG MIN |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -76.46    | 0.00 | -3.774E-01 | 0.00 | -54.77    |
|     | 9.8E-01      | 0.00 | -45.49    | 0.00 | -3.774E-01 | 0.00 | -7.82     |
|     | 1.79         | 0.00 | -20.00    | 0.00 | -3.774E-01 | 0.00 | 8.07      |
|     | 2.59         | 0.00 | 6.818E-01 | 0.00 | -3.774E-01 | 0.00 | -6.93     |
|     | 3.40         | 0.00 | 19.36     | 0.00 | -3.774E-01 | 0.00 | -40.63    |
| 103 | ENVOLVIG MAX |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -29.41    | 0.00 | 6.08       | 0.00 | -9.63     |
|     | 9.8E-01      | 0.00 | -10.74    | 0.00 | 6.08       | 0.00 | 6.56      |
|     | 1.79         | 0.00 | 7.94      | 0.00 | 6.08       | 0.00 | 21.83     |
|     | 2.59         | 0.00 | 31.24     | 0.00 | 6.08       | 0.00 | 28.64     |
|     | 3.40         | 0.00 | 59.17     | 0.00 | 6.08       | 0.00 | 17.64     |
| 103 | ENVOLVIG MIN |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -86.63    | 0.00 | -2.89      | 0.00 | -63.68    |
|     | 9.8E-01      | 0.00 | -51.84    | 0.00 | -2.89      | 0.00 | -10.87    |
|     | 1.79         | 0.00 | -24.50    | 0.00 | -2.89      | 0.00 | 7.68      |
|     | 2.59         | 0.00 | -1.80     | 0.00 | -2.89      | 0.00 | -6.24     |
|     | 3.40         | 0.00 | 16.88     | 0.00 | -2.89      | 0.00 | -37.54    |
| 104 | ENVOLVIG MAX |      |           |      |            |      |           |
|     | 1.8E-01      | 0.00 | -28.92    | 0.00 | 2.78       | 0.00 | -8.74     |
|     | 9.8E-01      | 0.00 | -10.24    | 0.00 | 2.78       | 0.00 | 7.05      |
|     | 1.79         | 0.00 | 8.43      | 0.00 | 2.78       | 0.00 | 21.71     |
|     | 2.59         | 0.00 | 31.42     | 0.00 | 2.78       | 0.00 | 28.91     |

|     |              |      |         |      |            |      |            |
|-----|--------------|------|---------|------|------------|------|------------|
|     | 3.40         | 0.00 | 58.86   | 0.00 | 2.78       | 0.00 | 17.95      |
| 104 | ENVOLVIG MIN |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -86.94  | 0.00 | -5.95      | 0.00 | -64.95     |
|     | 9.8E-01      | 0.00 | -52.48  | 0.00 | -5.95      | 0.00 | -11.62     |
|     | 1.79         | 0.00 | -25.14  | 0.00 | -5.95      | 0.00 | 7.78       |
|     | 2.59         | 0.00 | -2.11   | 0.00 | -5.95      | 0.00 | -6.55      |
|     | 3.40         | 0.00 | 16.56   | 0.00 | -5.95      | 0.00 | -37.76     |
| 105 | ENVOLVIG MAX |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -77.18  | 0.00 | 8.28       | 0.00 | -17.51     |
|     | 1.09         | 0.00 | -27.81  | 0.00 | 8.28       | 0.00 | 55.63      |
|     | 2.00         | 0.00 | 16.77   | 0.00 | 8.28       | 0.00 | 103.82     |
|     | 2.91         | 0.00 | 94.56   | 0.00 | 8.28       | 0.00 | 68.46      |
|     | 3.82         | 0.00 | 180.45  | 0.00 | 8.28       | 0.00 | 9.73       |
| 105 | ENVOLVIG MIN |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -221.41 | 0.00 | 5.159E-01  | 0.00 | -92.94     |
|     | 1.09         | 0.00 | -106.37 | 0.00 | 5.159E-01  | 0.00 | 11.97      |
|     | 2.00         | 0.00 | -17.51  | 0.00 | 5.159E-01  | 0.00 | 32.41      |
|     | 2.91         | 0.00 | 23.09   | 0.00 | 5.159E-01  | 0.00 | 8.620E-01  |
|     | 3.82         | 0.00 | 58.06   | 0.00 | 5.159E-01  | 0.00 | -87.48     |
| 106 | ENVOLVIG MAX |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -69.50  | 0.00 | 3.23       | 0.00 | 14.73      |
|     | 1.07         | 0.00 | -20.18  | 0.00 | 3.23       | 0.00 | 71.79      |
|     | 1.96         | 0.00 | 34.13   | 0.00 | 3.23       | 0.00 | 89.46      |
|     | 2.86         | 0.00 | 122.40  | 0.00 | 3.23       | 0.00 | 28.17      |
|     | 3.75         | 0.00 | 225.12  | 0.00 | 3.23       | 0.00 | -37.46     |
| 106 | ENVOLVIG MIN |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -185.75 | 0.00 | -3.27      | 0.00 | -87.45     |
|     | 1.07         | 0.00 | -83.03  | 0.00 | -3.27      | 0.00 | 2.96       |
|     | 1.96         | 0.00 | -9.58   | 0.00 | -3.27      | 0.00 | 33.57      |
|     | 2.86         | 0.00 | 39.74   | 0.00 | -3.27      | 0.00 | 2.71       |
|     | 3.75         | 0.00 | 89.06   | 0.00 | -3.27      | 0.00 | -129.33    |
| 107 | ENVOLVIG MAX |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -85.30  | 0.00 | 3.13       | 0.00 | -41.89     |
|     | 1.07         | 0.00 | -35.98  | 0.00 | 3.13       | 0.00 | 14.38      |
|     | 1.96         | 0.00 | 16.42   | 0.00 | 3.13       | 0.00 | 51.78      |
|     | 2.86         | 0.00 | 106.30  | 0.00 | 3.13       | 0.00 | 22.38      |
|     | 3.75         | 0.00 | 209.02  | 0.00 | 3.13       | 0.00 | -31.13     |
| 107 | ENVOLVIG MIN |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -201.85 | 0.00 | -3.15      | 0.00 | -125.42    |
|     | 1.07         | 0.00 | -99.13  | 0.00 | -3.15      | 0.00 | -2.83      |
|     | 1.96         | 0.00 | -14.11  | 0.00 | -3.15      | 0.00 | 22.41      |
|     | 2.86         | 0.00 | 35.21   | 0.00 | -3.15      | 0.00 | -14.97     |
|     | 3.75         | 0.00 | 84.53   | 0.00 | -3.15      | 0.00 | -138.24    |
| 108 | ENVOLVIG MAX |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -75.43  | 0.00 | 8.140E-03  | 0.00 | -21.05     |
|     | 1.20         | 0.00 | -29.72  | 0.00 | 8.140E-03  | 0.00 | 50.51      |
|     | 2.23         | 0.00 | 16.13   | 0.00 | 8.140E-03  | 0.00 | 105.04     |
|     | 3.25         | 0.00 | 115.01  | 0.00 | 8.140E-03  | 0.00 | 52.39      |
|     | 4.28         | 0.00 | 230.88  | 0.00 | 8.140E-03  | 0.00 | -17.26     |
| 108 | ENVOLVIG MIN |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -232.62 | 0.00 | -1.882E-02 | 0.00 | -134.85    |
|     | 1.20         | 0.00 | -116.74 | 0.00 | -1.882E-02 | 0.00 | -1.02      |
|     | 2.23         | 0.00 | -17.58  | 0.00 | -1.882E-02 | 0.00 | 39.88      |
|     | 3.25         | 0.00 | 28.14   | 0.00 | -1.882E-02 | 0.00 | 5.498E-02  |
|     | 4.28         | 0.00 | 73.85   | 0.00 | -1.882E-02 | 0.00 | -132.72    |
| 109 | ENVOLVIG MAX |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -80.09  | 0.00 | 2.44       | 0.00 | -25.83     |
|     | 1.03         | 0.00 | -30.92  | 0.00 | 2.44       | 0.00 | 21.35      |
|     | 1.88         | 0.00 | 20.32   | 0.00 | 2.44       | 0.00 | 42.39      |
|     | 2.73         | 0.00 | 122.90  | 0.00 | 2.44       | 0.00 | -4.636E-01 |
|     | 3.58         | 0.00 | 236.51  | 0.00 | 2.44       | 0.00 | -55.96     |
| 109 | ENVOLVIG MIN |      |         |      |            |      |            |
|     | 1.8E-01      | 0.00 | -217.93 | 0.00 | -2.35      | 0.00 | -134.95    |
|     | 1.03         | 0.00 | -104.32 | 0.00 | -2.35      | 0.00 | -16.60     |
|     | 1.88         | 0.00 | -8.47   | 0.00 | -2.35      | 0.00 | 13.24      |
|     | 2.73         | 0.00 | 40.70   | 0.00 | -2.35      | 0.00 | -14.94     |

|     |               |      |           |      |            |      |         |
|-----|---------------|------|-----------|------|------------|------|---------|
|     | 3.58          | 0.00 | 89.87     | 0.00 | -2.35      | 0.00 | -166.53 |
| 110 | ENNVOLVIG MAX |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -4.09     | 0.00 | 1.79       | 0.00 | 8.54    |
|     | 7.8E-01       | 0.00 | 9.81      | 0.00 | 1.79       | 0.00 | 6.83    |
|     | 1.38          | 0.00 | 23.71     | 0.00 | 1.79       | 0.00 | -1.35   |
|     | 1.98          | 0.00 | 43.87     | 0.00 | 1.79       | 0.00 | 6.85    |
|     | 2.58          | 0.00 | 64.21     | 0.00 | 1.79       | 0.00 | 9.34    |
| 110 | ENNVOLVIG MIN |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -65.89    | 0.00 | -1.37      | 0.00 | -61.42  |
|     | 7.8E-01       | 0.00 | -45.54    | 0.00 | -1.37      | 0.00 | -28.00  |
|     | 1.38          | 0.00 | -25.20    | 0.00 | -1.37      | 0.00 | -8.65   |
|     | 1.98          | 0.00 | -11.11    | 0.00 | -1.37      | 0.00 | -26.23  |
|     | 2.58          | 0.00 | 2.78      | 0.00 | -1.37      | 0.00 | -58.64  |
| 111 | ENNVOLVIG MAX |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -77.37    | 0.00 | -4.714E-01 | 0.00 | -17.86  |
|     | 1.09          | 0.00 | -27.99    | 0.00 | -4.714E-01 | 0.00 | 55.36   |
|     | 2.00          | 0.00 | 16.58     | 0.00 | -4.714E-01 | 0.00 | 103.08  |
|     | 2.91          | 0.00 | 95.08     | 0.00 | -4.714E-01 | 0.00 | 66.94   |
|     | 3.82          | 0.00 | 180.97    | 0.00 | -4.714E-01 | 0.00 | 8.20    |
| 111 | ENNVOLVIG MIN |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -220.89   | 0.00 | -8.32      | 0.00 | -92.73  |
|     | 1.09          | 0.00 | -105.85   | 0.00 | -8.32      | 0.00 | 11.91   |
|     | 2.00          | 0.00 | -16.77    | 0.00 | -8.32      | 0.00 | 32.14   |
|     | 2.91          | 0.00 | 23.60     | 0.00 | -8.32      | 0.00 | 1.01    |
|     | 3.82          | 0.00 | 58.57     | 0.00 | -8.32      | 0.00 | -87.83  |
| 112 | ENNVOLVIG MAX |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -20.08    | 0.00 | -2.985E-04 | 0.00 | 12.09   |
|     | 9.7E-01       | 0.00 | -1.62     | 0.00 | -2.985E-04 | 0.00 | 23.50   |
|     | 1.77          | 0.00 | 18.58     | 0.00 | -2.985E-04 | 0.00 | 19.97   |
|     | 2.57          | 0.00 | 43.77     | 0.00 | -2.985E-04 | 0.00 | 7.32    |
|     | 3.36          | 0.00 | 74.43     | 0.00 | -2.985E-04 | 0.00 | -7.22   |
| 112 | ENNVOLVIG MIN |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -59.92    | 0.00 | -6.71      | 0.00 | -41.19  |
|     | 9.7E-01       | 0.00 | -32.88    | 0.00 | -6.71      | 0.00 | -7.71   |
|     | 1.77          | 0.00 | -9.43     | 0.00 | -6.71      | 0.00 | 7.16    |
|     | 2.57          | 0.00 | 9.02      | 0.00 | -6.71      | 0.00 | -6.11   |
|     | 3.36          | 0.00 | 27.48     | 0.00 | -6.71      | 0.00 | -51.02  |
| 113 | ENNVOLVIG MAX |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -17.64    | 0.00 | 2.73       | 0.00 | 16.57   |
|     | 9.7E-01       | 0.00 | 8.117E-01 | 0.00 | 2.73       | 0.00 | 28.14   |
|     | 1.77          | 0.00 | 22.87     | 0.00 | 2.73       | 0.00 | 22.10   |
|     | 2.57          | 0.00 | 49.89     | 0.00 | 2.73       | 0.00 | 6.17    |
|     | 3.36          | 0.00 | 84.30     | 0.00 | 2.73       | 0.00 | -9.44   |
| 113 | ENNVOLVIG MIN |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -59.81    | 0.00 | -6.51      | 0.00 | -37.77  |
|     | 9.7E-01       | 0.00 | -31.52    | 0.00 | -6.51      | 0.00 | -6.75   |
|     | 1.77          | 0.00 | -8.11     | 0.00 | -6.51      | 0.00 | 7.06    |
|     | 2.57          | 0.00 | 10.35     | 0.00 | -6.51      | 0.00 | -8.31   |
|     | 3.36          | 0.00 | 28.81     | 0.00 | -6.51      | 0.00 | -58.83  |
| 114 | ENNVOLVIG MAX |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -17.40    | 0.00 | 6.36       | 0.00 | 16.84   |
|     | 9.7E-01       | 0.00 | 1.06      | 0.00 | 6.36       | 0.00 | 28.49   |
|     | 1.77          | 0.00 | 23.39     | 0.00 | 6.36       | 0.00 | 22.18   |
|     | 2.57          | 0.00 | 50.41     | 0.00 | 6.36       | 0.00 | 6.67    |
|     | 3.36          | 0.00 | 84.51     | 0.00 | 6.36       | 0.00 | -8.57   |
| 114 | ENNVOLVIG MIN |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -59.59    | 0.00 | -2.64      | 0.00 | -37.89  |
|     | 9.7E-01       | 0.00 | -31.71    | 0.00 | -2.64      | 0.00 | -6.99   |
|     | 1.77          | 0.00 | -8.57     | 0.00 | -2.64      | 0.00 | 7.19    |
|     | 2.57          | 0.00 | 9.89      | 0.00 | -2.64      | 0.00 | -8.79   |
|     | 3.36          | 0.00 | 28.34     | 0.00 | -2.64      | 0.00 | -59.72  |
| 115 | ENNVOLVIG MAX |      |           |      |            |      |         |
|     | 1.8E-01       | 0.00 | -52.32    | 0.00 | 5.00       | 0.00 | -25.02  |
|     | 1.51          | 0.00 | -21.49    | 0.00 | 5.00       | 0.00 | 29.84   |
|     | 2.84          | 0.00 | 9.35      | 0.00 | 5.00       | 0.00 | 70.57   |



|     |              |      |         |      |       |      |            |
|-----|--------------|------|---------|------|-------|------|------------|
|     | 4.17         | 0.00 | 56.49   | 0.00 | 5.00  | 0.00 | 45.24      |
|     | 5.50         | 0.00 | 116.68  | 0.00 | 5.00  | 0.00 | -8.14      |
| 115 | ENVOLVIG MIN |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -124.06 | 0.00 | 1.67  | 0.00 | -99.93     |
|     | 1.51         | 0.00 | -63.88  | 0.00 | 1.67  | 0.00 | 2.82       |
|     | 2.84         | 0.00 | -13.78  | 0.00 | 1.67  | 0.00 | 31.71      |
|     | 4.17         | 0.00 | 18.16   | 0.00 | 1.67  | 0.00 | -7.747E-01 |
|     | 5.50         | 0.00 | 49.00   | 0.00 | 1.67  | 0.00 | -93.20     |
| 116 | ENVOLVIG MAX |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -24.24  | 0.00 | 3.95  | 0.00 | -3.26      |
|     | 9.7E-01      | 0.00 | -5.79   | 0.00 | 3.95  | 0.00 | 9.03       |
|     | 1.77         | 0.00 | 12.67   | 0.00 | 3.95  | 0.00 | 23.66      |
|     | 2.57         | 0.00 | 35.87   | 0.00 | 3.95  | 0.00 | 32.61      |
|     | 3.36         | 0.00 | 61.06   | 0.00 | 3.95  | 0.00 | 24.54      |
| 116 | ENVOLVIG MIN |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -76.02  | 0.00 | -2.73 | 0.00 | -54.75     |
|     | 9.7E-01      | 0.00 | -49.14  | 0.00 | -2.73 | 0.00 | -5.88      |
|     | 1.77         | 0.00 | -23.95  | 0.00 | -2.73 | 0.00 | 5.87       |
|     | 2.57         | 0.00 | -3.49   | 0.00 | -2.73 | 0.00 | -11.49     |
|     | 3.36         | 0.00 | 14.96   | 0.00 | -2.73 | 0.00 | -46.60     |
| 117 | ENVOLVIG MAX |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -24.89  | 0.00 | 4.33  | 0.00 | -5.01      |
|     | 9.7E-01      | 0.00 | -6.43   | 0.00 | 4.33  | 0.00 | 7.47       |
|     | 1.77         | 0.00 | 12.02   | 0.00 | 4.33  | 0.00 | 24.96      |
|     | 2.57         | 0.00 | 35.64   | 0.00 | 4.33  | 0.00 | 36.31      |
|     | 3.36         | 0.00 | 62.66   | 0.00 | 4.33  | 0.00 | 28.80      |
| 117 | ENVOLVIG MIN |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -84.81  | 0.00 | -4.23 | 0.00 | -62.33     |
|     | 9.7E-01      | 0.00 | -54.77  | 0.00 | -4.23 | 0.00 | -7.92      |
|     | 1.77         | 0.00 | -27.75  | 0.00 | -4.23 | 0.00 | 5.24       |
|     | 2.57         | 0.00 | -5.90   | 0.00 | -4.23 | 0.00 | -11.69     |
|     | 3.36         | 0.00 | 12.56   | 0.00 | -4.23 | 0.00 | -46.00     |
| 118 | ENVOLVIG MAX |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -24.17  | 0.00 | 4.33  | 0.00 | -3.84      |
|     | 9.7E-01      | 0.00 | -5.71   | 0.00 | 4.33  | 0.00 | 8.06       |
|     | 1.77         | 0.00 | 12.75   | 0.00 | 4.33  | 0.00 | 25.11      |
|     | 2.57         | 0.00 | 36.21   | 0.00 | 4.33  | 0.00 | 37.13      |
|     | 3.36         | 0.00 | 63.23   | 0.00 | 4.33  | 0.00 | 30.09      |
| 118 | ENVOLVIG MIN |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -84.99  | 0.00 | -4.25 | 0.00 | -63.53     |
|     | 9.7E-01      | 0.00 | -55.62  | 0.00 | -4.25 | 0.00 | -8.45      |
|     | 1.77         | 0.00 | -28.60  | 0.00 | -4.25 | 0.00 | 5.25       |
|     | 2.57         | 0.00 | -6.58   | 0.00 | -4.25 | 0.00 | -12.26     |
|     | 3.36         | 0.00 | 11.88   | 0.00 | -4.25 | 0.00 | -46.95     |
| 119 | ENVOLVIG MAX |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -29.15  | 0.00 | 2.08  | 0.00 | 19.22      |
|     | 1.07         | 0.00 | -3.84   | 0.00 | 2.08  | 0.00 | 39.55      |
|     | 1.96         | 0.00 | 23.01   | 0.00 | 2.08  | 0.00 | 38.81      |
|     | 2.86         | 0.00 | 59.73   | 0.00 | 2.08  | 0.00 | 16.98      |
|     | 3.75         | 0.00 | 105.37  | 0.00 | 2.08  | 0.00 | -7.86      |
| 119 | ENVOLVIG MIN |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -90.46  | 0.00 | -3.07 | 0.00 | -63.96     |
|     | 1.07         | 0.00 | -48.55  | 0.00 | -3.07 | 0.00 | -9.76      |
|     | 1.96         | 0.00 | -13.36  | 0.00 | -3.07 | 0.00 | 13.49      |
|     | 2.86         | 0.00 | 11.95   | 0.00 | -3.07 | 0.00 | -4.43      |
|     | 3.75         | 0.00 | 37.26   | 0.00 | -3.07 | 0.00 | -71.36     |
| 120 | ENVOLVIG MAX |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -38.92  | 0.00 | 2.93  | 0.00 | -11.77     |
|     | 1.07         | 0.00 | -13.61  | 0.00 | 2.93  | 0.00 | 12.75      |
|     | 1.96         | 0.00 | 12.12   | 0.00 | 2.93  | 0.00 | 28.81      |
|     | 2.86         | 0.00 | 48.84   | 0.00 | 2.93  | 0.00 | 21.62      |
|     | 3.75         | 0.00 | 96.19   | 0.00 | 2.93  | 0.00 | 9.220E-01  |
| 120 | ENVOLVIG MIN |      |         |      |       |      |            |
|     | 1.8E-01      | 0.00 | -99.64  | 0.00 | -1.89 | 0.00 | -67.04     |
|     | 1.07         | 0.00 | -51.43  | 0.00 | -1.89 | 0.00 | -5.71      |
|     | 1.96         | 0.00 | -15.13  | 0.00 | -1.89 | 0.00 | 12.56      |

|     |              |        |           |            |            |            |        |
|-----|--------------|--------|-----------|------------|------------|------------|--------|
|     | 2.86         | 0.00   | 10.18     | 0.00       | -1.89      | 0.00       | -9.20  |
|     | 3.75         | 0.00   | 35.49     | 0.00       | -1.89      | 0.00       | -68.97 |
| 121 | ENVOLVIG MAX |        |           |            |            |            |        |
|     | 1.8E-01      | 0.00   | -22.64    | 0.00       | 1.012E-01  | 0.00       | 5.20   |
|     | 1.20         | 0.00   | -4.48     | 0.00       | 1.012E-01  | 0.00       | 24.83  |
|     | 2.23         | 0.00   | 13.78     | 0.00       | 1.012E-01  | 0.00       | 37.27  |
|     | 3.25         | 0.00   | 47.36     | 0.00       | 1.012E-01  | 0.00       | 25.78  |
|     | 4.28         | 0.00   | 88.96     | 0.00       | 1.012E-01  | 0.00       | 7.39   |
| 121 | ENVOLVIG MIN |        |           |            |            |            |        |
|     | 1.8E-01      | 0.00   | -90.10    | 0.00       | -4.997E-02 | 0.00       | -70.84 |
|     | 1.20         | 0.00   | -48.21    | 0.00       | -4.997E-02 | 0.00       | -9.96  |
|     | 2.23         | 0.00   | -14.73    | 0.00       | -4.997E-02 | 0.00       | 14.28  |
|     | 3.25         | 0.00   | 3.44      | 0.00       | -4.997E-02 | 0.00       | -8.98  |
|     | 4.28         | 0.00   | 21.61     | 0.00       | -4.997E-02 | 0.00       | -69.16 |
| 122 | ENVOLVIG MAX |        |           |            |            |            |        |
|     | 1.8E-01      | 0.00   | -32.96    | 0.00       | 2.55       | 0.00       | 2.09   |
|     | 1.03         | 0.00   | -9.22     | 0.00       | 2.55       | 0.00       | 20.82  |
|     | 1.88         | 0.00   | 14.52     | 0.00       | 2.55       | 0.00       | 28.27  |
|     | 2.73         | 0.00   | 51.83     | 0.00       | 2.55       | 0.00       | 12.76  |
|     | 3.58         | 0.00   | 101.34    | 0.00       | 2.55       | 0.00       | -8.33  |
| 122 | ENVOLVIG MIN |        |           |            |            |            |        |
|     | 1.8E-01      | 0.00   | -101.12   | 0.00       | -2.95      | 0.00       | -70.59 |
|     | 1.03         | 0.00   | -51.67    | 0.00       | -2.95      | 0.00       | -11.34 |
|     | 1.88         | 0.00   | -13.71    | 0.00       | -2.95      | 0.00       | 9.84   |
|     | 2.73         | 0.00   | 10.69     | 0.00       | -2.95      | 0.00       | -4.68  |
|     | 3.58         | 0.00   | 34.43     | 0.00       | -2.95      | 0.00       | -62.95 |
| 123 | ENVOLVIG MAX |        |           |            |            |            |        |
|     | 1.8E-01      | 0.00   | -29.71    | 0.00       | 4.91       | 0.00       | -1.70  |
|     | 1.02         | 0.00   | -6.15     | 0.00       | 4.91       | 0.00       | 16.40  |
|     | 1.86         | 0.00   | 17.29     | 0.00       | 4.91       | 0.00       | 36.65  |
|     | 2.71         | 0.00   | 51.21     | 0.00       | 4.91       | 0.00       | 43.06  |
|     | 3.55         | 0.00   | 86.31     | 0.00       | 4.91       | 0.00       | 28.39  |
| 123 | ENVOLVIG MIN |        |           |            |            |            |        |
|     | 1.8E-01      | 0.00   | -107.58   | 0.00       | 5.768E-02  | 0.00       | -72.23 |
|     | 1.02         | 0.00   | -63.98    | 0.00       | 5.768E-02  | 0.00       | -5.32  |
|     | 1.86         | 0.00   | -26.67    | 0.00       | 5.768E-02  | 0.00       | 8.69   |
|     | 2.71         | 0.00   | -1.72     | 0.00       | 5.768E-02  | 0.00       | -15.61 |
|     | 3.55         | 0.00   | 20.72     | 0.00       | 5.768E-02  | 0.00       | -66.85 |
| 141 | ENVOLVIG MAX |        |           |            |            |            |        |
|     | 1.8E-01      | -9.07  | -20.37    | 8.988E-02  | 4.570E-01  | 4.053E-01  | -10.75 |
|     | 2.05         | -9.07  | -9.85     | 8.988E-02  | 4.570E-01  | 2.368E-01  | 24.50  |
|     | 3.93         | -9.07  | 3.32      | 8.988E-02  | 4.570E-01  | 7.389E-02  | 44.77  |
|     | 5.80         | -9.07  | 25.39     | 8.988E-02  | 4.570E-01  | 7.618E-01  | 19.06  |
|     | 7.68         | -9.07  | 45.77     | 8.988E-02  | 4.570E-01  | 1.67       | -17.99 |
| 141 | ENVOLVIG MIN |        |           |            |            |            |        |
|     | 1.8E-01      | -23.63 | -42.88    | -4.840E-01 | 2.303E-01  | -1.96      | -37.34 |
|     | 2.05         | -23.63 | -22.49    | -4.840E-01 | 2.303E-01  | -1.05      | 7.81   |
|     | 3.93         | -23.63 | -1.50     | -4.840E-01 | 2.303E-01  | -1.514E-01 | 22.98  |
|     | 5.80         | -23.63 | 11.31     | -4.840E-01 | 2.303E-01  | -1.003E-01 | 6.84   |
|     | 7.68         | -23.63 | 21.83     | -4.840E-01 | 2.303E-01  | -2.688E-01 | -48.21 |
| 142 | ENVOLVIG MAX |        |           |            |            |            |        |
|     | 1.8E-01      | -5.46  | -2.49     | 4.343E-01  | 2.910E-02  | 5.917E-01  | -6.24  |
|     | 1.20         | -5.46  | 7.733E-01 | 4.343E-01  | 2.910E-02  | 1.915E-01  | -5.36  |
|     | 2.23         | -5.46  | 4.03      | 4.343E-01  | 2.910E-02  | -1.716E-01 | -7.83  |
|     | 3.25         | -5.46  | 8.74      | 4.343E-01  | 2.910E-02  | -2.699E-02 | -3.99  |
|     | 4.28         | -5.46  | 14.17     | 4.343E-01  | 2.910E-02  | 2.714E-01  | -3.35  |
| 142 | ENVOLVIG MIN |        |           |            |            |            |        |
|     | 1.8E-01      | -14.44 | -17.08    | -2.911E-01 | -7.864E-02 | -1.19      | -34.07 |
|     | 1.20         | -14.44 | -11.66    | -2.911E-01 | -7.864E-02 | -9.346E-01 | -19.33 |
|     | 2.23         | -14.44 | -6.23     | -2.911E-01 | -7.864E-02 | -7.857E-01 | -13.45 |
|     | 3.25         | -14.44 | -2.26     | -2.911E-01 | -7.864E-02 | -1.01      | -16.19 |
|     | 4.28         | -14.44 | 1.00      | -2.911E-01 | -7.864E-02 | -1.45      | -27.93 |
| 143 | ENVOLVIG MAX |        |           |            |            |            |        |
|     | 1.8E-01      | -8.04  | -18.84    | 5.939E-01  | -1.318E-01 | 2.00       | -13.13 |
|     | 1.96         | -8.04  | -9.54     | 5.939E-01  | -1.318E-01 | 9.621E-01  | 16.71  |

|     |              |        |        |            |            |            |            |
|-----|--------------|--------|--------|------------|------------|------------|------------|
|     | 3.75         | -8.04  | 1.93   | 5.939E-01  | -1.318E-01 | 6.862E-02  | 36.80      |
|     | 5.54         | -8.04  | 19.68  | 5.939E-01  | -1.318E-01 | 4.838E-02  | 19.80      |
|     | 7.33         | -8.04  | 36.73  | 5.939E-01  | -1.318E-01 | 3.301E-02  | -7.78      |
| 143 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -20.68 | -38.22 | 8.603E-03  | -6.180E-01 | 7.106E-02  | -36.88     |
|     | 1.96         | -20.68 | -21.17 | 8.603E-03  | -6.180E-01 | 3.216E-02  | 5.92       |
|     | 3.75         | -20.68 | -2.96  | 8.603E-03  | -6.180E-01 | -1.514E-01 | 19.68      |
|     | 5.54         | -20.68 | 8.59   | 8.603E-03  | -6.180E-01 | -1.21      | 5.66       |
|     | 7.33         | -20.68 | 17.89  | 8.603E-03  | -6.180E-01 | -2.27      | -33.24     |
| 144 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -7.71  | -14.58 | 8.742E-01  | -2.20      | 2.63       | 7.462E-01  |
|     | 1.73         | -7.71  | -4.54  | 8.742E-01  | -3.049E-01 | 1.27       | 18.09      |
|     | 3.29         | -7.71  | 6.00   | 8.742E-01  | 1.62       | 2.912E-02  | 23.80      |
|     | 4.85         | -7.71  | 20.46  | 8.742E-01  | 4.14       | 3.123E-01  | 8.39       |
|     | 6.40         | -7.71  | 37.49  | 8.742E-01  | 6.67       | 5.957E-01  | -13.87     |
| 144 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -13.99 | -30.61 | -1.820E-01 | -3.44      | -5.379E-01 | -25.37     |
|     | 1.73         | -13.99 | -13.61 | -1.820E-01 | -1.56      | -2.545E-01 | 3.31       |
|     | 3.29         | -13.99 | -1.34  | -1.820E-01 | 6.601E-02  | -9.106E-02 | 13.21      |
|     | 4.85         | -13.99 | 8.70   | -1.820E-01 | 1.69       | -1.45      | -1.51      |
|     | 6.40         | -13.99 | 18.74  | -1.820E-01 | 3.32       | -2.81      | -39.93     |
| 145 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -4.82  | -7.65  | 9.912E-01  | 1.055E-01  | 3.21       | 5.49       |
|     | 1.73         | -4.82  | -1.37  | 9.912E-01  | 1.055E-01  | 1.66       | 14.22      |
|     | 3.29         | -4.82  | 5.18   | 9.912E-01  | 1.055E-01  | 1.274E-01  | 15.69      |
|     | 4.85         | -4.82  | 13.56  | 9.912E-01  | 1.055E-01  | 3.175E-01  | 8.01       |
|     | 6.40         | -4.82  | 24.23  | 9.912E-01  | 1.055E-01  | 7.109E-01  | -3.47      |
| 145 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -10.02 | -20.49 | -2.526E-01 | -2.69      | -8.626E-01 | -22.66     |
|     | 1.73         | -10.02 | -10.76 | -2.526E-01 | -2.69      | -4.692E-01 | -1.09      |
|     | 3.29         | -10.02 | -2.63  | -2.526E-01 | -2.69      | -8.331E-02 | 7.91       |
|     | 4.85         | -10.02 | 3.65   | -2.526E-01 | -2.69      | -1.42      | -2.80      |
|     | 6.40         | -10.02 | 9.94   | -2.526E-01 | -2.69      | -2.97      | -29.56     |
| 146 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -4.76  | -7.76  | -5.837E-02 | 1.94       | 2.389E-02  | 5.14       |
|     | 1.73         | -4.76  | -1.48  | -5.837E-02 | 1.94       | 1.148E-01  | 14.02      |
|     | 3.29         | -4.76  | 5.03   | -5.837E-02 | 1.94       | 2.057E-01  | 15.79      |
|     | 4.85         | -4.76  | 13.42  | -5.837E-02 | 1.94       | 1.68       | 8.12       |
|     | 6.40         | -4.76  | 24.15  | -5.837E-02 | 1.94       | 3.47       | -3.52      |
| 146 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -10.13 | -20.58 | -1.16      | -2.595E-01 | -3.77      | -22.47     |
|     | 1.73         | -10.13 | -10.74 | -1.16      | -2.595E-01 | -1.96      | -8.933E-01 |
|     | 3.29         | -10.13 | -2.58  | -1.16      | -2.595E-01 | -1.487E-01 | 8.02       |
|     | 4.85         | -10.13 | 3.71   | -1.16      | -2.595E-01 | 2.966E-01  | -2.64      |
|     | 6.40         | -10.13 | 9.99   | -1.16      | -2.595E-01 | 3.875E-01  | -29.09     |
| 147 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -6.58  | -15.89 | 2.110E-02  | 3.80       | 2.524E-02  | -2.55      |
|     | 1.73         | -6.58  | -5.88  | 2.110E-02  | 1.96       | -7.489E-03 | 16.69      |
|     | 3.28         | -6.58  | 4.22   | 2.110E-02  | 3.404E-01  | -3.762E-02 | 26.21      |
|     | 4.83         | -6.58  | 18.72  | 2.110E-02  | -1.28      | 1.31       | 11.89      |
|     | 6.38         | -6.58  | 35.68  | 2.110E-02  | -2.90      | 2.73       | -10.82     |
| 147 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -15.98 | -32.14 | -9.160E-01 | 2.27       | -2.95      | -25.01     |
|     | 1.73         | -15.98 | -15.19 | -9.160E-01 | 3.839E-01  | -1.53      | 4.66       |
|     | 3.28         | -15.98 | -1.67  | -9.160E-01 | -1.51      | -1.300E-01 | 15.01      |
|     | 4.83         | -15.98 | 8.33   | -9.160E-01 | -3.75      | -7.296E-02 | 1.56       |
|     | 6.38         | -15.98 | 18.33  | -9.160E-01 | -6.27      | -1.057E-01 | -32.54     |
| 148 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -14.42 | -25.11 | 1.177E-01  | 1.392E-02  | 4.222E-01  | -10.91     |
|     | 2.05         | -14.42 | -11.43 | 1.177E-01  | 1.392E-02  | 2.015E-01  | 34.10      |
|     | 3.93         | -14.42 | 4.85   | 1.177E-01  | 1.392E-02  | 3.092E-02  | 65.07      |
|     | 5.80         | -14.42 | 32.93  | 1.177E-01  | 1.392E-02  | 9.810E-01  | 34.61      |
|     | 7.68         | -14.42 | 62.14  | 1.177E-01  | 1.392E-02  | 1.93       | -8.23      |
| 148 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -32.74 | -61.82 | -5.071E-01 | -9.338E-02 | -1.87      | -58.35     |
|     | 2.05         | -32.74 | -32.61 | -5.071E-01 | -9.338E-02 | -9.207E-01 | 7.20       |

|     |              |        |        |            |            |            |            |
|-----|--------------|--------|--------|------------|------------|------------|------------|
|     | 3.93         | -32.74 | -4.92  | -5.071E-01 | -9.338E-02 | -1.991E-02 | 30.51      |
|     | 5.80         | -32.74 | 11.04  | -5.071E-01 | -9.338E-02 | -2.399E-01 | 6.69       |
|     | 7.68         | -32.74 | 24.72  | -5.071E-01 | -9.338E-02 | -4.606E-01 | -60.49     |
| 149 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -14.40 | -22.61 | 7.875E-01  | 7.737E-01  | 2.71       | -5.90      |
|     | 1.96         | -14.40 | -9.61  | 7.875E-01  | 7.737E-01  | 1.30       | 30.40      |
|     | 3.74         | -14.40 | 5.55   | 7.875E-01  | 7.737E-01  | -4.286E-02 | 56.69      |
|     | 5.52         | -14.40 | 31.18  | 7.875E-01  | 7.737E-01  | 4.055E-02  | 30.87      |
|     | 7.30         | -14.40 | 58.99  | 7.875E-01  | 7.737E-01  | 2.333E-01  | -7.82      |
| 149 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -33.46 | -58.86 | -1.082E-01 | 3.600E-01  | -5.377E-01 | -57.38     |
|     | 1.96         | -33.46 | -31.10 | -1.082E-01 | 3.600E-01  | -3.450E-01 | 5.08       |
|     | 3.74         | -33.46 | -5.20  | -1.082E-01 | 3.600E-01  | -2.094E-01 | 27.05      |
|     | 5.52         | -33.46 | 10.30  | -1.082E-01 | 3.600E-01  | -1.50      | 3.32       |
|     | 7.30         | -33.46 | 23.33  | -1.082E-01 | 3.600E-01  | -2.91      | -58.15     |
| 150 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 2.0E-01      | -9.50  | -15.55 | -2.582E-01 | 6.62       | 8.117E-02  | -11.22     |
|     | 1.55         | -9.50  | -6.85  | -2.582E-01 | 4.49       | 5.080E-01  | 3.90       |
|     | 2.90         | -9.50  | 1.86   | -2.582E-01 | 2.85       | 1.93       | 10.67      |
|     | 4.25         | -9.50  | 12.86  | -2.582E-01 | 1.20       | 3.53       | 5.99       |
|     | 5.60         | -9.50  | 27.62  | -2.582E-01 | -4.417E-01 | 5.14       | -5.86      |
| 150 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 2.0E-01      | -25.62 | -31.41 | -1.19      | 2.82       | -1.47      | -34.64     |
|     | 1.55         | -25.62 | -16.65 | -1.19      | 1.41       | -5.267E-02 | -6.16      |
|     | 2.90         | -25.62 | -4.50  | -1.19      | -2.296E-04 | 6.214E-01  | 6.02       |
|     | 4.25         | -25.62 | 4.41   | -1.19      | -1.41      | 1.07       | -1.12      |
|     | 5.60         | -25.62 | 13.11  | -1.19      | -2.82      | 1.42       | -25.74     |
| 151 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -7.65  | -19.34 | 5.626E-02  | -3.51      | 8.563E-02  | -15.90     |
|     | 1.88         | -7.65  | -8.38  | 5.626E-02  | -1.73      | 9.060E-02  | 8.71       |
|     | 3.58         | -7.65  | 2.64   | 5.626E-02  | 5.101E-02  | 9.558E-02  | 21.49      |
|     | 5.28         | -7.65  | 18.96  | 5.626E-02  | 2.76       | 1.053E-01  | 7.84       |
|     | 6.98         | -7.65  | 37.54  | 5.626E-02  | 5.52       | 1.163E-01  | -17.35     |
| 151 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -14.93 | -36.79 | -6.435E-03 | -5.53      | -4.305E-01 | -40.43     |
|     | 1.88         | -14.93 | -18.21 | -6.435E-03 | -2.76      | -5.202E-01 | -2.802E-01 |
|     | 3.58         | -14.93 | -2.13  | -6.435E-03 | -6.325E-02 | -6.099E-01 | 12.58      |
|     | 5.28         | -14.93 | 8.83   | -6.435E-03 | 1.71       | -7.043E-01 | -1.13      |
|     | 6.98         | -14.93 | 19.79  | -6.435E-03 | 3.49       | -8.000E-01 | -42.97     |
| 152 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -5.22  | -11.00 | 6.028E-02  | 7.774E-02  | 1.352E-01  | -6.08      |
|     | 1.88         | -5.22  | -4.13  | 6.028E-02  | 7.774E-02  | 1.345E-01  | 7.67       |
|     | 3.58         | -5.22  | 2.76   | 6.028E-02  | 7.774E-02  | 1.338E-01  | 14.41      |
|     | 5.28         | -5.22  | 12.42  | 6.028E-02  | 7.774E-02  | 1.341E-01  | 7.22       |
|     | 6.98         | -5.22  | 24.62  | 6.028E-02  | 7.774E-02  | 1.361E-01  | -6.89      |
| 152 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -10.74 | -24.20 | -1.162E-03 | -5.362E-02 | -4.837E-01 | -28.56     |
|     | 1.88         | -10.74 | -11.99 | -1.162E-03 | -5.362E-02 | -5.835E-01 | -1.97      |
|     | 3.58         | -10.74 | -2.46  | -1.162E-03 | -5.362E-02 | -6.834E-01 | 7.96       |
|     | 5.28         | -10.74 | 4.40   | -1.162E-03 | -5.362E-02 | -7.841E-01 | -2.51      |
|     | 6.98         | -10.74 | 11.26  | -1.162E-03 | -5.362E-02 | -8.866E-01 | -29.73     |
| 153 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -5.05  | -11.08 | 3.678E-01  | 1.03       | 1.29       | -6.33      |
|     | 1.88         | -5.05  | -4.22  | 3.678E-01  | 1.03       | 7.688E-01  | 7.59       |
|     | 3.58         | -5.05  | 2.67   | 3.678E-01  | 1.03       | 7.191E-01  | 14.44      |
|     | 5.28         | -5.05  | 12.39  | 3.678E-01  | 1.03       | 9.985E-01  | 7.15       |
|     | 6.98         | -5.05  | 24.59  | 3.678E-01  | 1.03       | 1.28       | -7.03      |
| 153 | ENVOLVIG MIN |        |        |            |            |            |            |
|     | 1.8E-01      | -10.47 | -24.23 | -1.643E-01 | -1.068E-02 | -1.560E-02 | -28.45     |
|     | 1.88         | -10.47 | -12.03 | -1.643E-01 | -1.068E-02 | 1.586E-01  | -1.94      |
|     | 3.58         | -10.47 | -2.43  | -1.643E-01 | -1.068E-02 | -1.376E-01 | 8.00       |
|     | 5.28         | -10.47 | 4.43   | -1.643E-01 | -1.068E-02 | -7.628E-01 | -2.33      |
|     | 6.98         | -10.47 | 11.29  | -1.643E-01 | -1.068E-02 | -1.39      | -29.40     |
| 154 | ENVOLVIG MAX |        |        |            |            |            |            |
|     | 1.8E-01      | -7.35  | -14.07 | 16.40      | -1.81      | 4.47       | -1.03      |

|     |              |        |           |            |            |            |            |
|-----|--------------|--------|-----------|------------|------------|------------|------------|
|     | 4.8E-01      | -7.35  | -12.14    | 16.40      | -2.12      | 4.971E-01  | 2.90       |
|     | 7.8E-01      | -7.35  | -10.20    | 16.40      | -2.43      | -1.60      | 8.58       |
|     | 1.08         | -7.35  | -8.27     | 16.40      | -2.75      | -3.56      | 16.43      |
|     | 1.38         | -7.35  | -6.34     | 16.40      | -3.06      | -5.52      | 25.76      |
| 154 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | -19.78 | -42.57    | 6.39       | -22.18     | 1.15       | -21.59     |
|     | 4.8E-01      | -19.78 | -39.29    | 6.39       | -22.55     | -1.21      | -10.07     |
|     | 7.8E-01      | -19.78 | -36.01    | 6.39       | -22.91     | -5.37      | -1.61      |
|     | 1.08         | -19.78 | -32.73    | 6.39       | -23.28     | -10.29     | 5.37       |
|     | 1.38         | -19.78 | -29.81    | 6.39       | -23.65     | -15.21     | 10.28      |
| 155 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 1.8E-01      | -14.47 | -24.93    | 4.442E-01  | 1.307E-01  | 1.63       | -10.34     |
|     | 2.05         | -14.47 | -11.25    | 4.442E-01  | 1.307E-01  | 7.975E-01  | 34.10      |
|     | 3.93         | -14.47 | 5.03      | 4.442E-01  | 1.307E-01  | 1.559E-02  | 65.02      |
|     | 5.80         | -14.47 | 32.93     | 4.442E-01  | 1.307E-01  | 1.494E-01  | 34.93      |
|     | 7.68         | -14.47 | 62.14     | 4.442E-01  | 1.307E-01  | 2.844E-01  | -7.56      |
| 155 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | -32.85 | -61.82    | -7.201E-02 | 1.577E-02  | -2.556E-01 | -59.04     |
|     | 2.05         | -32.85 | -32.61    | -7.201E-02 | 1.577E-02  | -1.206E-01 | 6.83       |
|     | 3.93         | -32.85 | -5.11     | -7.201E-02 | 1.577E-02  | -3.660E-02 | 30.44      |
|     | 5.80         | -32.85 | 10.85     | -7.201E-02 | 1.577E-02  | -8.683E-01 | 6.29       |
|     | 7.68         | -32.85 | 24.54     | -7.201E-02 | 1.577E-02  | -1.70      | -61.22     |
| 156 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 1.8E-01      | -12.38 | -24.77    | 2.032E-01  | 5.594E-01  | 5.779E-01  | -6.74      |
|     | 2.01         | -12.38 | -11.37    | 2.032E-01  | 5.594E-01  | 2.058E-01  | 34.55      |
|     | 3.84         | -12.38 | 4.30      | 2.032E-01  | 5.594E-01  | 1.436E-01  | 64.76      |
|     | 5.67         | -12.38 | 30.18     | 2.032E-01  | 5.594E-01  | 1.14       | 38.07      |
|     | 7.50         | -12.38 | 58.43     | 2.032E-01  | 5.594E-01  | 2.17       | -7.29      |
| 156 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | -32.45 | -62.33    | -5.631E-01 | -4.628E-01 | -1.95      | -61.74     |
|     | 2.01         | -32.45 | -33.74    | -5.631E-01 | -4.628E-01 | -9.226E-01 | 5.37       |
|     | 3.84         | -32.45 | -5.90     | -5.631E-01 | -4.628E-01 | -2.012E-01 | 29.35      |
|     | 5.67         | -32.45 | 10.38     | -5.631E-01 | -4.628E-01 | -5.383E-01 | 11.15      |
|     | 7.50         | -32.45 | 23.56     | -5.631E-01 | -4.628E-01 | -9.104E-01 | -47.77     |
| 157 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 0.00         | -7.65  | 29.38     | -6.27      | 24.16      | -4.63      | 25.81      |
|     | 3.0E-01      | -7.65  | 32.26     | -6.27      | 23.79      | -2.74      | 16.63      |
|     | 6.0E-01      | -7.65  | 35.54     | -6.27      | 23.43      | -8.607E-01 | 8.84       |
|     | 9.0E-01      | -7.65  | 38.82     | -6.27      | 23.06      | 1.51       | 2.82       |
|     | 1.20         | -7.65  | 42.10     | -6.27      | 22.70      | 5.19       | -1.18      |
| 157 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 0.00         | -19.46 | 6.55      | -16.05     | 4.19       | -14.07     | 10.35      |
|     | 3.0E-01      | -19.46 | 8.48      | -16.05     | 3.88       | -9.25      | 5.35       |
|     | 6.0E-01      | -19.46 | 10.41     | -16.05     | 3.56       | -4.74      | -1.65      |
|     | 9.0E-01      | -19.46 | 12.35     | -16.05     | 3.25       | -1.29      | -9.69      |
|     | 1.20         | -19.46 | 14.28     | -16.05     | 2.94       | 1.08       | -21.09     |
| 158 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 1.8E-01      | -8.56  | -20.75    | 1.132E-01  | -3.53      | 4.068E-01  | -17.64     |
|     | 1.86         | -8.56  | -9.90     | 1.132E-01  | -1.77      | 2.165E-01  | 9.23       |
|     | 3.54         | -8.56  | 9.368E-01 | 1.132E-01  | -1.541E-02 | 2.731E-02  | 27.86      |
|     | 5.22         | -8.56  | 14.86     | 1.132E-01  | 1.74       | 1.24       | 19.68      |
|     | 6.90         | -8.56  | 33.24     | 1.132E-01  | 3.98       | 2.61       | -1.77      |
| 158 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | -16.24 | -40.27    | -8.174E-01 | -6.94      | -2.88      | -45.76     |
|     | 1.86         | -16.24 | -21.90    | -8.174E-01 | -4.21      | -1.51      | -5.907E-01 |
|     | 3.54         | -16.24 | -5.70     | -8.174E-01 | -1.48      | -1.350E-01 | 15.66      |
|     | 5.22         | -16.24 | 5.65      | -8.174E-01 | 5.874E-01  | -1.641E-01 | 4.97       |
|     | 6.90         | -16.24 | 16.50     | -8.174E-01 | 2.64       | -3.543E-01 | -27.68     |
| 159 | ENVOLVIG MAX |        |           |            |            |            |            |
|     | 1.8E-01      | -5.13  | -11.40    | 1.566E-01  | 2.50       | 4.761E-01  | -6.09      |
|     | 1.86         | -5.13  | -4.61     | 1.566E-01  | 2.50       | 2.128E-01  | 8.40       |
|     | 3.54         | -5.13  | 2.17      | 1.566E-01  | 2.50       | 1.047E-01  | 18.28      |
|     | 5.22         | -5.13  | 10.95     | 1.566E-01  | 2.50       | 1.69       | 15.16      |
|     | 6.90         | -5.13  | 22.16     | 1.566E-01  | 2.50       | 3.28       | 3.79       |
| 159 | ENVOLVIG MIN |        |           |            |            |            |            |
|     | 1.8E-01      | -11.91 | -26.12    | -9.474E-01 | -1.328E-01 | -3.09      | -32.22     |

|     |              |        |            |            |            |            |            |
|-----|--------------|--------|------------|------------|------------|------------|------------|
|     | 1.86         | -11.91 | -14.05     | -9.474E-01 | -1.328E-01 | -1.50      | -2.24      |
|     | 3.54         | -11.91 | -4.87      | -9.474E-01 | -1.328E-01 | -5.946E-02 | 9.42       |
|     | 5.22         | -11.91 | 2.20       | -9.474E-01 | -1.328E-01 | -3.137E-01 | 6.501E-02  |
|     | 6.90         | -11.91 | 8.98       | -9.474E-01 | -1.328E-01 | -5.769E-01 | -23.98     |
| 160 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -4.91  | -11.42     | 1.01       | 1.723E-01  | 3.27       | -6.28      |
|     | 1.86         | -4.91  | -4.64      | 1.01       | 1.723E-01  | 1.58       | 8.28       |
|     | 3.54         | -4.91  | 2.15       | 1.01       | 1.723E-01  | -5.661E-02 | 18.04      |
|     | 5.22         | -4.91  | 10.97      | 1.01       | 1.723E-01  | 6.569E-01  | 14.55      |
|     | 6.90         | -4.91  | 22.34      | 1.01       | 1.723E-01  | 1.37       | 2.96       |
| 160 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -11.40 | -25.95     | -4.250E-01 | -2.83      | -1.49      | -31.60     |
|     | 1.86         | -11.40 | -13.88     | -4.250E-01 | -2.83      | -7.721E-01 | -2.06      |
|     | 3.54         | -11.40 | -4.62      | -4.250E-01 | -2.83      | -1.365E-01 | 9.31       |
|     | 5.22         | -11.40 | 2.40       | -4.250E-01 | -2.83      | -1.81      | -1.285E-02 |
|     | 6.90         | -11.40 | 9.18       | -4.250E-01 | -2.83      | -3.50      | -24.21     |
| 161 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -10.03 | -14.39     | 2.07       | 3.99       | 6.77       | -7.64      |
|     | 1.51         | -10.03 | -5.80      | 2.07       | 2.37       | 4.08       | 5.94       |
|     | 2.84         | -10.03 | 2.78       | 2.07       | 7.442E-01  | 1.39       | 13.94      |
|     | 4.17         | -10.03 | 13.75      | 2.07       | -7.579E-01 | 5.247E-01  | 9.44       |
|     | 5.50         | -10.03 | 28.30      | 2.07       | -2.15      | 1.632E-01  | -2.59      |
| 161 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -27.89 | -29.91     | 2.389E-01  | 5.091E-01  | 1.37       | -28.25     |
|     | 1.51         | -27.89 | -15.36     | 2.389E-01  | -8.807E-01 | 1.05       | -1.30      |
|     | 2.84         | -27.89 | -3.98      | 2.389E-01  | -2.27      | 3.543E-01  | 7.80       |
|     | 4.17         | -27.89 | 4.62       | 2.389E-01  | -3.78      | -1.89      | -1.61      |
|     | 5.50         | -27.89 | 13.20      | 2.389E-01  | -5.40      | -4.60      | -26.93     |
| 162 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -12.68 | -24.66     | 4.673E-01  | -3.123E-01 | 1.92       | -13.91     |
|     | 2.05         | -12.68 | -10.75     | 4.673E-01  | -3.123E-01 | 1.05       | 25.70      |
|     | 3.93         | -12.68 | 3.42       | 4.673E-01  | -3.123E-01 | 1.789E-01  | 47.09      |
|     | 5.80         | -12.68 | 26.98      | 4.673E-01  | -3.123E-01 | 5.569E-02  | 20.49      |
|     | 7.68         | -12.68 | 52.58      | 4.673E-01  | -3.123E-01 | 1.659E-01  | -21.70     |
| 162 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -29.40 | -49.80     | -5.878E-02 | -5.928E-01 | -2.749E-01 | -43.69     |
|     | 2.05         | -29.40 | -24.21     | -5.878E-02 | -5.928E-01 | -1.647E-01 | 8.46       |
|     | 3.93         | -29.40 | -1.59      | -5.878E-02 | -5.928E-01 | -6.242E-02 | 24.49      |
|     | 5.80         | -29.40 | 12.32      | -5.878E-02 | -5.928E-01 | -7.052E-01 | 7.42       |
|     | 7.68         | -29.40 | 26.23      | -5.878E-02 | -5.928E-01 | -1.58      | -54.09     |
| 163 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -8.71  | -7.79      | 4.640E-01  | -1.881E-02 | 1.36       | -9.52      |
|     | 1.20         | -8.71  | -1.92      | 4.640E-01  | -1.881E-02 | 8.871E-01  | -4.54      |
|     | 2.23         | -8.71  | 3.95       | 4.640E-01  | -1.881E-02 | 5.809E-01  | -5.58      |
|     | 3.25         | -8.71  | 11.80      | 4.640E-01  | -1.881E-02 | 8.403E-01  | -2.72      |
|     | 4.28         | -8.71  | 20.38      | 4.640E-01  | -1.881E-02 | 1.16       | -5.58      |
| 163 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -19.79 | -24.80     | -3.274E-01 | -1.265E-01 | -4.575E-01 | -38.99     |
|     | 1.20         | -19.79 | -15.11     | -3.274E-01 | -1.265E-01 | -1.218E-01 | -19.16     |
|     | 2.23         | -19.79 | -6.64      | -3.274E-01 | -1.265E-01 | 7.820E-02  | -10.49     |
|     | 3.25         | -19.79 | -1.438E-01 | -3.274E-01 | -1.265E-01 | -3.551E-01 | -15.47     |
|     | 4.28         | -19.79 | 5.73       | -3.274E-01 | -1.265E-01 | -8.183E-01 | -31.90     |
| 164 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.8E-01      | -12.60 | -23.77     | 1.072E-01  | -1.957E-01 | 4.875E-01  | -16.70     |
|     | 1.96         | -12.60 | -10.55     | 1.072E-01  | -1.957E-01 | 2.965E-01  | 19.07      |
|     | 3.74         | -12.60 | 2.66       | 1.072E-01  | -1.957E-01 | 4.469E-01  | 41.21      |
|     | 5.52         | -12.60 | 24.04      | 1.072E-01  | -1.957E-01 | 1.63       | 21.59      |
|     | 7.30         | -12.60 | 48.36      | 1.072E-01  | -1.957E-01 | 2.84       | -12.34     |
| 164 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.8E-01      | -31.15 | -48.90     | -6.820E-01 | -9.808E-01 | -2.02      | -46.39     |
|     | 1.96         | -31.15 | -24.59     | -6.820E-01 | -9.808E-01 | -8.002E-01 | 6.56       |
|     | 3.74         | -31.15 | -3.07      | -6.820E-01 | -9.808E-01 | 7.325E-02  | 20.90      |
|     | 5.52         | -31.15 | 10.15      | -6.820E-01 | -9.808E-01 | -8.558E-02 | 4.38       |
|     | 7.30         | -31.15 | 23.36      | -6.820E-01 | -9.808E-01 | -2.766E-01 | -45.00     |

**5.1.8.1.2 Calculo de Refuerzo Longitudinal.** Las vigas deben tener un area de refuerzo mínimo, ( $A_{smin} = \rho_{min} * db$ ); el  $\rho$  no debe exceder 0.025.

En cada viga existen al menos dos barras continuas con diámetro igual a N° 5 tanto arriba como abajo.

No se deben hacer traslapes dentro de los nudos , a  $2d$  de la cara del nudo y en los lugares donde el análisis indique que puede haber plastificación por flexión causada por los desplazamientos inelásticos de la estructura .

EJEMPLO DE DISEÑO:

Tomamos la viga 2" tramo E – F

PARAMETROS DE DISEÑO:

$L = 7.50$  m.

SECCION : 40 cm.\*50 cm.

RECUBRIMIENTO: 4cm.

$M_E = 359.8$  KNw-m.

$M_{EF} = 257.6$  KNw-m.

$M_F = 201.4$  KNw-m.

1.  $Ru_E = M_E/bd^2 = 35980 \text{ KNw-cm.}/(40 \text{ cm} * (46 \text{ cm})^2) = 0.42 \text{ KNw-cm}^2$

Cuantía de refuerzo ( $\rho$ )  $\rho = 0.0135$

Area de acero ( $A_s$ ):  $A_s = \rho bd = 0.0135 * 40 * 46 = 24.84 \text{ cm}^2$

$$R_{u_{EF}} = 25760 \text{ KNw-cm} / (40 * 46^2) = 0.304 \text{ KNw-cm}^2$$

$$\rho = 0.0092$$

$$A_s = 0.0092 * 40 * 46 = 16.92 \text{ cm}^2$$

$$R_{u_F} = 20140 \text{ KNw.cm}^2 / (40 * 46^2) = 0.278 \text{ KNw-cm}^2$$

$$\rho = 0.007$$

$$A_s = 0.007 * 40 * 46 = 12.88 \text{ cm}^2$$

De la solución de la viga con el programa se obtuvo:

$$A_{sE} = 26.12 \text{ cm}^2 \quad \text{Obtenido de la combinación Cu}$$

$$A_{s_{EF}} = 18.01 \text{ cm}^2 \quad \text{Obtenida de la combinación Cu}$$

$$A_{sF} = 13.48 \text{ cm}^2 \quad \text{Obtenida de la combinación Cu}$$

Haciendo la comparación estos cálculos si chequean con relación a los desarrollados anteriormente.

**5.1.8.1.3 Evaluación de Momentos de Plastificación.** Este tipo de visión se lo realiza para controlar el diseño del esfuerzo cortante basado en la resistencia nominal a momento flector ( $M_pR$ ) de un elemento, con o sin fuerza axial, determinado utilizando las propiedades del elemento en la cara del nudo y suponiendo que la resistencia a la fluencia del acero de refuerzo es  $1.25 f_y$  y con un coeficiente de reducción de resistencia  $\phi = 1$



EJEMPLO DE DISEÑO:

$$M_1 = 24.88 \text{ KNw-m}^2 \quad \rho = 0.0135$$

$$M_2 = 12.88 \text{ KNw-m}^2 \quad \rho = 0.007$$

$$M_n = \rho f_y (1 - 0.59\rho f_y / f'_c) b d^2$$

Sección 40 \* 50

$$M_p R_1 = 0.0135 * 42 \text{ KNw/cm}^2 * 125 * (1 - 0.59 * 0.0135 * 42 \text{ KNw/m}^2 / 2.11 \text{ KNw/m}^2) * 40 * 46^2$$

$$M_p R_1 = 48099.98 \text{ KN-cm}$$

$$M_p R_2 = 0.007 * 42 \text{ KNw/cm}^2 * 125 * (1 - 0.59 * 0.007 * 42 \text{ KNw/m}^2 / 2.11 \text{ KNw/m}^2) * 40 * 46^2$$

$$M_p R_2 = 27908.8 \text{ KN-cm}$$

$$V_{ur} = (M_p R_1 + M_p R_2) / L_n$$

$$V_{ur} = (48099.98 + 27908.8) / 750 = 101.34 \text{ KNw} < 325.41 \text{ KNw}$$

La separación es la obtenida con  $V_u = 325.41 \text{ KNu}$ .

En caso que  $V_{ur} > V_u$  se calcula  $V_{ud}$  y la nueva separación.

**5.1.8.1.4 Calculo de Refuerzo Transversal.** El refuerzo Transversal de las vigas se diseñará teniendo en cuenta los requisitos del apartado C.21.3.3 norma NSR – 98.

Analizando que la estructura en cuestión se encuentra en zona de amenaza sísmica alta.

EJEMPLO DE DISEÑO

$$V_E = 325.41 \text{ KNw}$$

$$V_F = 281.11 \text{ KNw}$$

Esfuerzo cortante:  $v_{udE}$

$$v_{udE} = 325.41 \text{ KNw} / (40 \text{ cm} * 46 \text{ cm}) = 0.18 \text{ KNw/cm}^2$$

$$\phi V_c = 0.85 * 0.53 \sqrt{f'_c}$$

$$\phi V_c = 0.06 \text{ KNw/cm}^2$$

$v_u < \phi V_c$  Requiere flejes con separación

$$S = (0.85 * 2 * 0.71 * 42000 \text{ KNw/m}^2) / (V_s * 0.40)$$

$$V_s = v_u - \phi V_c = 0.18 \text{ KNw/cm}^2 - 0.06 \text{ KNw/cm}^2 = 0.12 \text{ KNw/cm}^2$$

$$S = (0.85 * 2 * 0.71 * 42 \text{ KNw/cm}^2) / (0.12 \text{ KNw/cm}^2 * 40) = 10.56 \text{ cm}$$

Del programa se obtuvo:

$$(A_s/S) = 0.977 \text{ donde } A_s = 1.42 \text{ cm} \text{ entonces } S = 8 \text{ cm}$$

$$\text{Por norma } S_{\min} = d/4 \text{ en zonas de confinamiento} \quad S_{\min} = 46/4 = 11.5 \text{ cm}$$

Tomamos  $S = 8 \text{ cm}$ .

$$v_{udF} = 281.11 \text{ KNw} / (40 \text{ cm} * 46 \text{ cm}) = 0.15 \text{ KNw/cm}^2$$

$$\phi V_c = 0.06 \text{ KNw/cm}^2$$

$v_u < \phi V_c$  Requiere flejes con separación

$$V_s = 0.15 \text{ KNw/cm}^2 - 0.06 \text{ KNw/cm}^2 = 0.1 \text{ KNw/cm}^2$$

$$S = (0.85 * 2 * 0.71 * 42) / (0.1 * 40) = 12.67 \text{ cm}$$

Del programa:

$$(A_s/S) = 0.149 \quad S = 9.5 \text{ cm} < 14.48 \text{ cm} \quad \text{ok!}$$

M A T E R I A L P R O P E R T Y D A T A

| MAT LABEL | MODULUS OF ELASTICITY | POISSON'S RATIO | THERMAL COEFF | WEIGHT PER UNIT VOL | MASS PER UNIT VOL |
|-----------|-----------------------|-----------------|---------------|---------------------|-------------------|
| CONC      | 1752.645              | 0.200           | 9.900E-06     | 2.357E-05           | 2.401E-08         |

M A T E R I A L D E S I G N D A T A

| MAT LABEL | DESIGN CODE | STEEL FY | CONCRETE FC | REBAR FY | CONCRETE FCS | REBAR FYS |
|-----------|-------------|----------|-------------|----------|--------------|-----------|
| CONC      | C           |          | 2.068       | 41.369   | 2.068        | 41.369    |

C O N C R E T E C O L U M N P R O P E R T Y D A T A

| SECTION LABEL | MAT LABEL | COLUMN DEPTH | COLUMN WIDTH | REBAR PATTERN | CONCRETE COVER | BAR AREA |
|---------------|-----------|--------------|--------------|---------------|----------------|----------|
| 30X30C        | CONC      | 30.000       | 30.000       | RR-3-3        | 4.000          | 0.000    |
| 35X35C        | CONC      | 35.000       | 35.000       | RR-3-3        | 4.000          | 0.000    |
| DIAM35        | CONC      | 35.000       | 35.000       | CC            | 4.000          | 0.000    |
| 25X25C        | CONC      | 25.000       | 25.000       | RR-3-3        | 3.000          | 0.000    |

C O N C R E T E B E A M P R O P E R T Y D A T A

| SECTION LABEL | MAT LABEL | BEAM DEPTH | BEAM WIDTH | TOP COVER | BOTTOM COVER | REBAR AT-1 | REBAR AT-2 | REBAR AB-1 | REBAR AB-2 |
|---------------|-----------|------------|------------|-----------|--------------|------------|------------|------------|------------|
| 35X50V        | CONC      | 50.000     | 35.000     | 4.000     | 4.000        | 0.000      | 0.000      | 0.000      | 0.000      |
| 35X50CIM      | CONC      | 50.000     | 35.000     | 5.000     | 5.000        | 0.000      | 0.000      | 0.000      | 0.000      |
| 30X45V        | CONC      | 45.000     | 30.000     | 4.000     | 4.000        | 0.000      | 0.000      | 0.000      | 0.000      |
| 25X35CUB      | CONC      | 35.000     | 25.000     | 4.000     | 4.000        | 0.000      | 0.000      | 0.000      | 0.000      |
| 40X50V        | CONC      | 50.000     | 40.000     | 4.000     | 4.000        | 0.000      | 0.000      | 0.000      | 0.000      |
| 45X50V        | CONC      | 50.000     | 45.000     | 4.000     | 4.000        | 0.000      | 0.000      | 0.000      | 0.000      |

L O A D C O M B I N A T I O N M U L T I P L I E R S

| COMBO  | TYPE | CASE   | FACTOR | TYPE         | TITLE                  |
|--------|------|--------|--------|--------------|------------------------|
| CU     | ADD  | MUERTA | 1.4000 | STATIC(DEAD) | Estado CU              |
|        |      | VIVA   | 1.7000 | STATIC(LIVE) |                        |
| VIGAS1 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Vigas |
|        |      | SISMOX | 1.0000 | COMBO        |                        |
|        |      | SISMOY | 0.3000 | COMBO        |                        |
| VIGAS2 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Vigas |
|        |      | SISMOX | 0.3000 | COMBO        |                        |
|        |      | SISMOY | 1.0000 | COMBO        |                        |
| VIGAS3 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Vigas |
|        |      | SISMOX | 1.0000 | COMBO        |                        |
|        |      | SISMOY | 0.3000 | COMBO        |                        |
| VIGAS4 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Vigas |
|        |      | SISMOX | 0.3000 | COMBO        |                        |
|        |      | SISMOY | 1.0000 | COMBO        |                        |

C O D E P R E F E R E N C E S

Code: ACI 318-95

Phi\_bending : 0.85  
 Phi\_tension : 0.85  
 Phi\_compression(Tied) : 0.7  
 Phi\_compression(Spiral): 0.75  
 Phi\_shear : 0.85

C O N C R E T E D E S I G N E L E M E N T I N F O R M A T I O N (ACI 318-95)

| FRAME ID | SECTION ID | ELEMENT TYPE | FRAMING TYPE | LLRF FACTOR | L_ratio MAJOR | L_ratio MINOR | K MAJOR | K MINOR |
|----------|------------|--------------|--------------|-------------|---------------|---------------|---------|---------|
| 1        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 2        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 3        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.918         | 0.918         |         |         |
| 4        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.931         | 0.931         |         |         |
| 5        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.927         | 0.927         |         |         |
| 6        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.913         | 0.913         |         |         |
| 7        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.900         | 0.900         |         |         |
| 8        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.953         | 0.953         |         |         |
| 9        | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.896         | 0.896         |         |         |
| 10       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.888         | 0.888         |         |         |
| 11       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.920         | 0.920         |         |         |
| 12       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.920         | 0.920         |         |         |
| 13       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 14       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 15       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.921         | 0.921         |         |         |
| 16       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.953         | 0.953         |         |         |
| 17       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.938         | 0.938         |         |         |
| 18       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.920         | 0.920         |         |         |
| 19       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.920         | 0.920         |         |         |
| 20       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.927         | 0.927         |         |         |
| 21       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.951         | 0.951         |         |         |
| 22       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 23       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 1.000         | 1.000         |         |         |
| 24       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 1.000         | 1.000         |         |         |
| 25       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 1.000         | 1.000         |         |         |
| 26       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 1.000         | 1.000         |         |         |
| 27       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 1.000         | 1.000         |         |         |
| 28       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.951         | 0.951         |         |         |
| 29       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.953         | 0.953         |         |         |
| 30       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.926         | 0.926         |         |         |
| 31       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 32       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 33       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.929         | 0.929         |         |         |
| 34       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.929         | 0.929         |         |         |
| 35       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.929         | 0.929         |         |         |
| 36       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.905         | 0.905         |         |         |
| 37       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.927         | 0.927         |         |         |
| 38       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.953         | 0.953         |         |         |
| 39       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.953         | 0.953         |         |         |
| 40       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.925         | 0.925         |         |         |
| 41       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.914         | 0.914         |         |         |
| 42       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.908         | 0.908         |         |         |
| 43       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.908         | 0.908         |         |         |
| 44       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 45       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.917         | 0.917         |         |         |
| 46       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.921         | 0.921         |         |         |
| 47       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.913         | 0.913         |         |         |
| 48       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.913         | 0.913         |         |         |
| 49       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.901         | 0.901         |         |         |
| 50       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.901         | 0.901         |         |         |
| 51       | 35X50CIM   | BEAM         | SWYSPEC      | 1.000       | 0.926         | 0.926         |         |         |

|     |          |              |       |        |       |
|-----|----------|--------------|-------|--------|-------|
| 52  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.926  | 0.926 |
| 53  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.901  | 0.901 |
| 54  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.901  | 0.901 |
| 55  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 56  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 57  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.921  | 0.921 |
| 58  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.913  | 0.913 |
| 59  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.913  | 0.913 |
| 60  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.902  | 0.902 |
| 61  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.909  | 0.909 |
| 62  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.909  | 0.909 |
| 63  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.944  | 0.944 |
| 64  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.902  | 0.902 |
| 65  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.909  | 0.909 |
| 66  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.909  | 0.909 |
| 67  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.886  | 0.886 |
| 68  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.911  | 0.911 |
| 69  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.911  | 0.911 |
| 70  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.921  | 0.921 |
| 71  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.930  | 0.930 |
| 72  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.891  | 0.891 |
| 73  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.886  | 0.886 |
| 74  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.901  | 0.901 |
| 75  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.908  | 0.908 |
| 76  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.908  | 0.908 |
| 77  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.943  | 0.943 |
| 78  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.901  | 0.901 |
| 79  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.908  | 0.908 |
| 80  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.908  | 0.908 |
| 81  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.911  | 0.911 |
| 82  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.911  | 0.911 |
| 83  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.921  | 0.921 |
| 84  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.907  | 0.907 |
| 85  | 35X50CIM | BEAM SWYSPEC | 1.000 | 0.907  | 0.907 |
| 143 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 144 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 145 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.918  | 0.918 |
| 146 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.931  | 0.931 |
| 147 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.927  | 0.927 |
| 148 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.913  | 0.913 |
| 149 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.900  | 0.900 |
| 150 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.953  | 0.953 |
| 151 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.896  | 0.896 |
| 152 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.888  | 0.888 |
| 153 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.920  | 0.920 |
| 154 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.920  | 0.920 |
| 155 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 156 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 157 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.921  | 0.921 |
| 158 | 40X50V   | BEAM SWYSPEC | 1.000 | 0.953  | 0.953 |
| 159 | 35X50V   | BEAM SWYSPEC | 1.000 | 1.209  | 0.969 |
| 160 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.938  | 0.938 |
| 161 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.920  | 0.920 |
| 162 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.920  | 0.920 |
| 163 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.927  | 0.927 |
| 164 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.961  | 0.961 |
| 165 | 40X50V   | BEAM SWYSPEC | 1.000 | 1.925  | 0.125 |
| 166 | 40X50V   | BEAM SWYSPEC | 1.000 | 1.069  | 1.000 |
| 167 | 40X50V   | BEAM SWYSPEC | 1.000 | 1.000  | 1.000 |
| 168 | 40X50V   | BEAM SWYSPEC | 1.000 | 1.000  | 1.000 |
| 169 | 40X50V   | BEAM SWYSPEC | 1.000 | 1.000  | 1.000 |
| 170 | 40X50V   | BEAM SWYSPEC | 1.000 | 15.792 | 1.000 |
| 171 | 40X50V   | BEAM SWYSPEC | 1.000 | 1.034  | 0.968 |
| 172 | 45X50V   | BEAM SWYSPEC | 1.000 | 0.953  | 0.953 |
| 173 | 35X50V   | BEAM SWYSPEC | 1.000 | 4.459  | 0.885 |
| 174 | 35X50V   | BEAM SWYSPEC | 1.000 | 3.016  | 0.885 |
| 175 | 35X50V   | BEAM SWYSPEC | 1.000 | 1.000  | 1.000 |
| 176 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 177 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.917  | 0.917 |
| 178 | 35X50V   | BEAM SWYSPEC | 1.000 | 0.961  | 0.961 |
| 179 | 35X50V   | BEAM SWYSPEC | 1.000 | 1.000  | 1.000 |

|     |        |              |       |       |       |
|-----|--------|--------------|-------|-------|-------|
| 180 | 35X50V | BEAM SWYSPEC | 1.000 | 0.929 | 0.929 |
| 181 | 35X50V | BEAM SWYSPEC | 1.000 | 0.929 | 0.929 |
| 182 | 35X50V | BEAM SWYSPEC | 1.000 | 0.905 | 0.905 |
| 183 | 35X50V | BEAM SWYSPEC | 1.000 | 1.343 | 0.949 |
| 184 | 35X50V | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 185 | 35X50V | BEAM SWYSPEC | 1.000 | 0.927 | 0.927 |
| 186 | 40X50V | BEAM SWYSPEC | 1.000 | 3.575 | 0.913 |
| 187 | 40X50V | BEAM SWYSPEC | 1.000 | 1.300 | 0.968 |
| 188 | 40X50V | BEAM SWYSPEC | 1.000 | 0.953 | 0.953 |
| 189 | 35X50V | BEAM SWYSPEC | 1.000 | 0.925 | 0.925 |
| 190 | 35X50V | BEAM SWYSPEC | 1.000 | 0.914 | 0.914 |
| 191 | 35X50V | BEAM SWYSPEC | 1.000 | 0.908 | 0.908 |
| 192 | 35X50V | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 193 | 35X50V | BEAM SWYSPEC | 1.000 | 0.908 | 0.908 |
| 194 | 35X50V | BEAM SWYSPEC | 1.000 | 0.917 | 0.917 |
| 195 | 35X50V | BEAM SWYSPEC | 1.000 | 0.917 | 0.917 |
| 196 | 35X50V | BEAM SWYSPEC | 1.000 | 0.921 | 0.921 |
| 197 | 35X50V | BEAM SWYSPEC | 1.000 | 1.713 | 0.913 |
| 198 | 35X50V | BEAM SWYSPEC | 1.000 | 1.957 | 0.914 |
| 199 | 35X50V | BEAM SWYSPEC | 1.000 | 0.913 | 0.913 |
| 200 | 35X50V | BEAM SWYSPEC | 1.000 | 0.901 | 0.901 |
| 201 | 35X50V | BEAM SWYSPEC | 1.000 | 0.901 | 0.901 |
| 202 | 35X50V | BEAM SWYSPEC | 1.000 | 0.926 | 0.926 |
| 203 | 35X50V | BEAM SWYSPEC | 1.000 | 0.926 | 0.926 |
| 204 | 35X50V | BEAM SWYSPEC | 1.000 | 0.901 | 0.901 |
| 205 | 35X50V | BEAM SWYSPEC | 1.000 | 0.901 | 0.901 |
| 206 | 35X50V | BEAM SWYSPEC | 1.000 | 0.917 | 0.917 |
| 207 | 35X50V | BEAM SWYSPEC | 1.000 | 0.917 | 0.917 |
| 208 | 35X50V | BEAM SWYSPEC | 1.000 | 0.921 | 0.921 |
| 209 | 35X50V | BEAM SWYSPEC | 1.000 | 0.913 | 0.913 |
| 210 | 35X50V | BEAM SWYSPEC | 1.000 | 0.913 | 0.913 |
| 211 | 35X50V | BEAM SWYSPEC | 1.000 | 0.902 | 0.902 |
| 212 | 35X50V | BEAM SWYSPEC | 1.000 | 0.909 | 0.909 |
| 213 | 35X50V | BEAM SWYSPEC | 1.000 | 0.909 | 0.909 |
| 214 | 35X50V | BEAM SWYSPEC | 1.000 | 0.944 | 0.944 |
| 215 | 35X50V | BEAM SWYSPEC | 1.000 | 0.902 | 0.902 |
| 216 | 35X50V | BEAM SWYSPEC | 1.000 | 0.909 | 0.909 |
| 217 | 35X50V | BEAM SWYSPEC | 1.000 | 0.909 | 0.909 |
| 218 | 35X50V | BEAM SWYSPEC | 1.000 | 1.782 | 0.891 |
| 219 | 35X50V | BEAM SWYSPEC | 1.000 | 0.911 | 0.911 |
| 220 | 35X50V | BEAM SWYSPEC | 1.000 | 0.911 | 0.911 |
| 221 | 35X50V | BEAM SWYSPEC | 1.000 | 0.921 | 0.921 |
| 222 | 35X50V | BEAM SWYSPEC | 1.000 | 0.930 | 0.930 |
| 223 | 35X50V | BEAM SWYSPEC | 1.000 | 0.930 | 0.930 |
| 224 | 35X50V | BEAM SWYSPEC | 1.000 | 1.782 | 0.891 |
| 225 | 35X50V | BEAM SWYSPEC | 1.000 | 0.901 | 0.901 |
| 226 | 35X50V | BEAM SWYSPEC | 1.000 | 0.908 | 0.908 |
| 227 | 35X50V | BEAM SWYSPEC | 1.000 | 0.908 | 0.908 |
| 228 | 35X50V | BEAM SWYSPEC | 1.000 | 0.943 | 0.943 |
| 229 | 35X50V | BEAM SWYSPEC | 1.000 | 0.901 | 0.901 |
| 230 | 35X50V | BEAM SWYSPEC | 1.000 | 0.908 | 0.908 |
| 231 | 35X50V | BEAM SWYSPEC | 1.000 | 0.908 | 0.908 |
| 232 | 35X50V | BEAM SWYSPEC | 1.000 | 0.911 | 0.911 |
| 233 | 35X50V | BEAM SWYSPEC | 1.000 | 0.911 | 0.911 |
| 234 | 35X50V | BEAM SWYSPEC | 1.000 | 0.921 | 0.921 |
| 235 | 35X50V | BEAM SWYSPEC | 1.000 | 0.907 | 0.907 |
| 236 | 35X50V | BEAM SWYSPEC | 1.000 | 0.907 | 0.907 |
| 273 | 30X45V | BEAM SWYSPEC | 1.000 | 0.930 | 1.924 |
| 274 | 30X45V | BEAM SWYSPEC | 1.000 | 0.930 | 1.924 |
| 275 | 30X45V | BEAM SWYSPEC | 1.000 | 0.924 | 0.924 |
| 276 | 30X45V | BEAM SWYSPEC | 1.000 | 0.958 | 0.958 |
| 277 | 30X45V | BEAM SWYSPEC | 1.000 | 0.927 | 2.618 |
| 278 | 30X45V | BEAM SWYSPEC | 1.000 | 0.913 | 2.913 |
| 279 | 30X45V | BEAM SWYSPEC | 1.000 | 0.907 | 3.329 |
| 280 | 30X45V | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 281 | 30X45V | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 282 | 30X45V | BEAM SWYSPEC | 1.000 | 0.896 | 0.896 |
| 283 | 30X45V | BEAM SWYSPEC | 1.000 | 0.925 | 0.925 |
| 284 | 30X45V | BEAM SWYSPEC | 1.000 | 0.925 | 0.925 |
| 285 | 30X45V | BEAM SWYSPEC | 1.000 | 0.930 | 1.917 |
| 286 | 30X45V | BEAM SWYSPEC | 1.000 | 0.924 | 1.917 |

|     |          |              |       |       |       |
|-----|----------|--------------|-------|-------|-------|
| 287 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 1.907 |
| 288 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 1.907 |
| 289 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 0.920 |
| 290 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 0.920 |
| 291 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.958 | 0.958 |
| 292 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.955 | 0.955 |
| 293 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 1.907 |
| 294 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 1.907 |
| 295 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.930 | 1.924 |
| 296 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.930 | 1.924 |
| 297 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.934 | 0.934 |
| 298 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.934 | 0.934 |
| 299 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.912 | 0.912 |
| 300 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 0.927 |
| 301 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 1.913 |
| 302 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.913 |
| 303 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 304 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 305 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.958 | 0.958 |
| 306 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.921 | 0.921 |
| 307 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.914 | 0.914 |
| 308 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.921 | 0.921 |
| 309 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.930 | 1.924 |
| 310 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.930 | 1.924 |
| 311 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 312 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 313 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.954 | 0.954 |
| 314 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.954 | 0.954 |
| 315 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.958 | 0.958 |
| 316 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.958 | 0.958 |
| 317 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.924 | 1.911 |
| 318 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.924 | 1.911 |
| 319 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 320 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.920 |
| 321 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.948 | 1.212 |
| 322 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.951 | 0.951 |
| 323 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.951 | 0.951 |
| 324 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.955 | 0.955 |
| 325 | 30X45V   | BEAM SWYSPEC | 1.000 | 1.782 | 5.091 |
| 326 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.924 | 1.911 |
| 327 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.924 | 1.911 |
| 328 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 1.953 |
| 329 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.967 | 1.953 |
| 330 | 30X45V   | BEAM SWYSPEC | 1.000 | 1.782 | 5.018 |
| 331 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.951 | 0.951 |
| 332 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.954 | 0.954 |
| 333 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.954 | 0.954 |
| 334 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.943 | 1.211 |
| 335 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.924 | 1.917 |
| 336 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.930 | 1.917 |
| 337 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.933 | 0.933 |
| 338 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.927 | 1.913 |
| 339 | 30X45V   | BEAM SWYSPEC | 1.000 | 0.920 | 1.913 |
| 340 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 342 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 343 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 345 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 346 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 348 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 349 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 351 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 352 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 354 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 355 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 357 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 358 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 360 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 361 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 363 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 364 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 366 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |

|     |          |              |       |       |       |
|-----|----------|--------------|-------|-------|-------|
| 367 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 369 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 370 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 372 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 373 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 375 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 376 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 378 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 379 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 381 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 382 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 384 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 385 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |
| 387 | 25X35CUB | BEAM SWYSPEC | 1.000 | 1.000 | 1.000 |

C O N C R E T E   D E S I G N   O U T P U T   ( A C I 3 1 8 - 9 5 )

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | REQUIRED REINFORCING |        |        |        |       | SHEAR | COMBO |
|------------|---------------|---------------|----------------------|--------|--------|--------|-------|-------|-------|
|            |               |               | TOP                  | COMBO  | BOTTOM | COMBO  |       |       |       |
| 1          | 35X50CIM      | 17.500        | 2.223                | VIGAS1 | 1.622  | VIGAS1 | 0.016 | CU    |       |
| 1          | 35X50CIM      | 107.500       | 1.314                | VIGAS1 | 0.929  | VIGAS1 | 0.016 | CU    |       |
| 1          | 35X50CIM      | 197.500       | 0.551                | VIGAS1 | 0.551  | VIGAS1 | 0.016 | CU    |       |
| 1          | 35X50CIM      | 287.500       | 0.551                | VIGAS1 | 0.551  | VIGAS1 | 0.016 | CU    |       |
| 1          | 35X50CIM      | 377.500       | 1.135                | VIGAS1 | 1.379  | VIGAS1 | 0.016 | CU    |       |
| 2          | 35X50CIM      | 15.000        | 1.193                | VIGAS1 | 1.319  | VIGAS1 | 0.014 | CU    |       |
| 2          | 35X50CIM      | 105.000       | 0.497                | VIGAS1 | 0.497  | VIGAS1 | 0.014 | CU    |       |
| 2          | 35X50CIM      | 195.000       | 0.497                | VIGAS1 | 0.497  | VIGAS1 | 0.014 | CU    |       |
| 2          | 35X50CIM      | 285.000       | 1.167                | VIGAS1 | 1.073  | VIGAS1 | 0.014 | CU    |       |
| 2          | 35X50CIM      | 375.000       | 2.004                | VIGAS1 | 1.835  | VIGAS1 | 0.014 | CU    |       |
| 3          | 35X50CIM      | 17.500        | 2.997                | VIGAS2 | 1.629  | VIGAS2 | 0.020 | CU    |       |
| 3          | 35X50CIM      | 108.125       | 1.880                | VIGAS2 | 0.916  | VIGAS2 | 0.020 | CU    |       |
| 3          | 35X50CIM      | 198.750       | 0.777                | VIGAS2 | 0.740  | VIGAS2 | 0.020 | CU    |       |
| 3          | 35X50CIM      | 289.375       | 0.740                | VIGAS2 | 0.740  | VIGAS2 | 0.020 | CU    |       |
| 3          | 35X50CIM      | 380.000       | 1.207                | VIGAS2 | 1.410  | VIGAS2 | 0.020 | CU    |       |
| 4          | 35X50CIM      | 31.345        | 2.882                | VIGAS2 | 1.429  | VIGAS2 | 0.012 | CU    |       |
| 4          | 35X50CIM      | 196.009       | 1.697                | VIGAS2 | 0.712  | VIGAS2 | 0.012 | CU    |       |
| 4          | 35X50CIM      | 360.672       | 0.712                | VIGAS2 | 0.712  | VIGAS2 | 0.012 | CU    |       |
| 4          | 35X50CIM      | 525.336       | 0.712                | VIGAS2 | 0.712  | VIGAS2 | 0.012 | CU    |       |
| 4          | 35X50CIM      | 690.000       | 1.072                | VIGAS2 | 1.800  | VIGAS2 | 0.012 | CU    |       |
| 5          | 35X50CIM      | 15.000        | 2.261                | VIGAS1 | 1.776  | VIGAS1 | 0.015 | CU    |       |
| 5          | 35X50CIM      | 118.125       | 1.204                | VIGAS1 | 0.862  | VIGAS1 | 0.015 | CU    |       |
| 5          | 35X50CIM      | 221.250       | 0.560                | VIGAS1 | 0.560  | VIGAS1 | 0.015 | CU    |       |
| 5          | 35X50CIM      | 324.375       | 0.948                | VIGAS1 | 0.879  | VIGAS1 | 0.015 | CU    |       |
| 5          | 35X50CIM      | 427.500       | 1.863                | VIGAS1 | 1.931  | VIGAS1 | 0.015 | CU    |       |
| 6          | 35X50CIM      | 17.500        | 1.698                | VIGAS1 | 2.280  | VIGAS1 | 0.020 | CU    |       |
| 6          | 35X50CIM      | 108.750       | 0.879                | VIGAS1 | 1.105  | VIGAS1 | 0.020 | CU    |       |
| 6          | 35X50CIM      | 200.000       | 0.592                | VIGAS1 | 0.592  | VIGAS1 | 0.020 | CU    |       |
| 6          | 35X50CIM      | 291.250       | 1.214                | VIGAS1 | 0.744  | VIGAS1 | 0.020 | CU    |       |
| 6          | 35X50CIM      | 382.500       | 2.390                | VIGAS1 | 1.562  | VIGAS1 | 0.020 | CU    |       |
| 7          | 35X50CIM      | 17.500        | 2.183                | VIGAS1 | 1.542  | VIGAS1 | 0.028 | CU    |       |
| 7          | 35X50CIM      | 96.250        | 0.933                | VIGAS1 | 1.118  | VIGAS1 | 0.028 | CU    |       |
| 7          | 35X50CIM      | 175.000       | 0.692                | VIGAS1 | 0.665  | CU     | 0.028 | CU    |       |
| 7          | 35X50CIM      | 253.750       | 0.692                | VIGAS1 | 1.211  | CU     | 0.028 | CU    |       |
| 7          | 35X50CIM      | 332.500       | 0.800                | VIGAS3 | 2.800  | VIGAS1 | 0.028 | CU    |       |
| 8          | 35X50CIM      | 17.500        | 0.954                | VIGAS1 | 1.229  | VIGAS1 | 0.011 | CU    |       |
| 8          | 35X50CIM      | 196.250       | 0.756                | VIGAS1 | 0.756  | VIGAS1 | 0.011 | CU    |       |
| 8          | 35X50CIM      | 375.000       | 0.814                | CU     | 0.756  | VIGAS1 | 0.011 | CU    |       |
| 8          | 35X50CIM      | 553.750       | 1.975                | VIGAS1 | 0.756  | VIGAS1 | 0.011 | CU    |       |



|    |          |         |       |        |       |        |       |    |
|----|----------|---------|-------|--------|-------|--------|-------|----|
| 8  | 35X50CIM | 732.500 | 3.063 | VIGAS1 | 1.518 | VIGAS1 | 0.011 | CU |
| 9  | 35X50CIM | 15.000  | 1.526 | VIGAS2 | 1.274 | VIGAS2 | 0.028 | CU |
| 9  | 35X50CIM | 85.000  | 0.821 | VIGAS2 | 0.821 | VIGAS2 | 0.028 | CU |
| 9  | 35X50CIM | 155.000 | 0.821 | VIGAS2 | 0.883 | VIGAS2 | 0.028 | CU |
| 9  | 35X50CIM | 225.000 | 0.853 | VIGAS2 | 2.098 | VIGAS2 | 0.028 | CU |
| 9  | 35X50CIM | 295.000 | 1.567 | VIGAS2 | 3.331 | VIGAS2 | 0.028 | CU |
| 10 | 35X50CIM | 17.500  | 3.373 | VIGAS2 | 2.430 | VIGAS2 | 0.033 | CU |
| 10 | 35X50CIM | 86.875  | 1.917 | VIGAS2 | 1.455 | VIGAS2 | 0.033 | CU |
| 10 | 35X50CIM | 156.250 | 0.831 | VIGAS2 | 0.831 | VIGAS2 | 0.033 | CU |
| 10 | 35X50CIM | 225.625 | 0.831 | VIGAS2 | 0.951 | VIGAS2 | 0.033 | CU |
| 10 | 35X50CIM | 295.000 | 1.450 | VIGAS2 | 2.393 | VIGAS2 | 0.033 | CU |
| 11 | 35X50CIM | 17.500  | 2.482 | VIGAS2 | 1.389 | VIGAS2 | 0.019 | CU |
| 11 | 35X50CIM | 117.500 | 1.287 | VIGAS2 | 0.633 | VIGAS2 | 0.019 | CU |
| 11 | 35X50CIM | 217.500 | 0.614 | VIGAS2 | 0.614 | VIGAS2 | 0.019 | CU |
| 11 | 35X50CIM | 317.500 | 0.868 | VIGAS2 | 1.067 | VIGAS2 | 0.019 | CU |
| 11 | 35X50CIM | 417.500 | 1.626 | VIGAS2 | 2.259 | VIGAS2 | 0.019 | CU |
| 12 | 35X50CIM | 17.500  | 2.815 | VIGAS2 | 1.475 | VIGAS2 | 0.021 | CU |
| 12 | 35X50CIM | 117.500 | 1.486 | VIGAS2 | 0.695 | VIGAS2 | 0.021 | CU |
| 12 | 35X50CIM | 217.500 | 0.695 | VIGAS2 | 0.695 | VIGAS2 | 0.021 | CU |
| 12 | 35X50CIM | 317.500 | 0.928 | VIGAS2 | 1.127 | VIGAS2 | 0.021 | CU |
| 12 | 35X50CIM | 417.500 | 1.736 | VIGAS2 | 2.451 | VIGAS2 | 0.021 | CU |
| 13 | 35X50CIM | 17.500  | 2.508 | VIGAS1 | 1.340 | VIGAS1 | 0.017 | CU |
| 13 | 35X50CIM | 107.500 | 1.537 | VIGAS1 | 0.680 | VIGAS1 | 0.017 | CU |
| 13 | 35X50CIM | 197.500 | 0.620 | VIGAS1 | 0.620 | VIGAS1 | 0.017 | CU |
| 13 | 35X50CIM | 287.500 | 0.632 | VIGAS1 | 0.620 | VIGAS1 | 0.017 | CU |
| 13 | 35X50CIM | 377.500 | 1.291 | VIGAS1 | 1.334 | VIGAS1 | 0.017 | CU |
| 14 | 35X50CIM | 15.000  | 1.049 | VIGAS1 | 1.348 | VIGAS1 | 0.012 | CU |
| 14 | 35X50CIM | 105.000 | 0.475 | VIGAS1 | 0.645 | VIGAS1 | 0.012 | CU |
| 14 | 35X50CIM | 195.000 | 0.475 | VIGAS1 | 0.475 | VIGAS1 | 0.012 | CU |
| 14 | 35X50CIM | 285.000 | 0.752 | VIGAS1 | 1.167 | VIGAS1 | 0.012 | CU |
| 14 | 35X50CIM | 375.000 | 1.456 | VIGAS1 | 1.914 | VIGAS1 | 0.012 | CU |
| 15 | 35X50CIM | 17.500  | 2.017 | VIGAS1 | 2.014 | VIGAS1 | 0.018 | CU |
| 15 | 35X50CIM | 120.000 | 1.110 | VIGAS1 | 0.838 | VIGAS1 | 0.018 | CU |
| 15 | 35X50CIM | 222.500 | 0.661 | VIGAS1 | 0.661 | VIGAS1 | 0.018 | CU |
| 15 | 35X50CIM | 325.000 | 1.492 | VIGAS1 | 0.680 | VIGAS1 | 0.018 | CU |
| 15 | 35X50CIM | 427.500 | 2.676 | VIGAS1 | 1.582 | VIGAS1 | 0.018 | CU |
| 16 | 35X50CIM | 17.500  | 3.805 | VIGAS1 | 1.882 | VIGAS1 | 0.013 | CU |
| 16 | 35X50CIM | 196.250 | 2.627 | VIGAS1 | 1.059 | VIGAS1 | 0.013 | CU |
| 16 | 35X50CIM | 375.000 | 2.018 | CU     | 1.059 | VIGAS1 | 0.013 | CU |
| 16 | 35X50CIM | 553.750 | 2.924 | VIGAS1 | 1.059 | VIGAS1 | 0.013 | CU |
| 16 | 35X50CIM | 732.500 | 4.317 | VIGAS1 | 2.132 | VIGAS1 | 0.013 | CU |
| 17 | 35X50CIM | 17.500  | 1.190 | VIGAS2 | 0.842 | VIGAS2 | 0.008 | CU |
| 17 | 35X50CIM | 149.375 | 0.507 | VIGAS2 | 0.385 | VIGAS2 | 0.008 | CU |
| 17 | 35X50CIM | 281.250 | 0.385 | VIGAS2 | 0.385 | VIGAS2 | 0.008 | CU |
| 17 | 35X50CIM | 413.125 | 0.838 | VIGAS2 | 0.861 | VIGAS2 | 0.008 | CU |
| 17 | 35X50CIM | 545.000 | 1.403 | VIGAS2 | 1.550 | VIGAS2 | 0.008 | CU |
| 18 | 35X50CIM | 17.500  | 2.347 | VIGAS2 | 1.831 | VIGAS2 | 0.020 | CU |
| 18 | 35X50CIM | 118.750 | 1.081 | VIGAS2 | 0.910 | VIGAS2 | 0.020 | CU |
| 18 | 35X50CIM | 220.000 | 0.664 | VIGAS2 | 0.664 | VIGAS2 | 0.020 | CU |
| 18 | 35X50CIM | 321.250 | 0.913 | VIGAS2 | 1.418 | VIGAS2 | 0.020 | CU |
| 18 | 35X50CIM | 422.500 | 1.833 | VIGAS2 | 2.688 | VIGAS2 | 0.020 | CU |
| 19 | 35X50CIM | 17.500  | 2.220 | VIGAS2 | 1.675 | VIGAS2 | 0.018 | CU |
| 19 | 35X50CIM | 118.750 | 1.068 | VIGAS2 | 0.908 | VIGAS2 | 0.018 | CU |
| 19 | 35X50CIM | 220.000 | 0.585 | VIGAS2 | 0.585 | VIGAS2 | 0.018 | CU |
| 19 | 35X50CIM | 321.250 | 0.609 | VIGAS2 | 1.208 | VIGAS2 | 0.018 | CU |
| 19 | 35X50CIM | 422.500 | 1.373 | VIGAS2 | 2.362 | VIGAS2 | 0.018 | CU |
| 20 | 35X50CIM | 35.000  | 1.280 | VIGAS2 | 1.291 | VIGAS2 | 0.007 | CU |
| 20 | 35X50CIM | 200.625 | 0.494 | VIGAS2 | 0.587 | VIGAS2 | 0.007 | CU |
| 20 | 35X50CIM | 366.250 | 0.494 | VIGAS2 | 0.494 | VIGAS2 | 0.007 | CU |

|    |          |         |       |        |       |        |       |    |
|----|----------|---------|-------|--------|-------|--------|-------|----|
| 20 | 35X50CIM | 531.875 | 0.811 | VIGAS2 | 1.169 | VIGAS2 | 0.007 | CU |
| 20 | 35X50CIM | 697.500 | 1.517 | VIGAS2 | 1.995 | VIGAS2 | 0.007 | CU |
| 21 | 35X50CIM | 17.500  | 1.920 | VIGAS2 | 1.229 | VIGAS2 | 0.008 | CU |
| 21 | 35X50CIM | 187.500 | 1.031 | VIGAS2 | 0.510 | VIGAS2 | 0.008 | CU |
| 21 | 35X50CIM | 357.500 | 0.476 | VIGAS2 | 0.476 | VIGAS2 | 0.008 | CU |
| 21 | 35X50CIM | 527.500 | 0.921 | VIGAS2 | 0.731 | VIGAS2 | 0.008 | CU |
| 21 | 35X50CIM | 697.500 | 1.644 | VIGAS2 | 1.618 | VIGAS2 | 0.008 | CU |
| 22 | 35X50CIM | 17.500  | 1.187 | VIGAS1 | 1.094 | VIGAS1 | 0.013 | CU |
| 22 | 35X50CIM | 65.625  | 0.766 | VIGAS1 | 0.715 | VIGAS1 | 0.013 | CU |
| 22 | 35X50CIM | 113.750 | 0.347 | VIGAS1 | 0.337 | VIGAS1 | 0.013 | CU |
| 22 | 35X50CIM | 161.875 | 0.295 | VIGAS1 | 0.295 | VIGAS1 | 0.013 | CU |
| 22 | 35X50CIM | 210.000 | 0.415 | VIGAS1 | 0.487 | VIGAS1 | 0.013 | CU |
| 23 | 35X50CIM | 0.000   | 0.365 | VIGAS1 | 0.305 | VIGAS1 | 0.021 | CU |
| 23 | 35X50CIM | 9.000   | 0.304 | VIGAS1 | 0.261 | VIGAS1 | 0.021 | CU |
| 23 | 35X50CIM | 18.000  | 0.244 | VIGAS1 | 0.217 | VIGAS1 | 0.021 | CU |
| 23 | 35X50CIM | 27.000  | 0.183 | VIGAS1 | 0.173 | VIGAS1 | 0.021 | CU |
| 23 | 35X50CIM | 36.000  | 0.123 | VIGAS1 | 0.129 | VIGAS1 | 0.021 | CU |
| 24 | 35X50CIM | 0.000   | 0.032 | VIGAS1 | 0.016 | VIGAS1 | 0.005 | CU |
| 24 | 35X50CIM | 9.000   | 0.037 | VIGAS1 | 0.025 | VIGAS1 | 0.005 | CU |
| 24 | 35X50CIM | 18.000  | 0.042 | VIGAS1 | 0.040 | VIGAS1 | 0.005 | CU |
| 24 | 35X50CIM | 27.000  | 0.046 | VIGAS1 | 0.056 | VIGAS1 | 0.005 | CU |
| 24 | 35X50CIM | 36.000  | 0.051 | VIGAS1 | 0.071 | VIGAS1 | 0.005 | CU |
| 25 | 35X50CIM | 0.000   | 0.057 | VIGAS1 | 0.028 | VIGAS1 | 0.004 | CU |
| 25 | 35X50CIM | 9.000   | 0.036 | VIGAS1 | 0.014 | VIGAS1 | 0.004 | CU |
| 25 | 35X50CIM | 18.000  | 0.012 | CU     | 0.014 | VIGAS1 | 0.004 | CU |
| 25 | 35X50CIM | 27.000  | 0.019 | VIGAS1 | 0.014 | VIGAS1 | 0.004 | CU |
| 25 | 35X50CIM | 36.000  | 0.034 | VIGAS1 | 0.029 | VIGAS1 | 0.004 | CU |
| 26 | 35X50CIM | 0.000   | 0.104 | VIGAS1 | 0.052 | VIGAS1 | 0.010 | CU |
| 26 | 35X50CIM | 9.000   | 0.114 | VIGAS1 | 0.051 | VIGAS3 | 0.010 | CU |
| 26 | 35X50CIM | 18.000  | 0.125 | VIGAS1 | 0.037 | VIGAS1 | 0.010 | CU |
| 26 | 35X50CIM | 27.000  | 0.136 | VIGAS1 | 0.037 | VIGAS1 | 0.010 | CU |
| 26 | 35X50CIM | 36.000  | 0.147 | VIGAS1 | 0.073 | VIGAS1 | 0.010 | CU |
| 27 | 35X50CIM | 0.000   | 0.409 | VIGAS1 | 0.204 | VIGAS1 | 0.079 | CU |
| 27 | 35X50CIM | 9.000   | 0.655 | VIGAS1 | 0.347 | VIGAS1 | 0.079 | CU |
| 27 | 35X50CIM | 18.000  | 0.902 | VIGAS1 | 0.347 | VIGAS1 | 0.079 | CU |
| 27 | 35X50CIM | 27.000  | 1.149 | VIGAS1 | 0.347 | VIGAS1 | 0.079 | CU |
| 27 | 35X50CIM | 36.000  | 1.397 | VIGAS1 | 0.696 | VIGAS1 | 0.079 | CU |
| 28 | 35X50CIM | 0.000   | 1.663 | VIGAS1 | 0.827 | VIGAS1 | 0.031 | CU |
| 28 | 35X50CIM | 85.625  | 0.947 | VIGAS1 | 0.947 | VIGAS1 | 0.031 | CU |
| 28 | 35X50CIM | 171.250 | 0.947 | VIGAS1 | 1.067 | VIGAS1 | 0.031 | CU |
| 28 | 35X50CIM | 256.875 | 0.947 | VIGAS1 | 2.448 | VIGAS1 | 0.031 | CU |
| 28 | 35X50CIM | 342.500 | 1.206 | VIGAS3 | 3.852 | VIGAS1 | 0.031 | CU |
| 29 | 35X50CIM | 17.500  | 1.573 | VIGAS1 | 2.332 | VIGAS1 | 0.017 | CU |
| 29 | 35X50CIM | 196.250 | 1.142 | VIGAS1 | 1.142 | VIGAS1 | 0.017 | CU |
| 29 | 35X50CIM | 375.000 | 1.218 | CU     | 1.142 | VIGAS1 | 0.017 | CU |
| 29 | 35X50CIM | 553.750 | 2.877 | VIGAS1 | 1.142 | VIGAS1 | 0.017 | CU |
| 29 | 35X50CIM | 732.500 | 4.662 | VIGAS1 | 2.300 | VIGAS1 | 0.017 | CU |
| 30 | 35X50CIM | 17.500  | 1.944 | VIGAS1 | 1.659 | VIGAS1 | 0.012 | CU |
| 30 | 35X50CIM | 126.351 | 1.083 | VIGAS1 | 0.915 | VIGAS1 | 0.012 | CU |
| 30 | 35X50CIM | 235.203 | 0.482 | VIGAS1 | 0.482 | VIGAS1 | 0.012 | CU |
| 30 | 35X50CIM | 344.054 | 0.558 | VIGAS1 | 0.619 | VIGAS1 | 0.012 | CU |
| 30 | 35X50CIM | 452.905 | 1.299 | VIGAS1 | 1.475 | VIGAS1 | 0.012 | CU |
| 31 | 35X50CIM | 17.500  | 3.470 | VIGAS1 | 1.966 | VIGAS1 | 0.023 | CU |
| 31 | 35X50CIM | 107.500 | 2.169 | VIGAS1 | 1.139 | VIGAS1 | 0.023 | CU |
| 31 | 35X50CIM | 197.500 | 0.893 | VIGAS1 | 0.855 | VIGAS1 | 0.023 | CU |
| 31 | 35X50CIM | 287.500 | 0.855 | VIGAS1 | 0.855 | VIGAS1 | 0.023 | CU |
| 31 | 35X50CIM | 377.500 | 1.323 | VIGAS1 | 1.659 | VIGAS1 | 0.023 | CU |
| 32 | 35X50CIM | 15.000  | 0.862 | VIGAS1 | 1.348 | VIGAS1 | 0.015 | CU |
| 32 | 35X50CIM | 105.000 | 0.514 | VIGAS1 | 0.514 | VIGAS1 | 0.015 | CU |

|    |          |         |       |        |       |        |       |    |
|----|----------|---------|-------|--------|-------|--------|-------|----|
| 32 | 35X50CIM | 195.000 | 0.514 | VIGAS1 | 0.514 | VIGAS1 | 0.015 | CU |
| 32 | 35X50CIM | 285.000 | 1.210 | VIGAS1 | 1.173 | VIGAS1 | 0.015 | CU |
| 32 | 35X50CIM | 375.000 | 2.072 | VIGAS1 | 1.859 | VIGAS1 | 0.015 | CU |
| 33 | 35X50CIM | 17.500  | 1.589 | VIGAS2 | 1.742 | VIGAS2 | 0.010 | CU |
| 33 | 35X50CIM | 132.500 | 0.938 | VIGAS2 | 0.988 | VIGAS2 | 0.010 | CU |
| 33 | 35X50CIM | 247.500 | 0.432 | VIGAS2 | 0.432 | VIGAS2 | 0.010 | CU |
| 33 | 35X50CIM | 362.500 | 0.516 | VIGAS2 | 0.432 | VIGAS2 | 0.010 | CU |
| 33 | 35X50CIM | 477.500 | 1.256 | VIGAS2 | 1.000 | VIGAS2 | 0.010 | CU |
| 34 | 35X50CIM | 17.500  | 2.387 | VIGAS2 | 1.654 | VIGAS2 | 0.015 | CU |
| 34 | 35X50CIM | 132.500 | 1.262 | VIGAS2 | 0.819 | VIGAS2 | 0.015 | CU |
| 34 | 35X50CIM | 247.500 | 0.591 | VIGAS2 | 0.591 | VIGAS2 | 0.015 | CU |
| 34 | 35X50CIM | 362.500 | 0.837 | VIGAS2 | 0.956 | VIGAS2 | 0.015 | CU |
| 34 | 35X50CIM | 477.500 | 1.672 | VIGAS2 | 2.078 | VIGAS2 | 0.015 | CU |
| 35 | 35X50CIM | 17.500  | 2.598 | VIGAS2 | 1.974 | VIGAS2 | 0.018 | CU |
| 35 | 35X50CIM | 132.500 | 1.193 | VIGAS2 | 0.750 | VIGAS2 | 0.018 | CU |
| 35 | 35X50CIM | 247.500 | 0.750 | VIGAS2 | 0.750 | VIGAS2 | 0.018 | CU |
| 35 | 35X50CIM | 362.500 | 1.770 | VIGAS2 | 1.581 | VIGAS2 | 0.018 | CU |
| 35 | 35X50CIM | 477.500 | 3.039 | VIGAS2 | 2.993 | VIGAS2 | 0.018 | CU |
| 36 | 35X50CIM | 17.500  | 1.999 | VIGAS2 | 2.873 | VIGAS2 | 0.022 | CU |
| 36 | 35X50CIM | 95.000  | 1.184 | VIGAS2 | 1.784 | VIGAS2 | 0.022 | CU |
| 36 | 35X50CIM | 172.500 | 0.709 | VIGAS2 | 0.709 | VIGAS2 | 0.022 | CU |
| 36 | 35X50CIM | 250.000 | 0.709 | VIGAS2 | 0.709 | VIGAS2 | 0.022 | CU |
| 36 | 35X50CIM | 327.500 | 1.428 | VIGAS2 | 1.236 | VIGAS2 | 0.022 | CU |
| 37 | 35X50CIM | 15.000  | 2.146 | VIGAS1 | 1.658 | VIGAS1 | 0.016 | CU |
| 37 | 35X50CIM | 118.125 | 1.138 | VIGAS1 | 0.971 | VIGAS1 | 0.016 | CU |
| 37 | 35X50CIM | 221.250 | 0.532 | VIGAS1 | 0.532 | VIGAS1 | 0.016 | CU |
| 37 | 35X50CIM | 324.375 | 0.532 | VIGAS1 | 0.853 | VIGAS1 | 0.016 | CU |
| 37 | 35X50CIM | 427.500 | 1.069 | VIGAS1 | 1.858 | VIGAS1 | 0.016 | CU |
| 38 | 35X50CIM | 17.500  | 1.243 | VIGAS1 | 0.769 | VIGAS1 | 0.006 | CU |
| 38 | 35X50CIM | 196.250 | 0.548 | VIGAS1 | 0.381 | VIGAS1 | 0.006 | CU |
| 38 | 35X50CIM | 375.000 | 0.381 | VIGAS1 | 0.381 | VIGAS1 | 0.006 | CU |
| 38 | 35X50CIM | 553.750 | 0.728 | VIGAS1 | 0.835 | VIGAS1 | 0.006 | CU |
| 38 | 35X50CIM | 732.500 | 1.231 | VIGAS1 | 1.532 | VIGAS1 | 0.006 | CU |
| 39 | 35X50CIM | 17.500  | 1.368 | VIGAS1 | 2.803 | VIGAS1 | 0.017 | CU |
| 39 | 35X50CIM | 196.250 | 0.973 | VIGAS1 | 1.108 | VIGAS1 | 0.017 | CU |
| 39 | 35X50CIM | 375.000 | 0.973 | VIGAS1 | 0.973 | VIGAS1 | 0.017 | CU |
| 39 | 35X50CIM | 553.750 | 2.243 | VIGAS1 | 0.973 | VIGAS1 | 0.017 | CU |
| 39 | 35X50CIM | 732.500 | 3.960 | VIGAS1 | 1.958 | VIGAS1 | 0.017 | CU |
| 40 | 35X50CIM | 36.916  | 2.130 | VIGAS2 | 1.631 | VIGAS2 | 0.009 | CU |
| 40 | 35X50CIM | 203.937 | 1.164 | VIGAS2 | 0.804 | VIGAS2 | 0.009 | CU |
| 40 | 35X50CIM | 370.958 | 0.528 | VIGAS2 | 0.528 | VIGAS2 | 0.009 | CU |
| 40 | 35X50CIM | 537.979 | 0.836 | VIGAS2 | 0.745 | VIGAS2 | 0.009 | CU |
| 40 | 35X50CIM | 705.000 | 1.663 | VIGAS2 | 1.707 | VIGAS2 | 0.009 | CU |
| 41 | 35X50CIM | 15.000  | 1.757 | VIGAS2 | 0.874 | VIGAS2 | 0.024 | CU |
| 41 | 35X50CIM | 101.875 | 0.765 | VIGAS2 | 0.765 | VIGAS2 | 0.024 | CU |
| 41 | 35X50CIM | 188.750 | 0.765 | VIGAS2 | 0.765 | VIGAS2 | 0.024 | CU |
| 41 | 35X50CIM | 275.625 | 0.933 | VIGAS2 | 1.870 | VIGAS2 | 0.024 | CU |
| 41 | 35X50CIM | 362.500 | 1.514 | VIGAS2 | 3.100 | VIGAS2 | 0.024 | CU |
| 42 | 35X50CIM | 17.500  | 1.847 | VIGAS2 | 1.387 | VIGAS2 | 0.024 | CU |
| 42 | 35X50CIM | 103.750 | 0.783 | VIGAS2 | 0.783 | VIGAS2 | 0.024 | CU |
| 42 | 35X50CIM | 190.000 | 0.783 | VIGAS2 | 0.783 | VIGAS2 | 0.024 | CU |
| 42 | 35X50CIM | 276.250 | 0.928 | VIGAS2 | 1.906 | VIGAS2 | 0.024 | CU |
| 42 | 35X50CIM | 362.500 | 1.701 | VIGAS2 | 3.175 | VIGAS2 | 0.024 | CU |
| 43 | 35X50CIM | 17.500  | 2.383 | VIGAS2 | 2.104 | VIGAS2 | 0.021 | CU |
| 43 | 35X50CIM | 103.750 | 1.162 | VIGAS2 | 1.066 | VIGAS2 | 0.021 | CU |
| 43 | 35X50CIM | 190.000 | 0.611 | VIGAS2 | 0.611 | VIGAS2 | 0.021 | CU |
| 43 | 35X50CIM | 276.250 | 0.985 | VIGAS2 | 1.249 | VIGAS2 | 0.021 | CU |
| 43 | 35X50CIM | 362.500 | 2.022 | VIGAS2 | 2.471 | VIGAS2 | 0.021 | CU |
| 44 | 35X50CIM | 17.500  | 3.680 | VIGAS1 | 2.271 | VIGAS1 | 0.023 | CU |

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|----|----------|---------|-------|--------|-------|--------|-------|----|
| 44 | 35X50CIM | 107.500 | 2.319 | VIGAS1 | 1.313 | VIGAS1 | 0.023 | CU |
| 44 | 35X50CIM | 197.500 | 0.980 | VIGAS1 | 0.906 | VIGAS1 | 0.023 | CU |
| 44 | 35X50CIM | 287.500 | 0.906 | VIGAS1 | 0.906 | VIGAS1 | 0.023 | CU |
| 44 | 35X50CIM | 377.500 | 1.526 | VIGAS1 | 1.672 | VIGAS1 | 0.023 | CU |
| 45 | 35X50CIM | 15.000  | 0.744 | VIGAS1 | 1.180 | VIGAS1 | 0.012 | CU |
| 45 | 35X50CIM | 105.000 | 0.431 | VIGAS1 | 0.496 | VIGAS1 | 0.012 | CU |
| 45 | 35X50CIM | 195.000 | 0.431 | VIGAS1 | 0.490 | VIGAS1 | 0.012 | CU |
| 45 | 35X50CIM | 285.000 | 0.866 | VIGAS1 | 1.110 | VIGAS1 | 0.012 | CU |
| 45 | 35X50CIM | 375.000 | 1.553 | VIGAS1 | 1.735 | VIGAS1 | 0.012 | CU |
| 46 | 35X50CIM | 17.500  | 2.141 | VIGAS1 | 1.878 | VIGAS1 | 0.014 | CU |
| 46 | 35X50CIM | 120.000 | 1.124 | VIGAS1 | 0.887 | VIGAS1 | 0.014 | CU |
| 46 | 35X50CIM | 222.500 | 0.530 | VIGAS1 | 0.530 | VIGAS1 | 0.014 | CU |
| 46 | 35X50CIM | 325.000 | 1.076 | VIGAS1 | 0.883 | VIGAS1 | 0.014 | CU |
| 46 | 35X50CIM | 427.500 | 2.070 | VIGAS1 | 1.897 | VIGAS1 | 0.014 | CU |
| 47 | 35X50CIM | 17.500  | 1.517 | VIGAS1 | 1.766 | VIGAS1 | 0.011 | CU |
| 47 | 35X50CIM | 103.125 | 0.872 | VIGAS1 | 1.112 | VIGAS1 | 0.011 | CU |
| 47 | 35X50CIM | 188.750 | 0.438 | VIGAS1 | 0.464 | VIGAS1 | 0.011 | CU |
| 47 | 35X50CIM | 274.375 | 0.438 | VIGAS1 | 0.438 | VIGAS1 | 0.011 | CU |
| 47 | 35X50CIM | 360.000 | 0.829 | VIGAS1 | 1.052 | VIGAS1 | 0.011 | CU |
| 48 | 35X50CIM | 15.000  | 1.466 | VIGAS1 | 1.733 | VIGAS1 | 0.025 | CU |
| 48 | 35X50CIM | 100.625 | 0.902 | VIGAS1 | 0.902 | VIGAS1 | 0.025 | CU |
| 48 | 35X50CIM | 186.250 | 0.943 | VIGAS1 | 0.902 | VIGAS1 | 0.025 | CU |
| 48 | 35X50CIM | 271.875 | 2.294 | VIGAS1 | 1.409 | VIGAS1 | 0.025 | CU |
| 48 | 35X50CIM | 357.500 | 3.666 | VIGAS1 | 2.380 | VIGAS1 | 0.025 | CU |
| 49 | 35X50CIM | 17.500  | 2.422 | VIGAS2 | 2.667 | VIGAS2 | 0.022 | CU |
| 49 | 35X50CIM | 97.188  | 1.193 | VIGAS2 | 1.475 | VIGAS2 | 0.022 | CU |
| 49 | 35X50CIM | 176.875 | 0.659 | VIGAS2 | 0.659 | VIGAS2 | 0.022 | CU |
| 49 | 35X50CIM | 256.563 | 0.870 | VIGAS2 | 1.231 | VIGAS2 | 0.022 | CU |
| 49 | 35X50CIM | 336.250 | 2.053 | VIGAS2 | 2.460 | VIGAS2 | 0.022 | CU |
| 50 | 35X50CIM | 17.500  | 2.504 | VIGAS2 | 1.971 | VIGAS2 | 0.023 | CU |
| 50 | 35X50CIM | 97.187  | 1.304 | VIGAS2 | 1.010 | VIGAS2 | 0.023 | CU |
| 50 | 35X50CIM | 176.875 | 0.619 | VIGAS2 | 0.619 | VIGAS2 | 0.023 | CU |
| 50 | 35X50CIM | 256.563 | 0.890 | VIGAS2 | 1.060 | VIGAS2 | 0.023 | CU |
| 50 | 35X50CIM | 336.250 | 1.850 | VIGAS2 | 2.256 | VIGAS2 | 0.023 | CU |
| 51 | 35X50CIM | 35.000  | 1.997 | VIGAS2 | 1.366 | VIGAS2 | 0.009 | CU |
| 51 | 35X50CIM | 198.750 | 1.078 | VIGAS2 | 0.624 | VIGAS2 | 0.009 | CU |
| 51 | 35X50CIM | 362.500 | 0.495 | VIGAS2 | 0.495 | VIGAS2 | 0.009 | CU |
| 51 | 35X50CIM | 526.250 | 0.849 | VIGAS2 | 0.737 | VIGAS2 | 0.009 | CU |
| 51 | 35X50CIM | 690.000 | 1.592 | VIGAS2 | 1.652 | VIGAS2 | 0.009 | CU |
| 52 | 35X50CIM | 35.000  | 2.014 | VIGAS2 | 1.312 | VIGAS2 | 0.009 | CU |
| 52 | 35X50CIM | 198.750 | 1.088 | VIGAS2 | 0.585 | VIGAS2 | 0.009 | CU |
| 52 | 35X50CIM | 362.500 | 0.499 | VIGAS2 | 0.499 | VIGAS2 | 0.009 | CU |
| 52 | 35X50CIM | 526.250 | 0.859 | VIGAS2 | 0.741 | VIGAS2 | 0.009 | CU |
| 52 | 35X50CIM | 690.000 | 1.588 | VIGAS2 | 1.663 | VIGAS2 | 0.009 | CU |
| 53 | 35X50CIM | 17.500  | 2.478 | VIGAS2 | 1.689 | VIGAS2 | 0.024 | CU |
| 53 | 35X50CIM | 97.187  | 1.235 | VIGAS2 | 0.789 | VIGAS2 | 0.024 | CU |
| 53 | 35X50CIM | 176.875 | 0.613 | VIGAS2 | 0.613 | VIGAS2 | 0.024 | CU |
| 53 | 35X50CIM | 256.563 | 0.996 | VIGAS2 | 1.216 | VIGAS2 | 0.024 | CU |
| 53 | 35X50CIM | 336.250 | 1.898 | VIGAS2 | 2.459 | VIGAS2 | 0.024 | CU |
| 54 | 35X50CIM | 17.500  | 2.685 | VIGAS2 | 1.868 | VIGAS2 | 0.031 | CU |
| 54 | 35X50CIM | 97.188  | 1.153 | VIGAS2 | 0.893 | VIGAS2 | 0.031 | CU |
| 54 | 35X50CIM | 176.875 | 0.844 | VIGAS2 | 0.844 | VIGAS2 | 0.031 | CU |
| 54 | 35X50CIM | 256.563 | 1.043 | VIGAS2 | 1.878 | VIGAS2 | 0.031 | CU |
| 54 | 35X50CIM | 336.250 | 2.021 | VIGAS2 | 3.425 | VIGAS2 | 0.031 | CU |
| 55 | 35X50CIM | 17.500  | 3.932 | VIGAS1 | 2.767 | VIGAS1 | 0.027 | CU |
| 55 | 35X50CIM | 107.500 | 2.324 | VIGAS1 | 1.448 | VIGAS1 | 0.027 | CU |
| 55 | 35X50CIM | 197.500 | 0.967 | VIGAS1 | 0.967 | VIGAS1 | 0.027 | CU |
| 55 | 35X50CIM | 287.500 | 1.149 | VIGAS1 | 0.967 | VIGAS1 | 0.027 | CU |
| 55 | 35X50CIM | 377.500 | 2.464 | VIGAS1 | 2.392 | VIGAS1 | 0.027 | CU |

|    |          |         |       |        |       |        |       |        |
|----|----------|---------|-------|--------|-------|--------|-------|--------|
| 56 | 35X50CIM | 15.000  | 1.576 | VIGAS1 | 2.024 | VIGAS1 | 0.016 | VIGAS4 |
| 56 | 35X50CIM | 105.000 | 0.624 | VIGAS1 | 1.047 | VIGAS1 | 0.016 | VIGAS4 |
| 56 | 35X50CIM | 195.000 | 0.552 | VIGAS1 | 0.552 | VIGAS1 | 0.016 | VIGAS4 |
| 56 | 35X50CIM | 285.000 | 0.884 | VIGAS1 | 1.268 | VIGAS1 | 0.016 | VIGAS4 |
| 56 | 35X50CIM | 375.000 | 1.859 | VIGAS1 | 2.227 | VIGAS1 | 0.016 | VIGAS4 |
| 57 | 35X50CIM | 17.500  | 2.166 | VIGAS1 | 1.858 | VIGAS1 | 0.015 | CU     |
| 57 | 35X50CIM | 120.000 | 1.172 | VIGAS1 | 0.839 | VIGAS1 | 0.015 | CU     |
| 57 | 35X50CIM | 222.500 | 0.545 | VIGAS1 | 0.545 | VIGAS1 | 0.015 | CU     |
| 57 | 35X50CIM | 325.000 | 1.180 | VIGAS1 | 0.788 | VIGAS1 | 0.015 | CU     |
| 57 | 35X50CIM | 427.500 | 2.202 | VIGAS1 | 1.777 | VIGAS1 | 0.015 | CU     |
| 58 | 35X50CIM | 17.500  | 1.820 | VIGAS1 | 2.365 | VIGAS1 | 0.018 | CU     |
| 58 | 35X50CIM | 103.125 | 0.856 | VIGAS1 | 1.332 | VIGAS1 | 0.018 | CU     |
| 58 | 35X50CIM | 188.750 | 0.585 | VIGAS1 | 0.585 | VIGAS1 | 0.018 | CU     |
| 58 | 35X50CIM | 274.375 | 0.705 | VIGAS1 | 1.054 | VIGAS1 | 0.018 | CU     |
| 58 | 35X50CIM | 360.000 | 1.730 | VIGAS1 | 2.020 | VIGAS1 | 0.018 | CU     |
| 59 | 35X50CIM | 15.000  | 2.259 | VIGAS1 | 2.447 | VIGAS1 | 0.029 | CU     |
| 59 | 35X50CIM | 100.625 | 1.108 | VIGAS1 | 0.952 | VIGAS1 | 0.029 | CU     |
| 59 | 35X50CIM | 186.250 | 0.952 | VIGAS1 | 0.952 | VIGAS1 | 0.029 | CU     |
| 59 | 35X50CIM | 271.875 | 2.266 | VIGAS1 | 1.168 | VIGAS1 | 0.029 | CU     |
| 59 | 35X50CIM | 357.500 | 3.871 | VIGAS1 | 2.319 | VIGAS1 | 0.029 | CU     |
| 60 | 35X50CIM | 17.500  | 2.402 | VIGAS2 | 1.999 | VIGAS2 | 0.023 | CU     |
| 60 | 35X50CIM | 98.125  | 1.197 | VIGAS2 | 1.012 | VIGAS2 | 0.023 | CU     |
| 60 | 35X50CIM | 178.750 | 0.594 | VIGAS2 | 0.594 | VIGAS2 | 0.023 | CU     |
| 60 | 35X50CIM | 259.375 | 0.939 | VIGAS2 | 1.180 | VIGAS2 | 0.023 | CU     |
| 60 | 35X50CIM | 340.000 | 1.925 | VIGAS2 | 2.385 | VIGAS2 | 0.023 | CU     |
| 61 | 35X50CIM | 17.500  | 2.427 | VIGAS2 | 2.741 | VIGAS2 | 0.022 | CU     |
| 61 | 35X50CIM | 98.750  | 1.184 | VIGAS2 | 1.527 | VIGAS2 | 0.022 | CU     |
| 61 | 35X50CIM | 180.000 | 0.677 | VIGAS2 | 0.677 | VIGAS2 | 0.022 | CU     |
| 61 | 35X50CIM | 261.250 | 0.859 | VIGAS2 | 1.268 | VIGAS2 | 0.022 | CU     |
| 61 | 35X50CIM | 342.500 | 2.064 | VIGAS2 | 2.512 | VIGAS2 | 0.022 | CU     |
| 62 | 35X50CIM | 17.500  | 2.468 | VIGAS2 | 2.790 | VIGAS2 | 0.023 | CU     |
| 62 | 35X50CIM | 98.750  | 1.196 | VIGAS2 | 1.563 | VIGAS2 | 0.023 | CU     |
| 62 | 35X50CIM | 180.000 | 0.689 | VIGAS2 | 0.689 | VIGAS2 | 0.023 | CU     |
| 62 | 35X50CIM | 261.250 | 0.849 | VIGAS2 | 1.314 | VIGAS2 | 0.023 | CU     |
| 62 | 35X50CIM | 342.500 | 2.066 | VIGAS2 | 2.588 | VIGAS2 | 0.023 | CU     |
| 63 | 35X50CIM | 17.500  | 1.899 | VIGAS2 | 1.233 | VIGAS2 | 0.009 | CU     |
| 63 | 35X50CIM | 153.750 | 1.096 | VIGAS2 | 0.632 | VIGAS2 | 0.009 | CU     |
| 63 | 35X50CIM | 290.000 | 0.471 | VIGAS2 | 0.471 | VIGAS2 | 0.009 | CU     |
| 63 | 35X50CIM | 426.250 | 0.569 | VIGAS2 | 0.496 | VIGAS2 | 0.009 | CU     |
| 63 | 35X50CIM | 562.500 | 1.171 | VIGAS2 | 1.295 | VIGAS2 | 0.009 | CU     |
| 64 | 35X50CIM | 17.500  | 2.432 | VIGAS2 | 1.910 | VIGAS2 | 0.024 | CU     |
| 64 | 35X50CIM | 98.125  | 1.191 | VIGAS2 | 0.936 | VIGAS2 | 0.024 | CU     |
| 64 | 35X50CIM | 178.750 | 0.619 | VIGAS2 | 0.619 | VIGAS2 | 0.024 | CU     |
| 64 | 35X50CIM | 259.375 | 0.994 | VIGAS2 | 1.259 | VIGAS2 | 0.024 | CU     |
| 64 | 35X50CIM | 340.000 | 1.969 | VIGAS2 | 2.501 | VIGAS2 | 0.024 | CU     |
| 65 | 35X50CIM | 15.000  | 2.575 | VIGAS2 | 1.656 | VIGAS2 | 0.025 | CU     |
| 65 | 35X50CIM | 96.250  | 1.282 | VIGAS2 | 0.766 | VIGAS2 | 0.025 | CU     |
| 65 | 35X50CIM | 177.500 | 0.637 | VIGAS2 | 0.637 | VIGAS2 | 0.025 | CU     |
| 65 | 35X50CIM | 258.750 | 0.999 | VIGAS2 | 1.266 | VIGAS2 | 0.025 | CU     |
| 65 | 35X50CIM | 340.000 | 1.891 | VIGAS2 | 2.559 | VIGAS2 | 0.025 | CU     |
| 66 | 35X50CIM | 15.000  | 2.567 | VIGAS2 | 1.567 | VIGAS2 | 0.025 | CU     |
| 66 | 35X50CIM | 96.250  | 1.309 | VIGAS2 | 0.735 | VIGAS2 | 0.025 | CU     |
| 66 | 35X50CIM | 177.500 | 0.635 | VIGAS2 | 0.635 | VIGAS2 | 0.025 | CU     |
| 66 | 35X50CIM | 258.750 | 0.916 | VIGAS2 | 1.168 | VIGAS2 | 0.025 | CU     |
| 66 | 35X50CIM | 340.000 | 1.750 | VIGAS2 | 2.423 | VIGAS2 | 0.025 | CU     |
| 67 | 35X50CIM | 17.500  | 1.376 | VIGAS1 | 2.779 | VIGAS1 | 0.031 | CU     |
| 67 | 35X50CIM | 80.704  | 0.924 | VIGAS2 | 1.573 | VIGAS1 | 0.031 | CU     |
| 67 | 35X50CIM | 143.909 | 0.687 | VIGAS1 | 0.937 | VIGAS2 | 0.031 | CU     |
| 67 | 35X50CIM | 207.113 | 0.888 | VIGAS1 | 0.965 | VIGAS1 | 0.031 | CU     |
| 67 | 35X50CIM | 270.318 | 1.997 | VIGAS1 | 1.633 | VIGAS1 | 0.031 | CU     |

|    |          |         |       |        |       |        |       |    |
|----|----------|---------|-------|--------|-------|--------|-------|----|
| 68 | 35X50CIM | 17.500  | 3.920 | VIGAS1 | 2.790 | VIGAS1 | 0.026 | CU |
| 68 | 35X50CIM | 106.875 | 2.330 | VIGAS1 | 1.478 | VIGAS1 | 0.026 | CU |
| 68 | 35X50CIM | 196.250 | 0.964 | VIGAS1 | 0.964 | VIGAS1 | 0.026 | CU |
| 68 | 35X50CIM | 285.625 | 1.102 | VIGAS1 | 0.964 | VIGAS1 | 0.026 | CU |
| 68 | 35X50CIM | 375.000 | 2.407 | VIGAS1 | 2.335 | VIGAS1 | 0.026 | CU |
| 69 | 35X50CIM | 17.500  | 1.500 | VIGAS1 | 2.101 | VIGAS1 | 0.018 | CU |
| 69 | 35X50CIM | 106.875 | 0.585 | VIGAS1 | 1.033 | VIGAS1 | 0.018 | CU |
| 69 | 35X50CIM | 196.250 | 0.535 | VIGAS1 | 0.535 | VIGAS1 | 0.018 | CU |
| 69 | 35X50CIM | 285.625 | 1.080 | VIGAS1 | 1.236 | VIGAS1 | 0.018 | CU |
| 69 | 35X50CIM | 375.000 | 2.150 | VIGAS1 | 2.158 | VIGAS1 | 0.018 | CU |
| 70 | 35X50CIM | 17.500  | 2.492 | VIGAS1 | 2.093 | VIGAS1 | 0.018 | CU |
| 70 | 35X50CIM | 120.000 | 1.228 | VIGAS1 | 1.001 | VIGAS1 | 0.018 | CU |
| 70 | 35X50CIM | 222.500 | 0.626 | VIGAS1 | 0.626 | VIGAS1 | 0.018 | CU |
| 70 | 35X50CIM | 325.000 | 1.156 | VIGAS1 | 1.267 | VIGAS1 | 0.018 | CU |
| 70 | 35X50CIM | 427.500 | 2.249 | VIGAS1 | 2.532 | VIGAS1 | 0.018 | CU |
| 71 | 35X50CIM | 17.500  | 1.700 | VIGAS1 | 1.928 | VIGAS1 | 0.012 | CU |
| 71 | 35X50CIM | 133.750 | 0.999 | VIGAS1 | 1.013 | VIGAS1 | 0.012 | CU |
| 71 | 35X50CIM | 250.000 | 0.478 | VIGAS1 | 0.478 | VIGAS1 | 0.012 | CU |
| 71 | 35X50CIM | 366.250 | 0.797 | VIGAS1 | 0.478 | VIGAS1 | 0.012 | CU |
| 71 | 35X50CIM | 482.500 | 1.709 | VIGAS1 | 1.083 | VIGAS1 | 0.012 | CU |
| 72 | 35X50CIM | 15.000  | 1.408 | VIGAS2 | 1.397 | VIGAS2 | 0.020 | CU |
| 72 | 35X50CIM | 76.250  | 0.701 | VIGAS2 | 0.932 | VIGAS2 | 0.020 | CU |
| 72 | 35X50CIM | 137.500 | 0.403 | VIGAS2 | 0.627 | VIGAS1 | 0.020 | CU |
| 72 | 35X50CIM | 198.750 | 0.403 | VIGAS2 | 0.847 | VIGAS1 | 0.020 | CU |
| 72 | 35X50CIM | 260.000 | 0.664 | VIGAS2 | 1.624 | VIGAS2 | 0.020 | CU |
| 73 | 35X50CIM | 17.500  | 1.886 | VIGAS1 | 2.266 | VIGAS1 | 0.025 | CU |
| 73 | 35X50CIM | 80.704  | 1.326 | VIGAS4 | 1.238 | VIGAS1 | 0.025 | CU |
| 73 | 35X50CIM | 143.909 | 0.561 | VIGAS1 | 0.805 | VIGAS2 | 0.025 | CU |
| 73 | 35X50CIM | 207.113 | 0.921 | VIGAS1 | 0.987 | VIGAS1 | 0.025 | CU |
| 73 | 35X50CIM | 270.318 | 1.817 | VIGAS1 | 1.780 | VIGAS1 | 0.025 | CU |
| 74 | 35X50CIM | 17.500  | 2.362 | VIGAS2 | 1.874 | VIGAS2 | 0.022 | CU |
| 74 | 35X50CIM | 97.188  | 1.235 | VIGAS2 | 0.978 | VIGAS2 | 0.022 | CU |
| 74 | 35X50CIM | 176.875 | 0.585 | VIGAS2 | 0.585 | VIGAS2 | 0.022 | CU |
| 74 | 35X50CIM | 256.563 | 0.795 | VIGAS2 | 0.989 | VIGAS2 | 0.022 | CU |
| 74 | 35X50CIM | 336.250 | 1.689 | VIGAS2 | 2.112 | VIGAS2 | 0.022 | CU |
| 75 | 35X50CIM | 17.500  | 2.369 | VIGAS2 | 1.912 | VIGAS2 | 0.022 | CU |
| 75 | 35X50CIM | 97.813  | 1.232 | VIGAS2 | 1.009 | VIGAS2 | 0.022 | CU |
| 75 | 35X50CIM | 178.125 | 0.586 | VIGAS2 | 0.586 | VIGAS2 | 0.022 | CU |
| 75 | 35X50CIM | 258.438 | 0.777 | VIGAS2 | 1.011 | VIGAS2 | 0.022 | CU |
| 75 | 35X50CIM | 338.750 | 1.678 | VIGAS2 | 2.145 | VIGAS2 | 0.022 | CU |
| 76 | 35X50CIM | 17.500  | 2.223 | VIGAS2 | 1.792 | VIGAS2 | 0.021 | CU |
| 76 | 35X50CIM | 97.813  | 1.131 | VIGAS2 | 0.931 | VIGAS2 | 0.021 | CU |
| 76 | 35X50CIM | 178.125 | 0.550 | VIGAS2 | 0.550 | VIGAS2 | 0.021 | CU |
| 76 | 35X50CIM | 258.438 | 0.775 | VIGAS2 | 1.025 | VIGAS2 | 0.021 | CU |
| 76 | 35X50CIM | 338.750 | 1.635 | VIGAS2 | 2.115 | VIGAS2 | 0.021 | CU |
| 77 | 35X50CIM | 15.000  | 1.848 | VIGAS2 | 1.501 | VIGAS2 | 0.012 | CU |
| 77 | 35X50CIM | 149.375 | 0.727 | VIGAS2 | 0.727 | VIGAS2 | 0.012 | CU |
| 77 | 35X50CIM | 283.750 | 0.770 | VIGAS2 | 0.727 | VIGAS2 | 0.012 | CU |
| 77 | 35X50CIM | 418.125 | 1.833 | VIGAS2 | 1.574 | VIGAS2 | 0.012 | CU |
| 77 | 35X50CIM | 552.500 | 2.947 | VIGAS2 | 2.714 | VIGAS2 | 0.012 | CU |
| 78 | 35X50CIM | 17.500  | 2.800 | VIGAS2 | 2.286 | VIGAS2 | 0.031 | CU |
| 78 | 35X50CIM | 97.188  | 1.140 | VIGAS2 | 0.939 | VIGAS2 | 0.031 | CU |
| 78 | 35X50CIM | 176.875 | 0.939 | VIGAS2 | 0.939 | VIGAS2 | 0.031 | CU |
| 78 | 35X50CIM | 256.563 | 1.766 | VIGAS2 | 2.140 | VIGAS2 | 0.031 | CU |
| 78 | 35X50CIM | 336.250 | 3.139 | VIGAS2 | 3.819 | VIGAS2 | 0.031 | CU |
| 79 | 35X50CIM | 15.000  | 2.871 | VIGAS2 | 2.286 | VIGAS2 | 0.032 | CU |
| 79 | 35X50CIM | 95.313  | 1.176 | VIGAS2 | 0.956 | VIGAS2 | 0.032 | CU |
| 79 | 35X50CIM | 175.625 | 0.956 | VIGAS2 | 0.956 | VIGAS2 | 0.032 | CU |
| 79 | 35X50CIM | 255.938 | 1.799 | VIGAS2 | 2.174 | VIGAS2 | 0.032 | CU |

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|-----|----------|---------|-------|--------|-------|--------|-------|--------|
| 79  | 35X50CIM | 336.250 | 3.183 | VIGAS2 | 3.889 | VIGAS2 | 0.032 | CU     |
| 80  | 35X50CIM | 15.000  | 2.917 | VIGAS2 | 2.311 | VIGAS2 | 0.032 | CU     |
| 80  | 35X50CIM | 95.313  | 1.207 | VIGAS2 | 0.958 | VIGAS2 | 0.032 | CU     |
| 80  | 35X50CIM | 175.625 | 0.958 | VIGAS2 | 0.958 | VIGAS2 | 0.032 | CU     |
| 80  | 35X50CIM | 255.938 | 1.810 | VIGAS2 | 2.169 | VIGAS2 | 0.032 | CU     |
| 80  | 35X50CIM | 336.250 | 3.206 | VIGAS2 | 3.898 | VIGAS2 | 0.032 | CU     |
| 81  | 35X50CIM | 17.500  | 3.278 | VIGAS1 | 3.115 | VIGAS1 | 0.023 | CU     |
| 81  | 35X50CIM | 106.875 | 1.891 | VIGAS1 | 1.707 | VIGAS1 | 0.023 | CU     |
| 81  | 35X50CIM | 196.250 | 0.808 | VIGAS1 | 0.808 | VIGAS1 | 0.023 | CU     |
| 81  | 35X50CIM | 285.625 | 1.055 | VIGAS1 | 0.827 | VIGAS1 | 0.023 | CU     |
| 81  | 35X50CIM | 375.000 | 2.452 | VIGAS1 | 2.197 | VIGAS1 | 0.023 | CU     |
| 82  | 35X50CIM | 17.500  | 1.627 | VIGAS1 | 1.954 | VIGAS1 | 0.017 | CU     |
| 82  | 35X50CIM | 106.875 | 0.699 | VIGAS1 | 0.943 | VIGAS1 | 0.017 | CU     |
| 82  | 35X50CIM | 196.250 | 0.515 | VIGAS1 | 0.515 | VIGAS1 | 0.017 | CU     |
| 82  | 35X50CIM | 285.625 | 1.058 | VIGAS1 | 1.145 | VIGAS1 | 0.017 | CU     |
| 82  | 35X50CIM | 375.000 | 2.071 | VIGAS1 | 2.079 | VIGAS1 | 0.017 | CU     |
| 83  | 35X50CIM | 17.500  | 2.035 | VIGAS1 | 2.066 | VIGAS1 | 0.015 | CU     |
| 83  | 35X50CIM | 120.000 | 1.059 | VIGAS1 | 0.992 | VIGAS1 | 0.015 | CU     |
| 83  | 35X50CIM | 222.500 | 0.547 | VIGAS1 | 0.547 | VIGAS1 | 0.015 | CU     |
| 83  | 35X50CIM | 325.000 | 1.132 | VIGAS1 | 0.870 | VIGAS1 | 0.015 | CU     |
| 83  | 35X50CIM | 427.500 | 2.208 | VIGAS1 | 1.844 | VIGAS1 | 0.015 | CU     |
| 84  | 35X50CIM | 17.500  | 1.891 | VIGAS1 | 2.350 | VIGAS1 | 0.019 | CU     |
| 84  | 35X50CIM | 102.500 | 0.959 | VIGAS1 | 1.278 | VIGAS1 | 0.019 | CU     |
| 84  | 35X50CIM | 187.500 | 0.582 | VIGAS1 | 0.582 | VIGAS1 | 0.019 | CU     |
| 84  | 35X50CIM | 272.500 | 0.838 | VIGAS1 | 0.885 | VIGAS1 | 0.019 | CU     |
| 84  | 35X50CIM | 357.500 | 1.905 | VIGAS1 | 1.815 | VIGAS1 | 0.019 | CU     |
| 85  | 35X50CIM | 17.500  | 2.127 | VIGAS1 | 2.367 | VIGAS1 | 0.025 | CU     |
| 85  | 35X50CIM | 102.500 | 0.954 | VIGAS1 | 0.941 | VIGAS1 | 0.025 | CU     |
| 85  | 35X50CIM | 187.500 | 0.820 | VIGAS1 | 0.820 | VIGAS1 | 0.025 | CU     |
| 85  | 35X50CIM | 272.500 | 1.886 | VIGAS1 | 1.371 | VIGAS1 | 0.025 | CU     |
| 85  | 35X50CIM | 357.500 | 3.329 | VIGAS1 | 2.551 | VIGAS1 | 0.025 | CU     |
| 143 | 35X50V   | 17.500  | 3.314 | VIGAS1 | 1.858 | VIGAS1 | 0.049 | VIGAS4 |
| 143 | 35X50V   | 107.500 | 1.320 | CU     | 3.528 | VIGAS1 | 0.037 | VIGAS4 |
| 143 | 35X50V   | 197.500 | 1.320 | CU     | 2.941 | CU     | 0.034 | VIGAS4 |
| 143 | 35X50V   | 287.500 | 1.320 | CU     | 1.320 | CU     | 0.046 | VIGAS4 |
| 143 | 35X50V   | 377.500 | 5.367 | CU     | 2.660 | CU     | 0.058 | VIGAS4 |
| 144 | 35X50V   | 15.000  | 5.367 | CU     | 2.697 | CU     | 0.028 | VIGAS2 |
| 144 | 35X50V   | 105.000 | 1.338 | CU     | 1.338 | CU     | 0.028 | VIGAS2 |
| 144 | 35X50V   | 195.000 | 1.338 | CU     | 2.722 | CU     | 0.028 | VIGAS2 |
| 144 | 35X50V   | 285.000 | 1.338 | CU     | 3.276 | VIGAS1 | 0.028 | VIGAS2 |
| 144 | 35X50V   | 375.000 | 3.540 | VIGAS1 | 1.752 | VIGAS1 | 0.028 | VIGAS2 |
| 145 | 35X50V   | 17.500  | 4.182 | VIGAS2 | 2.067 | VIGAS2 | 0.051 | VIGAS4 |
| 145 | 35X50V   | 108.125 | 1.167 | VIGAS2 | 3.805 | VIGAS2 | 0.038 | VIGAS4 |
| 145 | 35X50V   | 198.750 | 1.167 | VIGAS2 | 3.672 | CU     | 0.030 | VIGAS4 |
| 145 | 35X50V   | 289.375 | 1.167 | VIGAS2 | 1.590 | CU     | 0.043 | VIGAS4 |
| 145 | 35X50V   | 380.000 | 4.763 | VIGAS2 | 2.349 | VIGAS2 | 0.056 | VIGAS4 |
| 146 | 35X50V   | 31.345  | 5.367 | VIGAS2 | 2.962 | VIGAS2 | 0.025 | VIGAS2 |
| 146 | 35X50V   | 196.009 | 2.933 | CU     | 5.149 | CU     | 0.025 | VIGAS2 |
| 146 | 35X50V   | 360.672 | 2.933 | CU     | 5.394 | CU     | 0.025 | VIGAS2 |
| 146 | 35X50V   | 525.336 | 2.933 | CU     | 2.933 | CU     | 0.025 | VIGAS2 |
| 146 | 35X50V   | 690.000 | 9.288 | CU     | 5.367 | CU     | 0.037 | CU     |
| 147 | 35X50V   | 15.000  | 4.080 | VIGAS1 | 2.017 | VIGAS1 | 0.046 | VIGAS4 |
| 147 | 35X50V   | 118.125 | 1.347 | VIGAS1 | 3.051 | VIGAS1 | 0.035 | VIGAS4 |
| 147 | 35X50V   | 221.250 | 1.347 | VIGAS1 | 3.322 | CU     | 0.027 | VIGAS4 |
| 147 | 35X50V   | 324.375 | 1.347 | VIGAS1 | 2.068 | VIGAS1 | 0.039 | VIGAS4 |
| 147 | 35X50V   | 427.500 | 5.367 | VIGAS1 | 2.715 | VIGAS1 | 0.050 | VIGAS4 |
| 148 | 35X50V   | 17.500  | 5.367 | VIGAS1 | 2.797 | VIGAS1 | 0.050 | VIGAS4 |
| 148 | 35X50V   | 108.750 | 1.795 | VIGAS1 | 1.388 | VIGAS1 | 0.042 | VIGAS4 |
| 148 | 35X50V   | 200.000 | 1.388 | VIGAS1 | 1.089 | CU     | 0.034 | VIGAS4 |

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|-----|--------|---------|--------|--------|--------|--------|-------|--------|
| 148 | 35x50V | 291.250 | 1.388  | VIGAS1 | 2.279  | VIGAS1 | 0.035 | VIGAS4 |
| 148 | 35x50V | 382.500 | 2.549  | VIGAS1 | 2.583  | VIGAS1 | 0.044 | VIGAS4 |
| 149 | 35x50V | 17.500  | 2.247  | VIGAS1 | 2.645  | VIGAS1 | 0.051 | VIGAS4 |
| 149 | 35x50V | 96.250  | 2.511  | CU     | 2.511  | CU     | 0.060 | CU     |
| 149 | 35x50V | 175.000 | 2.586  | CU     | 2.511  | CU     | 0.070 | CU     |
| 149 | 35x50V | 253.750 | 5.367  | CU     | 2.511  | CU     | 0.081 | CU     |
| 149 | 35x50V | 332.500 | 7.882  | CU     | 5.095  | CU     | 0.092 | CU     |
| 150 | 35x50V | 17.500  | 10.694 | CU     | 5.367  | CU     | 0.058 | CU     |
| 150 | 35x50V | 196.250 | 3.348  | CU     | 4.405  | CU     | 0.027 | VIGAS2 |
| 150 | 35x50V | 375.000 | 3.348  | CU     | 8.968  | CU     | 0.027 | VIGAS2 |
| 150 | 35x50V | 553.750 | 3.348  | CU     | 5.862  | CU     | 0.027 | VIGAS2 |
| 150 | 35x50V | 732.500 | 5.487  | VIGAS1 | 3.456  | CU     | 0.045 | CU     |
| 151 | 35x50V | 15.000  | 4.775  | VIGAS2 | 2.356  | VIGAS2 | 0.060 | VIGAS4 |
| 151 | 35x50V | 85.000  | 1.469  | CU     | 1.469  | CU     | 0.051 | VIGAS4 |
| 151 | 35x50V | 155.000 | 1.469  | CU     | 1.469  | CU     | 0.047 | VIGAS4 |
| 151 | 35x50V | 225.000 | 3.915  | VIGAS2 | 1.469  | CU     | 0.057 | VIGAS4 |
| 151 | 35x50V | 295.000 | 6.077  | VIGAS2 | 3.957  | VIGAS2 | 0.067 | VIGAS4 |
| 152 | 35x50V | 17.500  | 5.306  | VIGAS2 | 4.176  | VIGAS2 | 0.065 | CU     |
| 152 | 35x50V | 86.875  | 2.809  | VIGAS2 | 3.153  | VIGAS2 | 0.052 | CU     |
| 152 | 35x50V | 156.250 | 1.297  | VIGAS2 | 1.322  | VIGAS2 | 0.056 | CU     |
| 152 | 35x50V | 225.625 | 1.250  | CU     | 1.297  | VIGAS2 | 0.068 | CU     |
| 152 | 35x50V | 295.000 | 5.041  | VIGAS2 | 2.485  | VIGAS2 | 0.080 | CU     |
| 153 | 35x50V | 17.500  | 4.882  | VIGAS2 | 2.407  | VIGAS2 | 0.048 | VIGAS4 |
| 153 | 35x50V | 117.500 | 1.635  | VIGAS2 | 3.587  | VIGAS2 | 0.037 | VIGAS4 |
| 153 | 35x50V | 217.500 | 1.635  | VIGAS2 | 3.306  | CU     | 0.032 | VIGAS4 |
| 153 | 35x50V | 317.500 | 1.635  | VIGAS2 | 2.135  | VIGAS2 | 0.042 | VIGAS4 |
| 153 | 35x50V | 417.500 | 5.367  | VIGAS2 | 3.301  | VIGAS2 | 0.053 | VIGAS4 |
| 154 | 35x50V | 17.500  | 4.039  | VIGAS2 | 1.997  | VIGAS2 | 0.045 | VIGAS4 |
| 154 | 35x50V | 117.500 | 1.473  | VIGAS2 | 2.497  | CU     | 0.034 | VIGAS4 |
| 154 | 35x50V | 217.500 | 1.473  | VIGAS2 | 3.489  | CU     | 0.028 | VIGAS4 |
| 154 | 35x50V | 317.500 | 1.473  | VIGAS2 | 2.134  | VIGAS2 | 0.039 | VIGAS4 |
| 154 | 35x50V | 417.500 | 5.367  | VIGAS2 | 2.970  | VIGAS2 | 0.050 | VIGAS4 |
| 155 | 35x50V | 17.500  | 4.497  | VIGAS1 | 2.220  | VIGAS1 | 0.073 | CU     |
| 155 | 35x50V | 107.500 | 2.705  | CU     | 5.367  | CU     | 0.041 | VIGAS2 |
| 155 | 35x50V | 197.500 | 2.705  | CU     | 5.728  | CU     | 0.041 | VIGAS2 |
| 155 | 35x50V | 287.500 | 2.705  | CU     | 2.705  | CU     | 0.052 | CU     |
| 155 | 35x50V | 377.500 | 8.527  | CU     | 5.367  | CU     | 0.109 | CU     |
| 156 | 35x50V | 15.000  | 8.407  | CU     | 5.367  | CU     | 0.103 | CU     |
| 156 | 35x50V | 105.000 | 2.669  | CU     | 2.669  | CU     | 0.050 | VIGAS2 |
| 156 | 35x50V | 195.000 | 2.669  | CU     | 4.077  | CU     | 0.050 | VIGAS2 |
| 156 | 35x50V | 285.000 | 2.669  | CU     | 2.669  | CU     | 0.050 | VIGAS2 |
| 156 | 35x50V | 375.000 | 7.147  | VIGAS1 | 4.531  | CU     | 0.096 | CU     |
| 157 | 35x50V | 17.500  | 7.385  | VIGAS1 | 4.479  | CU     | 0.068 | CU     |
| 157 | 35x50V | 120.000 | 2.211  | CU     | 2.993  | VIGAS1 | 0.032 | VIGAS2 |
| 157 | 35x50V | 222.500 | 2.211  | CU     | 5.367  | CU     | 0.032 | VIGAS2 |
| 157 | 35x50V | 325.000 | 2.211  | CU     | 5.367  | CU     | 0.032 | VIGAS2 |
| 157 | 35x50V | 427.500 | 3.968  | VIGAS1 | 1.962  | VIGAS1 | 0.043 | CU     |
| 158 | 40x50V | 17.500  | 16.672 | CU     | 7.840  | CU     | 0.142 | CU     |
| 158 | 40x50V | 196.250 | 5.089  | CU     | 8.621  | CU     | 0.057 | CU     |
| 158 | 40x50V | 375.000 | 5.089  | CU     | 18.139 | CU     | 0.044 | VIGAS2 |
| 158 | 40x50V | 553.750 | 5.089  | CU     | 9.332  | CU     | 0.054 | CU     |
| 158 | 40x50V | 732.500 | 15.091 | CU     | 7.144  | CU     | 0.138 | CU     |
| 159 | 35x50V | 17.500  | 9.749  | CU     | 5.367  | CU     | 0.059 | CU     |
| 159 | 35x50V | 153.750 | 3.070  | CU     | 3.070  | CU     | 0.038 | VIGAS2 |
| 159 | 35x50V | 290.000 | 3.070  | CU     | 5.781  | CU     | 0.038 | VIGAS2 |
| 159 | 35x50V | 426.250 | 3.070  | CU     | 6.942  | CU     | 0.038 | VIGAS2 |
| 159 | 35x50V | 562.500 | 0.000  | VIGAS4 | 4.766  | CU     | 0.038 | VIGAS2 |
| 160 | 35x50V | 17.500  | 4.347  | CU     | 2.147  | CU     | 0.020 | VIGAS2 |
| 160 | 35x50V | 149.375 | 1.411  | CU     | 1.456  | CU     | 0.020 | VIGAS2 |



|     |        |         |                                      |        |        |        |       |        |
|-----|--------|---------|--------------------------------------|--------|--------|--------|-------|--------|
| 160 | 35x50V | 281.250 | 1.411                                | CU     | 3.169  | CU     | 0.020 | VIGAS2 |
| 160 | 35x50V | 413.125 | 1.411                                | CU     | 1.411  | CU     | 0.020 | VIGAS2 |
| 160 | 35x50V | 545.000 | 5.367                                | CU     | 2.845  | CU     | 0.020 | VIGAS2 |
| 161 | 35x50V | 17.500  | 5.361                                | CU     | 2.640  | CU     | 0.053 | VIGAS4 |
| 161 | 35x50V | 118.750 | 1.310                                | CU     | 1.310  | CU     | 0.042 | VIGAS4 |
| 161 | 35x50V | 220.000 | 1.310                                | CU     | 2.076  | CU     | 0.031 | VIGAS4 |
| 161 | 35x50V | 321.250 | 1.310                                | CU     | 2.033  | VIGAS2 | 0.041 | VIGAS4 |
| 161 | 35x50V | 422.500 | 5.367                                | VIGAS2 | 3.005  | VIGAS2 | 0.051 | VIGAS4 |
| 162 | 35x50V | 17.500  | 4.951                                | CU     | 2.441  | CU     | 0.051 | VIGAS4 |
| 162 | 35x50V | 118.750 | 1.212                                | CU     | 1.212  | CU     | 0.041 | VIGAS4 |
| 162 | 35x50V | 220.000 | 1.212                                | CU     | 2.003  | CU     | 0.030 | VIGAS4 |
| 162 | 35x50V | 321.250 | 1.212                                | CU     | 1.212  | CU     | 0.040 | VIGAS4 |
| 162 | 35x50V | 422.500 | 4.630                                | CU     | 2.285  | CU     | 0.051 | VIGAS4 |
| 163 | 35x50V | 35.000  | 7.557                                | CU     | 4.891  | CU     | 0.030 | CU     |
| 163 | 35x50V | 200.625 | 2.624                                | CU     | 2.624  | CU     | 0.027 | VIGAS2 |
| 163 | 35x50V | 366.250 | 2.624                                | CU     | 5.233  | CU     | 0.027 | VIGAS2 |
| 163 | 35x50V | 531.875 | 2.624                                | CU     | 2.624  | CU     | 0.027 | VIGAS2 |
| 163 | 35x50V | 697.500 | 8.257                                | CU     | 5.328  | CU     | 0.032 | CU     |
| 164 | 35x50V | 0.000   | 1.582                                | VIGAS1 | 0.788  | VIGAS1 | 0.043 | VIGAS2 |
| 164 | 35x50V | 106.875 | 4.016                                | CU     | 5.367  | CU     | 0.043 | VIGAS2 |
| 164 | 35x50V | 213.750 | 4.016                                | CU     | 4.842  | CU     | 0.043 | VIGAS2 |
| 164 | 35x50V | 320.625 | 4.016                                | CU     | 4.016  | CU     | 0.050 | CU     |
| 164 | 35x50V | 427.500 | 13.022                               | CU     | 6.170  | CU     | 0.096 | CU     |
| 165 | 40x50V | 17.500  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 165 | 40x50V | 18.125  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 165 | 40x50V | 18.750  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 165 | 40x50V | 19.375  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 165 | 40x50V | 20.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 166 | 40x50V | 0.000   | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 166 | 40x50V | 9.000   | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 166 | 40x50V | 18.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 166 | 40x50V | 27.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 166 | 40x50V | 36.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 167 | 40x50V | 0.000   | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 167 | 40x50V | 9.000   | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 167 | 40x50V | 18.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 167 | 40x50V | 27.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 167 | 40x50V | 36.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 168 | 40x50V | 0.000   | 2.200                                | CU     | 1.094  | CU     | 0.209 | CU     |
| 168 | 40x50V | 9.000   | 1.530                                | CU     | 0.546  | CU     | 0.207 | CU     |
| 168 | 40x50V | 18.000  | 1.338                                | VIGAS1 | 0.546  | CU     | 0.206 | CU     |
| 168 | 40x50V | 27.000  | 1.223                                | VIGAS1 | 0.817  | VIGAS1 | 0.204 | CU     |
| 168 | 40x50V | 36.000  | 1.124                                | VIGAS1 | 1.617  | VIGAS1 | 0.202 | CU     |
| 169 | 40x50V | 0.000   | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 169 | 40x50V | 9.000   | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 169 | 40x50V | 18.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 169 | 40x50V | 27.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 169 | 40x50V | 36.000  | Shear stress exceeds maximum allowed |        |        |        |       |        |
| 170 | 40x50V | 0.000   | 2.274                                | VIGAS3 | 6.133  | VIGAS1 | 0.047 | VIGAS4 |
| 170 | 40x50V | 9.000   | 2.114                                | VIGAS1 | 6.133  | VIGAS1 | 0.046 | VIGAS4 |
| 170 | 40x50V | 18.000  | 2.114                                | VIGAS1 | 6.133  | VIGAS1 | 0.045 | VIGAS4 |
| 170 | 40x50V | 27.000  | 2.114                                | VIGAS1 | 6.159  | VIGAS1 | 0.044 | VIGAS4 |
| 170 | 40x50V | 36.000  | 2.598                                | VIGAS3 | 6.551  | VIGAS1 | 0.043 | VIGAS4 |
| 171 | 40x50V | 0.000   | 2.601                                | VIGAS3 | 7.535  | VIGAS1 | 0.085 | VIGAS4 |
| 171 | 40x50V | 133.125 | 5.179                                | CU     | 6.133  | CU     | 0.079 | VIGAS4 |
| 171 | 40x50V | 266.250 | 5.179                                | CU     | 5.179  | CU     | 0.090 | VIGAS4 |
| 171 | 40x50V | 399.375 | 6.133                                | CU     | 5.179  | CU     | 0.102 | VIGAS4 |
| 171 | 40x50V | 532.500 | 16.999                               | CU     | 7.983  | CU     | 0.113 | VIGAS4 |
| 172 | 45x50V | 17.500  | 26.122                               | CU     | 11.931 | CU     | 0.176 | CU     |

|     |        |         |        |        |        |        |       |        |
|-----|--------|---------|--------|--------|--------|--------|-------|--------|
| 172 | 45x50V | 196.250 | 6.900  | CU     | 6.900  | CU     | 0.083 | CU     |
| 172 | 45x50V | 375.000 | 6.900  | CU     | 18.009 | CU     | 0.057 | VIGAS2 |
| 172 | 45x50V | 553.750 | 6.900  | CU     | 10.912 | CU     | 0.057 | VIGAS2 |
| 172 | 45x50V | 732.500 | 13.485 | CU     | 6.900  | CU     | 0.149 | CU     |
| 173 | 35x50V | 0.000   | 0.000  | VIGAS4 | 5.367  | CU     | 0.085 | CU     |
| 173 | 35x50V | 33.750  | 3.800  | CU     | 3.800  | CU     | 0.093 | CU     |
| 173 | 35x50V | 67.500  | 3.800  | CU     | 3.800  | CU     | 0.100 | CU     |
| 173 | 35x50V | 101.250 | 7.207  | CU     | 3.800  | CU     | 0.108 | CU     |
| 173 | 35x50V | 135.000 | 12.259 | CU     | 5.829  | CU     | 0.115 | CU     |
| 174 | 35x50V | 17.500  | 7.610  | CU     | 4.924  | CU     | 0.082 | VIGAS4 |
| 174 | 35x50V | 51.250  | 5.367  | CU     | 2.428  | CU     | 0.080 | VIGAS4 |
| 174 | 35x50V | 85.000  | 2.428  | CU     | 2.428  | CU     | 0.077 | VIGAS4 |
| 174 | 35x50V | 118.750 | 2.428  | CU     | 2.428  | CU     | 0.075 | VIGAS4 |
| 174 | 35x50V | 152.500 | 0.000  | VIGAS4 | 5.367  | CU     | 0.072 | VIGAS4 |
| 175 | 35x50V | 0.000   | 4.103  | VIGAS1 | 2.028  | VIGAS1 | 0.058 | CU     |
| 175 | 35x50V | 38.125  | 3.162  | VIGAS1 | 1.008  | VIGAS1 | 0.057 | CU     |
| 175 | 35x50V | 76.250  | 2.645  | VIGAS2 | 1.008  | VIGAS1 | 0.056 | CU     |
| 175 | 35x50V | 114.375 | 2.040  | VIGAS2 | 1.008  | VIGAS1 | 0.054 | CU     |
| 175 | 35x50V | 152.500 | 1.638  | VIGAS2 | 0.815  | VIGAS2 | 0.053 | CU     |
| 176 | 35x50V | 17.500  | 5.367  | VIGAS1 | 2.875  | VIGAS1 | 0.065 | CU     |
| 176 | 35x50V | 107.500 | 2.474  | CU     | 5.202  | CU     | 0.041 | VIGAS2 |
| 176 | 35x50V | 197.500 | 2.474  | CU     | 5.367  | CU     | 0.041 | VIGAS2 |
| 176 | 35x50V | 287.500 | 2.474  | CU     | 2.474  | CU     | 0.044 | CU     |
| 176 | 35x50V | 377.500 | 7.760  | CU     | 5.018  | CU     | 0.096 | CU     |
| 177 | 35x50V | 15.000  | 7.710  | CU     | 4.987  | CU     | 0.090 | CU     |
| 177 | 35x50V | 105.000 | 2.458  | CU     | 2.458  | CU     | 0.044 | VIGAS2 |
| 177 | 35x50V | 195.000 | 2.458  | CU     | 4.356  | CU     | 0.044 | VIGAS2 |
| 177 | 35x50V | 285.000 | 2.458  | CU     | 2.458  | CU     | 0.044 | VIGAS2 |
| 177 | 35x50V | 375.000 | 5.661  | VIGAS1 | 3.339  | CU     | 0.077 | CU     |
| 178 | 35x50V | 17.500  | 5.367  | CU     | 2.832  | CU     | 0.042 | VIGAS4 |
| 178 | 35x50V | 124.375 | 1.405  | CU     | 1.405  | CU     | 0.035 | VIGAS4 |
| 178 | 35x50V | 231.250 | 1.405  | CU     | 1.659  | CU     | 0.029 | VIGAS4 |
| 178 | 35x50V | 338.125 | 1.405  | CU     | 1.405  | CU     | 0.035 | VIGAS4 |
| 178 | 35x50V | 445.000 | 4.763  | CU     | 2.350  | CU     | 0.042 | VIGAS4 |
| 179 | 35x50V | 0.000   | 4.635  | CU     | 2.287  | CU     | 0.056 | CU     |
| 179 | 35x50V | 50.000  | 3.392  | CU     | 1.136  | CU     | 0.054 | CU     |
| 179 | 35x50V | 100.000 | 2.288  | CU     | 1.136  | CU     | 0.053 | CU     |
| 179 | 35x50V | 150.000 | 1.318  | CU     | 1.136  | CU     | 0.051 | CU     |
| 179 | 35x50V | 200.000 | 0.729  | VIGAS1 | 0.364  | VIGAS1 | 0.049 | CU     |
| 180 | 35x50V | 17.500  | 5.367  | CU     | 2.892  | CU     | 0.053 | VIGAS4 |
| 180 | 35x50V | 132.500 | 1.434  | CU     | 2.181  | VIGAS2 | 0.040 | VIGAS4 |
| 180 | 35x50V | 247.500 | 1.434  | CU     | 3.717  | CU     | 0.028 | VIGAS4 |
| 180 | 35x50V | 362.500 | 1.434  | CU     | 2.556  | VIGAS2 | 0.038 | VIGAS4 |
| 180 | 35x50V | 477.500 | 4.272  | CU     | 2.110  | CU     | 0.051 | VIGAS4 |
| 181 | 35x50V | 17.500  | 5.796  | VIGAS2 | 3.215  | CU     | 0.027 | VIGAS2 |
| 181 | 35x50V | 132.500 | 1.593  | CU     | 1.593  | CU     | 0.027 | VIGAS2 |
| 181 | 35x50V | 247.500 | 1.593  | CU     | 4.464  | CU     | 0.027 | VIGAS2 |
| 181 | 35x50V | 362.500 | 1.593  | CU     | 3.322  | CU     | 0.027 | VIGAS2 |
| 181 | 35x50V | 477.500 | 4.905  | VIGAS2 | 2.419  | VIGAS2 | 0.027 | VIGAS2 |
| 182 | 35x50V | 17.500  | 8.061  | VIGAS2 | 4.881  | CU     | 0.072 | VIGAS4 |
| 182 | 35x50V | 95.000  | 4.175  | CU     | 2.407  | CU     | 0.062 | VIGAS4 |
| 182 | 35x50V | 172.500 | 2.407  | CU     | 2.407  | CU     | 0.051 | VIGAS4 |
| 182 | 35x50V | 250.000 | 2.407  | CU     | 2.407  | CU     | 0.045 | VIGAS4 |
| 182 | 35x50V | 327.500 | 2.898  | VIGAS2 | 1.437  | VIGAS2 | 0.055 | VIGAS4 |
| 183 | 35x50V | 0.000   | 0.000  | VIGAS4 | 4.733  | CU     | 0.035 | VIGAS4 |
| 183 | 35x50V | 81.250  | 1.160  | CU     | 4.850  | CU     | 0.031 | VIGAS4 |
| 183 | 35x50V | 162.500 | 1.160  | CU     | 3.369  | CU     | 0.038 | VIGAS4 |
| 183 | 35x50V | 243.750 | 1.160  | CU     | 1.160  | CU     | 0.044 | VIGAS4 |
| 183 | 35x50V | 325.000 | 4.193  | CU     | 2.072  | CU     | 0.050 | VIGAS4 |

|     |        |         |        |        |        |        |       |        |
|-----|--------|---------|--------|--------|--------|--------|-------|--------|
| 184 | 35x50V | 0.000   | 1.691  | VIGAS2 | 0.841  | VIGAS2 | 0.045 | CU     |
| 184 | 35x50V | 85.625  | 1.144  | CU     | 1.144  | CU     | 0.042 | CU     |
| 184 | 35x50V | 171.250 | 1.144  | CU     | 2.436  | CU     | 0.039 | CU     |
| 184 | 35x50V | 256.875 | 1.144  | CU     | 3.727  | CU     | 0.036 | CU     |
| 184 | 35x50V | 342.500 | 0.000  | VIGAS4 | 4.668  | CU     | 0.033 | CU     |
| 185 | 35x50V | 15.000  | 4.078  | VIGAS1 | 2.055  | VIGAS1 | 0.056 | VIGAS4 |
| 185 | 35x50V | 118.125 | 3.128  | CU     | 3.128  | CU     | 0.045 | VIGAS4 |
| 185 | 35x50V | 221.250 | 3.128  | CU     | 3.128  | CU     | 0.049 | VIGAS4 |
| 185 | 35x50V | 324.375 | 3.128  | CU     | 3.128  | CU     | 0.060 | VIGAS4 |
| 185 | 35x50V | 427.500 | 9.945  | CU     | 5.367  | CU     | 0.071 | VIGAS4 |
| 186 | 40x50V | 17.500  | 14.591 | CU     | 6.921  | CU     | 0.120 | CU     |
| 186 | 40x50V | 63.125  | 7.684  | CU     | 4.507  | CU     | 0.100 | CU     |
| 186 | 40x50V | 108.750 | 4.507  | CU     | 4.507  | CU     | 0.081 | CU     |
| 186 | 40x50V | 154.375 | 4.507  | CU     | 4.507  | CU     | 0.061 | CU     |
| 186 | 40x50V | 200.000 | 0.000  | VIGAS4 | 6.133  | CU     | 0.053 | VIGAS2 |
| 187 | 40x50V | 0.000   | 0.000  | VIGAS4 | 4.102  | CU     | 0.094 | VIGAS4 |
| 187 | 40x50V | 133.125 | 5.816  | CU     | 10.043 | CU     | 0.073 | VIGAS4 |
| 187 | 40x50V | 266.250 | 5.816  | CU     | 8.678  | CU     | 0.083 | VIGAS4 |
| 187 | 40x50V | 399.375 | 5.816  | CU     | 5.816  | CU     | 0.104 | VIGAS4 |
| 187 | 40x50V | 532.500 | 19.357 | CU     | 8.998  | CU     | 0.146 | CU     |
| 188 | 40x50V | 17.500  | 17.162 | CU     | 8.054  | CU     | 0.077 | CU     |
| 188 | 40x50V | 196.250 | 5.224  | CU     | 5.224  | CU     | 0.039 | VIGAS2 |
| 188 | 40x50V | 375.000 | 5.224  | CU     | 7.645  | CU     | 0.039 | VIGAS2 |
| 188 | 40x50V | 553.750 | 5.224  | CU     | 6.133  | CU     | 0.039 | VIGAS2 |
| 188 | 40x50V | 732.500 | 6.338  | VIGAS1 | 3.355  | CU     | 0.048 | CU     |
| 189 | 35x50V | 36.916  | 7.942  | CU     | 5.132  | CU     | 0.032 | CU     |
| 189 | 35x50V | 203.937 | 2.529  | CU     | 2.529  | CU     | 0.025 | VIGAS2 |
| 189 | 35x50V | 370.958 | 2.529  | CU     | 5.367  | CU     | 0.025 | VIGAS2 |
| 189 | 35x50V | 537.979 | 2.529  | CU     | 3.055  | CU     | 0.025 | VIGAS2 |
| 189 | 35x50V | 705.000 | 6.436  | VIGAS2 | 4.060  | CU     | 0.027 | CU     |
| 190 | 35x50V | 15.000  | 3.613  | VIGAS2 | 1.788  | VIGAS2 | 0.052 | VIGAS4 |
| 190 | 35x50V | 101.875 | 1.683  | CU     | 1.683  | CU     | 0.039 | VIGAS4 |
| 190 | 35x50V | 188.750 | 1.683  | CU     | 1.683  | CU     | 0.037 | VIGAS4 |
| 190 | 35x50V | 275.625 | 2.669  | VIGAS2 | 1.683  | CU     | 0.049 | VIGAS4 |
| 190 | 35x50V | 362.500 | 6.134  | VIGAS2 | 3.399  | CU     | 0.061 | VIGAS4 |
| 191 | 35x50V | 17.500  | 4.678  | VIGAS2 | 2.308  | VIGAS2 | 0.043 | VIGAS4 |
| 191 | 35x50V | 103.750 | 1.789  | VIGAS2 | 1.293  | CU     | 0.036 | VIGAS4 |
| 191 | 35x50V | 190.000 | 1.293  | CU     | 1.293  | CU     | 0.036 | VIGAS4 |
| 191 | 35x50V | 276.250 | 3.102  | VIGAS2 | 1.293  | CU     | 0.042 | VIGAS4 |
| 191 | 35x50V | 362.500 | 5.288  | CU     | 2.605  | CU     | 0.049 | VIGAS4 |
| 192 | 35x50V | 0.000   | 0.000  | VIGAS4 | 4.561  | CU     | 0.039 | CU     |
| 192 | 35x50V | 95.000  | 1.119  | CU     | 3.200  | CU     | 0.042 | CU     |
| 192 | 35x50V | 190.000 | 1.119  | CU     | 1.422  | CU     | 0.046 | CU     |
| 192 | 35x50V | 285.000 | 1.119  | CU     | 1.119  | CU     | 0.049 | CU     |
| 192 | 35x50V | 380.000 | 3.407  | CU     | 1.687  | CU     | 0.052 | CU     |
| 193 | 35x50V | 17.500  | 5.367  | VIGAS2 | 2.979  | VIGAS2 | 0.051 | VIGAS4 |
| 193 | 35x50V | 103.750 | 1.581  | VIGAS2 | 1.477  | VIGAS2 | 0.042 | VIGAS4 |
| 193 | 35x50V | 190.000 | 1.477  | VIGAS2 | 1.398  | CU     | 0.033 | VIGAS4 |
| 193 | 35x50V | 276.250 | 1.477  | VIGAS2 | 2.038  | VIGAS2 | 0.038 | VIGAS4 |
| 193 | 35x50V | 362.500 | 4.283  | VIGAS2 | 2.116  | VIGAS2 | 0.047 | VIGAS4 |
| 194 | 35x50V | 17.500  | 5.367  | VIGAS1 | 2.944  | VIGAS1 | 0.064 | CU     |
| 194 | 35x50V | 107.500 | 2.316  | CU     | 5.116  | CU     | 0.039 | VIGAS2 |
| 194 | 35x50V | 197.500 | 2.316  | CU     | 5.367  | CU     | 0.039 | VIGAS2 |
| 194 | 35x50V | 287.500 | 2.316  | CU     | 2.316  | CU     | 0.040 | CU     |
| 194 | 35x50V | 377.500 | 7.242  | CU     | 4.693  | CU     | 0.091 | CU     |
| 195 | 35x50V | 15.000  | 7.126  | CU     | 4.621  | CU     | 0.084 | CU     |
| 195 | 35x50V | 105.000 | 2.280  | CU     | 2.280  | CU     | 0.044 | VIGAS2 |
| 195 | 35x50V | 195.000 | 2.280  | CU     | 3.595  | CU     | 0.044 | VIGAS2 |
| 195 | 35x50V | 285.000 | 2.280  | CU     | 2.280  | CU     | 0.044 | VIGAS2 |
| 195 | 35x50V | 375.000 | 6.742  | VIGAS1 | 4.328  | CU     | 0.081 | CU     |

|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 196 | 35x50V | 17.500  | 7.176 | VIGAS1 | 4.177 | CU     | 0.084 | CU     |
| 196 | 35x50V | 120.000 | 2.305 | CU     | 2.759 | CU     | 0.062 | VIGAS4 |
| 196 | 35x50V | 222.500 | 2.305 | CU     | 5.367 | CU     | 0.042 | VIGAS4 |
| 196 | 35x50V | 325.000 | 2.305 | CU     | 3.149 | VIGAS1 | 0.062 | VIGAS4 |
| 196 | 35x50V | 427.500 | 7.698 | VIGAS1 | 4.671 | CU     | 0.088 | CU     |
| 197 | 35x50V | 17.500  | 6.694 | VIGAS1 | 4.289 | CU     | 0.092 | VIGAS4 |
| 197 | 35x50V | 63.125  | 4.138 | VIGAS1 | 2.119 | CU     | 0.083 | VIGAS4 |
| 197 | 35x50V | 108.750 | 2.119 | CU     | 2.119 | CU     | 0.073 | VIGAS4 |
| 197 | 35x50V | 154.375 | 2.119 | CU     | 3.081 | CU     | 0.064 | VIGAS4 |
| 197 | 35x50V | 200.000 | 0.000 | VIGAS4 | 3.858 | CU     | 0.054 | VIGAS4 |
| 198 | 35x50V | 0.000   | 0.000 | VIGAS4 | 5.367 | CU     | 0.064 | VIGAS4 |
| 198 | 35x50V | 40.000  | 2.167 | CU     | 3.911 | CU     | 0.073 | VIGAS4 |
| 198 | 35x50V | 80.000  | 2.167 | CU     | 2.167 | CU     | 0.081 | VIGAS4 |
| 198 | 35x50V | 120.000 | 3.321 | CU     | 2.167 | CU     | 0.089 | VIGAS4 |
| 198 | 35x50V | 160.000 | 6.757 | CU     | 4.388 | CU     | 0.101 | CU     |
| 199 | 35x50V | 15.000  | 6.797 | CU     | 4.413 | CU     | 0.084 | CU     |
| 199 | 35x50V | 100.625 | 2.179 | CU     | 2.179 | CU     | 0.040 | VIGAS2 |
| 199 | 35x50V | 186.250 | 2.179 | CU     | 5.367 | CU     | 0.040 | VIGAS2 |
| 199 | 35x50V | 271.875 | 2.179 | CU     | 4.364 | CU     | 0.040 | VIGAS2 |
| 199 | 35x50V | 357.500 | 5.367 | VIGAS1 | 2.748 | VIGAS1 | 0.056 | CU     |
| 200 | 35x50V | 17.500  | 5.604 | VIGAS2 | 2.787 | CU     | 0.054 | VIGAS4 |
| 200 | 35x50V | 97.188  | 3.333 | VIGAS2 | 1.382 | CU     | 0.046 | VIGAS4 |
| 200 | 35x50V | 176.875 | 1.382 | CU     | 1.382 | CU     | 0.037 | VIGAS4 |
| 200 | 35x50V | 256.563 | 1.382 | CU     | 1.382 | CU     | 0.037 | VIGAS4 |
| 200 | 35x50V | 336.250 | 3.671 | VIGAS2 | 1.817 | VIGAS2 | 0.046 | VIGAS4 |
| 201 | 35x50V | 17.500  | 4.818 | VIGAS2 | 2.376 | VIGAS2 | 0.047 | VIGAS4 |
| 201 | 35x50V | 97.187  | 1.311 | VIGAS2 | 1.537 | VIGAS2 | 0.039 | VIGAS4 |
| 201 | 35x50V | 176.875 | 1.180 | VIGAS2 | 1.252 | CU     | 0.030 | VIGAS4 |
| 201 | 35x50V | 256.563 | 1.180 | VIGAS2 | 1.216 | VIGAS2 | 0.038 | VIGAS4 |
| 201 | 35x50V | 336.250 | 3.795 | VIGAS2 | 1.877 | VIGAS2 | 0.046 | VIGAS4 |
| 202 | 35x50V | 35.000  | 7.131 | CU     | 4.623 | CU     | 0.034 | CU     |
| 202 | 35x50V | 198.750 | 2.282 | CU     | 3.097 | CU     | 0.025 | VIGAS2 |
| 202 | 35x50V | 362.500 | 2.282 | CU     | 5.538 | CU     | 0.025 | VIGAS2 |
| 202 | 35x50V | 526.250 | 2.282 | CU     | 3.167 | CU     | 0.025 | VIGAS2 |
| 202 | 35x50V | 690.000 | 7.017 | CU     | 4.552 | CU     | 0.034 | CU     |
| 203 | 35x50V | 35.000  | 7.226 | CU     | 4.683 | CU     | 0.035 | CU     |
| 203 | 35x50V | 198.750 | 2.311 | CU     | 3.088 | CU     | 0.025 | VIGAS2 |
| 203 | 35x50V | 362.500 | 2.311 | CU     | 5.617 | CU     | 0.025 | VIGAS2 |
| 203 | 35x50V | 526.250 | 2.311 | CU     | 3.377 | CU     | 0.025 | VIGAS2 |
| 203 | 35x50V | 690.000 | 6.761 | CU     | 4.390 | CU     | 0.033 | CU     |
| 204 | 35x50V | 17.500  | 4.310 | VIGAS2 | 2.129 | VIGAS2 | 0.050 | VIGAS4 |
| 204 | 35x50V | 97.187  | 1.058 | VIGAS2 | 1.058 | VIGAS2 | 0.041 | VIGAS4 |
| 204 | 35x50V | 176.875 | 1.058 | VIGAS2 | 1.617 | CU     | 0.032 | VIGAS4 |
| 204 | 35x50V | 256.563 | 1.058 | VIGAS2 | 2.717 | VIGAS2 | 0.037 | VIGAS4 |
| 204 | 35x50V | 336.250 | 3.915 | VIGAS2 | 2.394 | VIGAS2 | 0.046 | VIGAS4 |
| 205 | 35x50V | 17.500  | 4.601 | VIGAS2 | 2.271 | VIGAS2 | 0.050 | VIGAS4 |
| 205 | 35x50V | 97.188  | 1.425 | VIGAS2 | 1.425 | VIGAS2 | 0.041 | VIGAS4 |
| 205 | 35x50V | 176.875 | 1.425 | VIGAS2 | 1.425 | VIGAS2 | 0.035 | VIGAS4 |
| 205 | 35x50V | 256.563 | 2.155 | VIGAS2 | 1.425 | VIGAS2 | 0.043 | VIGAS4 |
| 205 | 35x50V | 336.250 | 5.367 | VIGAS2 | 2.874 | VIGAS2 | 0.052 | VIGAS4 |
| 206 | 35x50V | 17.500  | 5.367 | VIGAS1 | 3.213 | VIGAS1 | 0.066 | CU     |
| 206 | 35x50V | 107.500 | 2.330 | CU     | 4.875 | CU     | 0.041 | VIGAS2 |
| 206 | 35x50V | 197.500 | 2.330 | CU     | 5.367 | CU     | 0.041 | VIGAS2 |
| 206 | 35x50V | 287.500 | 2.330 | CU     | 2.330 | CU     | 0.041 | CU     |
| 206 | 35x50V | 377.500 | 7.373 | VIGAS1 | 4.722 | CU     | 0.092 | CU     |
| 207 | 35x50V | 15.000  | 6.916 | CU     | 4.488 | CU     | 0.092 | VIGAS4 |
| 207 | 35x50V | 105.000 | 2.344 | CU     | 2.344 | CU     | 0.070 | VIGAS4 |
| 207 | 35x50V | 195.000 | 2.344 | CU     | 3.278 | CU     | 0.047 | VIGAS4 |
| 207 | 35x50V | 285.000 | 2.344 | CU     | 2.344 | CU     | 0.069 | VIGAS4 |

|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 207 | 35x50V | 375.000 | 7.618 | VIGAS1 | 4.752 | CU     | 0.091 | VIGAS4 |
| 208 | 35x50V | 17.500  | 7.926 | VIGAS1 | 4.677 | CU     | 0.104 | CU     |
| 208 | 35x50V | 120.000 | 2.470 | CU     | 3.543 | CU     | 0.045 | VIGAS2 |
| 208 | 35x50V | 222.500 | 2.470 | CU     | 5.931 | CU     | 0.045 | VIGAS2 |
| 208 | 35x50V | 325.000 | 2.470 | CU     | 3.216 | CU     | 0.045 | VIGAS2 |
| 208 | 35x50V | 427.500 | 8.306 | VIGAS1 | 5.010 | CU     | 0.107 | CU     |
| 209 | 35x50V | 17.500  | 7.495 | VIGAS1 | 4.629 | CU     | 0.096 | CU     |
| 209 | 35x50V | 103.125 | 2.388 | CU     | 2.388 | CU     | 0.071 | VIGAS4 |
| 209 | 35x50V | 188.750 | 2.388 | CU     | 3.509 | CU     | 0.051 | VIGAS4 |
| 209 | 35x50V | 274.375 | 2.388 | CU     | 2.388 | CU     | 0.072 | VIGAS4 |
| 209 | 35x50V | 360.000 | 7.480 | CU     | 4.842 | CU     | 0.098 | CU     |
| 210 | 35x50V | 15.000  | 7.639 | VIGAS1 | 4.926 | CU     | 0.107 | CU     |
| 210 | 35x50V | 100.625 | 2.429 | CU     | 2.429 | CU     | 0.052 | CU     |
| 210 | 35x50V | 186.250 | 2.429 | CU     | 5.367 | CU     | 0.045 | VIGAS2 |
| 210 | 35x50V | 271.875 | 2.429 | CU     | 5.311 | CU     | 0.045 | VIGAS2 |
| 210 | 35x50V | 357.500 | 5.367 | VIGAS1 | 3.211 | VIGAS1 | 0.076 | CU     |
| 211 | 35x50V | 17.500  | 4.391 | VIGAS2 | 2.168 | VIGAS2 | 0.045 | VIGAS4 |
| 211 | 35x50V | 98.125  | 1.260 | VIGAS2 | 2.328 | VIGAS2 | 0.037 | VIGAS4 |
| 211 | 35x50V | 178.750 | 1.096 | VIGAS2 | 1.251 | CU     | 0.031 | VIGAS4 |
| 211 | 35x50V | 259.375 | 1.096 | VIGAS2 | 1.096 | VIGAS2 | 0.040 | VIGAS4 |
| 211 | 35x50V | 340.000 | 4.469 | VIGAS2 | 2.206 | VIGAS2 | 0.049 | VIGAS4 |
| 212 | 35x50V | 17.500  | 5.745 | VIGAS2 | 3.746 | VIGAS2 | 0.056 | VIGAS4 |
| 212 | 35x50V | 98.750  | 3.350 | VIGAS2 | 1.853 | VIGAS2 | 0.048 | VIGAS4 |
| 212 | 35x50V | 180.000 | 1.853 | VIGAS2 | 1.853 | VIGAS2 | 0.039 | VIGAS4 |
| 212 | 35x50V | 261.250 | 1.853 | VIGAS2 | 1.853 | VIGAS2 | 0.042 | VIGAS4 |
| 212 | 35x50V | 342.500 | 4.516 | VIGAS2 | 2.229 | VIGAS2 | 0.051 | VIGAS4 |
| 213 | 35x50V | 17.500  | 5.852 | VIGAS2 | 2.976 | CU     | 0.057 | VIGAS4 |
| 213 | 35x50V | 98.750  | 3.478 | VIGAS2 | 1.476 | CU     | 0.048 | VIGAS4 |
| 213 | 35x50V | 180.000 | 1.476 | CU     | 1.476 | CU     | 0.040 | VIGAS4 |
| 213 | 35x50V | 261.250 | 1.476 | CU     | 1.476 | CU     | 0.042 | VIGAS4 |
| 213 | 35x50V | 342.500 | 4.500 | VIGAS2 | 2.222 | VIGAS2 | 0.050 | VIGAS4 |
| 214 | 35x50V | 17.500  | 5.367 | CU     | 3.177 | CU     | 0.023 | VIGAS2 |
| 214 | 35x50V | 153.750 | 1.574 | CU     | 2.122 | CU     | 0.023 | VIGAS2 |
| 214 | 35x50V | 290.000 | 1.574 | CU     | 5.026 | CU     | 0.023 | VIGAS2 |
| 214 | 35x50V | 426.250 | 1.574 | CU     | 2.155 | CU     | 0.023 | VIGAS2 |
| 214 | 35x50V | 562.500 | 5.367 | CU     | 3.143 | CU     | 0.023 | VIGAS2 |
| 215 | 35x50V | 17.500  | 4.987 | VIGAS2 | 2.458 | VIGAS2 | 0.054 | VIGAS4 |
| 215 | 35x50V | 98.125  | 1.221 | VIGAS2 | 1.221 | VIGAS2 | 0.046 | VIGAS4 |
| 215 | 35x50V | 178.750 | 1.221 | VIGAS2 | 1.382 | CU     | 0.037 | VIGAS4 |
| 215 | 35x50V | 259.375 | 1.221 | VIGAS2 | 2.752 | VIGAS2 | 0.039 | VIGAS4 |
| 215 | 35x50V | 340.000 | 3.742 | VIGAS2 | 2.597 | VIGAS2 | 0.048 | VIGAS4 |
| 216 | 35x50V | 15.000  | 3.955 | CU     | 1.956 | CU     | 0.055 | VIGAS4 |
| 216 | 35x50V | 96.250  | 0.973 | CU     | 0.973 | CU     | 0.046 | VIGAS4 |
| 216 | 35x50V | 177.500 | 0.973 | CU     | 1.826 | CU     | 0.037 | VIGAS4 |
| 216 | 35x50V | 258.750 | 0.973 | CU     | 2.996 | VIGAS2 | 0.039 | VIGAS4 |
| 216 | 35x50V | 340.000 | 3.300 | VIGAS2 | 2.666 | VIGAS2 | 0.048 | VIGAS4 |
| 217 | 35x50V | 15.000  | 4.152 | CU     | 2.052 | CU     | 0.058 | VIGAS4 |
| 217 | 35x50V | 96.250  | 1.020 | CU     | 1.020 | CU     | 0.049 | VIGAS4 |
| 217 | 35x50V | 177.500 | 1.020 | CU     | 1.946 | CU     | 0.040 | VIGAS4 |
| 217 | 35x50V | 258.750 | 1.020 | CU     | 3.247 | VIGAS2 | 0.041 | VIGAS4 |
| 217 | 35x50V | 340.000 | 3.041 | VIGAS2 | 3.065 | VIGAS2 | 0.050 | VIGAS4 |
| 218 | 35x50V | 15.000  | 5.367 | CU     | 2.870 | CU     | 0.115 | CU     |
| 218 | 35x50V | 45.625  | 3.686 | CU     | 1.424 | CU     | 0.108 | CU     |
| 218 | 35x50V | 76.250  | 1.874 | CU     | 1.424 | CU     | 0.101 | CU     |
| 218 | 35x50V | 106.875 | 1.424 | CU     | 1.424 | CU     | 0.094 | CU     |
| 218 | 35x50V | 137.500 | 0.900 | VIGAS3 | 1.661 | VIGAS1 | 0.087 | CU     |
| 219 | 35x50V | 17.500  | 5.367 | VIGAS1 | 3.346 | VIGAS1 | 0.079 | CU     |
| 219 | 35x50V | 106.875 | 2.531 | CU     | 5.317 | CU     | 0.044 | VIGAS2 |
| 219 | 35x50V | 196.250 | 2.531 | CU     | 5.367 | CU     | 0.044 | VIGAS2 |

|     |        |         |        |        |       |        |       |        |
|-----|--------|---------|--------|--------|-------|--------|-------|--------|
| 219 | 35x50V | 285.625 | 2.531  | CU     | 2.531 | CU     | 0.050 | CU     |
| 219 | 35x50V | 375.000 | 7.950  | CU     | 5.137 | CU     | 0.107 | CU     |
| 220 | 35x50V | 17.500  | 7.525  | CU     | 4.871 | CU     | 0.098 | CU     |
| 220 | 35x50V | 106.875 | 2.455  | CU     | 2.455 | CU     | 0.049 | VIGAS2 |
| 220 | 35x50V | 196.250 | 2.455  | CU     | 3.985 | CU     | 0.049 | VIGAS2 |
| 220 | 35x50V | 285.625 | 2.455  | CU     | 2.455 | CU     | 0.049 | VIGAS2 |
| 220 | 35x50V | 375.000 | 7.893  | VIGAS1 | 4.979 | CU     | 0.099 | CU     |
| 221 | 35x50V | 17.500  | 8.121  | VIGAS1 | 4.675 | CU     | 0.119 | CU     |
| 221 | 35x50V | 120.000 | 3.661  | CU     | 3.664 | CU     | 0.056 | VIGAS2 |
| 221 | 35x50V | 222.500 | 3.661  | CU     | 5.429 | CU     | 0.056 | VIGAS2 |
| 221 | 35x50V | 325.000 | 3.661  | CU     | 3.661 | CU     | 0.070 | CU     |
| 221 | 35x50V | 427.500 | 11.798 | VIGAS1 | 5.621 | VIGAS1 | 0.138 | CU     |
| 222 | 35x50V | 17.500  | 13.373 | CU     | 6.326 | CU     | 0.155 | CU     |
| 222 | 35x50V | 133.750 | 4.115  | CU     | 4.115 | CU     | 0.075 | CU     |
| 222 | 35x50V | 250.000 | 4.115  | CU     | 8.320 | CU     | 0.053 | VIGAS2 |
| 222 | 35x50V | 366.250 | 4.115  | CU     | 5.170 | CU     | 0.064 | CU     |
| 222 | 35x50V | 482.500 | 10.394 | CU     | 5.367 | CU     | 0.145 | CU     |
| 223 | 35x50V | 17.500  | 8.772  | CU     | 5.367 | CU     | 0.116 | CU     |
| 223 | 35x50V | 75.625  | 3.776  | CU     | 2.779 | CU     | 0.096 | VIGAS4 |
| 223 | 35x50V | 133.750 | 2.779  | CU     | 2.779 | CU     | 0.080 | VIGAS4 |
| 223 | 35x50V | 191.875 | 2.779  | CU     | 2.779 | CU     | 0.069 | VIGAS4 |
| 223 | 35x50V | 250.000 | 3.263  | VIGAS1 | 2.328 | VIGAS1 | 0.085 | VIGAS4 |
| 224 | 35x50V | 0.000   | 1.050  | VIGAS3 | 1.546 | VIGAS1 | 0.082 | CU     |
| 224 | 35x50V | 30.625  | 1.279  | CU     | 1.279 | CU     | 0.089 | CU     |
| 224 | 35x50V | 61.250  | 1.703  | CU     | 1.279 | CU     | 0.096 | CU     |
| 224 | 35x50V | 91.875  | 3.304  | CU     | 1.279 | CU     | 0.103 | CU     |
| 224 | 35x50V | 122.500 | 5.232  | CU     | 2.577 | CU     | 0.110 | CU     |
| 225 | 35x50V | 17.500  | 4.279  | VIGAS2 | 2.114 | VIGAS2 | 0.044 | VIGAS4 |
| 225 | 35x50V | 97.188  | 1.249  | VIGAS2 | 2.418 | VIGAS2 | 0.036 | VIGAS4 |
| 225 | 35x50V | 176.875 | 1.051  | VIGAS2 | 1.300 | CU     | 0.031 | VIGAS4 |
| 225 | 35x50V | 256.563 | 1.051  | VIGAS2 | 1.051 | VIGAS2 | 0.039 | VIGAS4 |
| 225 | 35x50V | 336.250 | 4.160  | VIGAS2 | 2.056 | VIGAS2 | 0.048 | VIGAS4 |
| 226 | 35x50V | 17.500  | 3.857  | VIGAS2 | 2.069 | VIGAS2 | 0.047 | VIGAS4 |
| 226 | 35x50V | 97.813  | 0.948  | CU     | 2.541 | VIGAS2 | 0.038 | VIGAS4 |
| 226 | 35x50V | 178.125 | 0.948  | CU     | 1.404 | CU     | 0.035 | VIGAS4 |
| 226 | 35x50V | 258.438 | 0.948  | CU     | 0.948 | CU     | 0.044 | VIGAS4 |
| 226 | 35x50V | 338.750 | 3.854  | CU     | 1.906 | CU     | 0.052 | VIGAS4 |
| 227 | 35x50V | 17.500  | 3.758  | VIGAS2 | 2.254 | VIGAS2 | 0.047 | VIGAS4 |
| 227 | 35x50V | 97.813  | 0.999  | CU     | 2.644 | VIGAS2 | 0.039 | VIGAS4 |
| 227 | 35x50V | 178.125 | 0.999  | CU     | 1.394 | CU     | 0.036 | VIGAS4 |
| 227 | 35x50V | 258.438 | 0.999  | CU     | 0.999 | CU     | 0.045 | VIGAS4 |
| 227 | 35x50V | 338.750 | 4.067  | CU     | 2.010 | CU     | 0.053 | VIGAS4 |
| 228 | 35x50V | 15.000  | 5.782  | VIGAS2 | 3.586 | CU     | 0.025 | CU     |
| 228 | 35x50V | 149.375 | 1.775  | CU     | 1.887 | CU     | 0.024 | VIGAS2 |
| 228 | 35x50V | 283.750 | 1.775  | CU     | 5.367 | CU     | 0.024 | VIGAS2 |
| 228 | 35x50V | 418.125 | 1.775  | CU     | 3.542 | CU     | 0.024 | VIGAS2 |
| 228 | 35x50V | 552.500 | 5.367  | VIGAS2 | 3.104 | VIGAS2 | 0.024 | VIGAS2 |
| 229 | 35x50V | 17.500  | 5.121  | VIGAS2 | 2.523 | VIGAS2 | 0.080 | CU     |
| 229 | 35x50V | 97.188  | 1.253  | VIGAS2 | 1.253 | VIGAS2 | 0.063 | CU     |
| 229 | 35x50V | 176.875 | 1.253  | VIGAS2 | 2.089 | VIGAS2 | 0.047 | CU     |
| 229 | 35x50V | 256.563 | 1.625  | VIGAS2 | 3.690 | VIGAS2 | 0.050 | CU     |
| 229 | 35x50V | 336.250 | 4.825  | VIGAS2 | 3.953 | VIGAS2 | 0.066 | CU     |
| 230 | 35x50V | 15.000  | 4.491  | CU     | 2.217 | CU     | 0.063 | VIGAS4 |
| 230 | 35x50V | 95.313  | 1.102  | CU     | 1.102 | CU     | 0.054 | VIGAS4 |
| 230 | 35x50V | 175.625 | 1.102  | CU     | 1.698 | CU     | 0.046 | VIGAS4 |
| 230 | 35x50V | 255.938 | 1.532  | VIGAS4 | 3.799 | VIGAS2 | 0.045 | VIGAS4 |
| 230 | 35x50V | 336.250 | 3.993  | VIGAS2 | 4.045 | VIGAS2 | 0.054 | VIGAS4 |
| 231 | 35x50V | 15.000  | 4.704  | CU     | 2.321 | CU     | 0.065 | VIGAS4 |
| 231 | 35x50V | 95.313  | 1.153  | CU     | 1.153 | CU     | 0.056 | VIGAS4 |

|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 231 | 35x50V | 175.625 | 1.153 | CU     | 1.712 | CU     | 0.047 | VIGAS4 |
| 231 | 35x50V | 255.938 | 1.153 | CU     | 3.949 | VIGAS2 | 0.046 | VIGAS4 |
| 231 | 35x50V | 336.250 | 3.891 | VIGAS2 | 4.302 | VIGAS2 | 0.055 | VIGAS4 |
| 232 | 35x50V | 17.500  | 5.139 | VIGAS1 | 2.540 | VIGAS1 | 0.054 | VIGAS4 |
| 232 | 35x50V | 106.875 | 1.112 | CU     | 3.877 | VIGAS1 | 0.042 | VIGAS4 |
| 232 | 35x50V | 196.250 | 1.112 | CU     | 2.901 | CU     | 0.036 | VIGAS4 |
| 232 | 35x50V | 285.625 | 1.112 | CU     | 1.112 | CU     | 0.048 | VIGAS4 |
| 232 | 35x50V | 375.000 | 4.533 | CU     | 2.238 | CU     | 0.060 | VIGAS4 |
| 233 | 35x50V | 17.500  | 4.119 | CU     | 2.036 | CU     | 0.055 | VIGAS4 |
| 233 | 35x50V | 106.875 | 1.145 | CU     | 1.145 | CU     | 0.043 | VIGAS4 |
| 233 | 35x50V | 196.250 | 1.145 | CU     | 1.622 | CU     | 0.031 | VIGAS4 |
| 233 | 35x50V | 285.625 | 1.145 | CU     | 1.145 | CU     | 0.043 | VIGAS4 |
| 233 | 35x50V | 375.000 | 4.670 | CU     | 2.304 | CU     | 0.055 | VIGAS4 |
| 234 | 35x50V | 17.500  | 4.767 | CU     | 2.351 | CU     | 0.057 | VIGAS4 |
| 234 | 35x50V | 120.000 | 1.289 | CU     | 2.657 | VIGAS1 | 0.043 | VIGAS4 |
| 234 | 35x50V | 222.500 | 1.289 | CU     | 3.887 | CU     | 0.030 | VIGAS4 |
| 234 | 35x50V | 325.000 | 1.289 | CU     | 2.462 | VIGAS1 | 0.044 | VIGAS4 |
| 234 | 35x50V | 427.500 | 5.270 | CU     | 2.596 | CU     | 0.058 | VIGAS4 |
| 235 | 35x50V | 17.500  | 5.367 | VIGAS1 | 2.805 | VIGAS1 | 0.055 | VIGAS4 |
| 235 | 35x50V | 102.500 | 1.094 | CU     | 1.569 | VIGAS1 | 0.044 | VIGAS4 |
| 235 | 35x50V | 187.500 | 1.094 | CU     | 1.673 | CU     | 0.033 | VIGAS4 |
| 235 | 35x50V | 272.500 | 1.094 | CU     | 1.094 | CU     | 0.045 | VIGAS4 |
| 235 | 35x50V | 357.500 | 4.460 | CU     | 2.202 | CU     | 0.056 | VIGAS4 |
| 236 | 35x50V | 17.500  | 4.257 | CU     | 2.103 | CU     | 0.059 | VIGAS4 |
| 236 | 35x50V | 102.500 | 1.046 | CU     | 1.046 | CU     | 0.047 | VIGAS4 |
| 236 | 35x50V | 187.500 | 1.046 | CU     | 2.833 | CU     | 0.036 | VIGAS4 |
| 236 | 35x50V | 272.500 | 1.519 | VIGAS3 | 3.712 | VIGAS1 | 0.044 | VIGAS4 |
| 236 | 35x50V | 357.500 | 5.367 | VIGAS1 | 2.708 | VIGAS1 | 0.055 | VIGAS4 |
| 273 | 30x45V | 15.000  | 1.373 | VIGAS1 | 0.683 | VIGAS1 | 0.007 | VIGAS2 |
| 273 | 30x45V | 106.250 | 0.341 | VIGAS1 | 0.984 | VIGAS1 | 0.007 | VIGAS2 |
| 273 | 30x45V | 197.500 | 0.341 | VIGAS1 | 1.147 | CU     | 0.007 | VIGAS2 |
| 273 | 30x45V | 288.750 | 0.341 | VIGAS1 | 1.106 | CU     | 0.007 | VIGAS2 |
| 273 | 30x45V | 380.000 | 0.000 | VIGAS4 | 0.409 | CU     | 0.007 | VIGAS2 |
| 274 | 30x45V | 12.500  | 0.000 | VIGAS4 | 0.427 | CU     | 0.007 | VIGAS2 |
| 274 | 30x45V | 103.750 | 0.358 | VIGAS1 | 1.088 | CU     | 0.007 | VIGAS2 |
| 274 | 30x45V | 195.000 | 0.358 | VIGAS1 | 1.095 | CU     | 0.007 | VIGAS2 |
| 274 | 30x45V | 286.250 | 0.358 | VIGAS1 | 0.908 | VIGAS1 | 0.007 | VIGAS2 |
| 274 | 30x45V | 377.500 | 1.442 | VIGAS1 | 0.717 | VIGAS1 | 0.007 | VIGAS2 |
| 275 | 30x45V | 15.000  | 1.752 | VIGAS2 | 0.894 | VIGAS2 | 0.019 | VIGAS4 |
| 275 | 30x45V | 106.250 | 0.489 | VIGAS2 | 1.092 | VIGAS2 | 0.015 | VIGAS4 |
| 275 | 30x45V | 197.500 | 0.489 | VIGAS2 | 0.722 | CU     | 0.012 | VIGAS4 |
| 275 | 30x45V | 288.750 | 0.489 | VIGAS2 | 0.568 | VIGAS2 | 0.016 | VIGAS4 |
| 275 | 30x45V | 380.000 | 1.977 | VIGAS2 | 0.982 | VIGAS2 | 0.020 | VIGAS4 |
| 276 | 30x45V | 15.000  | 2.613 | CU     | 1.294 | CU     | 0.012 | VIGAS2 |
| 276 | 30x45V | 184.375 | 0.995 | CU     | 1.254 | CU     | 0.012 | VIGAS2 |
| 276 | 30x45V | 353.750 | 0.995 | CU     | 2.320 | CU     | 0.012 | VIGAS2 |
| 276 | 30x45V | 523.125 | 0.995 | CU     | 0.995 | CU     | 0.012 | VIGAS2 |
| 276 | 30x45V | 692.500 | 4.069 | CU     | 2.004 | CU     | 0.012 | VIGAS2 |
| 277 | 30x45V | 15.000  | 2.055 | VIGAS1 | 1.020 | VIGAS1 | 0.013 | VIGAS2 |
| 277 | 30x45V | 118.125 | 0.571 | CU     | 0.920 | CU     | 0.013 | VIGAS2 |
| 277 | 30x45V | 221.250 | 0.571 | CU     | 1.576 | CU     | 0.013 | VIGAS2 |
| 277 | 30x45V | 324.375 | 0.571 | CU     | 0.762 | VIGAS1 | 0.013 | VIGAS2 |
| 277 | 30x45V | 427.500 | 2.312 | CU     | 1.146 | CU     | 0.013 | VIGAS2 |
| 278 | 30x45V | 17.500  | 1.890 | CU     | 0.939 | CU     | 0.027 | VIGAS4 |
| 278 | 30x45V | 108.750 | 0.499 | CU     | 0.499 | CU     | 0.020 | VIGAS4 |
| 278 | 30x45V | 200.000 | 0.499 | CU     | 0.751 | CU     | 0.014 | VIGAS4 |
| 278 | 30x45V | 291.250 | 0.499 | CU     | 0.499 | CU     | 0.020 | VIGAS4 |
| 278 | 30x45V | 382.500 | 2.017 | CU     | 1.001 | CU     | 0.026 | VIGAS4 |
| 279 | 30x45V | 17.500  | 2.323 | CU     | 1.152 | CU     | 0.027 | VIGAS4 |

|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 279 | 30X45V | 96.875  | 0.573 | CU     | 0.573 | CU     | 0.021 | VIGAS4 |
| 279 | 30X45V | 176.250 | 0.573 | CU     | 0.784 | CU     | 0.016 | VIGAS4 |
| 279 | 30X45V | 255.625 | 0.573 | CU     | 0.798 | CU     | 0.018 | VIGAS4 |
| 279 | 30X45V | 335.000 | 0.885 | VIGAS1 | 0.577 | VIGAS1 | 0.023 | VIGAS4 |
| 280 | 30X45V | 15.000  | 1.769 | CU     | 0.879 | CU     | 0.018 | VIGAS4 |
| 280 | 30X45V | 101.875 | 0.438 | CU     | 0.438 | CU     | 0.015 | VIGAS4 |
| 280 | 30X45V | 188.750 | 0.438 | CU     | 0.533 | CU     | 0.012 | VIGAS4 |
| 280 | 30X45V | 275.625 | 0.438 | CU     | 0.793 | CU     | 0.010 | VIGAS4 |
| 280 | 30X45V | 362.500 | 0.000 | VIGAS4 | 0.460 | CU     | 0.013 | VIGAS4 |
| 281 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.493 | CU     | 0.015 | VIGAS4 |
| 281 | 30X45V | 99.375  | 0.500 | CU     | 0.756 | CU     | 0.011 | VIGAS4 |
| 281 | 30X45V | 186.250 | 0.500 | CU     | 0.500 | CU     | 0.013 | VIGAS4 |
| 281 | 30X45V | 273.125 | 0.765 | VIGAS1 | 0.500 | CU     | 0.016 | VIGAS4 |
| 281 | 30X45V | 360.000 | 2.021 | CU     | 1.003 | CU     | 0.020 | VIGAS4 |
| 282 | 30X45V | 15.000  | 1.952 | VIGAS2 | 0.969 | VIGAS2 | 0.028 | CU     |
| 282 | 30X45V | 85.000  | 0.694 | VIGAS2 | 0.601 | VIGAS2 | 0.023 | CU     |
| 282 | 30X45V | 155.000 | 0.601 | VIGAS2 | 0.601 | VIGAS2 | 0.018 | CU     |
| 282 | 30X45V | 225.000 | 1.105 | VIGAS2 | 0.616 | VIGAS2 | 0.023 | CU     |
| 282 | 30X45V | 295.000 | 2.435 | VIGAS2 | 1.207 | VIGAS2 | 0.029 | CU     |
| 283 | 30X45V | 15.000  | 2.253 | VIGAS2 | 1.117 | VIGAS2 | 0.021 | VIGAS4 |
| 283 | 30X45V | 115.625 | 0.641 | VIGAS2 | 1.319 | VIGAS2 | 0.017 | VIGAS4 |
| 283 | 30X45V | 216.250 | 0.641 | VIGAS2 | 0.938 | CU     | 0.015 | VIGAS4 |
| 283 | 30X45V | 316.875 | 0.641 | VIGAS2 | 0.765 | VIGAS2 | 0.018 | VIGAS4 |
| 283 | 30X45V | 417.500 | 2.600 | VIGAS2 | 1.288 | VIGAS2 | 0.022 | VIGAS4 |
| 284 | 30X45V | 15.000  | 1.607 | VIGAS2 | 0.799 | VIGAS2 | 0.017 | VIGAS4 |
| 284 | 30X45V | 115.625 | 0.466 | VIGAS2 | 0.875 | VIGAS2 | 0.013 | VIGAS4 |
| 284 | 30X45V | 216.250 | 0.466 | VIGAS2 | 0.871 | CU     | 0.010 | VIGAS4 |
| 284 | 30X45V | 316.875 | 0.466 | VIGAS2 | 0.606 | VIGAS2 | 0.015 | VIGAS4 |
| 284 | 30X45V | 417.500 | 1.885 | VIGAS2 | 0.936 | VIGAS2 | 0.019 | VIGAS4 |
| 285 | 30X45V | 15.000  | 1.412 | VIGAS1 | 0.804 | VIGAS1 | 0.017 | CU     |
| 285 | 30X45V | 106.250 | 0.461 | VIGAS1 | 1.123 | VIGAS1 | 0.015 | CU     |
| 285 | 30X45V | 197.500 | 0.350 | VIGAS1 | 0.935 | CU     | 0.012 | CU     |
| 285 | 30X45V | 288.750 | 0.350 | VIGAS1 | 1.086 | CU     | 0.010 | VIGAS4 |
| 285 | 30X45V | 380.000 | 0.000 | VIGAS4 | 0.890 | CU     | 0.012 | CU     |
| 286 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.961 | CU     | 0.015 | CU     |
| 286 | 30X45V | 103.125 | 0.552 | VIGAS1 | 1.015 | CU     | 0.014 | CU     |
| 286 | 30X45V | 193.750 | 0.552 | VIGAS1 | 1.213 | VIGAS1 | 0.016 | CU     |
| 286 | 30X45V | 284.375 | 1.041 | VIGAS1 | 1.190 | VIGAS1 | 0.019 | CU     |
| 286 | 30X45V | 375.000 | 2.237 | VIGAS1 | 1.109 | VIGAS1 | 0.022 | CU     |
| 287 | 30X45V | 17.500  | 3.399 | CU     | 1.678 | CU     | 0.035 | CU     |
| 287 | 30X45V | 103.750 | 1.789 | CU     | 0.834 | CU     | 0.032 | CU     |
| 287 | 30X45V | 190.000 | 0.834 | CU     | 0.834 | CU     | 0.029 | CU     |
| 287 | 30X45V | 276.250 | 0.834 | CU     | 0.834 | CU     | 0.027 | CU     |
| 287 | 30X45V | 362.500 | 0.000 | VIGAS4 | 1.055 | CU     | 0.024 | CU     |
| 288 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.984 | CU     | 0.021 | CU     |
| 288 | 30X45V | 98.750  | 0.705 | CU     | 0.705 | CU     | 0.023 | CU     |
| 288 | 30X45V | 185.000 | 0.705 | CU     | 0.705 | CU     | 0.026 | CU     |
| 288 | 30X45V | 271.250 | 1.913 | VIGAS1 | 0.705 | CU     | 0.029 | CU     |
| 288 | 30X45V | 357.500 | 2.864 | CU     | 1.417 | CU     | 0.031 | CU     |
| 289 | 30X45V | 17.500  | 2.550 | VIGAS2 | 1.263 | VIGAS2 | 0.021 | VIGAS4 |
| 289 | 30X45V | 118.750 | 0.629 | VIGAS2 | 0.657 | VIGAS2 | 0.017 | VIGAS4 |
| 289 | 30X45V | 220.000 | 0.629 | VIGAS2 | 0.707 | CU     | 0.013 | VIGAS4 |
| 289 | 30X45V | 321.250 | 0.629 | VIGAS2 | 0.883 | VIGAS2 | 0.017 | VIGAS4 |
| 289 | 30X45V | 422.500 | 2.318 | VIGAS2 | 1.149 | VIGAS2 | 0.020 | VIGAS4 |
| 290 | 30X45V | 17.500  | 1.851 | VIGAS2 | 0.919 | VIGAS2 | 0.019 | VIGAS4 |
| 290 | 30X45V | 118.750 | 0.466 | VIGAS2 | 0.603 | VIGAS2 | 0.014 | VIGAS4 |
| 290 | 30X45V | 220.000 | 0.466 | VIGAS2 | 0.727 | CU     | 0.010 | VIGAS4 |
| 290 | 30X45V | 321.250 | 0.466 | VIGAS2 | 0.645 | VIGAS2 | 0.014 | VIGAS4 |
| 290 | 30X45V | 422.500 | 1.883 | VIGAS2 | 0.935 | VIGAS2 | 0.019 | VIGAS4 |



|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 291 | 30X45V | 15.000  | 3.729 | CU     | 1.839 | CU     | 0.012 | VIGAS2 |
| 291 | 30X45V | 186.250 | 0.933 | CU     | 0.933 | CU     | 0.012 | VIGAS2 |
| 291 | 30X45V | 357.500 | 0.933 | CU     | 2.022 | CU     | 0.012 | VIGAS2 |
| 291 | 30X45V | 528.750 | 0.933 | CU     | 0.933 | CU     | 0.012 | VIGAS2 |
| 291 | 30X45V | 700.000 | 3.812 | CU     | 1.879 | CU     | 0.012 | VIGAS2 |
| 292 | 30X45V | 17.500  | 3.846 | CU     | 1.896 | CU     | 0.012 | VIGAS2 |
| 292 | 30X45V | 188.125 | 0.941 | CU     | 0.961 | CU     | 0.012 | VIGAS2 |
| 292 | 30X45V | 358.750 | 0.941 | CU     | 2.615 | CU     | 0.012 | VIGAS2 |
| 292 | 30X45V | 529.375 | 0.941 | CU     | 1.101 | CU     | 0.012 | VIGAS2 |
| 292 | 30X45V | 700.000 | 3.556 | CU     | 1.755 | CU     | 0.012 | VIGAS2 |
| 293 | 30X45V | 17.500  | 2.675 | CU     | 1.324 | CU     | 0.032 | CU     |
| 293 | 30X45V | 103.750 | 2.050 | VIGAS1 | 0.659 | CU     | 0.029 | CU     |
| 293 | 30X45V | 190.000 | 0.659 | CU     | 0.659 | CU     | 0.026 | CU     |
| 293 | 30X45V | 276.250 | 0.659 | CU     | 0.659 | CU     | 0.024 | CU     |
| 293 | 30X45V | 362.500 | 0.000 | VIGAS4 | 0.978 | CU     | 0.021 | CU     |
| 294 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.924 | CU     | 0.018 | CU     |
| 294 | 30X45V | 98.750  | 0.561 | CU     | 0.592 | CU     | 0.020 | CU     |
| 294 | 30X45V | 185.000 | 0.561 | CU     | 0.561 | CU     | 0.023 | CU     |
| 294 | 30X45V | 271.250 | 1.635 | VIGAS1 | 0.561 | CU     | 0.026 | CU     |
| 294 | 30X45V | 357.500 | 2.272 | CU     | 1.126 | CU     | 0.028 | CU     |
| 295 | 30X45V | 15.000  | 1.817 | VIGAS1 | 1.221 | VIGAS1 | 0.019 | CU     |
| 295 | 30X45V | 106.250 | 0.746 | VIGAS1 | 1.417 | VIGAS1 | 0.016 | CU     |
| 295 | 30X45V | 197.500 | 0.450 | VIGAS1 | 1.351 | VIGAS1 | 0.013 | CU     |
| 295 | 30X45V | 288.750 | 0.450 | VIGAS1 | 1.078 | CU     | 0.011 | VIGAS4 |
| 295 | 30X45V | 380.000 | 0.000 | VIGAS4 | 0.875 | CU     | 0.014 | CU     |
| 296 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.888 | CU     | 0.014 | CU     |
| 296 | 30X45V | 103.750 | 0.498 | VIGAS1 | 1.065 | CU     | 0.012 | VIGAS4 |
| 296 | 30X45V | 195.000 | 0.498 | VIGAS1 | 1.380 | VIGAS1 | 0.014 | CU     |
| 296 | 30X45V | 286.250 | 0.886 | VIGAS1 | 1.463 | VIGAS1 | 0.017 | CU     |
| 296 | 30X45V | 377.500 | 2.015 | VIGAS1 | 1.284 | VIGAS1 | 0.020 | CU     |
| 297 | 30X45V | 17.500  | 2.113 | CU     | 1.048 | CU     | 0.021 | VIGAS4 |
| 297 | 30X45V | 133.125 | 0.522 | CU     | 0.834 | VIGAS2 | 0.016 | VIGAS4 |
| 297 | 30X45V | 248.750 | 0.522 | CU     | 1.306 | CU     | 0.012 | VIGAS4 |
| 297 | 30X45V | 364.375 | 0.522 | CU     | 0.862 | CU     | 0.014 | VIGAS4 |
| 297 | 30X45V | 480.000 | 1.675 | VIGAS2 | 0.832 | VIGAS2 | 0.019 | VIGAS4 |
| 298 | 30X45V | 17.500  | 1.719 | CU     | 0.854 | CU     | 0.009 | VIGAS2 |
| 298 | 30X45V | 133.125 | 0.426 | CU     | 0.694 | VIGAS2 | 0.009 | VIGAS2 |
| 298 | 30X45V | 248.750 | 0.426 | CU     | 1.185 | CU     | 0.009 | VIGAS2 |
| 298 | 30X45V | 364.375 | 0.426 | CU     | 0.679 | CU     | 0.009 | VIGAS2 |
| 298 | 30X45V | 480.000 | 1.639 | VIGAS2 | 0.815 | VIGAS2 | 0.009 | VIGAS2 |
| 299 | 30X45V | 15.000  | 2.060 | VIGAS2 | 1.022 | VIGAS2 | 0.027 | CU     |
| 299 | 30X45V | 93.125  | 0.774 | VIGAS2 | 0.509 | VIGAS2 | 0.021 | CU     |
| 299 | 30X45V | 171.250 | 0.509 | VIGAS2 | 0.509 | VIGAS2 | 0.014 | CU     |
| 299 | 30X45V | 249.375 | 0.647 | VIGAS2 | 0.509 | VIGAS2 | 0.019 | CU     |
| 299 | 30X45V | 327.500 | 1.824 | VIGAS2 | 0.906 | VIGAS2 | 0.025 | CU     |
| 300 | 30X45V | 15.000  | 2.748 | VIGAS1 | 1.360 | VIGAS1 | 0.020 | VIGAS4 |
| 300 | 30X45V | 118.125 | 0.856 | VIGAS1 | 0.983 | VIGAS1 | 0.016 | VIGAS4 |
| 300 | 30X45V | 221.250 | 0.677 | VIGAS1 | 0.640 | CU     | 0.013 | VIGAS4 |
| 300 | 30X45V | 324.375 | 0.677 | VIGAS1 | 0.751 | VIGAS1 | 0.017 | VIGAS4 |
| 300 | 30X45V | 427.500 | 2.094 | VIGAS1 | 1.039 | VIGAS1 | 0.020 | VIGAS4 |
| 301 | 30X45V | 17.500  | 2.033 | CU     | 1.009 | CU     | 0.021 | VIGAS4 |
| 301 | 30X45V | 103.750 | 0.735 | VIGAS1 | 0.503 | CU     | 0.017 | VIGAS4 |
| 301 | 30X45V | 190.000 | 0.503 | CU     | 0.690 | CU     | 0.014 | VIGAS4 |
| 301 | 30X45V | 276.250 | 0.503 | CU     | 0.920 | CU     | 0.012 | VIGAS4 |
| 301 | 30X45V | 362.500 | 0.000 | VIGAS4 | 0.397 | CU     | 0.015 | VIGAS4 |
| 302 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.408 | CU     | 0.015 | VIGAS4 |
| 302 | 30X45V | 99.375  | 0.536 | CU     | 0.911 | CU     | 0.012 | VIGAS4 |
| 302 | 30X45V | 186.250 | 0.536 | CU     | 0.650 | CU     | 0.015 | VIGAS4 |
| 302 | 30X45V | 273.125 | 0.817 | VIGAS1 | 0.536 | CU     | 0.018 | VIGAS4 |
| 302 | 30X45V | 360.000 | 2.171 | CU     | 1.077 | CU     | 0.021 | VIGAS4 |

|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 303 | 30X45V | 15.000  | 2.032 | CU     | 1.008 | CU     | 0.021 | VIGAS4 |
| 303 | 30X45V | 101.875 | 0.917 | VIGAS1 | 0.502 | CU     | 0.018 | VIGAS4 |
| 303 | 30X45V | 188.750 | 0.502 | CU     | 0.502 | CU     | 0.015 | VIGAS4 |
| 303 | 30X45V | 275.625 | 0.502 | CU     | 0.785 | CU     | 0.012 | VIGAS4 |
| 303 | 30X45V | 362.500 | 0.000 | VIGAS4 | 0.535 | CU     | 0.015 | VIGAS4 |
| 304 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.484 | CU     | 0.016 | VIGAS4 |
| 304 | 30X45V | 99.375  | 0.571 | VIGAS1 | 0.841 | CU     | 0.013 | VIGAS4 |
| 304 | 30X45V | 186.250 | 0.571 | VIGAS1 | 0.908 | VIGAS1 | 0.014 | VIGAS4 |
| 304 | 30X45V | 273.125 | 0.924 | VIGAS1 | 0.589 | VIGAS1 | 0.017 | VIGAS4 |
| 304 | 30X45V | 360.000 | 2.314 | VIGAS1 | 1.147 | VIGAS1 | 0.020 | VIGAS4 |
| 305 | 30X45V | 15.000  | 3.869 | CU     | 1.907 | CU     | 0.012 | VIGAS2 |
| 305 | 30X45V | 188.125 | 0.991 | CU     | 0.991 | CU     | 0.012 | VIGAS2 |
| 305 | 30X45V | 361.250 | 0.991 | CU     | 1.965 | CU     | 0.012 | VIGAS2 |
| 305 | 30X45V | 534.375 | 0.991 | CU     | 0.991 | CU     | 0.012 | VIGAS2 |
| 305 | 30X45V | 707.500 | 4.053 | CU     | 1.996 | CU     | 0.012 | VIGAS2 |
| 306 | 30X45V | 15.000  | 1.873 | VIGAS2 | 0.930 | VIGAS2 | 0.020 | CU     |
| 306 | 30X45V | 102.500 | 0.718 | VIGAS2 | 0.464 | VIGAS2 | 0.016 | CU     |
| 306 | 30X45V | 190.000 | 0.464 | VIGAS2 | 0.464 | VIGAS2 | 0.012 | CU     |
| 306 | 30X45V | 277.500 | 0.464 | VIGAS2 | 0.490 | VIGAS2 | 0.013 | CU     |
| 306 | 30X45V | 365.000 | 1.271 | VIGAS2 | 0.632 | VIGAS2 | 0.017 | CU     |
| 307 | 30X45V | 17.500  | 1.650 | VIGAS2 | 1.681 | VIGAS2 | 0.021 | CU     |
| 307 | 30X45V | 104.375 | 0.606 | VIGAS2 | 1.269 | VIGAS2 | 0.017 | CU     |
| 307 | 30X45V | 191.250 | 0.515 | VIGAS2 | 0.386 | CU     | 0.018 | CU     |
| 307 | 30X45V | 278.125 | 0.602 | VIGAS2 | 0.515 | VIGAS2 | 0.022 | CU     |
| 307 | 30X45V | 365.000 | 2.083 | VIGAS2 | 1.034 | VIGAS2 | 0.026 | CU     |
| 308 | 30X45V | 15.000  | 1.242 | VIGAS2 | 0.618 | VIGAS2 | 0.020 | VIGAS4 |
| 308 | 30X45V | 102.500 | 0.681 | CU     | 0.681 | CU     | 0.016 | VIGAS4 |
| 308 | 30X45V | 190.000 | 0.681 | CU     | 0.681 | CU     | 0.018 | VIGAS4 |
| 308 | 30X45V | 277.500 | 1.037 | CU     | 0.681 | CU     | 0.022 | VIGAS4 |
| 308 | 30X45V | 365.000 | 2.767 | CU     | 1.370 | CU     | 0.026 | VIGAS4 |
| 309 | 30X45V | 15.000  | 1.532 | VIGAS1 | 1.168 | VIGAS1 | 0.017 | CU     |
| 309 | 30X45V | 106.250 | 0.544 | VIGAS1 | 1.376 | VIGAS1 | 0.015 | CU     |
| 309 | 30X45V | 197.500 | 0.380 | VIGAS1 | 0.996 | CU     | 0.012 | CU     |
| 309 | 30X45V | 288.750 | 0.380 | VIGAS1 | 1.097 | CU     | 0.010 | VIGAS4 |
| 309 | 30X45V | 380.000 | 0.000 | VIGAS4 | 0.849 | CU     | 0.013 | CU     |
| 310 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.882 | CU     | 0.014 | CU     |
| 310 | 30X45V | 103.750 | 0.451 | VIGAS1 | 1.063 | CU     | 0.011 | VIGAS4 |
| 310 | 30X45V | 195.000 | 0.451 | VIGAS1 | 1.308 | VIGAS1 | 0.013 | CU     |
| 310 | 30X45V | 286.250 | 0.754 | VIGAS1 | 1.339 | VIGAS1 | 0.016 | CU     |
| 310 | 30X45V | 377.500 | 1.822 | VIGAS1 | 1.109 | VIGAS1 | 0.019 | CU     |
| 311 | 30X45V | 15.000  | 1.608 | VIGAS1 | 1.062 | VIGAS1 | 0.017 | CU     |
| 311 | 30X45V | 101.875 | 0.678 | VIGAS1 | 1.228 | VIGAS1 | 0.014 | CU     |
| 311 | 30X45V | 188.750 | 0.398 | VIGAS1 | 1.157 | VIGAS1 | 0.012 | CU     |
| 311 | 30X45V | 275.625 | 0.398 | VIGAS1 | 0.872 | CU     | 0.010 | VIGAS4 |
| 311 | 30X45V | 362.500 | 0.000 | VIGAS4 | 0.655 | CU     | 0.013 | CU     |
| 312 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.647 | CU     | 0.012 | CU     |
| 312 | 30X45V | 99.375  | 0.356 | VIGAS1 | 0.881 | CU     | 0.009 | VIGAS4 |
| 312 | 30X45V | 186.250 | 0.356 | VIGAS1 | 1.124 | VIGAS1 | 0.011 | CU     |
| 312 | 30X45V | 273.125 | 0.556 | VIGAS1 | 1.172 | VIGAS1 | 0.013 | CU     |
| 312 | 30X45V | 360.000 | 1.435 | VIGAS1 | 0.984 | VIGAS1 | 0.016 | CU     |
| 313 | 30X45V | 15.000  | 3.431 | CU     | 1.694 | CU     | 0.012 | VIGAS2 |
| 313 | 30X45V | 183.750 | 0.929 | CU     | 0.929 | CU     | 0.012 | VIGAS2 |
| 313 | 30X45V | 352.500 | 0.929 | CU     | 2.008 | CU     | 0.012 | VIGAS2 |
| 313 | 30X45V | 521.250 | 0.929 | CU     | 0.929 | CU     | 0.012 | VIGAS2 |
| 313 | 30X45V | 690.000 | 3.793 | CU     | 1.870 | CU     | 0.012 | VIGAS2 |
| 314 | 30X45V | 15.000  | 1.678 | CU     | 0.834 | CU     | 0.009 | VIGAS2 |
| 314 | 30X45V | 183.750 | 0.711 | CU     | 0.711 | CU     | 0.009 | VIGAS2 |
| 314 | 30X45V | 352.500 | 0.711 | CU     | 1.289 | CU     | 0.009 | VIGAS2 |
| 314 | 30X45V | 521.250 | 0.711 | CU     | 0.711 | CU     | 0.009 | VIGAS2 |

|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 314 | 30X45V | 690.000 | 2.890 | CU     | 1.430 | CU     | 0.009 | VIGAS2 |
| 315 | 30X45V | 15.000  | 2.241 | CU     | 1.111 | CU     | 0.008 | VIGAS2 |
| 315 | 30X45V | 184.375 | 0.625 | CU     | 0.625 | CU     | 0.008 | VIGAS2 |
| 315 | 30X45V | 353.750 | 0.625 | CU     | 1.212 | CU     | 0.008 | VIGAS2 |
| 315 | 30X45V | 523.125 | 0.625 | CU     | 0.625 | CU     | 0.008 | VIGAS2 |
| 315 | 30X45V | 692.500 | 2.534 | CU     | 1.255 | CU     | 0.008 | VIGAS2 |
| 316 | 30X45V | 15.000  | 3.465 | CU     | 1.711 | CU     | 0.011 | VIGAS2 |
| 316 | 30X45V | 184.375 | 0.850 | CU     | 0.856 | CU     | 0.011 | VIGAS2 |
| 316 | 30X45V | 353.750 | 0.850 | CU     | 2.351 | CU     | 0.011 | VIGAS2 |
| 316 | 30X45V | 523.125 | 0.850 | CU     | 1.011 | CU     | 0.011 | VIGAS2 |
| 316 | 30X45V | 692.500 | 3.144 | CU     | 1.554 | CU     | 0.011 | VIGAS2 |
| 317 | 30X45V | 17.500  | 1.739 | VIGAS1 | 1.207 | VIGAS1 | 0.019 | CU     |
| 317 | 30X45V | 108.125 | 0.693 | VIGAS1 | 1.407 | VIGAS1 | 0.016 | CU     |
| 317 | 30X45V | 198.750 | 0.431 | VIGAS1 | 1.349 | VIGAS1 | 0.013 | CU     |
| 317 | 30X45V | 289.375 | 0.431 | VIGAS1 | 1.097 | CU     | 0.011 | VIGAS4 |
| 317 | 30X45V | 380.000 | 0.000 | VIGAS4 | 0.896 | CU     | 0.014 | CU     |
| 318 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.989 | CU     | 0.015 | VIGAS4 |
| 318 | 30X45V | 103.125 | 0.597 | VIGAS1 | 1.005 | CU     | 0.015 | CU     |
| 318 | 30X45V | 193.750 | 0.597 | VIGAS1 | 1.218 | VIGAS1 | 0.018 | CU     |
| 318 | 30X45V | 284.375 | 1.169 | VIGAS1 | 1.191 | VIGAS1 | 0.020 | CU     |
| 318 | 30X45V | 375.000 | 2.419 | VIGAS1 | 1.199 | VIGAS1 | 0.023 | CU     |
| 319 | 30X45V | 15.000  | 1.940 | VIGAS1 | 1.471 | VIGAS1 | 0.019 | CU     |
| 319 | 30X45V | 101.875 | 0.884 | VIGAS1 | 1.550 | VIGAS1 | 0.017 | CU     |
| 319 | 30X45V | 188.750 | 0.480 | VIGAS1 | 1.391 | VIGAS1 | 0.014 | CU     |
| 319 | 30X45V | 275.625 | 0.480 | VIGAS1 | 0.992 | CU     | 0.012 | VIGAS4 |
| 319 | 30X45V | 362.500 | 0.000 | VIGAS4 | 0.798 | CU     | 0.014 | CU     |
| 320 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.777 | CU     | 0.014 | CU     |
| 320 | 30X45V | 99.375  | 0.425 | VIGAS1 | 1.015 | CU     | 0.011 | VIGAS4 |
| 320 | 30X45V | 186.250 | 0.425 | VIGAS1 | 1.396 | VIGAS1 | 0.013 | CU     |
| 320 | 30X45V | 273.125 | 0.726 | VIGAS1 | 1.559 | VIGAS1 | 0.015 | CU     |
| 320 | 30X45V | 360.000 | 1.716 | VIGAS1 | 1.483 | VIGAS1 | 0.018 | CU     |
| 321 | 30X45V | 15.000  | 3.117 | CU     | 1.541 | CU     | 0.011 | VIGAS2 |
| 321 | 30X45V | 151.875 | 0.766 | CU     | 0.766 | CU     | 0.011 | VIGAS2 |
| 321 | 30X45V | 288.750 | 0.766 | CU     | 0.966 | CU     | 0.011 | VIGAS2 |
| 321 | 30X45V | 425.625 | 0.766 | CU     | 0.766 | CU     | 0.011 | VIGAS2 |
| 321 | 30X45V | 562.500 | 2.306 | CU     | 1.143 | CU     | 0.011 | VIGAS2 |
| 322 | 30X45V | 17.500  | 3.703 | CU     | 1.826 | CU     | 0.013 | VIGAS2 |
| 322 | 30X45V | 187.500 | 0.940 | CU     | 0.940 | CU     | 0.013 | VIGAS2 |
| 322 | 30X45V | 357.500 | 0.940 | CU     | 1.937 | CU     | 0.013 | VIGAS2 |
| 322 | 30X45V | 527.500 | 0.940 | CU     | 0.940 | CU     | 0.013 | VIGAS2 |
| 322 | 30X45V | 697.500 | 3.839 | CU     | 1.892 | CU     | 0.013 | VIGAS2 |
| 323 | 30X45V | 17.500  | 2.676 | VIGAS2 | 1.325 | VIGAS2 | 0.018 | VIGAS4 |
| 323 | 30X45V | 187.500 | 0.646 | CU     | 1.031 | VIGAS2 | 0.013 | VIGAS4 |
| 323 | 30X45V | 357.500 | 0.646 | CU     | 1.330 | CU     | 0.010 | VIGAS4 |
| 323 | 30X45V | 527.500 | 0.646 | CU     | 0.646 | CU     | 0.014 | VIGAS4 |
| 323 | 30X45V | 697.500 | 2.621 | CU     | 1.298 | CU     | 0.019 | VIGAS4 |
| 324 | 30X45V | 15.000  | 2.221 | CU     | 1.102 | CU     | 0.009 | VIGAS2 |
| 324 | 30X45V | 185.625 | 0.593 | CU     | 0.593 | CU     | 0.009 | VIGAS2 |
| 324 | 30X45V | 356.250 | 0.593 | CU     | 1.338 | CU     | 0.009 | VIGAS2 |
| 324 | 30X45V | 526.875 | 0.593 | CU     | 0.892 | VIGAS2 | 0.009 | VIGAS2 |
| 324 | 30X45V | 697.500 | 2.405 | CU     | 1.192 | CU     | 0.009 | VIGAS2 |
| 325 | 30X45V | 15.000  | 1.979 | CU     | 0.983 | CU     | 0.046 | VIGAS4 |
| 325 | 30X45V | 45.625  | 1.184 | VIGAS2 | 0.629 | CU     | 0.045 | VIGAS4 |
| 325 | 30X45V | 76.250  | 0.629 | CU     | 0.629 | CU     | 0.043 | VIGAS4 |
| 325 | 30X45V | 106.875 | 0.629 | CU     | 1.542 | CU     | 0.042 | VIGAS4 |
| 325 | 30X45V | 137.500 | 0.000 | VIGAS4 | 2.550 | CU     | 0.041 | VIGAS4 |
| 326 | 30X45V | 17.500  | 1.773 | VIGAS1 | 1.055 | VIGAS1 | 0.019 | CU     |
| 326 | 30X45V | 108.125 | 0.716 | VIGAS1 | 1.298 | VIGAS1 | 0.016 | CU     |
| 326 | 30X45V | 198.750 | 0.439 | VIGAS1 | 1.283 | VIGAS1 | 0.014 | CU     |

|     |        |         |       |        |       |        |       |        |
|-----|--------|---------|-------|--------|-------|--------|-------|--------|
| 326 | 30X45V | 289.375 | 0.439 | VIGAS1 | 1.080 | CU     | 0.011 | VIGAS4 |
| 326 | 30X45V | 380.000 | 0.000 | VIGAS4 | 0.915 | CU     | 0.013 | CU     |
| 327 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.995 | CU     | 0.015 | VIGAS4 |
| 327 | 30X45V | 103.125 | 0.582 | VIGAS1 | 1.000 | CU     | 0.015 | CU     |
| 327 | 30X45V | 193.750 | 0.582 | VIGAS1 | 1.169 | VIGAS1 | 0.017 | CU     |
| 327 | 30X45V | 284.375 | 1.126 | VIGAS1 | 1.107 | VIGAS1 | 0.020 | CU     |
| 327 | 30X45V | 375.000 | 2.357 | VIGAS1 | 1.169 | VIGAS1 | 0.023 | CU     |
| 328 | 30X45V | 17.500  | 2.266 | VIGAS1 | 1.800 | VIGAS1 | 0.021 | CU     |
| 328 | 30X45V | 103.750 | 1.110 | VIGAS1 | 1.770 | VIGAS1 | 0.018 | CU     |
| 328 | 30X45V | 190.000 | 0.559 | VIGAS1 | 1.505 | VIGAS1 | 0.016 | CU     |
| 328 | 30X45V | 276.250 | 0.559 | VIGAS1 | 0.983 | CU     | 0.014 | VIGAS4 |
| 328 | 30X45V | 362.500 | 0.000 | VIGAS4 | 0.794 | CU     | 0.016 | CU     |
| 329 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.751 | CU     | 0.011 | CU     |
| 329 | 30X45V | 103.125 | 0.274 | VIGAS1 | 1.036 | CU     | 0.008 | CU     |
| 329 | 30X45V | 193.750 | 0.274 | VIGAS1 | 0.979 | CU     | 0.009 | CU     |
| 329 | 30X45V | 284.375 | 0.418 | VIGAS3 | 1.151 | VIGAS1 | 0.012 | CU     |
| 329 | 30X45V | 375.000 | 1.101 | VIGAS1 | 0.864 | VIGAS1 | 0.015 | CU     |
| 330 | 30X45V | 0.000   | 0.000 | VIGAS4 | 2.524 | CU     | 0.040 | VIGAS4 |
| 330 | 30X45V | 30.625  | 0.622 | CU     | 1.547 | CU     | 0.042 | VIGAS4 |
| 330 | 30X45V | 61.250  | 0.622 | CU     | 0.622 | CU     | 0.043 | VIGAS4 |
| 330 | 30X45V | 91.875  | 1.053 | VIGAS2 | 0.622 | CU     | 0.044 | VIGAS4 |
| 330 | 30X45V | 122.500 | 1.883 | CU     | 0.935 | CU     | 0.046 | VIGAS4 |
| 331 | 30X45V | 17.500  | 4.100 | CU     | 2.044 | CU     | 0.012 | VIGAS2 |
| 331 | 30X45V | 185.625 | 1.015 | CU     | 1.015 | CU     | 0.012 | VIGAS2 |
| 331 | 30X45V | 353.750 | 1.015 | CU     | 2.400 | CU     | 0.012 | VIGAS2 |
| 331 | 30X45V | 521.875 | 1.015 | CU     | 1.994 | VIGAS2 | 0.012 | VIGAS2 |
| 331 | 30X45V | 690.000 | 3.341 | VIGAS2 | 1.650 | VIGAS2 | 0.012 | VIGAS2 |
| 332 | 30X45V | 17.500  | 2.781 | CU     | 1.377 | CU     | 0.009 | VIGAS2 |
| 332 | 30X45V | 186.250 | 0.685 | CU     | 0.685 | CU     | 0.009 | VIGAS2 |
| 332 | 30X45V | 355.000 | 0.685 | CU     | 1.625 | CU     | 0.009 | VIGAS2 |
| 332 | 30X45V | 523.750 | 0.685 | CU     | 1.141 | CU     | 0.009 | VIGAS2 |
| 332 | 30X45V | 692.500 | 2.012 | VIGAS2 | 0.999 | VIGAS2 | 0.009 | VIGAS2 |
| 333 | 30X45V | 17.500  | 2.861 | CU     | 1.416 | CU     | 0.009 | VIGAS2 |
| 333 | 30X45V | 186.250 | 0.704 | CU     | 0.704 | CU     | 0.009 | VIGAS2 |
| 333 | 30X45V | 355.000 | 0.704 | CU     | 1.611 | CU     | 0.009 | VIGAS2 |
| 333 | 30X45V | 523.750 | 0.704 | CU     | 1.159 | CU     | 0.009 | VIGAS2 |
| 333 | 30X45V | 692.500 | 2.044 | VIGAS2 | 1.014 | VIGAS2 | 0.009 | VIGAS2 |
| 334 | 30X45V | 15.000  | 2.777 | CU     | 1.375 | CU     | 0.011 | VIGAS2 |
| 334 | 30X45V | 149.375 | 0.684 | CU     | 0.684 | CU     | 0.011 | VIGAS2 |
| 334 | 30X45V | 283.750 | 0.684 | CU     | 1.338 | CU     | 0.011 | VIGAS2 |
| 334 | 30X45V | 418.125 | 0.684 | CU     | 1.314 | VIGAS2 | 0.011 | VIGAS2 |
| 334 | 30X45V | 552.500 | 2.544 | VIGAS2 | 1.260 | VIGAS2 | 0.011 | VIGAS2 |
| 335 | 30X45V | 17.500  | 2.007 | VIGAS1 | 0.996 | VIGAS1 | 0.019 | VIGAS4 |
| 335 | 30X45V | 108.125 | 0.625 | VIGAS1 | 0.956 | VIGAS1 | 0.016 | VIGAS4 |
| 335 | 30X45V | 198.750 | 0.496 | VIGAS1 | 0.961 | CU     | 0.012 | VIGAS4 |
| 335 | 30X45V | 289.375 | 0.496 | VIGAS1 | 1.059 | CU     | 0.012 | VIGAS4 |
| 335 | 30X45V | 380.000 | 0.000 | VIGAS4 | 0.510 | CU     | 0.015 | VIGAS4 |
| 336 | 30X45V | 12.500  | 0.000 | VIGAS4 | 0.526 | CU     | 0.008 | VIGAS2 |
| 336 | 30X45V | 103.750 | 0.330 | CU     | 1.044 | CU     | 0.008 | VIGAS2 |
| 336 | 30X45V | 195.000 | 0.330 | CU     | 0.907 | CU     | 0.008 | VIGAS2 |
| 336 | 30X45V | 286.250 | 0.330 | CU     | 0.482 | VIGAS1 | 0.008 | VIGAS2 |
| 336 | 30X45V | 377.500 | 1.328 | CU     | 0.661 | CU     | 0.008 | VIGAS2 |
| 337 | 30X45V | 15.000  | 1.836 | CU     | 0.912 | CU     | 0.019 | VIGAS4 |
| 337 | 30X45V | 118.750 | 0.802 | VIGAS1 | 0.454 | CU     | 0.015 | VIGAS4 |
| 337 | 30X45V | 222.500 | 0.454 | CU     | 0.454 | CU     | 0.011 | VIGAS4 |
| 337 | 30X45V | 326.250 | 0.778 | VIGAS1 | 0.454 | CU     | 0.015 | VIGAS4 |
| 337 | 30X45V | 430.000 | 1.770 | CU     | 0.879 | CU     | 0.019 | VIGAS4 |
| 338 | 30X45V | 15.000  | 1.096 | CU     | 0.546 | CU     | 0.008 | VIGAS2 |
| 338 | 30X45V | 101.875 | 0.272 | CU     | 0.555 | VIGAS1 | 0.008 | VIGAS2 |

|     |          |         |       |        |       |        |       |        |
|-----|----------|---------|-------|--------|-------|--------|-------|--------|
| 338 | 30X45V   | 188.750 | 0.272 | CU     | 0.878 | CU     | 0.008 | VIGAS2 |
| 338 | 30X45V   | 275.625 | 0.272 | CU     | 0.977 | CU     | 0.008 | VIGAS2 |
| 338 | 30X45V   | 362.500 | 0.000 | VIGAS4 | 0.483 | CU     | 0.008 | VIGAS2 |
| 339 | 30X45V   | 12.500  | 0.000 | VIGAS4 | 0.506 | CU     | 0.016 | VIGAS4 |
| 339 | 30X45V   | 98.750  | 0.525 | VIGAS1 | 0.950 | CU     | 0.012 | VIGAS4 |
| 339 | 30X45V   | 185.000 | 0.525 | VIGAS1 | 1.105 | VIGAS1 | 0.013 | VIGAS4 |
| 339 | 30X45V   | 271.250 | 0.778 | VIGAS1 | 0.906 | VIGAS1 | 0.016 | VIGAS4 |
| 339 | 30X45V   | 357.500 | 2.123 | VIGAS1 | 1.053 | VIGAS1 | 0.020 | VIGAS4 |
| 340 | 25X35CUB | 0.000   | 1.132 | CU     | 0.562 | CU     | 0.006 | VIGAS2 |
| 340 | 25X35CUB | 203.151 | 0.280 | CU     | 0.947 | CU     | 0.006 | VIGAS2 |
| 340 | 25X35CUB | 406.302 | 0.699 | CU     | 0.348 | CU     | 0.006 | VIGAS2 |
| 342 | 25X35CUB | 0.000   | 0.680 | CU     | 0.338 | CU     | 0.006 | VIGAS2 |
| 342 | 25X35CUB | 203.151 | 0.296 | CU     | 0.924 | CU     | 0.006 | VIGAS2 |
| 342 | 25X35CUB | 406.302 | 1.197 | CU     | 0.595 | CU     | 0.006 | VIGAS2 |
| 343 | 25X35CUB | 0.000   | 1.318 | CU     | 0.654 | CU     | 0.005 | VIGAS2 |
| 343 | 25X35CUB | 194.711 | 0.326 | CU     | 0.478 | CU     | 0.005 | VIGAS2 |
| 343 | 25X35CUB | 389.423 | 0.322 | CU     | 0.160 | CU     | 0.005 | VIGAS2 |
| 345 | 25X35CUB | 0.000   | 0.283 | CU     | 0.141 | CU     | 0.006 | VIGAS2 |
| 345 | 25X35CUB | 194.711 | 0.359 | CU     | 0.432 | CU     | 0.006 | VIGAS2 |
| 345 | 25X35CUB | 389.423 | 1.453 | CU     | 0.720 | CU     | 0.006 | VIGAS2 |
| 346 | 25X35CUB | 0.000   | 1.957 | CU     | 0.967 | CU     | 0.010 | VIGAS2 |
| 346 | 25X35CUB | 203.151 | 0.481 | CU     | 1.339 | CU     | 0.010 | VIGAS2 |
| 346 | 25X35CUB | 406.302 | 1.448 | CU     | 0.718 | CU     | 0.010 | VIGAS2 |
| 348 | 25X35CUB | 0.000   | 1.367 | CU     | 0.678 | CU     | 0.020 | VIGAS4 |
| 348 | 25X35CUB | 203.151 | 0.547 | CU     | 1.246 | CU     | 0.012 | VIGAS4 |
| 348 | 25X35CUB | 406.302 | 2.230 | CU     | 1.101 | CU     | 0.021 | VIGAS4 |
| 349 | 25X35CUB | 0.000   | 2.583 | CU     | 1.380 | CU     | 0.019 | VIGAS4 |
| 349 | 25X35CUB | 194.711 | 0.685 | CU     | 0.685 | CU     | 0.012 | VIGAS4 |
| 349 | 25X35CUB | 389.423 | 0.576 | CU     | 0.287 | CU     | 0.016 | VIGAS4 |
| 351 | 25X35CUB | 0.000   | 0.658 | CU     | 0.328 | CU     | 0.016 | VIGAS4 |
| 351 | 25X35CUB | 194.711 | 0.616 | CU     | 0.616 | CU     | 0.012 | VIGAS4 |
| 351 | 25X35CUB | 389.423 | 2.518 | CU     | 1.240 | CU     | 0.018 | VIGAS4 |
| 352 | 25X35CUB | 0.000   | 2.500 | CU     | 1.232 | CU     | 0.019 | VIGAS4 |
| 352 | 25X35CUB | 194.711 | 0.611 | CU     | 0.611 | CU     | 0.012 | VIGAS4 |
| 352 | 25X35CUB | 389.423 | 0.690 | CU     | 0.344 | CU     | 0.016 | VIGAS4 |
| 354 | 25X35CUB | 0.000   | 0.753 | CU     | 0.375 | CU     | 0.016 | VIGAS4 |
| 354 | 25X35CUB | 194.711 | 0.559 | CU     | 0.559 | CU     | 0.011 | VIGAS4 |
| 354 | 25X35CUB | 389.423 | 2.282 | CU     | 1.126 | CU     | 0.018 | VIGAS4 |
| 355 | 25X35CUB | 0.000   | 1.976 | CU     | 0.977 | CU     | 0.021 | VIGAS4 |
| 355 | 25X35CUB | 203.151 | 0.486 | CU     | 1.352 | CU     | 0.011 | VIGAS4 |
| 355 | 25X35CUB | 406.302 | 1.457 | CU     | 0.722 | CU     | 0.020 | VIGAS4 |
| 357 | 25X35CUB | 0.000   | 1.442 | CU     | 0.715 | CU     | 0.020 | VIGAS4 |
| 357 | 25X35CUB | 203.151 | 0.497 | CU     | 1.336 | CU     | 0.011 | VIGAS4 |
| 357 | 25X35CUB | 406.302 | 2.025 | CU     | 1.000 | CU     | 0.021 | VIGAS4 |
| 358 | 25X35CUB | 0.000   | 1.295 | CU     | 0.643 | CU     | 0.006 | VIGAS2 |
| 358 | 25X35CUB | 194.711 | 0.320 | CU     | 0.470 | CU     | 0.006 | VIGAS2 |
| 358 | 25X35CUB | 389.423 | 0.200 | CU     | 0.100 | CU     | 0.006 | VIGAS2 |
| 360 | 25X35CUB | 0.000   | 0.259 | VIGAS1 | 0.129 | VIGAS1 | 0.006 | VIGAS2 |
| 360 | 25X35CUB | 194.711 | 0.333 | CU     | 0.451 | CU     | 0.006 | VIGAS2 |
| 360 | 25X35CUB | 389.423 | 1.348 | CU     | 0.669 | CU     | 0.006 | VIGAS2 |
| 361 | 25X35CUB | 0.000   | 1.520 | CU     | 0.753 | CU     | 0.006 | VIGAS2 |
| 361 | 25X35CUB | 194.711 | 0.375 | CU     | 0.470 | CU     | 0.006 | VIGAS2 |
| 361 | 25X35CUB | 389.423 | 0.317 | CU     | 0.158 | CU     | 0.006 | VIGAS2 |
| 363 | 25X35CUB | 0.000   | 0.376 | CU     | 0.188 | CU     | 0.011 | VIGAS4 |

|     |          |         |       |        |       |        |       |        |
|-----|----------|---------|-------|--------|-------|--------|-------|--------|
| 363 | 25X35CUB | 194.711 | 0.325 | CU     | 0.540 | CU     | 0.007 | VIGAS4 |
| 363 | 25X35CUB | 389.423 | 1.316 | CU     | 0.653 | CU     | 0.013 | VIGAS4 |
| 364 | 25X35CUB | 0.000   | 1.887 | CU     | 0.933 | CU     | 0.020 | VIGAS4 |
| 364 | 25X35CUB | 203.151 | 0.464 | CU     | 1.378 | CU     | 0.010 | VIGAS4 |
| 364 | 25X35CUB | 406.302 | 1.470 | CU     | 0.729 | CU     | 0.019 | VIGAS4 |
| 366 | 25X35CUB | 0.000   | 1.432 | CU     | 0.710 | CU     | 0.019 | VIGAS4 |
| 366 | 25X35CUB | 203.151 | 0.495 | CU     | 1.335 | CU     | 0.011 | VIGAS4 |
| 366 | 25X35CUB | 406.302 | 2.014 | CU     | 0.995 | CU     | 0.021 | VIGAS4 |
| 367 | 25X35CUB | 0.000   | 1.452 | CU     | 0.720 | CU     | 0.017 | VIGAS4 |
| 367 | 25X35CUB | 194.711 | 0.358 | CU     | 1.021 | CU     | 0.009 | VIGAS4 |
| 367 | 25X35CUB | 389.423 | 1.046 | CU     | 0.520 | CU     | 0.016 | VIGAS4 |
| 369 | 25X35CUB | 0.000   | 1.056 | CU     | 0.525 | CU     | 0.016 | VIGAS4 |
| 369 | 25X35CUB | 194.711 | 0.350 | CU     | 1.032 | CU     | 0.009 | VIGAS4 |
| 369 | 25X35CUB | 389.423 | 1.418 | CU     | 0.703 | CU     | 0.016 | VIGAS4 |
| 370 | 25X35CUB | 0.000   | 1.939 | CU     | 0.959 | CU     | 0.020 | VIGAS4 |
| 370 | 25X35CUB | 203.151 | 0.477 | CU     | 1.346 | CU     | 0.011 | VIGAS4 |
| 370 | 25X35CUB | 406.302 | 1.452 | CU     | 0.720 | CU     | 0.019 | VIGAS4 |
| 372 | 25X35CUB | 0.000   | 1.346 | CU     | 0.668 | CU     | 0.020 | VIGAS4 |
| 372 | 25X35CUB | 203.151 | 0.562 | CU     | 1.224 | CU     | 0.012 | VIGAS4 |
| 372 | 25X35CUB | 406.302 | 2.295 | CU     | 1.132 | CU     | 0.022 | VIGAS4 |
| 373 | 25X35CUB | 0.000   | 1.763 | CU     | 0.872 | CU     | 0.020 | VIGAS4 |
| 373 | 25X35CUB | 194.711 | 0.434 | CU     | 1.238 | CU     | 0.011 | VIGAS4 |
| 373 | 25X35CUB | 389.423 | 1.317 | CU     | 0.654 | CU     | 0.019 | VIGAS4 |
| 375 | 25X35CUB | 0.000   | 1.342 | CU     | 0.666 | CU     | 0.019 | VIGAS4 |
| 375 | 25X35CUB | 194.711 | 0.413 | CU     | 1.268 | CU     | 0.010 | VIGAS4 |
| 375 | 25X35CUB | 389.423 | 1.678 | CU     | 0.831 | CU     | 0.020 | VIGAS4 |
| 376 | 25X35CUB | 0.000   | 2.004 | CU     | 0.990 | CU     | 0.020 | VIGAS4 |
| 376 | 25X35CUB | 203.151 | 0.492 | CU     | 1.321 | CU     | 0.011 | VIGAS4 |
| 376 | 25X35CUB | 406.302 | 1.438 | CU     | 0.713 | CU     | 0.019 | VIGAS4 |
| 378 | 25X35CUB | 0.000   | 1.346 | CU     | 0.668 | CU     | 0.020 | VIGAS4 |
| 378 | 25X35CUB | 203.151 | 0.567 | CU     | 1.216 | CU     | 0.012 | VIGAS4 |
| 378 | 25X35CUB | 406.302 | 2.314 | CU     | 1.141 | CU     | 0.022 | VIGAS4 |
| 379 | 25X35CUB | 0.000   | 2.411 | VIGAS1 | 1.189 | VIGAS1 | 0.021 | VIGAS4 |
| 379 | 25X35CUB | 194.711 | 0.590 | VIGAS1 | 1.235 | CU     | 0.012 | VIGAS4 |
| 379 | 25X35CUB | 389.423 | 1.313 | CU     | 0.651 | CU     | 0.020 | VIGAS4 |
| 381 | 25X35CUB | 0.000   | 1.363 | CU     | 0.676 | CU     | 0.009 | VIGAS2 |
| 381 | 25X35CUB | 194.711 | 0.396 | CU     | 1.293 | CU     | 0.009 | VIGAS2 |
| 381 | 25X35CUB | 389.423 | 1.607 | CU     | 0.796 | CU     | 0.009 | VIGAS2 |
| 382 | 25X35CUB | 0.000   | 1.371 | CU     | 0.680 | CU     | 0.007 | VIGAS2 |
| 382 | 25X35CUB | 203.151 | 0.339 | CU     | 0.856 | CU     | 0.007 | VIGAS2 |
| 382 | 25X35CUB | 406.302 | 0.645 | CU     | 0.321 | CU     | 0.007 | VIGAS2 |
| 384 | 25X35CUB | 0.000   | 0.625 | CU     | 0.311 | CU     | 0.006 | VIGAS2 |
| 384 | 25X35CUB | 203.151 | 0.356 | CU     | 0.832 | CU     | 0.006 | VIGAS2 |
| 384 | 25X35CUB | 406.302 | 1.440 | CU     | 0.714 | CU     | 0.006 | VIGAS2 |
| 385 | 25X35CUB | 0.000   | 1.250 | CU     | 0.620 | CU     | 0.006 | VIGAS2 |
| 385 | 25X35CUB | 194.711 | 0.309 | CU     | 0.781 | CU     | 0.006 | VIGAS2 |
| 385 | 25X35CUB | 389.423 | 0.595 | CU     | 0.297 | CU     | 0.006 | VIGAS2 |
| 387 | 25X35CUB | 0.000   | 0.569 | CU     | 0.284 | CU     | 0.012 | VIGAS4 |
| 387 | 25X35CUB | 194.711 | 0.330 | CU     | 0.751 | CU     | 0.008 | VIGAS4 |
| 387 | 25X35CUB | 389.423 | 1.336 | CU     | 0.663 | CU     | 0.014 | VIGAS4 |

### 5.1.8.1.5 Diseño a Torsión.

Viga 2" Cimentación

$$V_u = 3288 \text{ Kgf}$$

$$T_u = 318978 \text{ Kgf-cm}$$

$$d_1 = 2 \text{ cm}$$

$$d_2 = 0.95 \text{ cm}$$

$$d_3 = 1.91 \text{ cm}/2 = 0.95 \text{ cm}$$

$$X_1 = 35 - 2(2 + 0.95/2) = 35.05 \text{ cm}$$

$$Y_1 = 50 - 2(2 + 0.95/2) = 45.05 \text{ cm}$$

$$vT_u = T_u / (\sum X^2 Y) / 3$$

$$\sum X^2 Y = 35^2 * 50 = 61250$$

$$vT_u = 3 * 318978 / 61250 = 15.47 \text{ Kgf/cm}^2$$

$$v_{T_{\min}} = \phi * 0.4 * \sqrt{f'_c} = 0.85 * 0.4 * \sqrt{211} = 4.94 \text{ Kgf/cm}^2$$

$$v_u = V_u / bd = 3288 / 35 * 45 = 2.09 \text{ Kgf/cm}^2$$

$$\phi v_c = \phi * 0.53 \sqrt{f'_c} / \sqrt{1 + (vT_u / 1.2 v_u)^2} = 6.53 / \sqrt{1 + (15.47 / 1.2 * 2.09)^2} = 1.05 \text{ Kgf/cm}^2$$

$$\phi v_{T_c} = \phi * 0.63 \sqrt{f'_c} / \sqrt{1 + (1.2 v_u / vT_u)^2} = 7.78 / \sqrt{1 + (1.2 * 2.09 / 15.47)^2} = 7.68 \text{ Kgf/cm}^2$$

Estribos 2 ramas 3/8"

$$(A_{v_T} + A_v) = 1.42 \text{ cm}^2$$

$$X_1 = 35 - 2(2 + 0.95/2) = 30.05 \text{ cm}$$

$$Y_1 = 50 - 2(2 + 0.95/2) = 45.05 \text{ cm}$$

$$\alpha t = 0.66 + 0.33 * 45.05 / 30.05 = 1.15 < 1.5 \blacklozenge$$

$$S = 0.85(1.42)42 + 9 / ((2 * (15.97 - 7.68) * 61250 / 3 * 1.15 * 30.05 * 75.05) + (2.09 - 1.05) * 35)$$

$$S = 21.15 \text{ cm}$$

Viga 2" Entrepiso Tramo C-E

$$T_u = 423715 \text{ Kg-cm}$$

$$V_u = 18617 \text{ Kg}$$

$$X = 40 \text{ cm}$$

$$Y = 50 \text{ cm}$$

$$\sum X^2 Y = 80000 \text{ cm}^2$$

$$v_{Tu} = 3 \cdot 423715 / 80000 = 15,89 \text{ Kg/cm}^2 > v_{T_{\text{min}}}$$

$$v_u = 18617 / 40 \cdot 46 = 10,12 \text{ Kg/cm}^2$$

$$\phi_{vc} = 6,53 / \sqrt{1 + (15,89 / 1,2 \cdot 10,12)^2} = 5,97 \text{ Kg/cm}^2$$

$$\phi_{v_{Tc}} = 7,78 / \sqrt{1 + (1,2 \cdot 10,12 / 15,89)^2} = 6,18 \text{ Kg/cm}^2$$

Estribos 2 ramas 3/8"

$$(A_{v_T} + A_v) = 1,42 \text{ cm}^2$$

$$X_1 = 35 - 2(2 + 0,95/2) = 35,05 \text{ cm}$$

$$Z_1 = 50 - 2(2 + 0,95/2) = 45,05 \text{ cm}$$

$$\alpha_t = 0,66 + 0,33 \cdot 45,05 / 35,05 = 1,08 < 1,5 \quad \blacklozenge$$

$$S = 0,85(1,42) \cdot 42^2 \cdot 9 / ((2 \cdot (15,89 - 6,18) \cdot 80000 / 3 \cdot 1,08 \cdot 35,05 \cdot 45,05) + (10,12 - 5,97) \cdot 40)$$

$$S = 9,26 \text{ cm} \rightarrow 8 \text{ cm}$$

Refuerzo Longitudinal

$$1- A_l = 2A_t \cdot X_1 Y_1 / S = 2 \cdot 0,71 \cdot (35,05 + 45,05) / 8$$

$$A_l = 19,22 \text{ cm}^2$$

$$2- A_L = (28S / f_y (v_{Tu} / ((v_{Tu} + v_u) - 2A_t) \cdot (X_1 + Y_1)) / S$$

$$A_L = (28 \cdot 40 \cdot 8 / 4219 (15,89 / (15,89 + 10,12) - 2 \cdot 0,71) \cdot (35,05 + 45,05)) / 8$$

$$A_L = -1,232 \text{ cm}^2$$

$$\text{Se escoje } A_l = 14,22 \text{ cm}^2$$

3 N6 en 2 caras



## 5.1.8.2 Diseño de Columnas.

### 5.1.8.2.1 Análisis Sísmico.

#### BLOQUE A

CONSTRAINT COORDINATES AND MASSES

CONS DIAPH1 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |           |
|--|----------|----------|---------|---------|---------|-----------|
|  | U1       | U2       | U3      | R1      | R2      | R3        |
|  | 1.198348 | 1.198348 | .000000 | .000000 | .000000 | 12.436355 |

| CENTER OF MASS |           |           |           |
|----------------|-----------|-----------|-----------|
| GLOBAL         | U1        | U2        | U3        |
| X              | -7.13E-16 | -7.13E-16 | -4.33E-16 |
| Y              | 4.351668  | 4.351668  | 3.675000  |
| Z              | 6.250000  | 6.250000  | 6.250000  |

CONS DIAPH2 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |           |
|--|----------|----------|---------|---------|---------|-----------|
|  | U1       | U2       | U3      | R1      | R2      | R3        |
|  | 1.209920 | 1.209920 | .000000 | .000000 | .000000 | 13.068413 |

| CENTER OF MASS |           |           |           |
|----------------|-----------|-----------|-----------|
| GLOBAL         | U1        | U2        | U3        |
| X              | -3.36E-15 | -3.36E-15 | -3.93E-15 |
| Y              | 17.014022 | 17.014022 | 17.775000 |
| Z              | 6.250000  | 6.250000  | 6.250000  |

CONS DIAPH3 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |            |
|--|----------|----------|---------|---------|---------|------------|
|  | U1       | U2       | U3      | R1      | R2      | R3         |
|  | 6.581521 | 6.581521 | .000000 | .000000 | .000000 | 360.626613 |

| CENTER OF MASS |           |           |           |
|----------------|-----------|-----------|-----------|
| GLOBAL         | U1        | U2        | U3        |
| X              | 13.889253 | 13.889253 | 13.777083 |
| Y              | 11.009647 | 11.009647 | 10.154167 |
| Z              | 6.250000  | 6.250000  | 6.250000  |

CONS ENTIREPI ===== TYPE = DIAPH, NORMAL DIRECTION = U3

LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER

| GLOBAL | U1       | U2       | U3       | R1       | R2       | R3       |
|--------|----------|----------|----------|----------|----------|----------|
| X      | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y      | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z      | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |           |           |         |         |         |          |
|--|-----------|-----------|---------|---------|---------|----------|
|  | U1        | U2        | U3      | R1      | R2      | R3       |
|  | 57.364325 | 57.364325 | .000000 | .000000 | .000000 | 1313.905 |

| CENTER OF MASS |           |           |           |
|----------------|-----------|-----------|-----------|
| GLOBAL         | U1        | U2        | U3        |
| X              | 12.369001 | 12.369001 | 11.572857 |
| Y              | 12.104630 | 12.104630 | 12.009643 |
| Z              | 3.300000  | 3.300000  | 3.300000  |

DISPLACEMENT DEGREES OF FREEDOM

(A) = Active DOF, equilibrium equation  
 (-) = Restrained DOF, reaction computed  
 (+) = Constrained DOF  
 ( ) = Null DOF

| JOINTS |     | UX | UY | UZ | RX | RY | RZ |
|--------|-----|----|----|----|----|----|----|
| 1 TO   | 39  | -  | -  | -  | A  | A  | A  |
| 40 TO  | 171 | A  | A  | A  | A  | A  | A  |
| 172 TO | 187 | +  | +  | A  | A  | A  | +  |
| 188    |     | +  | +  | A  |    |    | +  |
| 189 TO | 214 | +  | +  | A  | A  | A  | +  |
| 215    |     | A  | A  | A  | A  | A  | A  |
| 216 TO | 220 | +  | +  | A  | A  | A  | +  |
| 221    |     | A  | A  | A  | A  | A  | A  |
| 222 TO | 224 | +  | +  | A  | A  | A  | +  |
| 225    |     | A  | A  | A  | A  | A  | A  |
| 226 TO | 227 | +  | +  | A  | A  | A  | +  |
| 228    |     | A  | A  | A  | A  | A  | A  |
| 229 TO | 234 | +  | +  | A  | A  | A  | +  |
| 235    |     | A  | A  | A  | A  | A  | A  |
| 236    |     | +  | +  | A  | A  | A  | +  |
| 237 TO | 239 | A  | A  | A  | A  | A  | A  |

| CONSTRAINTS        | U1 | U2 | U3 | R1 | R2 | R3 |
|--------------------|----|----|----|----|----|----|
| DIAPHI TO ENTIREPI | A  | A  |    |    |    | A  |

ASSEMBLED JOINT MASSES

IN GLOBAL COORDINATES

| JOINT | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| 1     | 0.218166 | 0.218166 | 0.218166 | .000000 | .000000 | .000000 |
| 2     | 0.204503 | 0.204503 | 0.204503 | .000000 | .000000 | .000000 |
| 3     | 0.218166 | 0.218166 | 0.218166 | .000000 | .000000 | .000000 |
| 4     | 0.201029 | 0.201029 | 0.201029 | .000000 | .000000 | .000000 |
| 5     | 0.296350 | 0.296350 | 0.296350 | .000000 | .000000 | .000000 |
| 6     | 0.297421 | 0.297421 | 0.297421 | .000000 | .000000 | .000000 |
| 7     | 0.210133 | 0.210133 | 0.210133 | .000000 | .000000 | .000000 |
| 8     | 0.378282 | 0.378282 | 0.378282 | .000000 | .000000 | .000000 |
| 9     | 0.303311 | 0.303311 | 0.303311 | .000000 | .000000 | .000000 |
| 10    | 0.277071 | 0.277071 | 0.277071 | .000000 | .000000 | .000000 |
| 11    | 0.204503 | 0.204503 | 0.204503 | .000000 | .000000 | .000000 |
| 12    | 0.448969 | 0.448969 | 0.448969 | .000000 | .000000 | .000000 |
| 13    | 0.321610 | 0.321610 | 0.321610 | .000000 | .000000 | .000000 |
| 14    | 0.412708 | 0.412708 | 0.412708 | .000000 | .000000 | .000000 |
| 15    | 0.412708 | 0.412708 | 0.412708 | .000000 | .000000 | .000000 |
| 16    | 0.202636 | 0.202636 | 0.202636 | .000000 | .000000 | .000000 |
| 17    | 0.411127 | 0.411127 | 0.411127 | .000000 | .000000 | .000000 |
| 18    | 0.058202 | 0.058202 | 0.058202 | .000000 | .000000 | .000000 |
| 19    | 0.026439 | 0.026439 | 0.026439 | .000000 | .000000 | .000000 |
| 20    | 0.026439 | 0.026439 | 0.026439 | .000000 | .000000 | .000000 |
| 21    | 0.026439 | 0.026439 | 0.026439 | .000000 | .000000 | .000000 |
| 22    | 0.026439 | 0.026439 | 0.026439 | .000000 | .000000 | .000000 |
| 23    | 0.090332 | 0.090332 | 0.090332 | .000000 | .000000 | .000000 |





|     |           |           |          |         |         |         |
|-----|-----------|-----------|----------|---------|---------|---------|
| 166 | 0.007547  | 0.007547  | 0.007547 | .000000 | .000000 | .000000 |
| 167 | 0.015095  | 0.015095  | 0.015095 | .000000 | .000000 | .000000 |
| 168 | 0.015095  | 0.015095  | 0.015095 | .000000 | .000000 | .000000 |
| 169 | 0.015095  | 0.015095  | 0.015095 | .000000 | .000000 | .000000 |
| 170 | 0.015095  | 0.015095  | 0.015095 | .000000 | .000000 | .000000 |
| 171 | 0.007547  | 0.007547  | 0.007547 | .000000 | .000000 | .000000 |
| 172 | 0.238301  | 0.238301  | 0.238301 | .000000 | .000000 | .000000 |
| 173 | 0.180481  | 0.180481  | 0.180481 | .000000 | .000000 | .000000 |
| 174 | 0.238301  | 0.238301  | 0.238301 | .000000 | .000000 | .000000 |
| 175 | 0.179380  | 0.179380  | 0.179380 | .000000 | .000000 | .000000 |
| 176 | 0.305316  | 0.305316  | 0.305316 | .000000 | .000000 | .000000 |
| 177 | 0.306234  | 0.306234  | 0.306234 | .000000 | .000000 | .000000 |
| 178 | 0.231416  | 0.231416  | 0.231416 | .000000 | .000000 | .000000 |
| 179 | 0.375544  | 0.375544  | 0.375544 | .000000 | .000000 | .000000 |
| 180 | 0.311283  | 0.311283  | 0.311283 | .000000 | .000000 | .000000 |
| 181 | 0.288791  | 0.288791  | 0.288791 | .000000 | .000000 | .000000 |
| 182 | 0.180481  | 0.180481  | 0.180481 | .000000 | .000000 | .000000 |
| 183 | 0.436132  | 0.436132  | 0.436132 | .000000 | .000000 | .000000 |
| 184 | 0.281217  | 0.281217  | 0.281217 | .000000 | .000000 | .000000 |
| 185 | 0.466656  | 0.466656  | 0.466656 | .000000 | .000000 | .000000 |
| 186 | 0.466656  | 0.466656  | 0.466656 | .000000 | .000000 | .000000 |
| 187 | 0.180757  | 0.180757  | 0.180757 | .000000 | .000000 | .000000 |
| 188 | 46.038150 | 46.038150 | .000000  | .000000 | .000000 | .000000 |
| 189 | 0.353075  | 0.353075  | 0.353075 | .000000 | .000000 | .000000 |
| 190 | 0.017386  | 0.017386  | 0.017386 | .000000 | .000000 | .000000 |
| 191 | 0.024980  | 0.024980  | 0.024980 | .000000 | .000000 | .000000 |
| 192 | 0.024980  | 0.024980  | 0.024980 | .000000 | .000000 | .000000 |
| 193 | 0.024980  | 0.024980  | 0.024980 | .000000 | .000000 | .000000 |
| 194 | 0.024980  | 0.024980  | 0.024980 | .000000 | .000000 | .000000 |
| 195 | 0.238015  | 0.238015  | 0.238015 | .000000 | .000000 | .000000 |
| 196 | 0.612314  | 0.612314  | 0.612314 | .000000 | .000000 | .000000 |
| 197 | 0.477672  | 0.477672  | 0.477672 | .000000 | .000000 | .000000 |
| 198 | 0.318321  | 0.318321  | 0.318321 | .000000 | .000000 | .000000 |
| 199 | 0.241651  | 0.241651  | 0.241651 | .000000 | .000000 | .000000 |
| 200 | 0.499115  | 0.499115  | 0.499115 | .000000 | .000000 | .000000 |
| 201 | 0.182134  | 0.182134  | 0.182134 | .000000 | .000000 | .000000 |
| 202 | 0.335304  | 0.335304  | 0.335304 | .000000 | .000000 | .000000 |
| 203 | 0.392153  | 0.392153  | 0.392153 | .000000 | .000000 | .000000 |
| 204 | 0.344255  | 0.344255  | 0.344255 | .000000 | .000000 | .000000 |
| 205 | 0.572610  | 0.572610  | 0.572610 | .000000 | .000000 | .000000 |
| 206 | 0.368199  | 0.368199  | 0.368199 | .000000 | .000000 | .000000 |
| 207 | 0.235547  | 0.235547  | 0.235547 | .000000 | .000000 | .000000 |
| 208 | 0.193609  | 0.193609  | 0.193609 | .000000 | .000000 | .000000 |
| 209 | 0.345938  | 0.345938  | 0.345938 | .000000 | .000000 | .000000 |
| 210 | 0.310594  | 0.310594  | 0.310594 | .000000 | .000000 | .000000 |
| 211 | 0.138620  | 0.138620  | 0.138620 | .000000 | .000000 | .000000 |
| 212 | 0.150462  | 0.150462  | 0.150462 | .000000 | .000000 | .000000 |
| 213 | 0.232334  | 0.232334  | 0.232334 | .000000 | .000000 | .000000 |
| 214 | 0.398104  | 0.398104  | 0.398104 | .000000 | .000000 | .000000 |
| 215 | 0.340728  | 0.340728  | 0.340728 | .000000 | .000000 | .000000 |
| 216 | 0.143012  | 0.143012  | 0.143012 | .000000 | .000000 | .000000 |
| 217 | 0.483229  | 0.483229  | 0.483229 | .000000 | .000000 | .000000 |
| 218 | 0.298742  | 0.298742  | 0.298742 | .000000 | .000000 | .000000 |
| 219 | 0.270129  | 0.270129  | 0.270129 | .000000 | .000000 | .000000 |
| 220 | 0.495847  | 0.495847  | 0.495847 | .000000 | .000000 | .000000 |
| 221 | 0.345811  | 0.345811  | 0.345811 | .000000 | .000000 | .000000 |
| 222 | 0.657232  | 0.657232  | 0.657232 | .000000 | .000000 | .000000 |
| 223 | 0.690100  | 0.690100  | 0.690100 | .000000 | .000000 | .000000 |
| 224 | 0.614861  | 0.614861  | 0.614861 | .000000 | .000000 | .000000 |
| 225 | 0.525112  | 0.525112  | 0.525112 | .000000 | .000000 | .000000 |
| 226 | 0.562088  | 0.562088  | 0.562088 | .000000 | .000000 | .000000 |
| 227 | 0.643619  | 0.643619  | 0.643619 | .000000 | .000000 | .000000 |
| 228 | 0.547716  | 0.547716  | 0.547716 | .000000 | .000000 | .000000 |
| 229 | 0.666050  | 0.666050  | 0.666050 | .000000 | .000000 | .000000 |
| 230 | 0.704750  | 0.704750  | 0.704750 | .000000 | .000000 | .000000 |
| 231 | 0.146044  | 0.146044  | 0.146044 | .000000 | .000000 | .000000 |
| 232 | 0.492092  | 0.492092  | 0.492092 | .000000 | .000000 | .000000 |
| 233 | 0.537824  | 0.537824  | 0.537824 | .000000 | .000000 | .000000 |
| 234 | 0.788239  | 0.788239  | 0.788239 | .000000 | .000000 | .000000 |
| 235 | 0.368415  | 0.368415  | 0.368415 | .000000 | .000000 | .000000 |
| 236 | 0.397826  | 0.397826  | 0.397826 | .000000 | .000000 | .000000 |

|     |          |          |          |         |         |         |
|-----|----------|----------|----------|---------|---------|---------|
| 237 | 0.348483 | 0.348483 | 0.348483 | .000000 | .000000 | .000000 |
| 238 | 0.338632 | 0.338632 | 0.338632 | .000000 | .000000 | .000000 |
| 239 | 0.325091 | 0.325091 | 0.325091 | .000000 | .000000 | .000000 |

TOTAL ASSEMBLED JOINT MASSES

IN GLOBAL COORDINATES

|       | UX        | UY        | UZ        | RX      | RY      | RZ      |
|-------|-----------|-----------|-----------|---------|---------|---------|
| TOTAL | 81.132256 | 81.132256 | 35.094106 | .000000 | .000000 | .000000 |

TOTAL ACCELERATED MASS AND LOCATION

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

|       | UX        | UY        | UZ        |
|-------|-----------|-----------|-----------|
| MASS  | 70.607622 | 70.607622 | 24.569472 |
| X-LOC | 12.489028 | 12.489028 | 13.011869 |
| Y-LOC | 11.969525 | 11.969525 | 11.668828 |
| Z-LOC | 3.783536  | 3.783536  | 4.689585  |

MODAL PERIODS AND FREQUENCIES

| MODE | PERIOD<br>(TIME) | FREQUENCY<br>(CYC/TIME) | FREQUENCY<br>(RAD/TIME) | EIGENVALUE<br>(RAD/TIME)**2 |
|------|------------------|-------------------------|-------------------------|-----------------------------|
| 1    | 0.385071         | 2.596925                | 16.316963               | 266.243289                  |
| 2    | 0.363850         | 2.748384                | 17.268606               | 298.204760                  |

MODAL PARTICIPATION FACTORS

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

| MODE | PERIOD   | UX        | UY        | UZ       |
|------|----------|-----------|-----------|----------|
| 1    | 0.385071 | -0.247353 | 8.265062  | 0.088803 |
| 2    | 0.363850 | -8.255443 | -0.243571 | 0.022158 |

MODAL PARTICIPATING MASS RATIOS

| MODE | PERIOD   | INDIVIDUAL MODE (PERCENT) |         |        | CUMULATIVE SUM (PERCENT) |         |        |
|------|----------|---------------------------|---------|--------|--------------------------|---------|--------|
|      |          | UX                        | UY      | UZ     | UX                       | UY      | UZ     |
| 1    | 0.385071 | 0.0867                    | 96.7477 | 0.0321 | 0.0867                   | 96.7477 | 0.0321 |
| 2    | 0.363850 | 96.5226                   | 0.0840  | 0.0020 | 96.6093                  | 96.8317 | 0.0341 |

MODAL LOAD PARTICIPATION RATIOS

| LOAD, ACC, OR NLLINK/DEF<br>(TYPE) | STATIC<br>(NAME) | STATIC<br>(PERCENT) | DYNAMIC<br>(PERCENT)     | EFFECTIVE<br>PERIOD |
|------------------------------------|------------------|---------------------|--------------------------|---------------------|
| LOAD                               | MUERTA           | 0.8947              | -> 0.0044<- (*) SEE NOTE | 0.130341            |
| LOAD                               | VIVA             | 1.9466              | -> 0.0151<- (*) SEE NOTE | 0.189291            |
| ACC                                | UX               | 36.4382             | 96.6093                  | 0.601907            |
| ACC                                | UY               | 28.8654             | 96.8317                  | 0.716158            |
| ACC                                | UZ               | 0.0000              | 0.0341                   | -INFINITY-          |

(\*) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

RESPONSE SPECTRUM ACCELERATIONS

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | DAMP-RATIO | U1       | U2      | U3      |
|------|----------|------------|----------|---------|---------|
| 1    | 0.385071 | 0.050000   | 8.386208 | .000000 | .000000 |
| 2    | 0.363850 | 0.050000   | 8.386208 | .000000 | .000000 |

SPEC SPECY -----

| MODE | PERIOD   | DAMP-RATIO | U1      | U2       | U3      |
|------|----------|------------|---------|----------|---------|
| 1    | 0.385071 | 0.050000   | .000000 | 8.386208 | .000000 |
| 2    | 0.363850 | 0.050000   | .000000 | 8.386208 | .000000 |

RESPONSE SPECTRUM MODAL AMPLITUDES

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | U1        | U2      | U3      |
|------|----------|-----------|---------|---------|
| 1    | 0.385071 | -0.007791 | .000000 | .000000 |
| 2    | 0.363850 | -0.232162 | .000000 | .000000 |

SPEC SPECY -----

| MODE | PERIOD   | U1      | U2        | U3      |
|------|----------|---------|-----------|---------|
| 1    | 0.385071 | .000000 | 0.260335  | .000000 |
| 2    | 0.363850 | .000000 | -0.006850 | .000000 |

RESPONSE SPECTRUM MODAL CORRELATIONS

PARTIAL MAIRIX SHOWING CORRELATION FACTORS BETWEEN NEARBY MODES

SPEC SPECX -----

| MODE I | PERIOD   | I     | I+1   | I+2 | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1      | 0.385071 | 1.000 | 0.756 |     |     |     |     |     |     |     |     |
| 2      | 0.363850 | 1.000 |       |     |     |     |     |     |     |     |     |

SPEC SPECY -----

| MODE I | PERIOD   | I     | I+1   | I+2 | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1      | 0.385071 | 1.000 | 0.756 |     |     |     |     |     |     |     |     |
| 2      | 0.363850 | 1.000 |       |     |     |     |     |     |     |     |     |

RESPONSE SPECTRUM BASE REACTIONS

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U1:

| MODE | F1         | F2         | F3        | M1         | M2       | M3          |
|------|------------|------------|-----------|------------|----------|-------------|
| 1    | 0.513099   | -17.144691 | -0.184208 | 66.024512  | 4.676960 | -222.030842 |
| 2    | 571.539612 | 16.862871  | -1.534029 | -89.652709 | 2306.209 | -6648.451   |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC       | F1        | F2       | F3        | M1       | M2       | M3 |
|------------|-----------|----------|-----------|----------|----------|----|
| 571.927853 | 11.869899 | 1.677709 | 58.663201 | 2309.749 | 6817.956 |    |

SPEC SPECY -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U2:

| MODE | F1         | F2         | F3        | M1        | M2          | M3          |
|------|------------|------------|-----------|-----------|-------------|-------------|
| 1    | -17.144691 | 572.872346 | 6.155138  | -2206.142 | -156.275852 | 7418.934    |
| 2    | 16.862871  | 0.497527   | -0.045260 | -2.645140 | 68.043054   | -196.157822 |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC      | F1         | F2       | F3       | M1         | M2       | M3 |
|-----------|------------|----------|----------|------------|----------|----|
| 11.869899 | 573.248801 | 6.120972 | 2208.143 | 113.860609 | 7271.679 |    |

## BLOQUE B

CONSTRAINT COORDINATES AND MASSES

CONS ENTIREP1 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |           |         |         |         |            |  |
|--|-----------|---------|---------|---------|------------|--|
| U1   | U2        | U3      | R1      | R2      | R3         |  |
| 52.765553                                      | 52.765553 | .000000 | .000000 | .000000 | 830.933903 |  |

| CENTER OF MASS |           |           |           |
|----------------|-----------|-----------|-----------|
| GLOBAL         | U1        | U2        | U3        |
| X              | 10.460880 | 10.460880 | 9.729722  |
| Y              | 32.349634 | 32.349634 | 32.119403 |
| Z              | 3.300000  | 3.300000  | 3.300000  |

DISPLACEMENT DEGREES OF FREEDOM

(A) = Active DOF, equilibrium equation  
(-) = Restrained DOF, reaction computed  
(+) = Constrained DOF  
( ) = Null DOF

| JOINTS | UX | UY | UZ | RX | RY | RZ |   |
|--------|----|----|----|----|----|----|---|
| 1 TO   | 35 | -  | -  | -  | A  | A  | A |
| 36 TO  | 54 | +  | +  | A  | A  | A  | + |
| 55     |    | +  | +  | A  |    |    | + |
| 56 TO  | 71 | +  | +  | A  | A  | A  | + |
| 72 TO  | 89 | A  | A  | A  | A  | A  | A |

| CONSTRAINTS | U1 | U2 | U3 | R1 | R2 | R3 |
|-------------|----|----|----|----|----|----|
| ENTIREP1    | A  | A  |    |    |    | A  |

ASSEMBLED JOINT MASSES

IN GLOBAL COORDINATES

| JOINT | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| 1     | 0.204114 | 0.204114 | 0.204114 | .000000 | .000000 | .000000 |
| 2     | 0.217630 | 0.217630 | 0.217630 | .000000 | .000000 | .000000 |
| 3     | 0.299434 | 0.299434 | 0.299434 | .000000 | .000000 | .000000 |
| 4     | 0.302742 | 0.302742 | 0.302742 | .000000 | .000000 | .000000 |
| 5     | 0.210133 | 0.210133 | 0.210133 | .000000 | .000000 | .000000 |
| 6     | 0.207421 | 0.207421 | 0.207421 | .000000 | .000000 | .000000 |
| 7     | 0.190405 | 0.190405 | 0.190405 | .000000 | .000000 | .000000 |
| 8     | 0.190405 | 0.190405 | 0.190405 | .000000 | .000000 | .000000 |
| 9     | 0.204497 | 0.204497 | 0.204497 | .000000 | .000000 | .000000 |
| 10    | 0.204497 | 0.204497 | 0.204497 | .000000 | .000000 | .000000 |
| 11    | 0.280499 | 0.280499 | 0.280499 | .000000 | .000000 | .000000 |
| 12    | 0.217630 | 0.217630 | 0.217630 | .000000 | .000000 | .000000 |
| 13    | 0.375819 | 0.375819 | 0.375819 | .000000 | .000000 | .000000 |
| 14    | 0.386765 | 0.386765 | 0.386765 | .000000 | .000000 | .000000 |
| 15    | 0.210133 | 0.210133 | 0.210133 | .000000 | .000000 | .000000 |
| 16    | 0.358429 | 0.358429 | 0.358429 | .000000 | .000000 | .000000 |
| 17    | 0.202636 | 0.202636 | 0.202636 | .000000 | .000000 | .000000 |
| 18    | 0.202636 | 0.202636 | 0.202636 | .000000 | .000000 | .000000 |
| 19    | 0.217951 | 0.217951 | 0.217951 | .000000 | .000000 | .000000 |
| 20    | 0.335905 | 0.335905 | 0.335905 | .000000 | .000000 | .000000 |
| 21    | 0.285907 | 0.285907 | 0.285907 | .000000 | .000000 | .000000 |
| 22    | 0.217630 | 0.217630 | 0.217630 | .000000 | .000000 | .000000 |
| 23    | 0.381228 | 0.381228 | 0.381228 | .000000 | .000000 | .000000 |
| 24    | 0.392714 | 0.392714 | 0.392714 | .000000 | .000000 | .000000 |
| 25    | 0.300918 | 0.300918 | 0.300918 | .000000 | .000000 | .000000 |
| 26    | 0.334138 | 0.334138 | 0.334138 | .000000 | .000000 | .000000 |
| 27    | 0.201029 | 0.201029 | 0.201029 | .000000 | .000000 | .000000 |
| 28    | 0.201029 | 0.201029 | 0.201029 | .000000 | .000000 | .000000 |
| 29    | 0.216184 | 0.216184 | 0.216184 | .000000 | .000000 | .000000 |
| 30    | 0.209330 | 0.209330 | 0.209330 | .000000 | .000000 | .000000 |



|    |           |           |          |         |         |         |
|----|-----------|-----------|----------|---------|---------|---------|
| 31 | 0.217630  | 0.217630  | 0.217630 | .000000 | .000000 | .000000 |
| 32 | 0.304650  | 0.304650  | 0.304650 | .000000 | .000000 | .000000 |
| 33 | 0.308479  | 0.308479  | 0.308479 | .000000 | .000000 | .000000 |
| 34 | 0.210133  | 0.210133  | 0.210133 | .000000 | .000000 | .000000 |
| 35 | 0.279259  | 0.279259  | 0.279259 | .000000 | .000000 | .000000 |
| 36 | 0.226256  | 0.226256  | 0.226256 | .000000 | .000000 | .000000 |
| 37 | 0.193609  | 0.193609  | 0.193609 | .000000 | .000000 | .000000 |
| 38 | 0.307959  | 0.307959  | 0.307959 | .000000 | .000000 | .000000 |
| 39 | 0.304746  | 0.304746  | 0.304746 | .000000 | .000000 | .000000 |
| 40 | 0.187183  | 0.187183  | 0.187183 | .000000 | .000000 | .000000 |
| 41 | 0.223043  | 0.223043  | 0.223043 | .000000 | .000000 | .000000 |
| 42 | 0.170273  | 0.170273  | 0.170273 | .000000 | .000000 | .000000 |
| 43 | 0.170273  | 0.170273  | 0.170273 | .000000 | .000000 | .000000 |
| 44 | 0.170273  | 0.170273  | 0.170273 | .000000 | .000000 | .000000 |
| 45 | 0.170273  | 0.170273  | 0.170273 | .000000 | .000000 | .000000 |
| 46 | 0.291729  | 0.291729  | 0.291729 | .000000 | .000000 | .000000 |
| 47 | 0.193609  | 0.193609  | 0.193609 | .000000 | .000000 | .000000 |
| 48 | 0.373432  | 0.373432  | 0.373432 | .000000 | .000000 | .000000 |
| 49 | 0.370219  | 0.370219  | 0.370219 | .000000 | .000000 | .000000 |
| 50 | 0.187183  | 0.187183  | 0.187183 | .000000 | .000000 | .000000 |
| 51 | 0.357596  | 0.357596  | 0.357596 | .000000 | .000000 | .000000 |
| 52 | 0.180757  | 0.180757  | 0.180757 | .000000 | .000000 | .000000 |
| 53 | 0.180757  | 0.180757  | 0.180757 | .000000 | .000000 | .000000 |
| 54 | 0.180757  | 0.180757  | 0.180757 | .000000 | .000000 | .000000 |
| 55 | 44.104760 | 44.104760 | .000000  | .000000 | .000000 | .000000 |
| 56 | 0.323568  | 0.323568  | 0.323568 | .000000 | .000000 | .000000 |
| 57 | 0.296365  | 0.296365  | 0.296365 | .000000 | .000000 | .000000 |
| 58 | 0.193609  | 0.193609  | 0.193609 | .000000 | .000000 | .000000 |
| 59 | 0.378068  | 0.378068  | 0.378068 | .000000 | .000000 | .000000 |
| 60 | 0.374855  | 0.374855  | 0.374855 | .000000 | .000000 | .000000 |
| 61 | 0.264998  | 0.264998  | 0.264998 | .000000 | .000000 | .000000 |
| 62 | 0.322191  | 0.322191  | 0.322191 | .000000 | .000000 | .000000 |
| 63 | 0.179380  | 0.179380  | 0.179380 | .000000 | .000000 | .000000 |
| 64 | 0.179380  | 0.179380  | 0.179380 | .000000 | .000000 | .000000 |
| 65 | 0.179380  | 0.179380  | 0.179380 | .000000 | .000000 | .000000 |
| 66 | 0.230727  | 0.230727  | 0.230727 | .000000 | .000000 | .000000 |
| 67 | 0.193609  | 0.193609  | 0.193609 | .000000 | .000000 | .000000 |
| 68 | 0.312430  | 0.312430  | 0.312430 | .000000 | .000000 | .000000 |
| 69 | 0.309217  | 0.309217  | 0.309217 | .000000 | .000000 | .000000 |
| 70 | 0.187183  | 0.187183  | 0.187183 | .000000 | .000000 | .000000 |
| 71 | 0.295906  | 0.295906  | 0.295906 | .000000 | .000000 | .000000 |
| 72 | 0.469253  | 0.469253  | 0.469253 | .000000 | .000000 | .000000 |
| 73 | 0.550956  | 0.550956  | 0.550956 | .000000 | .000000 | .000000 |
| 74 | 0.537392  | 0.537392  | 0.537392 | .000000 | .000000 | .000000 |
| 75 | 0.455689  | 0.455689  | 0.455689 | .000000 | .000000 | .000000 |
| 76 | 0.774524  | 0.774524  | 0.774524 | .000000 | .000000 | .000000 |
| 77 | 0.774524  | 0.774524  | 0.774524 | .000000 | .000000 | .000000 |
| 78 | 0.742546  | 0.742546  | 0.742546 | .000000 | .000000 | .000000 |
| 79 | 0.720185  | 0.720185  | 0.720185 | .000000 | .000000 | .000000 |
| 80 | 0.341746  | 0.341746  | 0.341746 | .000000 | .000000 | .000000 |
| 81 | 0.795701  | 0.795701  | 0.795701 | .000000 | .000000 | .000000 |
| 82 | 0.795701  | 0.795701  | 0.795701 | .000000 | .000000 | .000000 |
| 83 | 0.795153  | 0.795153  | 0.795153 | .000000 | .000000 | .000000 |
| 84 | 0.230818  | 0.230818  | 0.230818 | .000000 | .000000 | .000000 |
| 85 | 0.338625  | 0.338625  | 0.338625 | .000000 | .000000 | .000000 |
| 86 | 0.490430  | 0.490430  | 0.490430 | .000000 | .000000 | .000000 |
| 87 | 0.572133  | 0.572133  | 0.572133 | .000000 | .000000 | .000000 |
| 88 | 0.547374  | 0.547374  | 0.547374 | .000000 | .000000 | .000000 |
| 89 | 0.443310  | 0.443310  | 0.443310 | .000000 | .000000 | .000000 |

TOTAL ASSEMBLED JOINT MASSES

IN GLOBAL COORDINATES

|       | UX        | UY        | UZ        | RX      | RY      | RZ      |
|-------|-----------|-----------|-----------|---------|---------|---------|
| TOTAL | 72.221551 | 72.221551 | 28.116791 | .000000 | .000000 | .000000 |

TOTAL ACCELERATED MASS AND LOCATION

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

|       | UX        | UY        | UZ        |
|-------|-----------|-----------|-----------|
| MASS  | 63.141610 | 63.141610 | 19.036850 |
| X-LOC | 10.381020 | 10.381020 | 10.059029 |
| Y-LOC | 32.347289 | 32.347289 | 32.341009 |
| Z-LOC | 3.784773  | 3.784773  | 4.907901  |

MODAL PERIODS AND FREQUENCIES

| MODE | PERIOD<br>(TIME) | FREQUENCY<br>(CYC/TIME) | FREQUENCY<br>(RAD/TIME) | EIGENVALUE<br>(RAD/TIME)**2 |
|------|------------------|-------------------------|-------------------------|-----------------------------|
| 1    | 0.386717         | 2.585870                | 16.247500               | 263.981244                  |
| 2    | 0.361323         | 2.767609                | 17.389403               | 302.391328                  |

MODAL PARTICIPATION FACTORS

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

| MODE | PERIOD   | UX        | UY       | UZ        |
|------|----------|-----------|----------|-----------|
| 1    | 0.386717 | 7.808803  | 0.016042 | 0.000362  |
| 2    | 0.361323 | -0.015127 | 7.837033 | -0.000134 |

MODAL PARTICIPATING MASS RATIOS

| MODE | PERIOD   | INDIVIDUAL MODE (PERCENT) |         |        | CUMULATIVE SUM (PERCENT) |         |        |
|------|----------|---------------------------|---------|--------|--------------------------|---------|--------|
|      |          | UX                        | UY      | UZ     | UX                       | UY      | UZ     |
| 1    | 0.386717 | 96.5725                   | 0.0004  | 0.0000 | 96.5725                  | 0.0004  | 0.0000 |
| 2    | 0.361323 | 0.0004                    | 97.2720 | 0.0000 | 96.5728                  | 97.2724 | 0.0000 |

MODAL LOAD PARTICIPATION RATIOS

| LOAD, ACC, OR NLLINK/DEF<br>(TYPE) | STATIC<br>(NAME) | STATIC<br>(PERCENT) | DYNAMIC<br>(PERCENT) | EFFECTIVE<br>PERIOD |          |
|------------------------------------|------------------|---------------------|----------------------|---------------------|----------|
| LOAD                               | MUERITA          | 0.0287              | -> 0.0000            | (* SEE NOTE)        | 0.027519 |
| LOAD                               | VIVA             | 0.0655              | -> 0.0000            | (* SEE NOTE)        | 0.041258 |
| ACC                                | UX               | 99.3522             | 96.5728              |                     | 0.385695 |
| ACC                                | UY               | 99.5205             | 97.2724              |                     | 0.360608 |
| ACC                                | UZ               | 0.0002              | 0.0000               |                     | 0.028136 |

(\* ) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

RESPONSE SPECTRUM ACCELERATIONS

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | DAMP-RATIO | U1       | U2      | U3      |
|------|----------|------------|----------|---------|---------|
| 1    | 0.386717 | 0.050000   | 8.093250 | .000000 | .000000 |
| 2    | 0.361323 | 0.050000   | 8.093250 | .000000 | .000000 |

SPEC SPECY -----

| MODE | PERIOD   | DAMP-RATIO | U1      | U2       | U3      |
|------|----------|------------|---------|----------|---------|
| 1    | 0.386717 | 0.050000   | .000000 | 8.093250 | .000000 |
| 2    | 0.361323 | 0.050000   | .000000 | 8.093250 | .000000 |

RESPONSE SPECTRUM MODAL AMPLITUDES

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | U1       | U2      | U3      |
|------|----------|----------|---------|---------|
| 1    | 0.386717 | 0.239406 | .000000 | .000000 |

2 0.361323 -0.000405 .000000 .000000

SPEC SPECX -----

| MODE | PERIOD   | U1      | U2       | U3      |
|------|----------|---------|----------|---------|
| 1    | 0.386717 | .000000 | 0.000492 | .000000 |
| 2    | 0.361323 | .000000 | 0.209752 | .000000 |

R E S P O N S E S P E C T R U M M O D A L C O R R E L A T I O N S

PARTIAL MATRIX SHOWING CORRELATION FACTORS BETWEEN NEARBY MODES

SPEC SPECX -----

| MODE I | PERIOD   | I     | I+1   | I+2 | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1      | 0.386717 | 1.000 | 0.684 |     |     |     |     |     |     |     |     |
| 2      | 0.361323 | 1.000 |       |     |     |     |     |     |     |     |     |

SPEC SPECX -----

| MODE I | PERIOD   | I     | I+1   | I+2 | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1      | 0.386717 | 1.000 | 0.684 |     |     |     |     |     |     |     |     |
| 2      | 0.361323 | 1.000 |       |     |     |     |     |     |     |     |     |

R E S P O N S E S P E C T R U M B A S E R E A C T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U1:

| MODE | F1         | F2        | F3       | M1        | M2       | M3         |
|------|------------|-----------|----------|-----------|----------|------------|
| 1    | 493.505431 | 1.013824  | 0.022858 | -3.313872 | 1971.259 | -15960.302 |
| 2    | 0.001852   | -0.959472 | 1.65E-05 | 3.812982  | 0.007432 | -10.131965 |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC       | F1       | F2       | F3       | M1       | M2        | M3 |
|------------|----------|----------|----------|----------|-----------|----|
| 493.506698 | 0.786169 | 0.022870 | 2.870415 | 1971.264 | 15967.232 |    |

SPEC SPECX -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U2:

| MODE | F1        | F2         | F3        | M1        | M2        | M3         |
|------|-----------|------------|-----------|-----------|-----------|------------|
| 1    | 1.013824  | 0.002083   | 4.70E-05  | -0.006808 | 4.049623  | -32.787772 |
| 2    | -0.959472 | 497.080020 | -0.008523 | -1975.417 | -3.850407 | 5249.134   |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC     | F1         | F2       | F3       | M1       | M2       | M3 |
|----------|------------|----------|----------|----------|----------|----|
| 0.786169 | 497.081444 | 0.008491 | 1975.421 | 3.146376 | 5226.767 |    |

### 5.1.8.2.2 Control de Derivas.

J O I N T D I S P L A C E M E N T S

| JOINT | LOAD  | U1     | U2     | U3     | R1        | R2        | R3        |
|-------|-------|--------|--------|--------|-----------|-----------|-----------|
| 1     | SPECX | 0.0000 | 0.0000 | 0.0000 | 7.796E-05 | 3.189E-03 | 1.402E-06 |
| 1     | SPECY | 0.0000 | 0.0000 | 0.0000 | 3.163E-03 | 1.077E-04 | 4.563E-06 |
| 2     | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.483E-04 | 1.026E-04 | 0.0000    |
| 2     | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.320E-03 | 3.388E-06 | 0.0000    |

|    |       |        |        |        |           |           |           |
|----|-------|--------|--------|--------|-----------|-----------|-----------|
| 3  | SPECX | 0.0000 | 0.0000 | 0.0000 | 7.311E-05 | 2.969E-03 | 1.482E-06 |
| 3  | SPECY | 0.0000 | 0.0000 | 0.0000 | 3.332E-03 | 1.141E-04 | 4.896E-06 |
| 4  | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.220E-05 | 6.246E-03 | 1.074E-06 |
| 4  | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.108E-03 | 1.572E-04 | 3.482E-06 |
| 5  | SPECX | 0.0000 | 0.0000 | 0.0000 | 2.154E-05 | 2.774E-03 | 0.0000    |
| 5  | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.015E-03 | 7.268E-05 | 2.125E-06 |
| 6  | SPECX | 0.0000 | 0.0000 | 0.0000 | 6.514E-05 | 1.263E-03 | 0.0000    |
| 6  | SPECY | 0.0000 | 0.0000 | 0.0000 | 3.052E-03 | 3.046E-05 | 2.204E-06 |
| 7  | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.553E-04 | 1.275E-03 | 1.452E-06 |
| 7  | SPECY | 0.0000 | 0.0000 | 0.0000 | 7.886E-03 | 3.259E-05 | 4.296E-06 |
| 8  | SPECX | 0.0000 | 0.0000 | 0.0000 | 6.813E-05 | 1.515E-03 | 0.0000    |
| 8  | SPECY | 0.0000 | 0.0000 | 0.0000 | 3.454E-03 | 3.924E-05 | 1.864E-06 |
| 9  | SPECX | 0.0000 | 0.0000 | 0.0000 | 6.615E-05 | 4.013E-03 | 1.922E-06 |
| 9  | SPECY | 0.0000 | 0.0000 | 0.0000 | 3.138E-03 | 9.472E-05 | 5.822E-06 |
| 10 | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.732E-05 | 3.403E-03 | 0.0000    |
| 10 | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.466E-03 | 6.855E-05 | 1.672E-06 |
| 11 | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.328E-04 | 1.292E-04 | 0.0000    |
| 11 | SPECY | 0.0000 | 0.0000 | 0.0000 | 5.694E-03 | 2.876E-06 | 2.204E-06 |
| 12 | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.760E-05 | 1.713E-03 | 0.0000    |
| 12 | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.918E-03 | 3.471E-05 | 2.012E-06 |
| 13 | SPECX | 0.0000 | 0.0000 | 0.0000 | 8.263E-05 | 1.702E-03 | 1.868E-06 |
| 13 | SPECY | 0.0000 | 0.0000 | 0.0000 | 4.114E-04 | 4.176E-05 | 2.236E-06 |
| 14 | SPECX | 0.0000 | 0.0000 | 0.0000 | 4.518E-05 | 4.322E-03 | 3.030E-06 |
| 14 | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.309E-03 | 8.336E-05 | 6.028E-06 |
| 15 | SPECX | 0.0000 | 0.0000 | 0.0000 | 5.407E-05 | 4.633E-03 | 1.323E-06 |
| 15 | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.547E-03 | 8.939E-05 | 5.231E-06 |
| 16 | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.907E-05 | 6.340E-03 | 1.319E-06 |
| 16 | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.426E-03 | 1.296E-04 | 4.322E-06 |
| 17 | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.283E-04 | 6.762E-04 | 9.513E-06 |
| 17 | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.163E-03 | 2.466E-04 | 1.891E-06 |
| 18 | SPECX | 0.0000 | 0.0000 | 0.0000 | 4.383E-03 | 8.065E-05 | 4.627E-05 |
| 18 | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.537E-03 | 3.406E-05 | 1.575E-05 |
| 19 | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.975E-03 | 2.023E-06 | 1.667E-06 |
| 19 | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.829E-03 | 4.313E-06 | 2.123E-06 |
| 20 | SPECX | 0.0000 | 0.0000 | 0.0000 | 2.860E-03 | 1.693E-05 | 2.583E-06 |
| 20 | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.899E-03 | 0.0000    | 0.0000    |
| 21 | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.603E-03 | 1.321E-05 | 3.012E-06 |
| 21 | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.939E-03 | 0.0000    | 0.0000    |
| 22 | SPECX | 0.0000 | 0.0000 | 0.0000 | 4.659E-04 | 2.548E-05 | 2.403E-06 |
| 22 | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.952E-03 | 1.646E-06 | 0.0000    |
| 23 | SPECX | 0.0000 | 0.0000 | 0.0000 | 2.504E-04 | 2.897E-04 | 3.405E-05 |
| 23 | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.834E-03 | 7.704E-06 | 9.468E-06 |
| 24 | SPECX | 0.0000 | 0.0000 | 0.0000 | 6.293E-05 | 2.976E-03 | 4.132E-06 |
| 24 | SPECY | 0.0000 | 0.0000 | 0.0000 | 3.177E-03 | 7.904E-05 | 5.776E-06 |
| 25 | SPECX | 0.0000 | 0.0000 | 0.0000 | 5.788E-05 | 4.801E-03 | 2.493E-06 |
| 25 | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.741E-03 | 1.120E-04 | 5.643E-06 |
| 26 | SPECX | 0.0000 | 0.0000 | 0.0000 | 4.039E-05 | 3.224E-03 | 0.0000    |
| 26 | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.580E-03 | 7.933E-05 | 1.334E-06 |

|    |       |           |        |           |           |           |           |
|----|-------|-----------|--------|-----------|-----------|-----------|-----------|
| 27 | SPECX | 0.0000    | 0.0000 | 0.0000    | 1.596E-04 | 1.028E-03 | 1.137E-06 |
| 27 | SPECY | 0.0000    | 0.0000 | 0.0000    | 7.020E-03 | 7.656E-05 | 4.682E-06 |
| 28 | SPECX | 0.0000    | 0.0000 | 0.0000    | 1.973E-04 | 1.913E-03 | 1.885E-06 |
| 28 | SPECY | 0.0000    | 0.0000 | 0.0000    | 2.193E-03 | 2.528E-04 | 2.283E-06 |
| 29 | SPECX | 0.0000    | 0.0000 | 0.0000    | 2.822E-05 | 6.328E-03 | 1.184E-06 |
| 29 | SPECY | 0.0000    | 0.0000 | 0.0000    | 1.125E-03 | 2.290E-04 | 3.903E-06 |
| 30 | SPECX | 0.0000    | 0.0000 | 0.0000    | 2.101E-05 | 3.030E-03 | 0.0000    |
| 30 | SPECY | 0.0000    | 0.0000 | 0.0000    | 6.715E-04 | 9.278E-05 | 2.253E-06 |
| 31 | SPECX | 0.0000    | 0.0000 | 0.0000    | 9.313E-05 | 6.754E-04 | 1.595E-06 |
| 31 | SPECY | 0.0000    | 0.0000 | 0.0000    | 6.743E-05 | 2.062E-05 | 1.495E-06 |
| 32 | SPECX | 0.0000    | 0.0000 | 0.0000    | 2.262E-05 | 2.433E-03 | 1.334E-06 |
| 32 | SPECY | 0.0000    | 0.0000 | 0.0000    | 1.137E-03 | 9.468E-05 | 1.762E-06 |
| 33 | SPECX | 0.0000    | 0.0000 | 0.0000    | 7.063E-05 | 3.939E-03 | 1.616E-06 |
| 33 | SPECY | 0.0000    | 0.0000 | 0.0000    | 3.340E-03 | 1.414E-04 | 6.433E-06 |
| 34 | SPECX | 0.0000    | 0.0000 | 0.0000    | 8.632E-05 | 2.973E-03 | 1.136E-06 |
| 34 | SPECY | 0.0000    | 0.0000 | 0.0000    | 3.128E-03 | 1.348E-04 | 3.656E-06 |
| 35 | SPECX | 0.0000    | 0.0000 | 0.0000    | 1.672E-04 | 9.663E-04 | 1.046E-06 |
| 35 | SPECY | 0.0000    | 0.0000 | 0.0000    | 7.161E-03 | 4.915E-05 | 3.496E-06 |
| 36 | SPECX | 0.0000    | 0.0000 | 0.0000    | 9.115E-05 | 2.373E-03 | 1.555E-06 |
| 36 | SPECY | 0.0000    | 0.0000 | 0.0000    | 4.479E-03 | 1.152E-04 | 4.700E-06 |
| 37 | SPECX | 0.0000    | 0.0000 | 0.0000    | 9.433E-05 | 2.237E-03 | 1.252E-06 |
| 37 | SPECY | 0.0000    | 0.0000 | 0.0000    | 4.755E-03 | 1.186E-04 | 4.811E-06 |
| 38 | SPECX | 0.0000    | 0.0000 | 0.0000    | 1.555E-04 | 9.694E-04 | 1.061E-06 |
| 38 | SPECY | 0.0000    | 0.0000 | 0.0000    | 7.942E-03 | 3.251E-05 | 3.084E-06 |
| 39 | SPECX | 0.0000    | 0.0000 | 0.0000    | 6.785E-05 | 2.653E-03 | 1.057E-06 |
| 39 | SPECY | 0.0000    | 0.0000 | 0.0000    | 3.452E-03 | 1.457E-04 | 4.157E-06 |
| 40 | SPECX | 0.0155    | 0.2435 | 0.0187    | 4.927E-03 | 3.212E-04 | 1.109E-03 |
| 40 | SPECY | 3.676E-04 | 0.3398 | 5.951E-04 | 6.927E-03 | 3.011E-05 | 1.146E-04 |
| 41 | SPECX | 0.0111    | 0.2013 | 6.983E-03 | 4.026E-03 | 3.180E-04 | 1.376E-03 |
| 41 | SPECY | 2.188E-04 | 0.3433 | 1.763E-04 | 6.926E-03 | 7.837E-06 | 9.134E-05 |
| 42 | SPECX | 8.940E-03 | 0.1445 | 1.255E-03 | 2.896E-03 | 1.358E-04 | 1.745E-03 |
| 42 | SPECY | 2.315E-04 | 0.3462 | 2.037E-04 | 6.962E-03 | 2.652E-06 | 7.632E-05 |
| 43 | SPECX | 8.814E-03 | 0.0807 | 1.840E-03 | 1.679E-03 | 1.418E-04 | 1.764E-03 |
| 43 | SPECY | 4.051E-04 | 0.3481 | 1.897E-04 | 7.002E-03 | 5.345E-06 | 5.434E-05 |
| 44 | SPECX | 0.0107    | 0.0235 | 7.400E-03 | 5.563E-04 | 2.981E-04 | 1.416E-03 |
| 44 | SPECY | 6.145E-04 | 0.3491 | 1.433E-04 | 7.030E-03 | 1.385E-05 | 3.002E-05 |
| 45 | SPECX | 0.0148    | 0.0231 | 0.0185    | 3.664E-04 | 3.077E-04 | 1.200E-03 |
| 45 | SPECY | 8.565E-04 | 0.3490 | 9.754E-04 | 7.062E-03 | 4.726E-05 | 2.807E-05 |
| 46 | SPECX | 0.1631    | 0.3984 | 0.1316    | 1.731E-03 | 7.821E-04 | 2.653E-03 |
| 46 | SPECY | 5.628E-03 | 0.5565 | 0.4749    | 7.964E-03 | 1.832E-04 | 1.578E-04 |
| 47 | SPECX | 0.1585    | 0.3117 | 0.1564    | 2.154E-03 | 5.894E-04 | 2.348E-03 |
| 47 | SPECY | 5.599E-03 | 0.5610 | 0.4798    | 8.017E-03 | 1.005E-04 | 1.154E-04 |
| 48 | SPECX | 0.1577    | 0.2320 | 0.1716    | 2.783E-03 | 3.919E-04 | 2.399E-03 |
| 48 | SPECY | 5.506E-03 | 0.5644 | 0.4824    | 8.052E-03 | 5.016E-05 | 1.017E-04 |
| 49 | SPECX | 0.1579    | 0.1516 | 0.1823    | 3.467E-03 | 3.511E-04 | 2.326E-03 |
| 49 | SPECY | 5.348E-03 | 0.5669 | 0.4837    | 8.063E-03 | 1.803E-05 | 7.487E-05 |
| 50 | SPECX | 0.1589    | 0.0717 | 0.1971    | 4.100E-03 | 5.941E-04 | 2.445E-03 |

|    |       |           |        |        |           |           |           |
|----|-------|-----------|--------|--------|-----------|-----------|-----------|
| 50 | SPECX | 5.222E-03 | 0.5685 | 0.4834 | 8.056E-03 | 4.463E-05 | 6.790E-05 |
| 51 | SPECX | 0.1637    | 0.0206 | 0.2192 | 4.534E-03 | 6.066E-04 | 2.631E-03 |
| 51 | SPECY | 5.279E-03 | 0.5696 | 0.4805 | 8.038E-03 | 1.302E-04 | 5.283E-05 |
| 52 | SPECX | 0.3614    | 0.4849 | 0.2066 | 1.347E-03 | 2.059E-03 | 2.208E-03 |
| 52 | SPECY | 0.0111    | 0.8022 | 1.0151 | 8.888E-03 | 2.248E-04 | 1.569E-04 |
| 53 | SPECX | 0.3580    | 0.4028 | 0.2813 | 2.124E-03 | 2.148E-03 | 2.447E-03 |
| 53 | SPECY | 0.0111    | 0.8073 | 1.0218 | 8.902E-03 | 1.520E-04 | 1.410E-04 |
| 54 | SPECX | 0.3557    | 0.3248 | 0.3534 | 2.961E-03 | 2.010E-03 | 2.189E-03 |
| 54 | SPECY | 0.0111    | 0.8111 | 1.0261 | 8.916E-03 | 9.759E-05 | 9.543E-05 |
| 55 | SPECX | 0.3558    | 0.2496 | 0.4240 | 3.828E-03 | 2.089E-03 | 2.345E-03 |
| 55 | SPECY | 0.0111    | 0.8137 | 1.0282 | 8.927E-03 | 4.439E-05 | 8.920E-05 |
| 56 | SPECX | 0.3583    | 0.1718 | 0.4967 | 4.695E-03 | 2.101E-03 | 2.293E-03 |
| 56 | SPECY | 0.0112    | 0.8155 | 1.0279 | 8.935E-03 | 5.805E-05 | 5.720E-05 |
| 57 | SPECX | 0.3619    | 0.0905 | 0.5724 | 5.545E-03 | 2.151E-03 | 2.345E-03 |
| 57 | SPECY | 0.0112    | 0.8164 | 1.0251 | 8.944E-03 | 1.239E-04 | 4.773E-05 |
| 58 | SPECX | 0.5899    | 0.5495 | 0.2694 | 9.804E-04 | 3.781E-03 | 2.222E-03 |
| 58 | SPECY | 0.0167    | 1.0721 | 1.6076 | 9.614E-03 | 2.438E-04 | 1.745E-04 |
| 59 | SPECX | 0.5878    | 0.4788 | 0.4021 | 1.816E-03 | 3.659E-03 | 1.811E-03 |
| 59 | SPECY | 0.0168    | 1.0771 | 1.6150 | 9.624E-03 | 1.925E-04 | 1.204E-04 |
| 60 | SPECX | 0.5873    | 0.4138 | 0.5341 | 2.682E-03 | 3.810E-03 | 2.068E-03 |
| 60 | SPECY | 0.0169    | 1.0810 | 1.6202 | 9.636E-03 | 1.270E-04 | 1.186E-04 |
| 61 | SPECX | 0.5878    | 0.3506 | 0.6668 | 3.563E-03 | 3.733E-03 | 1.812E-03 |
| 61 | SPECY | 0.0169    | 1.0836 | 1.6231 | 9.646E-03 | 8.773E-05 | 6.207E-05 |
| 62 | SPECX | 0.5889    | 0.2876 | 0.8009 | 4.454E-03 | 3.859E-03 | 1.994E-03 |
| 62 | SPECY | 0.0169    | 1.0852 | 1.6237 | 9.654E-03 | 7.852E-05 | 5.764E-05 |
| 63 | SPECX | 0.5910    | 0.2192 | 0.9393 | 5.353E-03 | 3.887E-03 | 1.935E-03 |
| 63 | SPECY | 0.0168    | 1.0859 | 1.6218 | 9.665E-03 | 1.107E-04 | 3.737E-05 |
| 64 | SPECX | 0.8386    | 0.5833 | 0.3011 | 2.471E-04 | 5.221E-03 | 1.361E-03 |
| 64 | SPECY | 0.0223    | 1.3614 | 2.2415 | 0.0102    | 2.841E-04 | 1.495E-04 |
| 65 | SPECX | 0.8389    | 0.5287 | 0.4917 | 1.016E-03 | 5.484E-03 | 1.768E-03 |
| 65 | SPECY | 0.0224    | 1.3666 | 2.2502 | 0.0102    | 2.287E-04 | 1.543E-04 |
| 66 | SPECX | 0.8387    | 0.4821 | 0.6826 | 1.890E-03 | 5.315E-03 | 1.187E-03 |
| 66 | SPECY | 0.0223    | 1.3699 | 2.2567 | 0.0102    | 1.780E-04 | 6.277E-05 |
| 67 | SPECX | 0.8380    | 0.4406 | 0.8735 | 2.772E-03 | 5.450E-03 | 1.432E-03 |
| 67 | SPECY | 0.0221    | 1.3720 | 2.2603 | 0.0102    | 1.170E-04 | 7.078E-05 |
| 68 | SPECX | 0.8379    | 0.3969 | 1.0665 | 3.629E-03 | 5.419E-03 | 1.283E-03 |
| 68 | SPECY | 0.0219    | 1.3734 | 2.2612 | 0.0102    | 1.045E-04 | 2.848E-05 |
| 69 | SPECX | 0.8382    | 0.3499 | 1.2632 | 4.460E-03 | 5.569E-03 | 1.417E-03 |
| 69 | SPECY | 0.0219    | 1.3738 | 2.2600 | 0.0102    | 1.234E-04 | 2.796E-05 |
| 70 | SPECX | 1.1409    | 0.5406 | 0.0980 | 1.039E-03 | 9.810E-03 | 2.365E-05 |
| 70 | SPECY | 0.0275    | 1.6741 | 4.9796 | 0.0113    | 2.450E-04 | 1.256E-05 |
| 71 | SPECX | 1.1322    | 0.5378 | 0.4895 | 1.207E-03 | 0.0101    | 9.812E-05 |
| 71 | SPECY | 0.0270    | 1.6750 | 4.8985 | 0.0113    | 3.170E-04 | 1.998E-05 |
| 72 | SPECX | 1.1493    | 0.5351 | 0.4661 | 8.221E-04 | 9.442E-03 | 1.695E-04 |
| 72 | SPECY | 0.0282    | 1.6739 | 4.9138 | 0.0113    | 1.953E-04 | 3.620E-06 |
| 73 | SPECX | 1.1270    | 0.5278 | 0.9142 | 1.378E-03 | 0.0102    | 1.812E-04 |
| 73 | SPECY | 0.0268    | 1.6764 | 4.6755 | 0.0114    | 3.965E-04 | 2.742E-05 |

|    |       |        |        |        |           |           |           |
|----|-------|--------|--------|--------|-----------|-----------|-----------|
| 74 | SPECX | 1.1537 | 0.5223 | 0.8842 | 5.190E-04 | 8.996E-03 | 2.344E-04 |
| 74 | SPECY | 0.0286 | 1.6744 | 4.7074 | 0.0112    | 1.736E-04 | 5.182E-06 |
| 75 | SPECX | 1.1398 | 0.5421 | 0.0934 | 1.097E-03 | 9.648E-03 | 3.564E-05 |
| 75 | SPECY | 0.0278 | 1.6740 | 4.5731 | 0.0113    | 2.582E-04 | 9.259E-06 |
| 76 | SPECX | 1.1348 | 0.5401 | 0.3556 | 1.280E-03 | 9.908E-03 | 7.884E-05 |
| 76 | SPECY | 0.0274 | 1.6747 | 4.5072 | 0.0113    | 3.261E-04 | 2.007E-05 |
| 77 | SPECX | 1.1446 | 0.5380 | 0.4068 | 8.707E-04 | 9.296E-03 | 1.291E-04 |
| 77 | SPECY | 0.0282 | 1.6738 | 4.5214 | 0.0113    | 2.065E-04 | 5.445E-06 |
| 78 | SPECX | 1.1285 | 0.5130 | 1.2615 | 1.618E-03 | 0.0103    | 3.434E-04 |
| 78 | SPECY | 0.0270 | 1.6781 | 4.3258 | 0.0114    | 4.695E-04 | 3.966E-05 |
| 79 | SPECX | 1.1508 | 0.5045 | 1.2251 | 2.196E-04 | 8.501E-03 | 4.308E-04 |
| 79 | SPECY | 0.0287 | 1.6753 | 4.3766 | 0.0112    | 1.682E-04 | 2.324E-05 |
| 80 | SPECX | 1.1325 | 0.5326 | 0.6885 | 1.466E-03 | 0.0101    | 2.216E-04 |
| 80 | SPECY | 0.0273 | 1.6757 | 4.3275 | 0.0114    | 3.993E-04 | 3.003E-05 |
| 81 | SPECX | 1.1462 | 0.5283 | 0.7389 | 5.697E-04 | 8.874E-03 | 3.003E-04 |
| 81 | SPECY | 0.0284 | 1.6741 | 4.3567 | 0.0112    | 1.763E-04 | 1.333E-05 |
| 82 | SPECX | 1.1386 | 0.5449 | 0.1056 | 1.189E-03 | 9.429E-03 | 2.539E-05 |
| 82 | SPECY | 0.0280 | 1.6737 | 4.1674 | 0.0113    | 2.788E-04 | 1.236E-05 |
| 83 | SPECX | 1.1366 | 0.5434 | 0.2226 | 1.384E-03 | 9.682E-03 | 9.338E-05 |
| 83 | SPECY | 0.0278 | 1.6742 | 4.1168 | 0.0113    | 3.406E-04 | 1.983E-05 |
| 84 | SPECX | 1.1403 | 0.5419 | 0.3515 | 9.572E-04 | 9.095E-03 | 1.676E-04 |
| 84 | SPECY | 0.0282 | 1.6736 | 4.1294 | 0.0112    | 2.281E-04 | 3.609E-06 |
| 85 | SPECX | 1.1351 | 0.5215 | 0.9608 | 1.706E-03 | 0.0101    | 2.646E-04 |
| 85 | SPECY | 0.0276 | 1.6771 | 4.0463 | 0.0114    | 4.670E-04 | 3.361E-05 |
| 86 | SPECX | 1.1423 | 0.5150 | 1.0114 | 2.395E-04 | 8.404E-03 | 3.287E-04 |
| 86 | SPECY | 0.0284 | 1.6748 | 4.0922 | 0.0112    | 1.621E-04 | 1.050E-05 |
| 87 | SPECX | 1.1366 | 0.5380 | 0.4637 | 1.578E-03 | 9.842E-03 | 1.719E-04 |
| 87 | SPECY | 0.0278 | 1.6750 | 3.9804 | 0.0113    | 4.063E-04 | 2.720E-05 |
| 88 | SPECX | 1.1397 | 0.5351 | 0.5986 | 6.630E-04 | 8.702E-03 | 2.280E-04 |
| 88 | SPECY | 0.0283 | 1.6738 | 4.0062 | 0.0112    | 1.923E-04 | 5.159E-06 |
| 89 | SPECX | 1.1380 | 0.4969 | 1.4929 | 1.997E-03 | 0.0102    | 3.487E-04 |
| 89 | SPECY | 0.0279 | 1.6797 | 3.8742 | 0.0115    | 5.275E-04 | 3.931E-05 |
| 90 | SPECX | 1.1389 | 0.4851 | 1.4556 | 6.522E-04 | 7.981E-03 | 4.283E-04 |
| 90 | SPECY | 0.0283 | 1.6763 | 3.9473 | 0.0111    | 1.637E-04 | 1.506E-05 |
| 91 | SPECX | 1.1402 | 0.5300 | 0.6623 | 1.812E-03 | 9.909E-03 | 3.334E-04 |
| 91 | SPECY | 0.0282 | 1.6760 | 3.7675 | 0.0114    | 4.676E-04 | 3.949E-05 |
| 92 | SPECX | 1.1349 | 0.5258 | 0.8034 | 3.205E-04 | 8.269E-03 | 4.229E-04 |
| 92 | SPECY | 0.0282 | 1.6743 | 3.8076 | 0.0111    | 1.698E-04 | 2.363E-05 |
| 93 | SPECX | 1.1372 | 0.5494 | 0.1337 | 1.334E-03 | 9.118E-03 | 3.409E-05 |
| 93 | SPECY | 0.0282 | 1.6732 | 3.7630 | 0.0112    | 3.132E-04 | 9.542E-06 |
| 94 | SPECX | 1.1440 | 0.5095 | 1.1413 | 2.061E-03 | 0.0101    | 4.415E-04 |
| 94 | SPECY | 0.0284 | 1.6783 | 3.6834 | 0.0114    | 5.216E-04 | 4.815E-05 |
| 95 | SPECX | 1.1375 | 0.5483 | 0.1003 | 1.527E-03 | 9.360E-03 | 8.366E-05 |
| 95 | SPECY | 0.0281 | 1.6736 | 3.7277 | 0.0112    | 3.669E-04 | 2.099E-05 |
| 96 | SPECX | 1.1367 | 0.5475 | 0.3024 | 1.109E-03 | 8.809E-03 | 1.326E-04 |
| 96 | SPECY | 0.0282 | 1.6731 | 3.7382 | 0.0112    | 2.677E-04 | 4.230E-06 |
| 97 | SPECX | 1.1312 | 0.5009 | 1.1983 | 5.140E-04 | 7.906E-03 | 5.493E-04 |
| 97 | SPECY | 0.0281 | 1.6756 | 3.7485 | 0.0111    | 1.534E-04 | 3.096E-05 |

|     |       |        |        |        |           |           |           |
|-----|-------|--------|--------|--------|-----------|-----------|-----------|
| 98  | SPECX | 1.1393 | 0.5444 | 0.2425 | 1.716E-03 | 9.521E-03 | 2.292E-04 |
| 98  | SPECY | 0.0283 | 1.6742 | 3.6346 | 0.0113    | 4.238E-04 | 3.149E-05 |
| 99  | SPECX | 1.1344 | 0.5429 | 0.4665 | 8.339E-04 | 8.450E-03 | 3.014E-04 |
| 99  | SPECY | 0.0282 | 1.6732 | 3.6559 | 0.0111    | 2.330E-04 | 1.539E-05 |
| 100 | SPECX | 1.1482 | 0.5213 | 0.7933 | 2.132E-03 | 9.893E-03 | 3.286E-04 |
| 100 | SPECY | 0.0288 | 1.6769 | 3.4931 | 0.0114    | 5.182E-04 | 3.906E-05 |
| 101 | SPECX | 1.1252 | 0.5160 | 0.9470 | 3.297E-04 | 7.815E-03 | 4.054E-04 |
| 101 | SPECY | 0.0279 | 1.6749 | 3.5489 | 0.0110    | 1.555E-04 | 1.549E-05 |
| 102 | SPECX | 1.1434 | 0.5389 | 0.3686 | 1.932E-03 | 9.601E-03 | 2.721E-04 |
| 102 | SPECY | 0.0286 | 1.6749 | 3.4899 | 0.0113    | 4.778E-04 | 3.532E-05 |
| 103 | SPECX | 1.1295 | 0.5368 | 0.6044 | 5.128E-04 | 8.063E-03 | 3.256E-04 |
| 103 | SPECY | 0.0281 | 1.6736 | 3.5224 | 0.0111    | 2.086E-04 | 1.449E-05 |
| 104 | SPECX | 1.1557 | 0.4835 | 1.5782 | 2.601E-03 | 0.0101    | 5.276E-04 |
| 104 | SPECY | 0.0293 | 1.6812 | 3.3533 | 0.0115    | 5.681E-04 | 5.595E-05 |
| 105 | SPECX | 1.1172 | 0.4683 | 1.5523 | 1.484E-03 | 7.457E-03 | 6.665E-04 |
| 105 | SPECY | 0.0275 | 1.6771 | 3.4528 | 0.0110    | 1.550E-04 | 3.403E-05 |
| 106 | SPECX | 1.1359 | 0.5573 | 0.1757 | 1.584E-03 | 8.663E-03 | 1.374E-05 |
| 106 | SPECY | 0.0283 | 1.6724 | 3.3606 | 0.0111    | 3.735E-04 | 5.972E-06 |
| 107 | SPECX | 1.1375 | 0.5564 | 0.0974 | 1.734E-03 | 8.884E-03 | 1.096E-04 |
| 107 | SPECY | 0.0284 | 1.6727 | 3.3412 | 0.0112    | 4.165E-04 | 1.696E-05 |
| 108 | SPECX | 1.1343 | 0.5560 | 0.2637 | 1.402E-03 | 8.378E-03 | 1.498E-04 |
| 108 | SPECY | 0.0283 | 1.6722 | 3.3484 | 0.0111    | 3.396E-04 | 9.598E-06 |
| 109 | SPECX | 1.1590 | 0.4994 | 1.2069 | 2.596E-03 | 9.925E-03 | 3.947E-04 |
| 109 | SPECY | 0.0296 | 1.6794 | 3.2650 | 0.0114    | 5.617E-04 | 4.416E-05 |
| 110 | SPECX | 1.1508 | 0.5330 | 0.4517 | 2.206E-03 | 9.615E-03 | 4.604E-04 |
| 110 | SPECY | 0.0292 | 1.6755 | 3.3035 | 0.0113    | 5.229E-04 | 4.985E-05 |
| 111 | SPECX | 1.1208 | 0.5307 | 0.7042 | 2.268E-04 | 7.672E-03 | 5.493E-04 |
| 111 | SPECY | 0.0278 | 1.6740 | 3.3480 | 0.0110    | 1.924E-04 | 3.816E-05 |
| 112 | SPECX | 1.1129 | 0.4888 | 1.2824 | 1.212E-03 | 7.362E-03 | 5.077E-04 |
| 112 | SPECY | 0.0274 | 1.6764 | 3.3519 | 0.0110    | 1.432E-04 | 1.515E-05 |
| 113 | SPECX | 1.1399 | 0.5536 | 0.0650 | 1.877E-03 | 9.030E-03 | 2.036E-04 |
| 113 | SPECY | 0.0286 | 1.6732 | 3.2914 | 0.0112    | 4.642E-04 | 2.678E-05 |
| 114 | SPECX | 1.1316 | 0.5530 | 0.3480 | 1.174E-03 | 8.058E-03 | 2.291E-04 |
| 114 | SPECY | 0.0282 | 1.6722 | 3.3058 | 0.0111    | 3.167E-04 | 1.664E-05 |
| 115 | SPECX | 1.1610 | 0.5140 | 0.8403 | 2.571E-03 | 9.793E-03 | 5.300E-04 |
| 115 | SPECY | 0.0298 | 1.6777 | 3.1768 | 0.0114    | 5.542E-04 | 5.690E-05 |
| 116 | SPECX | 1.1098 | 0.5082 | 1.0177 | 8.453E-04 | 7.324E-03 | 6.612E-04 |
| 116 | SPECY | 0.0273 | 1.6756 | 3.2497 | 0.0109    | 1.448E-04 | 3.920E-05 |
| 117 | SPECX | 1.1442 | 0.5496 | 0.0966 | 2.038E-03 | 9.098E-03 | 3.572E-04 |
| 117 | SPECY | 0.0289 | 1.6736 | 3.2144 | 0.0112    | 5.107E-04 | 3.904E-05 |
| 118 | SPECX | 1.1268 | 0.5489 | 0.4204 | 9.071E-04 | 7.728E-03 | 4.011E-04 |
| 118 | SPECY | 0.0281 | 1.6723 | 3.2361 | 0.0110    | 3.044E-04 | 3.453E-05 |
| 119 | SPECX | 1.1503 | 0.5453 | 0.1298 | 2.239E-03 | 9.108E-03 | 3.591E-04 |
| 119 | SPECY | 0.0293 | 1.6741 | 3.1156 | 0.0113    | 5.503E-04 | 3.982E-05 |
| 120 | SPECX | 1.1201 | 0.5447 | 0.4752 | 6.266E-04 | 7.415E-03 | 3.815E-04 |
| 120 | SPECY | 0.0278 | 1.6726 | 3.1445 | 0.0110    | 3.001E-04 | 3.102E-05 |
| 121 | SPECX | 1.1607 | 0.5278 | 0.4808 | 2.540E-03 | 9.549E-03 | 3.886E-04 |



|     |       |        |        |        |           |           |           |
|-----|-------|--------|--------|--------|-----------|-----------|-----------|
| 121 | SPECX | 0.0299 | 1.6760 | 3.0888 | 0.0114    | 5.558E-04 | 4.384E-05 |
| 122 | SPECX | 1.1093 | 0.5256 | 0.7587 | 3.941E-04 | 7.253E-03 | 4.481E-04 |
| 122 | SPECY | 0.0273 | 1.6744 | 3.1455 | 0.0109    | 1.830E-04 | 2.463E-05 |
| 123 | SPECX | 1.1588 | 0.5424 | 0.1414 | 2.474E-03 | 9.049E-03 | 5.944E-04 |
| 123 | SPECY | 0.0299 | 1.6743 | 3.0018 | 0.0113    | 5.795E-04 | 5.585E-05 |
| 124 | SPECX | 1.1111 | 0.5420 | 0.5089 | 3.863E-04 | 7.109E-03 | 6.505E-04 |
| 124 | SPECY | 0.0273 | 1.6728 | 3.0376 | 0.0109    | 3.033E-04 | 5.712E-05 |
| 125 | SPECX | 1.1390 | 0.5694 | 0.2240 | 2.147E-03 | 7.706E-03 | 4.942E-04 |
| 125 | SPECY | 0.0289 | 1.6714 | 2.9585 | 0.0111    | 6.169E-04 | 1.199E-04 |
| 126 | SPECX | 1.1350 | 0.5694 | 0.2333 | 1.948E-03 | 7.576E-03 | 5.314E-05 |
| 126 | SPECY | 0.0286 | 1.6711 | 2.9612 | 0.0111    | 6.070E-04 | 9.627E-05 |
| 127 | SPECX | 1.1310 | 0.5692 | 0.2430 | 1.759E-03 | 7.462E-03 | 5.964E-04 |
| 127 | SPECY | 0.0284 | 1.6709 | 2.9601 | 0.0110    | 5.916E-04 | 6.493E-05 |
| 128 | SPECX | 1.1433 | 0.5691 | 0.2160 | 2.341E-03 | 7.853E-03 | 1.013E-03 |
| 128 | SPECY | 0.0291 | 1.6716 | 2.9523 | 0.0112    | 6.225E-04 | 1.377E-04 |
| 129 | SPECX | 1.1267 | 0.5687 | 0.2525 | 1.595E-03 | 7.359E-03 | 1.101E-03 |
| 129 | SPECY | 0.0282 | 1.6706 | 2.9553 | 0.0109    | 5.707E-04 | 2.804E-05 |
| 130 | SPECX | 1.1479 | 0.5688 | 0.2099 | 2.511E-03 | 8.010E-03 | 1.484E-03 |
| 130 | SPECY | 0.0294 | 1.6718 | 2.9427 | 0.0112    | 6.256E-04 | 1.514E-04 |
| 131 | SPECX | 1.1222 | 0.5682 | 0.2610 | 1.463E-03 | 7.259E-03 | 1.538E-03 |
| 131 | SPECY | 0.0279 | 1.6704 | 2.9472 | 0.0109    | 5.455E-04 | 5.213E-05 |
| 132 | SPECX | 1.1532 | 0.5688 | 0.2063 | 2.650E-03 | 8.180E-03 | 1.861E-03 |
| 132 | SPECY | 0.0298 | 1.6719 | 2.9306 | 0.0112    | 6.276E-04 | 1.606E-04 |
| 133 | SPECX | 1.1170 | 0.5681 | 0.2680 | 1.360E-03 | 7.165E-03 | 1.859E-03 |
| 133 | SPECY | 0.0276 | 1.6701 | 2.9363 | 0.0108    | 5.173E-04 | 1.220E-04 |
| 134 | SPECX | 1.1585 | 0.5687 | 0.2053 | 2.744E-03 | 8.353E-03 | 2.063E-03 |
| 134 | SPECY | 0.0301 | 1.6719 | 2.9168 | 0.0113    | 6.291E-04 | 1.595E-04 |
| 135 | SPECX | 1.1119 | 0.5677 | 0.2729 | 1.286E-03 | 7.077E-03 | 2.030E-03 |
| 135 | SPECY | 0.0272 | 1.6699 | 2.9235 | 0.0108    | 4.865E-04 | 1.890E-04 |
| 136 | SPECX | 1.1795 | 0.4762 | 1.4952 | 3.578E-03 | 9.872E-03 | 4.597E-04 |
| 136 | SPECY | 0.0313 | 1.6822 | 2.8013 | 0.0114    | 6.069E-04 | 5.630E-05 |
| 137 | SPECX | 1.1789 | 0.4943 | 1.1424 | 3.389E-03 | 9.781E-03 | 5.852E-04 |
| 137 | SPECY | 0.0312 | 1.6800 | 2.8216 | 0.0114    | 5.881E-04 | 6.738E-05 |
| 138 | SPECX | 1.1772 | 0.5095 | 0.7942 | 3.172E-03 | 9.648E-03 | 4.174E-04 |
| 138 | SPECY | 0.0311 | 1.6781 | 2.8414 | 0.0114    | 5.782E-04 | 4.643E-05 |
| 139 | SPECX | 1.1737 | 0.5248 | 0.4511 | 2.957E-03 | 9.578E-03 | 7.307E-04 |
| 139 | SPECY | 0.0309 | 1.6762 | 2.8609 | 0.0114    | 5.689E-04 | 6.781E-05 |
| 140 | SPECX | 1.1679 | 0.5415 | 0.1269 | 2.736E-03 | 8.984E-03 | 4.308E-04 |
| 140 | SPECY | 0.0306 | 1.6744 | 2.8808 | 0.0113    | 5.964E-04 | 4.657E-05 |
| 141 | SPECX | 1.1639 | 0.5688 | 0.2073 | 2.787E-03 | 8.635E-03 | 1.424E-03 |
| 141 | SPECY | 0.0304 | 1.6720 | 2.9021 | 0.0113    | 6.275E-04 | 1.088E-04 |
| 142 | SPECX | 1.1067 | 0.5680 | 0.2756 | 1.234E-03 | 7.053E-03 | 1.440E-03 |
| 142 | SPECY | 0.0268 | 1.6696 | 2.9096 | 0.0108    | 4.430E-04 | 1.773E-04 |
| 143 | SPECX | 1.1017 | 0.5410 | 0.5206 | 2.429E-04 | 6.819E-03 | 3.783E-04 |
| 143 | SPECY | 0.0267 | 1.6728 | 2.9230 | 0.0108    | 3.123E-04 | 4.164E-05 |
| 144 | SPECX | 1.0946 | 0.5232 | 0.7666 | 7.510E-04 | 6.963E-03 | 8.365E-04 |
| 144 | SPECY | 0.0265 | 1.6747 | 2.9299 | 0.0108    | 1.747E-04 | 7.277E-05 |

|     |       |        |        |        |           |           |           |
|-----|-------|--------|--------|--------|-----------|-----------|-----------|
| 145 | SPECX | 1.0898 | 0.5037 | 1.0118 | 1.470E-03 | 6.796E-03 | 5.550E-04 |
| 145 | SPECY | 0.0265 | 1.6761 | 2.9326 | 0.0108    | 1.379E-04 | 1.958E-05 |
| 146 | SPECX | 1.0873 | 0.4827 | 1.2550 | 2.143E-03 | 6.798E-03 | 7.863E-04 |
| 146 | SPECY | 0.0265 | 1.6769 | 2.9331 | 0.0107    | 1.319E-04 | 3.197E-05 |
| 147 | SPECX | 1.0864 | 0.4573 | 1.4993 | 2.751E-03 | 6.846E-03 | 6.513E-04 |
| 147 | SPECY | 0.0265 | 1.6775 | 2.9320 | 0.0107    | 1.423E-04 | 1.258E-05 |
| 148 | SPECX | 1.4998 | 0.3540 | 1.2198 | 4.857E-03 | 9.477E-03 | 7.331E-04 |
| 148 | SPECY | 0.0304 | 2.0105 | 2.0782 | 0.0111    | 6.744E-04 | 1.238E-04 |
| 149 | SPECX | 1.5001 | 0.3770 | 0.8819 | 4.613E-03 | 9.346E-03 | 6.248E-04 |
| 149 | SPECY | 0.0304 | 2.0070 | 2.1007 | 0.0110    | 6.284E-04 | 7.709E-05 |
| 150 | SPECX | 1.4996 | 0.3973 | 0.5488 | 4.382E-03 | 9.312E-03 | 7.764E-04 |
| 150 | SPECY | 0.0304 | 2.0045 | 2.1214 | 0.0110    | 5.732E-04 | 7.353E-05 |
| 151 | SPECX | 1.4983 | 0.4163 | 0.2225 | 4.173E-03 | 9.070E-03 | 5.738E-04 |
| 151 | SPECY | 0.0304 | 2.0028 | 2.1404 | 0.0111    | 5.383E-04 | 3.271E-05 |
| 152 | SPECX | 1.4971 | 0.4407 | 0.1140 | 4.043E-03 | 9.123E-03 | 1.159E-03 |
| 152 | SPECY | 0.0303 | 2.0018 | 2.1578 | 0.0111    | 4.825E-04 | 4.649E-05 |
| 153 | SPECX | 1.4970 | 0.4754 | 0.4318 | 4.071E-03 | 8.937E-03 | 8.830E-04 |
| 153 | SPECY | 0.0304 | 2.0011 | 2.1732 | 0.0113    | 4.375E-04 | 1.719E-05 |
| 154 | SPECX | 1.8168 | 0.2207 | 0.8853 | 5.274E-03 | 8.906E-03 | 7.753E-04 |
| 154 | SPECY | 0.0351 | 2.3188 | 1.3978 | 0.0101    | 7.553E-04 | 1.400E-04 |
| 155 | SPECX | 1.8187 | 0.2463 | 0.5660 | 5.011E-03 | 8.901E-03 | 7.857E-04 |
| 155 | SPECY | 0.0351 | 2.3145 | 1.4218 | 0.0101    | 6.302E-04 | 1.087E-04 |
| 156 | SPECX | 1.8196 | 0.2663 | 0.2505 | 4.794E-03 | 8.803E-03 | 6.256E-04 |
| 156 | SPECY | 0.0351 | 2.3122 | 1.4420 | 0.0101    | 5.380E-04 | 3.660E-05 |
| 157 | SPECX | 1.8197 | 0.2866 | 0.0720 | 4.619E-03 | 8.865E-03 | 8.742E-04 |
| 157 | SPECY | 0.0352 | 2.3117 | 1.4584 | 0.0101    | 4.318E-04 | 1.795E-05 |
| 158 | SPECX | 1.8193 | 0.3090 | 0.3814 | 4.483E-03 | 8.721E-03 | 6.447E-04 |
| 158 | SPECY | 0.0351 | 2.3129 | 1.4709 | 0.0102    | 3.409E-04 | 6.273E-05 |
| 159 | SPECX | 1.8173 | 0.3369 | 0.6965 | 4.373E-03 | 8.866E-03 | 1.009E-03 |
| 159 | SPECY | 0.0351 | 2.3157 | 1.4794 | 0.0103    | 2.415E-04 | 9.619E-05 |
| 160 | SPECX | 2.1163 | 0.1080 | 0.5408 | 4.989E-03 | 8.211E-03 | 6.711E-04 |
| 160 | SPECY | 0.0430 | 2.5886 | 0.8004 | 8.455E-03 | 7.685E-04 | 1.768E-04 |
| 161 | SPECX | 2.1197 | 0.1275 | 0.2447 | 4.667E-03 | 8.281E-03 | 6.230E-04 |
| 161 | SPECY | 0.0430 | 2.5842 | 0.8251 | 8.456E-03 | 6.282E-04 | 6.901E-05 |
| 162 | SPECX | 2.1220 | 0.1429 | 0.0557 | 4.433E-03 | 8.341E-03 | 6.041E-04 |
| 162 | SPECY | 0.0431 | 2.5830 | 0.8441 | 8.486E-03 | 4.707E-04 | 2.041E-05 |
| 163 | SPECX | 2.1223 | 0.1551 | 0.3507 | 4.218E-03 | 8.284E-03 | 4.722E-04 |
| 163 | SPECY | 0.0431 | 2.5840 | 0.8577 | 8.529E-03 | 3.448E-04 | 6.189E-05 |
| 164 | SPECX | 2.1200 | 0.1710 | 0.6487 | 4.002E-03 | 8.394E-03 | 7.617E-04 |
| 164 | SPECY | 0.0431 | 2.5872 | 0.8660 | 8.586E-03 | 2.175E-04 | 1.158E-04 |
| 165 | SPECX | 2.1167 | 0.1906 | 0.9484 | 3.745E-03 | 8.279E-03 | 4.603E-04 |
| 165 | SPECY | 0.0431 | 2.5931 | 0.8685 | 8.668E-03 | 1.603E-04 | 2.096E-04 |
| 166 | SPECX | 2.3846 | 0.0548 | 0.2124 | 4.896E-03 | 7.263E-03 | 7.703E-04 |
| 166 | SPECY | 0.0532 | 2.7999 | 0.3280 | 6.157E-03 | 8.616E-04 | 1.082E-04 |
| 167 | SPECX | 2.3899 | 0.0579 | 0.0472 | 4.038E-03 | 7.312E-03 | 4.942E-04 |
| 167 | SPECY | 0.0531 | 2.7975 | 0.3522 | 6.223E-03 | 5.797E-04 | 4.147E-05 |
| 168 | SPECX | 2.3915 | 0.0613 | 0.3112 | 3.407E-03 | 7.548E-03 | 2.497E-04 |
| 168 | SPECY | 0.0530 | 2.7978 | 0.3697 | 6.227E-03 | 4.373E-04 | 3.769E-05 |

|     |       |        |        |           |           |           |           |
|-----|-------|--------|--------|-----------|-----------|-----------|-----------|
| 169 | SPECX | 2.3924 | 0.0641 | 0.5800    | 2.919E-03 | 7.541E-03 | 3.097E-04 |
| 169 | SPECY | 0.0529 | 2.8004 | 0.3817    | 6.236E-03 | 2.845E-04 | 8.583E-05 |
| 170 | SPECX | 2.3922 | 0.0685 | 0.8419    | 2.217E-03 | 7.232E-03 | 4.324E-04 |
| 170 | SPECY | 0.0529 | 2.8049 | 0.3875    | 6.273E-03 | 1.577E-04 | 1.580E-04 |
| 171 | SPECX | 2.3871 | 0.0830 | 1.1028    | 1.121E-03 | 7.619E-03 | 8.564E-04 |
| 171 | SPECY | 0.0528 | 2.8121 | 0.3861    | 6.296E-03 | 2.379E-04 | 2.461E-04 |
| 172 | SPECX | 2.5055 | 0.0734 | 0.0167    | 1.372E-04 | 4.198E-03 | 2.746E-05 |
| 172 | SPECY | 0.0909 | 2.7748 | 0.0215    | 4.218E-03 | 1.698E-04 | 8.925E-05 |
| 173 | SPECX | 2.5055 | 0.0672 | 5.066E-04 | 1.873E-04 | 3.264E-04 | 2.746E-05 |
| 173 | SPECY | 0.0909 | 2.8098 | 6.946E-04 | 7.576E-03 | 1.059E-05 | 8.925E-05 |
| 174 | SPECX | 2.5055 | 0.0623 | 0.0143    | 9.091E-05 | 4.077E-03 | 2.746E-05 |
| 174 | SPECY | 0.0909 | 2.8449 | 0.0254    | 3.941E-03 | 9.983E-05 | 8.925E-05 |
| 175 | SPECX | 2.5163 | 0.0734 | 7.263E-04 | 1.982E-05 | 7.248E-03 | 2.746E-05 |
| 175 | SPECY | 0.0640 | 2.7748 | 1.697E-03 | 1.001E-03 | 1.863E-04 | 8.925E-05 |
| 176 | SPECX | 2.5163 | 0.0623 | 0.0198    | 6.883E-05 | 3.707E-03 | 2.746E-05 |
| 176 | SPECY | 0.0640 | 2.8449 | 6.604E-03 | 1.864E-03 | 9.209E-05 | 8.925E-05 |
| 177 | SPECX | 2.5163 | 0.0586 | 2.859E-03 | 1.484E-04 | 2.136E-03 | 2.746E-05 |
| 177 | SPECY | 0.0640 | 2.8846 | 0.0209    | 3.547E-03 | 6.857E-05 | 8.925E-05 |
| 178 | SPECX | 2.5163 | 0.0573 | 6.720E-03 | 1.249E-04 | 2.049E-03 | 2.746E-05 |
| 178 | SPECY | 0.0640 | 2.9203 | 1.688E-03 | 6.341E-03 | 5.266E-05 | 8.925E-05 |
| 179 | SPECX | 2.5163 | 0.0579 | 0.0177    | 1.189E-04 | 2.477E-03 | 2.746E-05 |
| 179 | SPECY | 0.0640 | 2.9515 | 0.0262    | 3.939E-03 | 5.015E-05 | 8.925E-05 |
| 180 | SPECX | 2.5163 | 0.0643 | 9.492E-03 | 8.119E-05 | 4.504E-03 | 2.746E-05 |
| 180 | SPECY | 0.0640 | 3.0185 | 0.0251    | 3.764E-03 | 1.295E-04 | 8.925E-05 |
| 181 | SPECX | 2.5249 | 0.0734 | 0.0169    | 6.537E-05 | 4.269E-03 | 2.746E-05 |
| 181 | SPECY | 0.0506 | 2.7748 | 3.722E-03 | 2.514E-03 | 8.458E-05 | 8.925E-05 |
| 182 | SPECX | 2.5249 | 0.0672 | 7.283E-03 | 1.754E-04 | 3.970E-05 | 2.746E-05 |
| 182 | SPECY | 0.0506 | 2.8098 | 5.182E-04 | 7.223E-03 | 2.649E-05 | 8.925E-05 |
| 183 | SPECX | 2.5249 | 0.0623 | 1.104E-03 | 6.650E-05 | 2.600E-03 | 2.746E-05 |
| 183 | SPECY | 0.0506 | 2.8449 | 0.0240    | 2.668E-03 | 7.239E-05 | 8.925E-05 |
| 184 | SPECX | 2.5249 | 0.0586 | 0.0118    | 2.639E-04 | 2.027E-03 | 2.746E-05 |
| 184 | SPECY | 0.0506 | 2.8846 | 0.0211    | 5.716E-04 | 4.050E-05 | 8.925E-05 |
| 185 | SPECX | 2.5283 | 0.0579 | 0.0111    | 8.950E-05 | 4.447E-03 | 2.746E-05 |
| 185 | SPECY | 0.0489 | 2.9515 | 6.944E-04 | 3.462E-03 | 8.778E-05 | 8.925E-05 |
| 186 | SPECX | 2.5283 | 0.0643 | 0.0117    | 7.279E-05 | 4.554E-03 | 2.746E-05 |
| 186 | SPECY | 0.0489 | 3.0185 | 7.020E-04 | 3.339E-03 | 8.906E-05 | 8.925E-05 |
| 187 | SPECX | 2.5347 | 0.0734 | 9.635E-04 | 2.691E-05 | 7.216E-03 | 2.746E-05 |
| 187 | SPECY | 0.0521 | 2.7748 | 6.168E-04 | 1.252E-03 | 1.475E-04 | 8.925E-05 |
| 188 | SPECX | 2.5388 | 0.0586 | 0.0000    | 0.0000    | 0.0000    | 2.746E-05 |
| 188 | SPECY | 0.0581 | 2.8838 | 0.0000    | 0.0000    | 0.0000    | 8.925E-05 |
| 189 | SPECX | 2.5403 | 0.0586 | 0.0205    | 1.525E-03 | 4.427E-03 | 2.746E-05 |
| 189 | SPECY | 0.0610 | 2.8846 | 0.0246    | 2.452E-03 | 1.057E-04 | 8.925E-05 |
| 190 | SPECX | 2.5403 | 0.0585 | 0.0678    | 1.806E-03 | 4.753E-03 | 2.746E-05 |
| 190 | SPECY | 0.0610 | 2.8864 | 0.0271    | 2.920E-03 | 1.750E-04 | 8.925E-05 |
| 191 | SPECX | 2.5403 | 0.0583 | 0.2600    | 1.975E-03 | 5.694E-03 | 2.746E-05 |
| 191 | SPECY | 0.0610 | 2.8896 | 0.0374    | 3.533E-03 | 3.151E-04 | 8.925E-05 |
| 192 | SPECX | 2.5403 | 0.0581 | 0.4831    | 1.754E-03 | 6.167E-03 | 2.746E-05 |

|     |       |        |        |           |           |           |           |
|-----|-------|--------|--------|-----------|-----------|-----------|-----------|
| 192 | SPECY | 0.0610 | 2.8928 | 0.0504    | 3.795E-03 | 3.603E-04 | 8.925E-05 |
| 193 | SPECX | 2.5403 | 0.0580 | 0.7123    | 1.295E-03 | 5.929E-03 | 2.746E-05 |
| 193 | SPECY | 0.0610 | 2.8960 | 0.0638    | 3.776E-03 | 3.464E-04 | 8.925E-05 |
| 194 | SPECX | 2.5403 | 0.0578 | 0.9189    | 6.326E-04 | 4.926E-03 | 2.746E-05 |
| 194 | SPECY | 0.0610 | 2.8992 | 0.0758    | 3.478E-03 | 2.798E-04 | 8.925E-05 |
| 195 | SPECX | 2.5403 | 0.0577 | 1.0742    | 1.726E-04 | 3.277E-03 | 2.746E-05 |
| 195 | SPECY | 0.0610 | 2.9024 | 0.0844    | 2.825E-03 | 1.679E-04 | 8.925E-05 |
| 196 | SPECX | 2.5403 | 0.0579 | 5.426E-03 | 8.771E-05 | 2.305E-03 | 2.746E-05 |
| 196 | SPECY | 0.0610 | 2.9515 | 6.171E-03 | 3.678E-03 | 5.939E-05 | 8.925E-05 |
| 197 | SPECX | 2.5403 | 0.0643 | 0.0106    | 7.591E-05 | 4.897E-03 | 2.746E-05 |
| 197 | SPECY | 0.0610 | 3.0185 | 3.058E-03 | 3.473E-03 | 1.234E-04 | 8.925E-05 |
| 198 | SPECX | 2.5445 | 0.0734 | 0.0227    | 7.573E-05 | 3.631E-03 | 2.746E-05 |
| 198 | SPECY | 0.0700 | 2.7748 | 4.503E-04 | 2.684E-03 | 8.623E-05 | 8.925E-05 |
| 199 | SPECX | 2.5445 | 0.0672 | 7.238E-03 | 2.457E-04 | 6.966E-04 | 2.746E-05 |
| 199 | SPECY | 0.0700 | 2.8098 | 2.002E-03 | 6.739E-03 | 1.122E-04 | 8.925E-05 |
| 200 | SPECX | 2.5445 | 0.0623 | 4.098E-03 | 5.818E-04 | 1.905E-03 | 2.746E-05 |
| 200 | SPECY | 0.0700 | 2.8449 | 0.0138    | 2.787E-03 | 3.197E-04 | 8.925E-05 |
| 201 | SPECX | 2.5539 | 0.0734 | 8.030E-04 | 4.268E-05 | 7.240E-03 | 2.746E-05 |
| 201 | SPECY | 0.0944 | 2.7748 | 1.756E-03 | 1.017E-03 | 2.698E-04 | 8.925E-05 |
| 202 | SPECX | 2.5539 | 0.0623 | 0.0207    | 7.207E-05 | 3.369E-03 | 2.746E-05 |
| 202 | SPECY | 0.0944 | 2.8449 | 3.571E-03 | 1.708E-03 | 1.395E-04 | 8.925E-05 |
| 203 | SPECX | 2.5539 | 0.0586 | 0.0299    | 3.447E-04 | 1.649E-03 | 2.746E-05 |
| 203 | SPECY | 0.0944 | 2.8846 | 0.0262    | 9.333E-04 | 6.454E-05 | 8.925E-05 |
| 204 | SPECX | 2.5539 | 0.0577 | 0.1714    | 1.161E-03 | 2.946E-04 | 2.746E-05 |
| 204 | SPECY | 0.0944 | 2.9024 | 0.0268    | 4.690E-04 | 3.388E-05 | 8.925E-05 |
| 205 | SPECX | 2.5539 | 0.0579 | 1.844E-03 | 8.126E-05 | 2.678E-03 | 2.746E-05 |
| 205 | SPECY | 0.0944 | 2.9515 | 0.0114    | 2.182E-03 | 8.519E-05 | 8.925E-05 |
| 206 | SPECX | 2.5539 | 0.0643 | 0.0117    | 8.618E-05 | 4.189E-03 | 2.746E-05 |
| 206 | SPECY | 0.0944 | 3.0185 | 0.0198    | 3.928E-03 | 1.417E-04 | 8.925E-05 |
| 207 | SPECX | 2.5643 | 0.0734 | 0.0195    | 8.643E-05 | 3.873E-03 | 2.746E-05 |
| 207 | SPECY | 0.1247 | 2.7748 | 0.0229    | 4.155E-03 | 2.092E-04 | 8.925E-05 |
| 208 | SPECX | 2.5643 | 0.0672 | 2.026E-03 | 1.992E-04 | 9.648E-04 | 2.746E-05 |
| 208 | SPECY | 0.1247 | 2.8098 | 5.292E-04 | 8.046E-03 | 4.613E-05 | 8.925E-05 |
| 209 | SPECX | 2.5643 | 0.0623 | 1.021E-03 | 1.845E-04 | 3.145E-03 | 2.746E-05 |
| 209 | SPECY | 0.1247 | 2.8449 | 0.0234    | 4.696E-03 | 1.252E-04 | 8.925E-05 |
| 210 | SPECX | 2.5643 | 0.0586 | 1.878E-03 | 1.308E-04 | 2.939E-03 | 2.746E-05 |
| 210 | SPECY | 0.1247 | 2.8846 | 0.0231    | 4.664E-03 | 9.521E-05 | 8.925E-05 |
| 211 | SPECX | 2.5643 | 0.0577 | 0.0750    | 1.570E-04 | 1.011E-03 | 2.746E-05 |
| 211 | SPECY | 0.1247 | 2.9024 | 0.0306    | 1.993E-03 | 4.058E-05 | 8.925E-05 |
| 212 | SPECX | 2.5643 | 0.0573 | 2.281E-03 | 1.465E-04 | 1.012E-03 | 2.746E-05 |
| 212 | SPECY | 0.1247 | 2.9180 | 3.146E-03 | 6.959E-03 | 1.568E-04 | 8.925E-05 |
| 213 | SPECX | 2.5643 | 0.0579 | 0.0191    | 7.850E-05 | 3.516E-03 | 2.746E-05 |
| 213 | SPECY | 0.1247 | 2.9515 | 0.0277    | 3.970E-03 | 9.237E-05 | 8.925E-05 |
| 214 | SPECX | 3.7075 | 0.1055 | 0.0195    | 4.099E-05 | 1.809E-03 | 2.866E-05 |
| 214 | SPECY | 0.1235 | 3.9743 | 0.0244    | 1.780E-03 | 3.648E-05 | 1.003E-04 |
| 215 | SPECX | 3.7050 | 0.1192 | 0.0163    | 2.255E-05 | 1.821E-03 | 1.969E-04 |
| 215 | SPECY | 0.1234 | 3.8778 | 0.0307    | 1.062E-03 | 5.339E-05 | 3.970E-05 |

|     |       |        |        |           |           |           |           |
|-----|-------|--------|--------|-----------|-----------|-----------|-----------|
| 216 | SPECX | 3.6962 | 0.1055 | 9.123E-05 | 7.184E-05 | 1.801E-03 | 2.866E-05 |
| 216 | SPECY | 0.0939 | 3.9743 | 2.290E-03 | 1.203E-03 | 6.357E-05 | 1.003E-04 |
| 217 | SPECX | 3.6359 | 0.1199 | 0.0242    | 3.496E-05 | 1.454E-03 | 1.240E-04 |
| 217 | SPECY | 0.1023 | 3.8782 | 8.067E-03 | 7.241E-04 | 3.462E-05 | 1.438E-04 |
| 218 | SPECX | 3.6359 | 0.0858 | 3.232E-03 | 6.811E-05 | 7.342E-04 | 1.240E-04 |
| 218 | SPECY | 0.1023 | 3.9422 | 0.0205    | 3.153E-03 | 4.435E-05 | 1.438E-04 |
| 219 | SPECX | 3.6359 | 0.0792 | 8.037E-03 | 8.530E-05 | 7.496E-04 | 1.240E-04 |
| 219 | SPECY | 0.1023 | 3.9997 | 2.403E-03 | 2.177E-03 | 1.507E-05 | 1.438E-04 |
| 220 | SPECX | 3.6359 | 0.0967 | 0.0217    | 1.317E-04 | 9.182E-04 | 1.240E-04 |
| 220 | SPECY | 0.1023 | 4.0501 | 0.0312    | 1.230E-03 | 3.160E-05 | 1.438E-04 |
| 221 | SPECX | 3.6386 | 0.0857 | 0.0118    | 2.197E-05 | 1.644E-03 | 5.371E-05 |
| 221 | SPECY | 0.1020 | 3.9431 | 0.0293    | 9.237E-04 | 7.495E-05 | 1.872E-05 |
| 222 | SPECX | 3.6872 | 0.1055 | 0.0198    | 3.535E-05 | 1.618E-03 | 2.866E-05 |
| 222 | SPECY | 0.0771 | 3.9743 | 4.216E-03 | 1.257E-03 | 5.853E-05 | 1.003E-04 |
| 223 | SPECX | 3.6746 | 0.1199 | 1.928E-03 | 1.435E-04 | 2.130E-03 | 1.240E-04 |
| 223 | SPECY | 0.0768 | 3.8782 | 0.0290    | 7.790E-04 | 5.106E-05 | 1.438E-04 |
| 224 | SPECX | 3.6898 | 0.0967 | 0.0134    | 7.551E-05 | 2.070E-03 | 1.240E-04 |
| 224 | SPECY | 0.0722 | 4.0501 | 7.920E-04 | 1.033E-03 | 4.246E-05 | 1.438E-04 |
| 225 | SPECX | 3.6937 | 0.0857 | 0.0144    | 1.928E-05 | 2.030E-03 | 8.986E-05 |
| 225 | SPECY | 0.0722 | 3.9421 | 7.196E-04 | 8.242E-04 | 4.577E-05 | 8.678E-05 |
| 226 | SPECX | 3.7208 | 0.0798 | 0.0000    | 2.156E-05 | 1.073E-03 | 1.240E-04 |
| 226 | SPECY | 0.0757 | 3.9641 | 9.552E-05 | 9.250E-04 | 2.546E-05 | 1.438E-04 |
| 227 | SPECX | 3.7444 | 0.0967 | 1.946E-03 | 6.412E-05 | 2.903E-03 | 1.240E-04 |
| 227 | SPECY | 0.0886 | 4.0501 | 7.406E-03 | 1.087E-03 | 8.215E-05 | 1.438E-04 |
| 228 | SPECX | 3.7488 | 0.0857 | 0.0138    | 2.127E-05 | 1.932E-03 | 8.055E-05 |
| 228 | SPECY | 0.0887 | 3.9431 | 3.655E-03 | 8.368E-04 | 4.021E-05 | 8.188E-05 |
| 229 | SPECX | 3.7706 | 0.1053 | 0.0261    | 2.687E-05 | 1.869E-03 | 1.820E-04 |
| 229 | SPECY | 0.1033 | 3.9748 | 6.419E-04 | 1.224E-03 | 4.527E-05 | 1.047E-04 |
| 230 | SPECX | 3.7633 | 0.1199 | 1.290E-03 | 8.355E-05 | 2.470E-03 | 1.240E-04 |
| 230 | SPECY | 0.1031 | 3.8782 | 0.0179    | 7.767E-04 | 1.659E-04 | 1.438E-04 |
| 231 | SPECX | 3.7083 | 0.1053 | 6.574E-05 | 4.547E-05 | 2.102E-03 | 1.820E-04 |
| 231 | SPECY | 0.1305 | 3.9748 | 1.455E-03 | 1.220E-03 | 1.004E-04 | 1.047E-04 |
| 232 | SPECX | 3.8057 | 0.1199 | 0.0260    | 6.341E-05 | 1.914E-03 | 1.240E-04 |
| 232 | SPECY | 0.1428 | 3.8782 | 4.075E-03 | 6.201E-04 | 1.164E-04 | 1.438E-04 |
| 233 | SPECX | 3.8057 | 0.0858 | 0.0340    | 2.231E-05 | 5.880E-04 | 1.240E-04 |
| 233 | SPECY | 0.1428 | 3.9422 | 0.0347    | 9.274E-04 | 4.947E-05 | 1.438E-04 |
| 234 | SPECX | 3.8057 | 0.0967 | 2.442E-03 | 1.485E-05 | 1.504E-03 | 1.240E-04 |
| 234 | SPECY | 0.1428 | 4.0501 | 0.0134    | 7.450E-04 | 3.483E-05 | 1.438E-04 |
| 235 | SPECX | 3.8045 | 0.0858 | 0.0146    | 2.228E-05 | 1.958E-03 | 3.777E-05 |
| 235 | SPECY | 0.1422 | 3.9453 | 0.0232    | 9.473E-04 | 5.664E-05 | 9.093E-06 |
| 236 | SPECX | 3.6391 | 0.1053 | 0.0224    | 6.681E-05 | 1.429E-03 | 1.820E-04 |
| 236 | SPECY | 0.1647 | 3.9748 | 0.0258    | 1.837E-03 | 3.470E-05 | 1.047E-04 |
| 237 | SPECX | 3.6352 | 0.1197 | 3.377E-03 | 1.660E-04 | 2.368E-03 | 3.895E-04 |
| 237 | SPECY | 0.1645 | 3.8788 | 0.0280    | 1.312E-03 | 9.047E-05 | 2.558E-05 |
| 238 | SPECX | 3.5387 | 0.0855 | 3.618E-03 | 5.097E-05 | 2.027E-03 | 4.876E-04 |
| 238 | SPECY | 0.1610 | 3.9419 | 0.0283    | 1.348E-03 | 7.864E-05 | 7.444E-05 |
| 239 | SPECX | 3.5410 | 0.0960 | 0.0214    | 3.902E-05 | 1.281E-03 | 5.331E-04 |
| 239 | SPECY | 0.1610 | 4.0487 | 0.0334    | 1.187E-03 | 5.298E-05 | 7.333E-05 |

## BLOQUE B

### JOINT DISPLACEMENTS

| JOINT | LOAD  | U1     | U2     | U3     | R1        | R2        | R3        |
|-------|-------|--------|--------|--------|-----------|-----------|-----------|
| 1     | SPECX | 0.0000 | 0.0000 | 0.0000 | 6.101E-06 | 3.147E-03 | 0.0000    |
| 1     | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.290E-03 | 1.428E-04 | 4.653E-06 |
| 2     | SPECX | 0.0000 | 0.0000 | 0.0000 | 8.439E-06 | 1.169E-03 | 0.0000    |
| 2     | SPECY | 0.0000 | 0.0000 | 0.0000 | 5.628E-03 | 6.232E-05 | 6.402E-06 |
| 3     | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.895E-06 | 1.798E-03 | 0.0000    |
| 3     | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.347E-03 | 9.082E-05 | 2.880E-06 |
| 4     | SPECX | 0.0000 | 0.0000 | 0.0000 | 3.157E-06 | 1.831E-03 | 0.0000    |
| 4     | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.049E-03 | 8.265E-05 | 2.737E-06 |
| 5     | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.077E-05 | 1.076E-03 | 0.0000    |
| 5     | SPECY | 0.0000 | 0.0000 | 0.0000 | 5.853E-03 | 5.584E-05 | 6.033E-06 |
| 6     | SPECX | 0.0000 | 0.0000 | 0.0000 | 4.558E-06 | 3.148E-03 | 0.0000    |
| 6     | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.242E-03 | 1.572E-04 | 4.748E-06 |
| 7     | SPECX | 0.0000 | 0.0000 | 0.0000 | 5.194E-06 | 6.555E-03 | 0.0000    |
| 7     | SPECY | 0.0000 | 0.0000 | 0.0000 | 8.477E-04 | 2.204E-04 | 5.261E-06 |
| 8     | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.293E-06 | 6.167E-03 | 0.0000    |
| 8     | SPECY | 0.0000 | 0.0000 | 0.0000 | 9.047E-04 | 2.142E-04 | 5.868E-06 |
| 9     | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.935E-06 | 5.940E-03 | 0.0000    |
| 9     | SPECY | 0.0000 | 0.0000 | 0.0000 | 6.861E-04 | 1.993E-04 | 5.272E-06 |
| 10    | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.103E-05 | 6.499E-03 | 0.0000    |
| 10    | SPECY | 0.0000 | 0.0000 | 0.0000 | 4.525E-04 | 2.263E-04 | 3.349E-06 |
| 11    | SPECX | 0.0000 | 0.0000 | 0.0000 | 2.338E-06 | 3.271E-03 | 0.0000    |
| 11    | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.261E-03 | 6.031E-05 | 1.883E-06 |
| 12    | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.072E-05 | 1.141E-03 | 0.0000    |
| 12    | SPECY | 0.0000 | 0.0000 | 0.0000 | 5.358E-03 | 2.096E-05 | 7.490E-06 |
| 13    | SPECX | 0.0000 | 0.0000 | 0.0000 | 2.535E-06 | 1.930E-03 | 0.0000    |
| 13    | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.292E-03 | 3.540E-05 | 1.226E-06 |
| 14    | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.549E-06 | 2.036E-03 | 0.0000    |
| 14    | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.098E-03 | 3.736E-05 | 1.347E-06 |
| 15    | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.050E-05 | 8.681E-04 | 0.0000    |
| 15    | SPECY | 0.0000 | 0.0000 | 0.0000 | 5.733E-03 | 1.158E-05 | 5.822E-06 |
| 16    | SPECX | 0.0000 | 0.0000 | 0.0000 | 5.322E-05 | 4.027E-03 | 0.0000    |
| 16    | SPECY | 0.0000 | 0.0000 | 0.0000 | 2.204E-03 | 9.406E-05 | 6.861E-06 |
| 17    | SPECX | 0.0000 | 0.0000 | 0.0000 | 2.393E-06 | 6.610E-03 | 0.0000    |
| 17    | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.164E-03 | 1.210E-05 | 6.561E-06 |
| 18    | SPECX | 0.0000 | 0.0000 | 0.0000 | 2.290E-06 | 6.272E-03 | 0.0000    |
| 18    | SPECY | 0.0000 | 0.0000 | 0.0000 | 1.231E-03 | 1.123E-05 | 6.899E-06 |
| 19    | SPECX | 0.0000 | 0.0000 | 0.0000 | 1.666E-06 | 6.071E-03 | 0.0000    |
| 19    | SPECY | 0.0000 | 0.0000 | 0.0000 | 9.845E-04 | 1.042E-05 | 6.134E-06 |

|    |       |        |           |           |           |           |           |
|----|-------|--------|-----------|-----------|-----------|-----------|-----------|
| 20 | SPECX | 0.0000 | 0.0000    | 0.0000    | 3.881E-04 | 3.368E-03 | 0.0000    |
| 20 | SPECY | 0.0000 | 0.0000    | 0.0000    | 1.033E-03 | 5.333E-04 | 3.136E-06 |
| 21 | SPECX | 0.0000 | 0.0000    | 0.0000    | 3.717E-06 | 3.247E-03 | 0.0000    |
| 21 | SPECY | 0.0000 | 0.0000    | 0.0000    | 1.295E-03 | 5.275E-05 | 1.932E-06 |
| 22 | SPECX | 0.0000 | 0.0000    | 0.0000    | 1.074E-05 | 1.152E-03 | 0.0000    |
| 22 | SPECY | 0.0000 | 0.0000    | 0.0000    | 5.366E-03 | 1.937E-05 | 7.478E-06 |
| 23 | SPECX | 0.0000 | 0.0000    | 0.0000    | 2.197E-06 | 1.911E-03 | 0.0000    |
| 23 | SPECY | 0.0000 | 0.0000    | 0.0000    | 1.325E-03 | 3.090E-05 | 1.226E-06 |
| 24 | SPECX | 0.0000 | 0.0000    | 0.0000    | 1.685E-06 | 2.074E-03 | 0.0000    |
| 24 | SPECY | 0.0000 | 0.0000    | 0.0000    | 1.087E-03 | 3.676E-05 | 1.564E-06 |
| 25 | SPECX | 0.0000 | 0.0000    | 0.0000    | 7.030E-06 | 5.382E-04 | 0.0000    |
| 25 | SPECY | 0.0000 | 0.0000    | 0.0000    | 4.370E-03 | 5.237E-06 | 4.457E-06 |
| 26 | SPECX | 0.0000 | 0.0000    | 0.0000    | 3.911E-04 | 3.378E-03 | 0.0000    |
| 26 | SPECY | 0.0000 | 0.0000    | 0.0000    | 6.715E-04 | 5.779E-04 | 2.157E-06 |
| 27 | SPECX | 0.0000 | 0.0000    | 0.0000    | 2.698E-06 | 6.617E-03 | 0.0000    |
| 27 | SPECY | 0.0000 | 0.0000    | 0.0000    | 9.241E-04 | 2.173E-04 | 5.746E-06 |
| 28 | SPECX | 0.0000 | 0.0000    | 0.0000    | 2.329E-06 | 6.253E-03 | 0.0000    |
| 28 | SPECY | 0.0000 | 0.0000    | 0.0000    | 9.855E-04 | 2.118E-04 | 6.405E-06 |
| 29 | SPECX | 0.0000 | 0.0000    | 0.0000    | 1.100E-06 | 6.037E-03 | 0.0000    |
| 29 | SPECY | 0.0000 | 0.0000    | 0.0000    | 7.531E-04 | 1.999E-04 | 5.591E-06 |
| 30 | SPECX | 0.0000 | 0.0000    | 0.0000    | 1.335E-05 | 3.123E-03 | 0.0000    |
| 30 | SPECY | 0.0000 | 0.0000    | 0.0000    | 2.391E-03 | 1.423E-04 | 4.837E-06 |
| 31 | SPECX | 0.0000 | 0.0000    | 0.0000    | 1.497E-05 | 1.183E-03 | 0.0000    |
| 31 | SPECY | 0.0000 | 0.0000    | 0.0000    | 5.658E-03 | 6.416E-05 | 6.355E-06 |
| 32 | SPECX | 0.0000 | 0.0000    | 0.0000    | 4.914E-06 | 1.777E-03 | 0.0000    |
| 32 | SPECY | 0.0000 | 0.0000    | 0.0000    | 2.451E-03 | 8.919E-05 | 2.890E-06 |
| 33 | SPECX | 0.0000 | 0.0000    | 0.0000    | 3.648E-06 | 1.858E-03 | 0.0000    |
| 33 | SPECY | 0.0000 | 0.0000    | 0.0000    | 2.160E-03 | 8.648E-05 | 3.224E-06 |
| 34 | SPECX | 0.0000 | 0.0000    | 0.0000    | 2.045E-05 | 8.995E-04 | 0.0000    |
| 34 | SPECY | 0.0000 | 0.0000    | 0.0000    | 6.179E-03 | 4.141E-05 | 3.748E-06 |
| 35 | SPECX | 0.0000 | 0.0000    | 0.0000    | 9.271E-05 | 3.978E-03 | 0.0000    |
| 35 | SPECY | 0.0000 | 0.0000    | 0.0000    | 4.180E-03 | 2.235E-04 | 1.331E-05 |
| 36 | SPECX | 2.7179 | 4.932E-03 | 0.0200    | 5.824E-05 | 3.994E-03 | 1.352E-06 |
| 36 | SPECY | 0.1369 | 2.2755    | 0.0244    | 3.422E-03 | 2.381E-04 | 1.322E-04 |
| 37 | SPECX | 2.7179 | 4.597E-03 | 4.251E-03 | 2.078E-05 | 1.172E-03 | 1.352E-06 |
| 37 | SPECY | 0.1369 | 2.3274    | 3.605E-04 | 6.755E-03 | 5.755E-05 | 1.322E-04 |
| 38 | SPECX | 2.7179 | 4.302E-03 | 3.353E-03 | 1.017E-05 | 2.644E-03 | 1.352E-06 |
| 38 | SPECY | 0.1369 | 2.3793    | 0.0250    | 3.644E-03 | 9.058E-05 | 1.322E-04 |
| 39 | SPECX | 2.7179 | 4.026E-03 | 2.165E-03 | 7.272E-06 | 2.619E-03 | 1.352E-06 |
| 39 | SPECY | 0.1369 | 2.4381    | 0.0254    | 3.750E-03 | 1.657E-04 | 1.322E-04 |
| 40 | SPECX | 2.7179 | 3.852E-03 | 4.494E-03 | 1.068E-05 | 1.099E-03 | 1.352E-06 |
| 40 | SPECY | 0.1369 | 2.4877    | 8.791E-04 | 7.217E-03 | 6.271E-05 | 1.322E-04 |
| 41 | SPECX | 2.7179 | 3.738E-03 | 0.0213    | 5.194E-05 | 3.936E-03 | 1.352E-06 |
| 41 | SPECY | 0.1369 | 2.5373    | 0.0226    | 3.578E-03 | 1.425E-04 | 1.322E-04 |
| 42 | SPECX | 2.7183 | 4.932E-03 | 1.018E-03 | 1.766E-05 | 7.811E-03 | 1.352E-06 |
| 42 | SPECY | 0.0934 | 2.2755    | 4.773E-03 | 6.673E-04 | 2.730E-04 | 1.322E-04 |
| 43 | SPECX | 2.7183 | 4.302E-03 | 1.078E-05 | 1.098E-05 | 7.518E-03 | 1.352E-06 |
| 43 | SPECY | 0.0934 | 2.3793    | 5.096E-03 | 6.715E-04 | 2.506E-04 | 1.322E-04 |

|    |       |           |           |           |           |           |           |
|----|-------|-----------|-----------|-----------|-----------|-----------|-----------|
| 44 | SPECX | 2.7183    | 4.026E-03 | 3.696E-05 | 1.092E-05 | 7.605E-03 | 1.352E-06 |
| 44 | SPECY | 0.0934    | 2.4381    | 5.335E-03 | 7.242E-04 | 2.680E-04 | 1.322E-04 |
| 45 | SPECX | 2.7183    | 3.738E-03 | 1.052E-03 | 1.304E-05 | 7.905E-03 | 1.352E-06 |
| 45 | SPECY | 0.0934    | 2.5373    | 4.033E-04 | 6.482E-04 | 2.653E-04 | 1.322E-04 |
| 46 | SPECX | 2.7188    | 4.932E-03 | 0.0241    | 3.321E-06 | 4.875E-03 | 1.352E-06 |
| 46 | SPECY | 0.0500    | 2.2755    | 1.807E-03 | 2.276E-03 | 8.646E-05 | 1.322E-04 |
| 47 | SPECX | 2.7188    | 4.597E-03 | 5.743E-03 | 1.254E-05 | 9.176E-04 | 1.352E-06 |
| 47 | SPECY | 0.0500    | 2.3274    | 1.688E-04 | 6.570E-03 | 1.737E-05 | 1.322E-04 |
| 48 | SPECX | 2.7188    | 4.302E-03 | 2.362E-03 | 3.610E-06 | 3.101E-03 | 1.352E-06 |
| 48 | SPECY | 0.0500    | 2.3793    | 2.441E-03 | 2.430E-03 | 5.916E-05 | 1.322E-04 |
| 49 | SPECX | 2.7188    | 4.026E-03 | 3.202E-03 | 7.025E-06 | 3.002E-03 | 1.352E-06 |
| 49 | SPECY | 0.0500    | 2.4381    | 2.263E-03 | 2.482E-03 | 6.174E-05 | 1.322E-04 |
| 50 | SPECX | 2.7188    | 3.852E-03 | 8.792E-03 | 1.268E-05 | 7.447E-04 | 1.352E-06 |
| 50 | SPECY | 0.0500    | 2.4877    | 6.531E-05 | 7.092E-03 | 1.527E-05 | 1.322E-04 |
| 51 | SPECX | 2.7188    | 3.738E-03 | 0.0212    | 1.069E-05 | 5.354E-03 | 1.352E-06 |
| 51 | SPECY | 0.0500    | 2.5373    | 9.572E-03 | 3.502E-03 | 1.404E-04 | 1.322E-04 |
| 52 | SPECX | 2.7193    | 4.932E-03 | 1.120E-03 | 2.571E-06 | 7.997E-03 | 1.352E-06 |
| 52 | SPECY | 4.837E-03 | 2.2755    | 1.621E-04 | 9.590E-04 | 1.368E-05 | 1.322E-04 |
| 53 | SPECX | 2.7193    | 4.302E-03 | 8.102E-05 | 1.383E-06 | 7.649E-03 | 1.352E-06 |
| 53 | SPECY | 4.837E-03 | 2.3793    | 1.686E-04 | 9.786E-04 | 1.363E-05 | 1.322E-04 |
| 54 | SPECX | 2.7193    | 4.026E-03 | 9.149E-05 | 3.492E-06 | 7.750E-03 | 1.352E-06 |
| 54 | SPECY | 4.837E-03 | 2.4381    | 2.142E-05 | 1.059E-03 | 1.395E-05 | 1.322E-04 |
| 55 | SPECX | 2.7193    | 4.128E-03 | 0.0000    | 0.0000    | 0.0000    | 1.352E-06 |
| 55 | SPECY | 4.136E-03 | 2.4146    | 0.0000    | 0.0000    | 0.0000    | 1.322E-04 |
| 56 | SPECX | 2.7196    | 3.738E-03 | 0.0190    | 4.948E-04 | 4.989E-03 | 1.352E-06 |
| 56 | SPECY | 0.0268    | 2.5373    | 0.0272    | 1.996E-03 | 6.056E-04 | 1.322E-04 |
| 57 | SPECX | 2.7197    | 4.932E-03 | 0.0245    | 3.287E-06 | 4.932E-03 | 1.352E-06 |
| 57 | SPECY | 0.0449    | 2.2755    | 1.875E-04 | 2.326E-03 | 8.327E-05 | 1.322E-04 |
| 58 | SPECX | 2.7197    | 4.597E-03 | 5.919E-03 | 1.285E-05 | 9.054E-04 | 1.352E-06 |
| 58 | SPECY | 0.0449    | 2.3274    | 1.082E-04 | 6.580E-03 | 1.429E-05 | 1.322E-04 |
| 59 | SPECX | 2.7197    | 4.302E-03 | 1.892E-03 | 6.367E-06 | 3.103E-03 | 1.352E-06 |
| 59 | SPECY | 0.0449    | 2.3793    | 2.991E-04 | 2.483E-03 | 5.253E-05 | 1.322E-04 |
| 60 | SPECX | 2.7197    | 4.026E-03 | 1.288E-03 | 4.716E-06 | 3.247E-03 | 1.352E-06 |
| 60 | SPECY | 0.0449    | 2.4381    | 1.752E-04 | 2.499E-03 | 5.578E-05 | 1.322E-04 |
| 61 | SPECX | 2.7197    | 3.852E-03 | 0.0172    | 2.071E-05 | 2.406E-04 | 1.352E-06 |
| 61 | SPECY | 0.0449    | 2.4877    | 3.674E-04 | 5.471E-03 | 0.0000    | 1.322E-04 |
| 62 | SPECX | 2.7199    | 3.738E-03 | 0.0189    | 4.916E-04 | 4.915E-03 | 1.352E-06 |
| 62 | SPECY | 0.0630    | 2.5373    | 0.0240    | 1.875E-03 | 7.663E-04 | 1.322E-04 |
| 63 | SPECX | 2.7202    | 4.932E-03 | 8.765E-04 | 2.021E-05 | 7.877E-03 | 1.352E-06 |
| 63 | SPECY | 0.0915    | 2.2755    | 4.444E-03 | 7.492E-04 | 2.706E-04 | 1.322E-04 |
| 64 | SPECX | 2.7202    | 4.302E-03 | 1.763E-05 | 8.370E-06 | 7.590E-03 | 1.352E-06 |
| 64 | SPECY | 0.0915    | 2.3793    | 4.746E-03 | 7.566E-04 | 2.494E-04 | 1.322E-04 |
| 65 | SPECX | 2.7202    | 4.026E-03 | 7.744E-06 | 5.962E-06 | 7.711E-03 | 1.352E-06 |
| 65 | SPECY | 0.0915    | 2.4381    | 5.119E-03 | 8.234E-04 | 2.640E-04 | 1.322E-04 |
| 66 | SPECX | 2.7207    | 4.932E-03 | 0.0203    | 4.538E-05 | 4.052E-03 | 1.352E-06 |
| 66 | SPECY | 0.1383    | 2.2755    | 0.0223    | 3.509E-03 | 2.449E-04 | 1.322E-04 |
| 67 | SPECX | 2.7207    | 4.597E-03 | 4.317E-03 | 9.541E-06 | 1.154E-03 | 1.352E-06 |



|    |       |        |           |           |           |           |           |
|----|-------|--------|-----------|-----------|-----------|-----------|-----------|
| 67 | SPECY | 0.1383 | 2.3274    | 2.984E-04 | 6.765E-03 | 5.518E-05 | 1.322E-04 |
| 68 | SPECX | 2.7207 | 4.302E-03 | 3.546E-03 | 5.265E-06 | 2.680E-03 | 1.352E-06 |
| 68 | SPECY | 0.1383 | 2.3793    | 0.0228    | 3.737E-03 | 1.019E-04 | 1.322E-04 |
| 69 | SPECX | 2.7207 | 4.026E-03 | 2.552E-03 | 1.103E-05 | 2.680E-03 | 1.352E-06 |
| 69 | SPECY | 0.1383 | 2.4381    | 0.0230    | 3.844E-03 | 1.682E-04 | 1.322E-04 |
| 70 | SPECX | 2.7207 | 3.852E-03 | 7.313E-03 | 1.199E-05 | 9.392E-04 | 1.352E-06 |
| 70 | SPECY | 0.1383 | 2.4877    | 9.132E-04 | 7.263E-03 | 6.241E-05 | 1.322E-04 |
| 71 | SPECX | 2.7207 | 3.738E-03 | 0.0184    | 5.407E-05 | 4.664E-03 | 1.352E-06 |
| 71 | SPECY | 0.1383 | 2.5373    | 0.0103    | 4.856E-03 | 2.286E-04 | 1.322E-04 |
| 72 | SPECX | 3.8079 | 7.443E-03 | 0.0221    | 1.739E-05 | 1.783E-03 | 4.737E-04 |
| 72 | SPECY | 0.1899 | 3.4199    | 0.0278    | 1.831E-03 | 6.748E-05 | 2.076E-04 |
| 73 | SPECX | 3.8026 | 6.870E-03 | 5.713E-03 | 1.228E-05 | 9.373E-04 | 2.166E-04 |
| 73 | SPECY | 0.1893 | 3.6350    | 0.0288    | 2.019E-03 | 5.178E-05 | 1.825E-04 |
| 74 | SPECX | 3.8021 | 7.815E-03 | 4.342E-03 | 4.118E-06 | 9.024E-04 | 1.298E-04 |
| 74 | SPECY | 0.1892 | 3.6827    | 0.0289    | 1.957E-03 | 3.304E-05 | 1.678E-05 |
| 75 | SPECX | 3.8063 | 5.017E-03 | 0.0236    | 1.525E-05 | 1.779E-03 | 3.659E-04 |
| 75 | SPECY | 0.1891 | 3.5283    | 0.0253    | 1.402E-03 | 9.968E-05 | 3.898E-06 |
| 76 | SPECX | 4.3888 | 7.090E-03 | 0.0286    | 1.639E-06 | 2.611E-03 | 3.644E-04 |
| 76 | SPECY | 0.0811 | 3.4199    | 2.737E-03 | 1.164E-03 | 4.827E-05 | 2.068E-04 |
| 77 | SPECX | 4.3854 | 6.653E-03 | 6.794E-03 | 1.122E-05 | 3.204E-03 | 4.251E-04 |
| 77 | SPECY | 0.0811 | 3.6339    | 3.640E-03 | 1.278E-03 | 5.636E-05 | 2.102E-04 |
| 78 | SPECX | 4.2698 | 8.112E-03 | 8.074E-03 | 3.878E-06 | 2.759E-03 | 4.869E-04 |
| 78 | SPECY | 0.0918 | 3.6814    | 3.235E-03 | 1.265E-03 | 7.907E-05 | 9.320E-05 |
| 79 | SPECX | 4.2726 | 5.087E-03 | 0.0250    | 4.448E-06 | 3.042E-03 | 3.760E-04 |
| 79 | SPECY | 0.0921 | 3.5246    | 9.558E-03 | 1.144E-03 | 7.654E-05 | 1.682E-05 |
| 80 | SPECX | 4.5594 | 5.337E-03 | 0.0213    | 1.573E-05 | 5.216E-03 | 2.501E-04 |
| 80 | SPECY | 0.0155 | 3.5190    | 0.0309    | 6.941E-04 | 1.786E-04 | 4.314E-04 |
| 81 | SPECX | 4.4415 | 6.474E-03 | 0.0292    | 2.514E-06 | 2.711E-03 | 2.801E-04 |
| 81 | SPECY | 0.0748 | 3.4210    | 4.035E-04 | 1.200E-03 | 4.692E-05 | 2.117E-04 |
| 82 | SPECX | 4.4381 | 6.641E-03 | 6.497E-03 | 7.890E-06 | 3.324E-03 | 3.402E-04 |
| 82 | SPECY | 0.0748 | 3.6351    | 1.115E-03 | 1.318E-03 | 5.564E-05 | 2.171E-04 |
| 83 | SPECX | 4.5662 | 8.103E-03 | 5.694E-03 | 1.373E-05 | 3.772E-03 | 2.751E-04 |
| 83 | SPECY | 0.0779 | 3.6827    | 7.922E-04 | 1.275E-03 | 6.426E-05 | 3.465E-05 |
| 84 | SPECX | 4.5709 | 5.237E-03 | 0.0299    | 0.0000    | 1.653E-03 | 1.794E-04 |
| 84 | SPECY | 0.0780 | 3.5198    | 1.944E-03 | 1.055E-05 | 3.106E-05 | 4.033E-04 |
| 85 | SPECX | 4.4956 | 5.135E-03 | 0.0211    | 1.652E-05 | 4.966E-03 | 7.926E-04 |
| 85 | SPECY | 0.1391 | 3.5192    | 0.0274    | 6.949E-04 | 8.297E-06 | 4.013E-04 |
| 86 | SPECX | 3.8636 | 6.159E-03 | 0.0226    | 1.872E-05 | 1.901E-03 | 4.344E-04 |
| 86 | SPECY | 0.1992 | 3.4222    | 0.0253    | 1.885E-03 | 8.650E-05 | 2.160E-04 |
| 87 | SPECX | 3.8586 | 6.402E-03 | 5.948E-03 | 6.135E-06 | 9.948E-04 | 1.679E-04 |
| 87 | SPECY | 0.1988 | 3.6375    | 0.0261    | 2.079E-03 | 5.778E-05 | 1.808E-04 |
| 88 | SPECX | 3.8586 | 8.310E-03 | 4.512E-03 | 1.433E-05 | 9.199E-04 | 2.465E-04 |
| 88 | SPECY | 0.1988 | 3.6851    | 0.0260    | 2.017E-03 | 4.547E-05 | 3.863E-05 |
| 89 | SPECX | 3.8645 | 5.344E-03 | 0.0204    | 1.140E-05 | 2.243E-03 | 4.991E-04 |
| 89 | SPECY | 0.1991 | 3.5259    | 0.0127    | 1.365E-03 | 1.248E-04 | 9.602E-05 |

### 5.1.8.2.3 Fuerzas.

## BLOQUE A

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### LOAD COMBINATION MULTIPLIERS

| COMBO   | TYPE | CASE   | FACTOR | TYPE         | TITLE                     |
|---------|------|--------|--------|--------------|---------------------------|
| CU      | ADD  | MUERTA | 1.4000 | STATIC(DEAD) | Estado CU                 |
|         |      | VIVA   | 1.7000 | STATIC(LIVE) |                           |
|         |      |        |        |              |                           |
| COLUMN1 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|         |      | SISMOX | 1.2000 | COMBO        |                           |
|         |      | SISMOY | 0.3600 | COMBO        |                           |
|         |      |        |        |              |                           |
| COLUMN2 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|         |      | SISMOX | 0.3600 | COMBO        |                           |
|         |      | SISMOY | 1.2000 | COMBO        |                           |
|         |      |        |        |              |                           |
| COLUMN3 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|         |      | SISMOX | 1.2000 | COMBO        |                           |
|         |      | SISMOY | 0.3600 | COMBO        |                           |
|         |      |        |        |              |                           |
| COLUMN4 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|         |      | SISMOX | 0.3600 | COMBO        |                           |
|         |      | SISMOY | 1.2000 | COMBO        |                           |
|         |      |        |        |              |                           |

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### FRAME ELEMENT FORCES

| FRAME | LOAD        | LOC     | P       | V2     | V3     | T          | M2         | M3         |
|-------|-------------|---------|---------|--------|--------|------------|------------|------------|
| 52    | CU          | 2.5E-01 | -308.27 | -7.50  | -26.97 | -1.014E-01 | -36.76     | -8.12      |
|       |             | 1.65    | -302.61 | -7.50  | -26.97 | -1.014E-01 | 1.00       | 2.37       |
|       |             | 3.05    | -296.95 | -7.50  | -26.97 | -1.014E-01 | 38.77      | 12.87      |
| 52    | COLUMN1 MAX | 2.5E-01 | -201.93 | 16.93  | -11.46 | -2.933E-02 | -14.78     | 26.91      |
|       |             | 1.65    | -197.69 | 16.93  | -11.46 | -2.933E-02 | 1.28       | 3.22       |
|       |             | 3.05    | -193.45 | 16.93  | -11.46 | -2.933E-02 | 40.84      | 39.79      |
| 52    | COLUMN1 MIN | 2.5E-01 | -260.47 | -28.17 | -29.00 | -1.228E-01 | -40.37     | -39.10     |
|       |             | 1.65    | -256.22 | -28.17 | -29.00 | -1.228E-01 | 2.194E-01  | 3.447E-01  |
|       |             | 3.05    | -251.98 | -28.17 | -29.00 | -1.228E-01 | 17.32      | -20.48     |
| 52    | COLUMN2 MAX | 2.5E-01 | -197.72 | 1.86   | 6.97   | 7.940E-03  | 12.01      | 4.89       |
|       |             | 1.65    | -193.48 | 1.86   | 6.97   | 7.940E-03  | 2.25       | 2.29       |
|       |             | 3.05    | -189.23 | 1.86   | 6.97   | 7.940E-03  | 65.67      | 19.62      |
| 52    | COLUMN2 MIN | 2.5E-01 | -264.68 | -13.10 | -47.43 | -1.601E-01 | -67.15     | -17.07     |
|       |             | 1.65    | -260.44 | -13.10 | -47.43 | -1.601E-01 | -7.463E-01 | 1.27       |
|       |             | 3.05    | -256.19 | -13.10 | -47.43 | -1.601E-01 | -7.52      | -3.083E-01 |
| 52    | COLUMN3 MAX | 2.5E-01 | -137.26 | 18.63  | -2.71  | 1.138E-02  | -2.78      | 28.53      |
|       |             | 1.65    | -133.62 | 18.63  | -2.71  | 1.138E-02  | 1.03       | 2.45       |
|       |             | 3.05    | -129.98 | 18.63  | -2.71  | 1.138E-02  | 28.32      | 36.65      |
| 52    | COLUMN3 MIN | 2.5E-01 | -195.79 | -26.47 | -20.24 | -8.210E-02 | -28.36     | -37.48     |
|       |             | 1.65    | -192.15 | -26.47 | -20.24 | -8.210E-02 | -3.632E-02 | -4.193E-01 |
|       |             |         |         |        |        |            |            |            |

|    |             |         |            |            |            |            |            |
|----|-------------|---------|------------|------------|------------|------------|------------|
|    | 3.05        | -188.51 | -26.47     | -20.24     | -8.210E-02 | 4.80       | -23.63     |
| 52 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -133.04 | 3.55       | 15.73      | 4.865E-02  | 24.01      | 6.50       |
|    | 1.65        | -129.40 | 3.55       | 15.73      | 4.865E-02  | 1.99       | 1.53       |
|    | 3.05        | -125.77 | 3.55       | 15.73      | 4.865E-02  | 53.16      | 16.47      |
| 52 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -200.00 | -11.40     | -38.68     | -1.194E-01 | -55.15     | -15.46     |
|    | 1.65        | -196.36 | -11.40     | -38.68     | -1.194E-01 | -1.00      | 5.047E-01  |
|    | 3.05        | -192.73 | -11.40     | -38.68     | -1.194E-01 | -20.03     | -3.45      |
| 53 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -241.77 | -3.601E-01 | -4.97      | -5.723E-02 | -6.94      | -5.410E-01 |
|    | 1.65        | -237.61 | -3.601E-01 | -4.97      | -5.723E-02 | 1.266E-02  | -3.694E-02 |
|    | 3.05        | -233.46 | -3.601E-01 | -4.97      | -5.723E-02 | 6.96       | 4.672E-01  |
| 53 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -180.66 | 24.35      | -2.15      | -1.656E-02 | -2.68      | 33.89      |
|    | 1.65        | -177.55 | 24.35      | -2.15      | -1.656E-02 | 3.240E-01  | 1.425E-01  |
|    | 3.05        | -174.43 | 24.35      | -2.15      | -1.656E-02 | 7.12       | 34.99      |
| 53 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -181.99 | -24.89     | -5.30      | -6.928E-02 | -7.73      | -34.70     |
|    | 1.65        | -178.87 | -24.89     | -5.30      | -6.928E-02 | -3.050E-01 | -1.979E-01 |
|    | 3.05        | -175.76 | -24.89     | -5.30      | -6.928E-02 | 3.33       | -34.29     |
| 53 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -180.54 | 7.92       | 1.20       | 4.473E-03  | 2.64       | 11.00      |
|    | 1.65        | -177.42 | 7.92       | 1.20       | 4.473E-03  | 9.642E-01  | 2.829E-02  |
|    | 3.05        | -174.31 | 7.92       | 1.20       | 4.473E-03  | 11.16      | 11.87      |
| 53 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -182.11 | -8.46      | -8.65      | -9.031E-02 | -13.05     | -11.81     |
|    | 1.65        | -179.00 | -8.46      | -8.65      | -9.031E-02 | -9.452E-01 | -8.370E-02 |
|    | 3.05        | -175.88 | -8.46      | -8.65      | -9.031E-02 | -7.115E-01 | -11.17     |
| 53 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -125.16 | 24.56      | -5.327E-01 | 6.412E-03  | -4.070E-01 | 34.20      |
|    | 1.65        | -122.49 | 24.56      | -5.327E-01 | 6.412E-03  | 3.405E-01  | 1.546E-01  |
|    | 3.05        | -119.81 | 24.56      | -5.327E-01 | 6.412E-03  | 4.88       | 34.70      |
| 53 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -126.49 | -24.68     | -3.69      | -4.631E-02 | -5.45      | -34.39     |
|    | 1.65        | -123.81 | -24.68     | -3.69      | -4.631E-02 | -2.884E-01 | -1.858E-01 |
|    | 3.05        | -121.14 | -24.68     | -3.69      | -4.631E-02 | 1.08       | -34.57     |
| 53 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -125.04 | 8.13       | 2.81       | 2.744E-02  | 4.91       | 11.31      |
|    | 1.65        | -122.36 | 8.13       | 2.81       | 2.744E-02  | 9.808E-01  | 4.040E-02  |
|    | 3.05        | -119.69 | 8.13       | 2.81       | 2.744E-02  | 8.92       | 11.58      |
| 53 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -126.61 | -8.25      | -7.03      | -6.734E-02 | -10.77     | -11.50     |
|    | 1.65        | -123.94 | -8.25      | -7.03      | -6.734E-02 | -9.287E-01 | -7.160E-02 |
|    | 3.05        | -121.26 | -8.25      | -7.03      | -6.734E-02 | -2.95      | -11.45     |
| 54 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -306.85 | 6.17       | -30.29     | -1.010E-01 | -39.89     | 6.51       |
|    | 1.65        | -301.19 | 6.17       | -30.29     | -1.010E-01 | 2.51       | -2.12      |
|    | 3.05        | -295.54 | 6.17       | -30.29     | -1.010E-01 | 44.91      | -10.76     |
| 54 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -202.38 | 28.21      | -13.54     | -2.918E-02 | -16.80     | 39.44      |
|    | 1.65        | -198.13 | 28.21      | -13.54     | -2.918E-02 | 2.16       | -2.937E-02 |
|    | 3.05        | -193.89 | 28.21      | -13.54     | -2.918E-02 | 46.24      | 23.42      |
| 54 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -257.90 | -18.96     | -31.88     | -1.223E-01 | -43.04     | -29.68     |
|    | 1.65        | -253.66 | -18.96     | -31.88     | -1.223E-01 | 1.60       | -3.16      |
|    | 3.05        | -249.41 | -18.96     | -31.88     | -1.223E-01 | 21.12      | -39.55     |
| 54 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -192.57 | 12.60      | 6.00       | 7.935E-03  | 11.13      | 16.48      |
|    | 1.65        | -188.33 | 12.60      | 6.00       | 7.935E-03  | 2.74       | -1.07      |
|    | 3.05        | -184.09 | 12.60      | 6.00       | 7.935E-03  | 73.02      | 2.66       |
| 54 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -267.71 | -3.35      | -51.42     | -1.594E-01 | -70.97     | -6.71      |
|    | 1.65        | -263.46 | -3.35      | -51.42     | -1.594E-01 | 1.02       | -2.12      |
|    | 3.05        | -259.22 | -3.35      | -51.42     | -1.594E-01 | -5.66      | -18.80     |
| 54 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -133.38 | 27.07      | -3.71      | 1.136E-02  | -3.80      | 38.49      |
|    | 1.65        | -129.75 | 27.07      | -3.71      | 1.136E-02  | 1.40       | 6.184E-01  |
|    | 3.05        | -126.11 | 27.07      | -3.71      | 1.136E-02  | 31.72      | 25.67      |

|    |             |         |            |        |            |            |            |
|----|-------------|---------|------------|--------|------------|------------|------------|
| 54 | COLUMN3 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -188.91 | -20.10     | -22.05 | -8.178E-02 | -30.03     | -30.63     |
|    | 1.65        | -185.27 | -20.10     | -22.05 | -8.178E-02 | 8.384E-01  | -2.51      |
|    | 3.05        | -181.63 | -20.10     | -22.05 | -8.178E-02 | 6.60       | -37.31     |
| 54 | COLUMN4 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -123.58 | 11.46      | 15.83  | 4.848E-02  | 24.13      | 15.53      |
|    | 1.65        | -119.94 | 11.46      | 15.83  | 4.848E-02  | 1.98       | -4.218E-01 |
|    | 3.05        | -116.31 | 11.46      | 15.83  | 4.848E-02  | 58.49      | 4.91       |
| 54 | COLUMN4 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -198.71 | -4.49      | -41.59 | -1.189E-01 | -57.97     | -7.66      |
|    | 1.65        | -195.07 | -4.49      | -41.59 | -1.189E-01 | 2.624E-01  | -1.47      |
|    | 3.05        | -191.44 | -4.49      | -41.59 | -1.189E-01 | -20.18     | -16.55     |
| 55 | CU          |         |            |        |            |            |            |
|    | 2.5E-01     | -182.03 | -2.31      | -28.41 | -1.027E-01 | -40.41     | -9.604E-01 |
|    | 1.65        | -176.37 | -2.31      | -28.41 | -1.027E-01 | -6.337E-01 | 2.27       |
|    | 3.05        | -170.72 | -2.31      | -28.41 | -1.027E-01 | 39.14      | 5.50       |
| 55 | COLUMN1 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -134.96 | 3.33       | -7.53  | -2.972E-02 | -11.10     | 7.78       |
|    | 1.65        | -130.72 | 3.33       | -7.53  | -2.972E-02 | -3.931E-01 | 3.11       |
|    | 3.05        | -126.48 | 3.33       | -7.53  | -2.972E-02 | 48.71      | 9.80       |
| 55 | COLUMN1 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -138.08 | -6.79      | -35.08 | -1.244E-01 | -49.51     | -9.22      |
|    | 1.65        | -133.84 | -6.79      | -35.08 | -1.244E-01 | -5.575E-01 | 2.905E-01  |
|    | 3.05        | -129.60 | -6.79      | -35.08 | -1.244E-01 | 10.00      | -1.56      |
| 55 | COLUMN2 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -134.10 | -9.428E-02 | 21.13  | 8.035E-03  | 28.94      | 2.03       |
|    | 1.65        | -129.86 | -9.428E-02 | 21.13  | 8.035E-03  | -3.153E-01 | 2.16       |
|    | 3.05        | -125.62 | -9.428E-02 | 21.13  | 8.035E-03  | 88.92      | 5.95       |
| 55 | COLUMN2 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -138.94 | -3.36      | -63.74 | -1.621E-01 | -89.55     | -3.47      |
|    | 1.65        | -134.70 | -3.36      | -63.74 | -1.621E-01 | -6.353E-01 | 1.24       |
|    | 3.05        | -130.46 | -3.36      | -63.74 | -1.621E-01 | -30.21     | 2.29       |
| 55 | COLUMN3 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -98.73  | 3.88       | 3.60   | 1.152E-02  | 4.66       | 7.82       |
|    | 1.65        | -95.09  | 3.88       | 3.60   | 1.152E-02  | -2.313E-01 | 2.39       |
|    | 3.05        | -91.45  | 3.88       | 3.60   | 1.152E-02  | 33.28      | 8.31       |
| 55 | COLUMN3 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -101.85 | -6.25      | -23.94 | -8.314E-02 | -33.76     | -9.18      |
|    | 1.65        | -98.21  | -6.25      | -23.94 | -8.314E-02 | -3.956E-01 | -4.348E-01 |
|    | 3.05        | -94.57  | -6.25      | -23.94 | -8.314E-02 | -5.43      | -3.05      |
| 55 | COLUMN4 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -97.87  | 4.517E-01  | 32.26  | 4.927E-02  | 44.70      | 2.07       |
|    | 1.65        | -94.23  | 4.517E-01  | 32.26  | 4.927E-02  | -1.534E-01 | 1.44       |
|    | 3.05        | -90.59  | 4.517E-01  | 32.26  | 4.927E-02  | 73.49      | 4.46       |
| 55 | COLUMN4 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -102.71 | -2.82      | -52.60 | -1.209E-01 | -73.80     | -3.43      |
|    | 1.65        | -99.07  | -2.82      | -52.60 | -1.209E-01 | -4.735E-01 | 5.153E-01  |
|    | 3.05        | -95.43  | -2.82      | -52.60 | -1.209E-01 | -45.64     | 8.032E-01  |
| 56 | CU          |         |            |        |            |            |            |
|    | 2.5E-01     | -336.76 | -8.02      | -26.17 | -1.045E-01 | -39.01     | -8.85      |
|    | 1.65        | -331.10 | -8.02      | -26.17 | -1.045E-01 | -2.37      | 2.37       |
|    | 3.05        | -325.44 | -8.02      | -26.17 | -1.045E-01 | 34.27      | 13.60      |
| 56 | COLUMN1 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -225.10 | 19.27      | -6.44  | -3.035E-02 | -10.39     | 30.07      |
|    | 1.65        | -220.85 | 19.27      | -6.44  | -3.035E-02 | -1.35      | 3.09       |
|    | 3.05        | -216.61 | 19.27      | -6.44  | -3.035E-02 | 43.77      | 44.29      |
| 56 | COLUMN1 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -280.04 | -31.30     | -32.82 | -1.263E-01 | -48.12     | -43.35     |
|    | 1.65        | -275.80 | -31.30     | -32.82 | -1.263E-01 | -2.20      | 4.687E-01  |
|    | 3.05        | -271.55 | -31.30     | -32.82 | -1.263E-01 | 7.64       | -23.89     |
| 56 | COLUMN2 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -236.73 | 2.15       | 21.73  | 8.053E-03  | 29.84      | 5.21       |
|    | 1.65        | -232.49 | 2.15       | 21.73  | 8.053E-03  | -5.701E-01 | 2.20       |
|    | 3.05        | -228.25 | 2.15       | 21.73  | 8.053E-03  | 82.41      | 21.21      |
| 56 | COLUMN2 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -268.40 | -14.18     | -60.99 | -1.648E-01 | -88.36     | -18.49     |
|    | 1.65        | -264.16 | -14.18     | -60.99 | -1.648E-01 | -2.98      | 1.36       |
|    | 3.05        | -259.92 | -14.18     | -60.99 | -1.648E-01 | -31.00     | -8.198E-01 |
| 56 | COLUMN3 MAX |         |            |        |            |            |            |

|    |             |         |        |           |            |            |            |
|----|-------------|---------|--------|-----------|------------|------------|------------|
|    | 2.5E-01     | -148.43 | 21.14  | 4.30      | 1.157E-02  | 5.43       | 31.70      |
|    | 1.65        | -144.79 | 21.14  | 4.30      | 1.157E-02  | -5.550E-01 | 2.11       |
|    | 3.05        | -141.15 | 21.14  | 4.30      | 1.157E-02  | 29.52      | 40.69      |
| 56 | COLUMN3 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -203.37 | -29.43 | -22.08    | -8.442E-02 | -32.29     | -41.72     |
|    | 1.65        | -199.73 | -29.43 | -22.08    | -8.442E-02 | -1.41      | -5.136E-01 |
|    | 3.05        | -196.09 | -29.43 | -22.08    | -8.442E-02 | -6.60      | -27.49     |
| 56 | COLUMN4 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -160.06 | 4.02   | 32.47     | 4.998E-02  | 45.67      | 6.85       |
|    | 1.65        | -156.43 | 4.02   | 32.47     | 4.998E-02  | 2.220E-01  | 1.22       |
|    | 3.05        | -152.79 | 4.02   | 32.47     | 4.998E-02  | 68.17      | 17.62      |
| 56 | COLUMN4 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -191.73 | -12.31 | -50.25    | -1.228E-01 | -72.53     | -16.86     |
|    | 1.65        | -188.10 | -12.31 | -50.25    | -1.228E-01 | -2.19      | 3.785E-01  |
|    | 3.05        | -184.46 | -12.31 | -50.25    | -1.228E-01 | -45.24     | -4.42      |
| 57 | CU          |         |        |           |            |            |            |
|    | 2.5E-01     | -282.32 | 4.45   | -25.27    | -1.039E-01 | -35.51     | 4.23       |
|    | 1.65        | -276.67 | 4.45   | -25.27    | -1.039E-01 | -1.207E-01 | -2.01      |
|    | 3.05        | -271.01 | 4.45   | -25.27    | -1.039E-01 | 35.26      | -8.24      |
| 57 | COLUMN1 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -200.20 | 37.50  | -9.00     | -2.965E-02 | -12.46     | 52.23      |
|    | 1.65        | -195.96 | 37.50  | -9.00     | -2.965E-02 | 3.368E-01  | -2.733E-01 |
|    | 3.05        | -191.72 | 37.50  | -9.00     | -2.965E-02 | 40.20      | 40.41      |
| 57 | COLUMN1 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -223.28 | -30.82 | -28.91    | -1.262E-01 | -40.80     | -45.89     |
|    | 1.65        | -219.04 | -30.82 | -28.91    | -1.262E-01 | -5.178E-01 | -2.74      |
|    | 3.05        | -214.80 | -30.82 | -28.91    | -1.262E-01 | 12.70      | -52.78     |
| 57 | COLUMN2 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -184.23 | 14.35  | 12.37     | 8.485E-03  | 17.93      | 18.99      |
|    | 1.65        | -179.99 | 14.35  | 12.37     | 8.485E-03  | 6.669E-01  | -1.09      |
|    | 3.05        | -175.74 | 14.35  | 12.37     | 8.485E-03  | 69.62      | 8.81       |
| 57 | COLUMN2 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -239.26 | -7.67  | -50.28    | -1.644E-01 | -71.19     | -12.66     |
|    | 1.65        | -235.01 | -7.67  | -50.28    | -1.644E-01 | -8.479E-01 | -1.93      |
|    | 3.05        | -230.77 | -7.67  | -50.28    | -1.644E-01 | -16.73     | -21.18     |
| 57 | COLUMN3 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -140.28 | 36.11  | 4.544E-01 | 1.207E-02  | 7.242E-01  | 51.11      |
|    | 1.65        | -136.64 | 36.11  | 4.544E-01 | 1.207E-02  | 2.770E-01  | 5.629E-01  |
|    | 3.05        | -133.01 | 36.11  | 4.544E-01 | 1.207E-02  | 26.90      | 43.21      |
| 57 | COLUMN3 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -163.36 | -32.22 | -19.45    | -8.451E-02 | -27.62     | -47.02     |
|    | 1.65        | -159.73 | -32.22 | -19.45    | -8.451E-02 | -5.776E-01 | -1.91      |
|    | 3.05        | -156.09 | -32.22 | -19.45    | -8.451E-02 | -6.039E-01 | -49.99     |
| 57 | COLUMN4 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -124.31 | 12.95  | 21.83     | 5.021E-02  | 31.11      | 17.87      |
|    | 1.65        | -120.67 | 12.95  | 21.83     | 5.021E-02  | 6.071E-01  | -2.499E-01 |
|    | 3.05        | -117.04 | 12.95  | 21.83     | 5.021E-02  | 56.32      | 11.61      |
| 57 | COLUMN4 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -179.34 | -9.07  | -40.83    | -1.226E-01 | -58.01     | -13.78     |
|    | 1.65        | -175.70 | -9.07  | -40.83    | -1.226E-01 | -9.077E-01 | -1.09      |
|    | 3.05        | -172.06 | -9.07  | -40.83    | -1.226E-01 | -30.03     | -18.38     |
| 58 | CU          |         |        |           |            |            |            |
|    | 2.5E-01     | -136.52 | 4.00   | -8.66     | -1.019E-01 | -9.78      | 3.90       |
|    | 1.65        | -130.86 | 4.00   | -8.66     | -1.019E-01 | 2.35       | -1.70      |
|    | 3.05        | -125.20 | 4.00   | -8.66     | -1.019E-01 | 14.48      | -7.31      |
| 58 | COLUMN1 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -93.26  | 37.39  | -3.31     | -2.964E-02 | -3.57      | 52.16      |
|    | 1.65        | -89.01  | 37.39  | -3.31     | -2.964E-02 | 2.47       | -1.894E-01 |
|    | 3.05        | -84.77  | 37.39  | -3.31     | -2.964E-02 | 16.03      | 41.58      |
| 58 | COLUMN1 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -111.52 | -31.39 | -9.69     | -1.232E-01 | -11.10     | -46.31     |
|    | 1.65        | -107.27 | -31.39 | -9.69     | -1.232E-01 | 1.06       | -2.37      |
|    | 3.05        | -103.03 | -31.39 | -9.69     | -1.232E-01 | 5.69       | -52.54     |
| 58 | COLUMN2 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -97.71  | 14.11  | 3.50      | 7.836E-03  | 4.49       | 18.82      |
|    | 1.65        | -93.46  | 14.11  | 3.50      | 7.836E-03  | 3.94       | -9.258E-01 |
|    | 3.05        | -89.22  | 14.11  | 3.50      | 7.836E-03  | 27.03      | 9.72       |
| 58 | COLUMN2 MIN |         |        |           |            |            |            |

|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
|    | 2.5E-01     | -107.07 | -8.10  | -16.50     | -1.606E-01 | -19.16     | -12.97     |
|    | 1.65        | -102.82 | -8.10  | -16.50     | -1.606E-01 | -4.109E-01 | -1.63      |
|    | 3.05        | -98.58  | -8.10  | -16.50     | -1.606E-01 | -5.31      | -20.68     |
| 58 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -79.99  | 36.62  | -1.853E-01 | 1.124E-02  | -1.486E-01 | 51.77      |
|    | 1.65        | -76.36  | 36.62  | -1.853E-01 | 1.124E-02  | 1.52       | 5.005E-01  |
|    | 3.05        | -72.72  | 36.62  | -1.853E-01 | 1.124E-02  | 10.70      | 43.35      |
| 58 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -98.25  | -32.16 | -6.56      | -8.229E-02 | -7.68      | -46.70     |
|    | 1.65        | -94.62  | -32.16 | -6.56      | -8.229E-02 | 1.031E-01  | -1.68      |
|    | 3.05        | -90.98  | -32.16 | -6.56      | -8.229E-02 | 3.676E-01  | -50.77     |
| 58 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -84.44  | 13.34  | 6.62       | 4.872E-02  | 7.91       | 18.43      |
|    | 1.65        | -80.81  | 13.34  | 6.62       | 4.872E-02  | 2.99       | -2.360E-01 |
|    | 3.05        | -77.17  | 13.34  | 6.62       | 4.872E-02  | 21.71      | 11.48      |
| 58 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -93.80  | -8.87  | -13.37     | -1.198E-01 | -15.74     | -13.36     |
|    | 1.65        | -90.17  | -8.87  | -13.37     | -1.198E-01 | -1.36      | -9.400E-01 |
|    | 3.05        | -86.53  | -8.87  | -13.37     | -1.198E-01 | -10.64     | -18.91     |
| 59 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -498.96 | -26.06 | -33.88     | -1.045E-01 | -43.81     | -25.11     |
|    | 1.65        | -493.30 | -26.06 | -33.88     | -1.045E-01 | 3.62       | 11.38      |
|    | 3.05        | -487.64 | -26.06 | -33.88     | -1.045E-01 | 51.05      | 47.87      |
| 59 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -341.93 | 12.93  | -15.79     | -2.992E-02 | -19.20     | 27.98      |
|    | 1.65        | -337.68 | 12.93  | -15.79     | -2.992E-02 | 3.06       | 9.88       |
|    | 3.05        | -333.44 | 12.93  | -15.79     | -2.992E-02 | 51.58      | 80.03      |
| 59 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -406.51 | -52.03 | -35.03     | -1.268E-01 | -46.51     | -65.65     |
|    | 1.65        | -402.27 | -52.03 | -35.03     | -1.268E-01 | 2.37       | 7.18       |
|    | 3.05        | -398.03 | -52.03 | -35.03     | -1.268E-01 | 25.00      | -8.23      |
| 59 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -334.40 | -9.01  | 4.81       | 8.381E-03  | 10.12      | -3.68      |
|    | 1.65        | -330.16 | -9.01  | 4.81       | 8.381E-03  | 3.43       | 8.97       |
|    | 3.05        | -325.92 | -9.01  | 4.81       | 8.381E-03  | 79.92      | 50.24      |
| 59 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -414.04 | -30.08 | -55.62     | -1.651E-01 | -75.83     | -33.99     |
|    | 1.65        | -409.79 | -30.08 | -55.62     | -1.651E-01 | 2.00       | 8.10       |
|    | 3.05        | -405.55 | -30.08 | -55.62     | -1.651E-01 | -3.35      | 21.56      |
| 59 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -218.49 | 19.86  | -4.48      | 1.204E-02  | -4.66      | 33.28      |
|    | 1.65        | -214.85 | 19.86  | -4.48      | 1.204E-02  | 1.76       | 5.48       |
|    | 3.05        | -211.21 | 19.86  | -4.48      | 1.204E-02  | 34.45      | 65.93      |
| 59 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -283.07 | -45.10 | -23.71     | -8.486E-02 | -31.97     | -60.36     |
|    | 1.65        | -279.44 | -45.10 | -23.71     | -8.486E-02 | 1.08       | 2.78       |
|    | 3.05        | -275.80 | -45.10 | -23.71     | -8.486E-02 | 7.87       | -22.33     |
| 59 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -210.96 | -2.09  | 16.12      | 5.035E-02  | 24.66      | 1.62       |
|    | 1.65        | -207.33 | -2.09  | 16.12      | 5.035E-02  | 2.14       | 4.56       |
|    | 3.05        | -203.69 | -2.09  | 16.12      | 5.035E-02  | 62.79      | 36.14      |
| 59 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -290.60 | -23.16 | -44.31     | -1.232E-01 | -61.29     | -28.70     |
|    | 1.65        | -286.96 | -23.16 | -44.31     | -1.232E-01 | 7.042E-01  | 3.70       |
|    | 3.05        | -283.32 | -23.16 | -44.31     | -1.232E-01 | -20.48     | 7.47       |
| 60 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -388.96 | 41.62  | -36.97     | -1.000E-01 | -47.94     | 39.43      |
|    | 1.65        | -383.30 | 41.62  | -36.97     | -1.000E-01 | 3.82       | -18.84     |
|    | 3.05        | -377.64 | 41.62  | -36.97     | -1.000E-01 | 55.58      | -77.11     |
| 60 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -270.22 | 50.62  | -17.25     | -2.908E-02 | -21.01     | 57.44      |
|    | 1.65        | -265.98 | 50.62  | -17.25     | -2.908E-02 | 3.15       | -13.43     |
|    | 3.05        | -261.74 | 50.62  | -17.25     | -2.908E-02 | 56.07      | -31.36     |
| 60 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -313.21 | 11.81  | -38.20     | -1.209E-01 | -50.90     | 1.70       |
|    | 1.65        | -308.97 | 11.81  | -38.20     | -1.209E-01 | 2.58       | -14.84     |
|    | 3.05        | -304.72 | 11.81  | -38.20     | -1.209E-01 | 27.31      | -84.31     |
| 60 | COLUMN2 MAX |         |        |            |            |            |            |

|    |             |         |            |           |            |            |            |
|----|-------------|---------|------------|-----------|------------|------------|------------|
|    | 2.5E-01     | -256.45 | 37.47      | 5.08      | 7.722E-03  | 10.86      | 38.58      |
|    | 1.65        | -252.20 | 37.47      | 5.08      | 7.722E-03  | 3.75       | -13.87     |
|    | 3.05        | -247.96 | 37.47      | 5.08      | 7.722E-03  | 86.74      | -49.33     |
| 60 | COLUMN2 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -326.99 | 24.96      | -60.54    | -1.577E-01 | -82.76     | 20.56      |
|    | 1.65        | -322.74 | 24.96      | -60.54    | -1.577E-01 | 1.99       | -14.40     |
|    | 3.05        | -318.50 | 24.96      | -60.54    | -1.577E-01 | -3.37      | -66.34     |
| 60 | COLUMN3 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -170.18 | 40.59      | -4.86     | 1.105E-02  | -5.02      | 50.82      |
|    | 1.65        | -166.54 | 40.59      | -4.86     | 1.105E-02  | 1.78       | -6.00      |
|    | 3.05        | -162.90 | 40.59      | -4.86     | 1.105E-02  | 37.35      | -9.88      |
| 60 | COLUMN3 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -213.16 | 1.77       | -25.81    | -8.080E-02 | -34.92     | -4.92      |
|    | 1.65        | -209.53 | 1.77       | -25.81    | -8.080E-02 | 1.22       | -7.40      |
|    | 3.05        | -205.89 | 1.77       | -25.81    | -8.080E-02 | 8.59       | -62.83     |
| 60 | COLUMN4 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -156.40 | 27.43      | 17.47     | 4.785E-02  | 26.84      | 31.96      |
|    | 1.65        | -152.76 | 27.43      | 17.47     | 4.785E-02  | 2.38       | -6.44      |
|    | 3.05        | -149.13 | 27.43      | 17.47     | 4.785E-02  | 68.02      | -27.85     |
| 60 | COLUMN4 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -226.94 | 14.93      | -48.14    | -1.176E-01 | -66.78     | 13.94      |
|    | 1.65        | -223.30 | 14.93      | -48.14    | -1.176E-01 | 6.214E-01  | -6.97      |
|    | 3.05        | -219.66 | 14.93      | -48.14    | -1.176E-01 | -22.08     | -44.86     |
| 61 | CU          |         |            |           |            |            |            |
|    | 2.5E-01     | -497.53 | -14.18     | -29.39    | -1.049E-01 | -41.22     | -12.20     |
|    | 1.65        | -491.87 | -14.18     | -29.39    | -1.049E-01 | -7.939E-02 | 7.65       |
|    | 3.05        | -486.22 | -14.18     | -29.39    | -1.049E-01 | 41.06      | 27.50      |
| 61 | COLUMN1 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -350.37 | 11.33      | -10.04    | -3.032E-02 | -13.64     | 22.82      |
|    | 1.65        | -346.13 | 11.33      | -10.04    | -3.032E-02 | 4.184E-01  | 6.95       |
|    | 3.05        | -341.89 | 11.33      | -10.04    | -3.032E-02 | 47.12      | 50.17      |
| 61 | COLUMN1 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -395.93 | -32.60     | -34.04    | -1.270E-01 | -48.19     | -41.13     |
|    | 1.65        | -391.68 | -32.60     | -34.04    | -1.270E-01 | -5.375E-01 | 4.52       |
|    | 3.05        | -387.44 | -32.60     | -34.04    | -1.270E-01 | 14.48      | -8.92      |
| 61 | COLUMN2 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -362.04 | -3.64      | 14.99     | 8.218E-03  | 22.40      | 1.02       |
|    | 1.65        | -357.79 | -3.64      | 14.99     | 8.218E-03  | 1.41       | 6.12       |
|    | 3.05        | -353.55 | -3.64      | 14.99     | 8.218E-03  | 81.16      | 30.03      |
| 61 | COLUMN2 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -384.26 | -17.63     | -59.07    | -1.655E-01 | -84.23     | -19.33     |
|    | 1.65        | -380.02 | -17.63     | -59.07    | -1.655E-01 | -1.53      | 5.35       |
|    | 3.05        | -375.77 | -17.63     | -59.07    | -1.655E-01 | -19.57     | 11.22      |
| 61 | COLUMN3 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -237.25 | 14.88      | 5.323E-01 | 1.177E-02  | 1.29       | 25.45      |
|    | 1.65        | -233.61 | 14.88      | 5.323E-01 | 1.177E-02  | 5.427E-01  | 4.62       |
|    | 3.05        | -229.98 | 14.88      | 5.323E-01 | 1.177E-02  | 32.44      | 42.87      |
| 61 | COLUMN3 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -282.80 | -29.06     | -23.47    | -8.490E-02 | -33.27     | -38.50     |
|    | 1.65        | -279.16 | -29.06     | -23.47    | -8.490E-02 | -4.132E-01 | 2.18       |
|    | 3.05        | -275.53 | -29.06     | -23.47    | -8.490E-02 | -2.025E-01 | -16.22     |
| 61 | COLUMN4 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -248.91 | -9.788E-02 | 25.56     | 5.032E-02  | 37.32      | 3.65       |
|    | 1.65        | -245.28 | -9.788E-02 | 25.56     | 5.032E-02  | 1.54       | 3.79       |
|    | 3.05        | -241.64 | -9.788E-02 | 25.56     | 5.032E-02  | 66.49      | 22.73      |
| 61 | COLUMN4 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -271.14 | -14.08     | -48.50    | -1.234E-01 | -69.30     | -16.70     |
|    | 1.65        | -267.50 | -14.08     | -48.50    | -1.234E-01 | -1.41      | 3.01       |
|    | 3.05        | -263.86 | -14.08     | -48.50    | -1.234E-01 | -34.25     | 3.92       |
| 62 | CU          |         |            |           |            |            |            |
|    | 2.5E-01     | -471.21 | 2.07       | -6.54     | -5.632E-02 | -8.89      | 1.88       |
|    | 1.65        | -467.05 | 2.07       | -6.54     | -5.632E-02 | 2.612E-01  | -1.01      |
|    | 3.05        | -462.89 | 2.07       | -6.54     | -5.632E-02 | 9.41       | -3.91      |
| 62 | COLUMN1 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -346.50 | 25.42      | -2.82     | -1.634E-02 | -3.38      | 34.70      |
|    | 1.65        | -343.38 | 25.42      | -2.82     | -1.634E-02 | 5.743E-01  | -6.269E-01 |
|    | 3.05        | -340.27 | 25.42      | -2.82     | -1.634E-02 | 9.59       | 30.61      |
| 62 | COLUMN1 MIN |         |            |           |            |            |            |
|    | 2.5E-01     | -360.31 | -22.32     | -6.98     | -6.814E-02 | -9.96      | -31.88     |
|    | 1.65        | -357.19 | -22.32     | -6.98     | -6.814E-02 | -1.824E-01 | -8.940E-01 |

|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
|    | 3.05        | -354.08 | -22.32 | -6.98      | -6.814E-02 | 4.53       | -36.47     |
| 62 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -350.90 | 9.13   | 1.56       | 4.361E-03  | 3.54       | 11.99      |
|    | 1.65        | -347.78 | 9.13   | 1.56       | 4.361E-03  | 1.36       | -7.011E-01 |
|    | 3.05        | -344.66 | 9.13   | 1.56       | 4.361E-03  | 14.94      | 7.73       |
| 62 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -355.92 | -6.04  | -11.36     | -8.884E-02 | -16.87     | -9.18      |
|    | 1.65        | -352.80 | -6.04  | -11.36     | -8.884E-02 | -9.657E-01 | -8.198E-01 |
|    | 3.05        | -349.68 | -6.04  | -11.36     | -8.884E-02 | -8.223E-01 | -13.59     |
| 62 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -221.98 | 24.84  | -6.709E-01 | 6.262E-03  | -3.966E-01 | 34.28      |
|    | 1.65        | -219.30 | 24.84  | -6.709E-01 | 6.262E-03  | 5.432E-01  | -2.356E-01 |
|    | 3.05        | -216.63 | 24.84  | -6.709E-01 | 6.262E-03  | 6.55       | 31.81      |
| 62 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -235.79 | -22.90 | -4.83      | -4.553E-02 | -6.97      | -32.30     |
|    | 1.65        | -233.11 | -22.90 | -4.83      | -4.553E-02 | -2.135E-01 | -5.027E-01 |
|    | 3.05        | -230.44 | -22.90 | -4.83      | -4.553E-02 | 1.48       | -35.27     |
| 62 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -226.37 | 8.56   | 3.71       | 2.697E-02  | 6.52       | 11.57      |
|    | 1.65        | -223.70 | 8.56   | 3.71       | 2.697E-02  | 1.33       | -3.098E-01 |
|    | 3.05        | -221.03 | 8.56   | 3.71       | 2.697E-02  | 11.90      | 8.93       |
| 62 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -231.39 | -6.61  | -9.21      | -6.623E-02 | -13.89     | -9.59      |
|    | 1.65        | -228.72 | -6.61  | -9.21      | -6.623E-02 | -9.968E-01 | -4.285E-01 |
|    | 3.05        | -226.05 | -6.61  | -9.21      | -6.623E-02 | -3.87      | -12.39     |
| 63 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -804.25 | -4.79  | -46.21     | -1.042E-01 | -58.52     | -3.98      |
|    | 1.65        | -798.59 | -4.79  | -46.21     | -1.042E-01 | 6.17       | 2.73       |
|    | 3.05        | -792.94 | -4.79  | -46.21     | -1.042E-01 | 70.87      | 9.44       |
| 63 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -592.68 | 28.04  | -23.00     | -2.976E-02 | -27.21     | 42.55      |
|    | 1.65        | -588.44 | 28.04  | -23.00     | -2.976E-02 | 5.00       | 3.31       |
|    | 3.05        | -584.19 | 28.04  | -23.00     | -2.976E-02 | 69.12      | 50.12      |
| 63 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -613.70 | -35.23 | -46.32     | -1.265E-01 | -60.57     | -48.51     |
|    | 1.65        | -609.45 | -35.23 | -46.32     | -1.265E-01 | 4.26       | 7.936E-01  |
|    | 3.05        | -605.21 | -35.23 | -46.32     | -1.265E-01 | 37.18      | -35.95     |
| 63 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -572.39 | 6.45   | 1.80       | 8.476E-03  | 8.21       | 11.48      |
|    | 1.65        | -568.15 | 6.45   | 1.80       | 8.476E-03  | 5.69       | 2.48       |
|    | 3.05        | -563.91 | 6.45   | 1.80       | 8.476E-03  | 103.13     | 20.75      |
| 63 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -633.99 | -13.64 | -71.11     | -1.647E-01 | -95.99     | -17.45     |
|    | 1.65        | -629.74 | -13.64 | -71.11     | -1.647E-01 | 3.57       | 1.62       |
|    | 3.05        | -625.50 | -13.64 | -71.11     | -1.647E-01 | 3.17       | -6.58      |
| 63 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -373.80 | 30.17  | -8.72      | 1.206E-02  | -9.02      | 43.98      |
|    | 1.65        | -370.16 | 30.17  | -8.72      | 1.206E-02  | 3.20       | 1.75       |
|    | 3.05        | -366.52 | 30.17  | -8.72      | 1.206E-02  | 47.32      | 45.58      |
| 63 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -394.81 | -33.10 | -32.04     | -8.468E-02 | -42.38     | -47.08     |
|    | 1.65        | -391.18 | -33.10 | -32.04     | -8.468E-02 | 2.46       | -7.596E-01 |
|    | 3.05        | -387.54 | -33.10 | -32.04     | -8.468E-02 | 15.39      | -40.49     |
| 63 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -353.51 | 8.58   | 16.08      | 5.030E-02  | 26.40      | 12.91      |
|    | 1.65        | -349.87 | 8.58   | 16.08      | 5.030E-02  | 3.89       | 9.308E-01  |
|    | 3.05        | -346.24 | 8.58   | 16.08      | 5.030E-02  | 81.34      | 16.21      |
| 63 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -415.10 | -11.51 | -56.83     | -1.229E-01 | -77.79     | -16.02     |
|    | 1.65        | -411.46 | -11.51 | -56.83     | -1.229E-01 | 1.77       | 6.279E-02  |
|    | 3.05        | -407.83 | -11.51 | -56.83     | -1.229E-01 | -18.62     | -11.12     |
| 64 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -280.71 | 17.13  | -26.26     | -7.366E-02 | -35.30     | 15.96      |
|    | 1.65        | -276.26 | 17.13  | -26.26     | -7.366E-02 | 1.46       | -8.02      |
|    | 3.05        | -271.82 | 17.13  | -26.26     | -7.366E-02 | 38.22      | -32.01     |
| 64 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -192.58 | 32.70  | -10.53     | -2.252E-02 | -13.77     | 40.02      |
|    | 1.65        | -189.24 | 32.70  | -10.53     | -2.252E-02 | 1.42       | -5.74      |
|    | 3.05        | -185.91 | 32.70  | -10.53     | -2.252E-02 | 41.65      | 3.52       |



|    |             |         |        |        |            |            |         |
|----|-------------|---------|--------|--------|------------|------------|---------|
| 64 | COLUMN1 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -228.48 | -7.00  | -28.86 | -8.797E-02 | -39.19     | -16.09  |
|    | 1.65        | -225.15 | -7.00  | -28.86 | -8.797E-02 | 7.695E-01  | -6.30   |
|    | 3.05        | -221.82 | -7.00  | -28.86 | -8.797E-02 | 15.67      | -51.53  |
| 64 | COLUMN2 MAX |         |        |        |            |            |         |
|    | 2.5E-01     | -186.08 | 19.16  | 8.65   | 4.702E-03  | 13.29      | 20.89   |
|    | 1.65        | -182.75 | 19.16  | 8.65   | 4.702E-03  | 1.31       | -5.91   |
|    | 3.05        | -179.42 | 19.16  | 8.65   | 4.702E-03  | 68.27      | -15.24  |
| 64 | COLUMN2 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -234.98 | 6.53   | -48.04 | -1.152E-01 | -66.24     | 3.05    |
|    | 1.65        | -231.65 | 6.53   | -48.04 | -1.152E-01 | 8.762E-01  | -6.13   |
|    | 3.05        | -228.31 | 6.53   | -48.04 | -1.152E-01 | -10.95     | -32.77  |
| 64 | COLUMN3 MAX |         |        |        |            |            |         |
|    | 2.5E-01     | -103.56 | 27.29  | -1.18  | 7.022E-03  | -1.31      | 35.52   |
|    | 1.65        | -100.70 | 27.29  | -1.18  | 7.022E-03  | 7.878E-01  | -2.68   |
|    | 3.05        | -97.84  | 27.29  | -1.18  | 7.022E-03  | 27.94      | 14.14   |
| 64 | COLUMN3 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -139.46 | -12.41 | -19.51 | -5.843E-02 | -26.73     | -20.59  |
|    | 1.65        | -136.61 | -12.41 | -19.51 | -5.843E-02 | 1.402E-01  | -3.23   |
|    | 3.05        | -133.75 | -12.41 | -19.51 | -5.843E-02 | 1.95       | -40.90  |
| 64 | COLUMN4 MAX |         |        |        |            |            |         |
|    | 2.5E-01     | -97.06  | 13.76  | 18.00  | 3.424E-02  | 25.75      | 16.38   |
|    | 1.65        | -94.21  | 13.76  | 18.00  | 3.424E-02  | 6.811E-01  | -2.85   |
|    | 3.05        | -91.35  | 13.76  | 18.00  | 3.424E-02  | 54.56      | -4.61   |
| 64 | COLUMN4 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -145.96 | 1.13   | -38.69 | -8.565E-02 | -53.78     | -1.46   |
|    | 1.65        | -143.10 | 1.13   | -38.69 | -8.565E-02 | 2.469E-01  | -3.07   |
|    | 3.05        | -140.24 | 1.13   | -38.69 | -8.565E-02 | -24.67     | -22.15  |
| 65 | CU          |         |        |        |            |            |         |
|    | 2.5E-01     | -660.31 | -63.93 | -43.84 | -1.713E-01 | -64.10     | -48.78  |
|    | 1.65        | -652.92 | -63.93 | -43.84 | -1.713E-01 | -2.73      | 40.72   |
|    | 3.05        | -645.53 | -63.93 | -43.84 | -1.713E-01 | 58.64      | 130.22  |
| 65 | COLUMN1 MAX |         |        |        |            |            |         |
|    | 2.5E-01     | -476.65 | -16.12 | -14.17 | -5.193E-02 | -21.02     | 8.27    |
|    | 1.65        | -471.11 | -16.12 | -14.17 | -5.193E-02 | -1.08      | 30.85   |
|    | 3.05        | -465.57 | -16.12 | -14.17 | -5.193E-02 | 69.31      | 141.92  |
| 65 | COLUMN1 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -513.82 | -79.77 | -51.58 | -2.050E-01 | -75.13     | -81.44  |
|    | 1.65        | -508.27 | -79.77 | -51.58 | -2.050E-01 | -3.02      | 30.23   |
|    | 3.05        | -502.73 | -79.77 | -51.58 | -2.050E-01 | 18.65      | 53.41   |
| 65 | COLUMN2 MAX |         |        |        |            |            |         |
|    | 2.5E-01     | -488.62 | -37.84 | 25.97  | 1.183E-02  | 37.07      | -22.34  |
|    | 1.65        | -483.07 | -37.84 | 25.97  | 1.183E-02  | 7.426E-01  | 30.67   |
|    | 3.05        | -477.53 | -37.84 | 25.97  | 1.183E-02  | 123.62     | 111.71  |
| 65 | COLUMN2 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -501.85 | -58.05 | -91.73 | -2.688E-01 | -133.22    | -50.82  |
|    | 1.65        | -496.31 | -58.05 | -91.73 | -2.688E-01 | -4.84      | 30.40   |
|    | 3.05        | -490.77 | -58.05 | -91.73 | -2.688E-01 | -35.65     | 83.61   |
| 65 | COLUMN3 MAX |         |        |        |            |            |         |
|    | 2.5E-01     | -267.85 | 5.39   | 2.73   | 1.665E-02  | 3.59       | 18.30   |
|    | 1.65        | -263.10 | 5.39   | 2.73   | 1.665E-02  | -1.228E-01 | 10.77   |
|    | 3.05        | -258.35 | 5.39   | 2.73   | 1.665E-02  | 46.61      | 91.72   |
| 65 | COLUMN3 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -305.02 | -58.26 | -34.68 | -1.364E-01 | -50.51     | -71.40  |
|    | 1.65        | -300.27 | -58.26 | -34.68 | -1.364E-01 | -2.06      | 10.14   |
|    | 3.05        | -295.51 | -58.26 | -34.68 | -1.364E-01 | -4.06      | 3.21    |
| 65 | COLUMN4 MAX |         |        |        |            |            |         |
|    | 2.5E-01     | -279.82 | -16.33 | 42.87  | 8.042E-02  | 61.69      | -12.31  |
|    | 1.65        | -275.07 | -16.33 | 42.87  | 8.042E-02  | 1.70       | 10.59   |
|    | 3.05        | -270.32 | -16.33 | 42.87  | 8.042E-02  | 100.91     | 61.51   |
| 65 | COLUMN4 MIN |         |        |        |            |            |         |
|    | 2.5E-01     | -293.05 | -36.54 | -74.82 | -2.002E-01 | -108.60    | -40.79  |
|    | 1.65        | -288.30 | -36.54 | -74.82 | -2.002E-01 | -3.88      | 10.32   |
|    | 3.05        | -283.55 | -36.54 | -74.82 | -2.002E-01 | -58.36     | 33.41   |
| 66 | CU          |         |        |        |            |            |         |
|    | 2.5E-01     | -648.92 | 68.65  | -45.25 | -1.714E-01 | -65.61     | 52.08   |
|    | 1.65        | -641.53 | 68.65  | -45.25 | -1.714E-01 | -2.27      | -44.03  |
|    | 3.05        | -634.14 | 68.65  | -45.25 | -1.714E-01 | 61.07      | -140.15 |
| 66 | COLUMN1 MAX |         |        |        |            |            |         |

|    |             |         |            |        |            |            |            |
|----|-------------|---------|------------|--------|------------|------------|------------|
|    | 2.5E-01     | -467.02 | 81.28      | -14.69 | -4.898E-02 | -21.67     | 80.58      |
|    | 1.65        | -461.48 | 81.28      | -14.69 | -4.898E-02 | -1.09      | -32.83     |
|    | 3.05        | -455.94 | 81.28      | -14.69 | -4.898E-02 | 72.13      | -63.21     |
| 66 | COLUMN1 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -506.36 | 21.70      | -53.17 | -2.081E-01 | -76.76     | -2.46      |
|    | 1.65        | -500.82 | 21.70      | -53.17 | -2.081E-01 | -2.31      | -33.22     |
|    | 3.05        | -495.27 | 21.70      | -53.17 | -2.081E-01 | 19.48      | -147.01    |
| 66 | COLUMN2 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -479.74 | 60.95      | 26.35  | 1.379E-02  | 37.08      | 52.24      |
|    | 1.65        | -474.19 | 60.95      | 26.35  | 1.379E-02  | 1.945E-01  | -32.94     |
|    | 3.05        | -468.65 | 60.95      | 26.35  | 1.379E-02  | 128.31     | -91.81     |
| 66 | COLUMN2 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -493.65 | 42.03      | -94.22 | -2.708E-01 | -135.51    | 25.88      |
|    | 1.65        | -488.10 | 42.03      | -94.22 | -2.708E-01 | -3.60      | -33.11     |
|    | 3.05        | -482.56 | 42.03      | -94.22 | -2.708E-01 | -36.70     | -118.41    |
| 66 | COLUMN3 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -266.77 | 58.55      | 2.77   | 1.984E-02  | 3.66       | 70.10      |
|    | 1.65        | -262.02 | 58.55      | 2.77   | 1.984E-02  | -2.189E-01 | -11.49     |
|    | 3.05        | -257.27 | 58.55      | 2.77   | 1.984E-02  | 48.55      | -10.05     |
| 66 | COLUMN3 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -306.11 | -1.04      | -35.71 | -1.392E-01 | -51.43     | -12.95     |
|    | 1.65        | -301.36 | -1.04      | -35.71 | -1.392E-01 | -1.44      | -11.88     |
|    | 3.05        | -296.60 | -1.04      | -35.71 | -1.392E-01 | -4.10      | -93.85     |
| 66 | COLUMN4 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -279.48 | 38.22      | 43.82  | 8.262E-02  | 62.41      | 41.76      |
|    | 1.65        | -274.73 | 38.22      | 43.82  | 8.262E-02  | 1.07       | -11.60     |
|    | 3.05        | -269.98 | 38.22      | 43.82  | 8.262E-02  | 104.73     | -38.64     |
| 66 | COLUMN4 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -293.39 | 19.30      | -76.75 | -2.020E-01 | -110.18    | 15.39      |
|    | 1.65        | -288.64 | 19.30      | -76.75 | -2.020E-01 | -2.73      | -11.77     |
|    | 3.05        | -283.89 | 19.30      | -76.75 | -2.020E-01 | -60.28     | -65.25     |
| 67 | CU          |         |            |        |            |            |            |
|    | 2.5E-01     | -183.92 | -2.50      | -29.51 | -1.017E-01 | -41.33     | -5.528E-01 |
|    | 1.65        | -178.26 | -2.50      | -29.51 | -1.017E-01 | -1.655E-02 | 2.95       |
|    | 3.05        | -172.61 | -2.50      | -29.51 | -1.017E-01 | 41.29      | 6.45       |
| 67 | COLUMN1 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -136.49 | 3.32       | -8.90  | -2.940E-02 | -12.57     | 8.09       |
|    | 1.65        | -132.25 | 3.32       | -8.90  | -2.940E-02 | 8.377E-02  | 3.44       |
|    | 3.05        | -128.00 | 3.32       | -8.90  | -2.940E-02 | 49.58      | 10.89      |
| 67 | COLUMN1 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -139.39 | -7.07      | -35.36 | -1.232E-01 | -49.42     | -8.92      |
|    | 1.65        | -135.15 | -7.07      | -35.36 | -1.232E-01 | -1.086E-01 | 9.815E-01  |
|    | 3.05        | -130.91 | -7.07      | -35.36 | -1.232E-01 | 12.36      | -1.21      |
| 67 | COLUMN2 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -136.80 | -2.145E-01 | 18.66  | 7.972E-03  | 25.86      | 2.30       |
|    | 1.65        | -132.55 | -2.145E-01 | 18.66  | 7.972E-03  | 2.381E-01  | 2.60       |
|    | 3.05        | -128.31 | -2.145E-01 | 18.66  | 7.972E-03  | 88.32      | 6.77       |
| 67 | COLUMN2 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -139.09 | -3.54      | -62.92 | -1.605E-01 | -87.85     | -3.13      |
|    | 1.65        | -134.84 | -3.54      | -62.92 | -1.605E-01 | -2.629E-01 | 1.82       |
|    | 3.05        | -130.60 | -3.54      | -62.92 | -1.605E-01 | -26.38     | 2.90       |
| 67 | COLUMN3 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -99.97  | 3.91       | 2.11   | 1.142E-02  | 2.85       | 7.98       |
|    | 1.65        | -96.33  | 3.91       | 2.11   | 1.142E-02  | 8.340E-02  | 2.51       |
|    | 3.05        | -92.70  | 3.91       | 2.11   | 1.142E-02  | 34.16      | 9.14       |
| 67 | COLUMN3 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -102.87 | -6.49      | -24.34 | -8.233E-02 | -34.00     | -9.03      |
|    | 1.65        | -99.24  | -6.49      | -24.34 | -8.233E-02 | -1.090E-01 | 5.326E-02  |
|    | 3.05        | -95.60  | -6.49      | -24.34 | -8.233E-02 | -3.06      | -2.96      |
| 67 | COLUMN4 MAX |         |            |        |            |            |            |
|    | 2.5E-01     | -100.28 | 3.703E-01  | 29.67  | 4.880E-02  | 41.27      | 2.19       |
|    | 1.65        | -96.64  | 3.703E-01  | 29.67  | 4.880E-02  | 2.377E-01  | 1.67       |
|    | 3.05        | -93.00  | 3.703E-01  | 29.67  | 4.880E-02  | 72.90      | 5.02       |
| 67 | COLUMN4 MIN |         |            |        |            |            |            |
|    | 2.5E-01     | -102.57 | -2.95      | -51.91 | -1.197E-01 | -72.43     | -3.24      |
|    | 1.65        | -98.93  | -2.95      | -51.91 | -1.197E-01 | -2.633E-01 | 8.915E-01  |
|    | 3.05        | -95.29  | -2.95      | -51.91 | -1.197E-01 | -41.80     | 1.16       |
| 68 | CU          |         |            |        |            |            |            |
|    | 2.5E-01     | -691.87 | -4.74      | -18.70 | -6.843E-02 | -25.78     | -2.50      |

|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
|    | 1.65        | -687.43 | -4.74  | -18.70     | -6.843E-02 | 4.081E-01  | 4.14       |
|    | 3.05        | -682.98 | -4.74  | -18.70     | -6.843E-02 | 26.59      | 10.77      |
| 68 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -491.26 | 14.22  | -5.52      | -1.061E-02 | -8.78      | 26.17      |
|    | 1.65        | -487.92 | 14.22  | -5.52      | -1.061E-02 | 1.90       | 6.26       |
|    | 3.05        | -484.59 | 14.22  | -5.52      | -1.061E-02 | 33.28      | 29.81      |
| 68 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -546.55 | -21.33 | -22.54     | -9.203E-02 | -29.88     | -29.92     |
|    | 1.65        | -543.22 | -21.33 | -22.54     | -9.203E-02 | -1.29      | -5.815E-02 |
|    | 3.05        | -539.88 | -21.33 | -22.54     | -9.203E-02 | 6.61       | -13.65     |
| 68 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -488.44 | 2.48   | 8.49       | 1.340E-02  | 12.00      | 7.75       |
|    | 1.65        | -485.10 | 2.48   | 8.49       | 1.340E-02  | 1.00       | 4.29       |
|    | 3.05        | -481.77 | 2.48   | 8.49       | 1.340E-02  | 51.67      | 15.35      |
| 68 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -549.37 | -9.59  | -36.54     | -1.160E-01 | -50.66     | -11.50     |
|    | 1.65        | -546.03 | -9.59  | -36.54     | -1.160E-01 | -3.891E-01 | 1.92       |
|    | 3.05        | -542.70 | -9.59  | -36.54     | -1.160E-01 | -11.79     | 8.118E-01  |
| 68 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -266.90 | 15.82  | 1.44       | 1.704E-02  | 9.482E-01  | 27.21      |
|    | 1.65        | -264.04 | 15.82  | 1.44       | 1.704E-02  | 1.88       | 5.06       |
|    | 3.05        | -261.19 | 15.82  | 1.44       | 1.704E-02  | 23.52      | 26.37      |
| 68 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -322.19 | -19.73 | -15.58     | -6.437E-02 | -20.15     | -28.88     |
|    | 1.65        | -319.34 | -19.73 | -15.58     | -6.437E-02 | -1.30      | -1.26      |
|    | 3.05        | -316.48 | -19.73 | -15.58     | -6.437E-02 | -3.16      | -17.09     |
| 68 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -264.08 | 4.08   | 15.45      | 4.105E-02  | 21.72      | 8.79       |
|    | 1.65        | -261.23 | 4.08   | 15.45      | 4.105E-02  | 9.848E-01  | 3.09       |
|    | 3.05        | -258.37 | 4.08   | 15.45      | 4.105E-02  | 41.91      | 11.90      |
| 68 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -325.01 | -7.98  | -29.58     | -8.838E-02 | -40.93     | -10.46     |
|    | 1.65        | -322.15 | -7.98  | -29.58     | -8.838E-02 | -4.056E-01 | 7.171E-01  |
|    | 3.05        | -319.30 | -7.98  | -29.58     | -8.838E-02 | -21.55     | -2.63      |
| 69 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -864.74 | -31.37 | -46.54     | -1.644E-01 | -63.21     | -26.33     |
|    | 1.65        | -857.35 | -31.37 | -46.54     | -1.644E-01 | 1.94       | 17.58      |
|    | 3.05        | -849.96 | -31.37 | -46.54     | -1.644E-01 | 67.09      | 61.50      |
| 69 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -636.54 | 25.72  | -17.88     | -3.557E-02 | -23.19     | 47.54      |
|    | 1.65        | -631.00 | 25.72  | -17.88     | -3.557E-02 | 1.96       | 14.85      |
|    | 3.05        | -625.46 | 25.72  | -17.88     | -3.557E-02 | 73.79      | 116.72     |
| 69 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -660.56 | -72.77 | -51.93     | -2.110E-01 | -71.62     | -87.04     |
|    | 1.65        | -655.02 | -72.77 | -51.93     | -2.110E-01 | 9.552E-01  | 11.52      |
|    | 3.05        | -649.48 | -72.77 | -51.93     | -2.110E-01 | 26.85      | -24.47     |
| 69 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -635.68 | -7.51  | 18.68      | 2.072E-02  | 28.80      | 2.02       |
|    | 1.65        | -630.14 | -7.51  | 18.68      | 2.072E-02  | 2.69       | 13.89      |
|    | 3.05        | -624.60 | -7.51  | 18.68      | 2.072E-02  | 124.14     | 69.22      |
| 69 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -661.42 | -39.54 | -88.48     | -2.673E-01 | -123.62    | -41.52     |
|    | 1.65        | -655.88 | -39.54 | -88.48     | -2.673E-01 | 2.224E-01  | 12.48      |
|    | 3.05        | -650.34 | -39.54 | -88.48     | -2.673E-01 | -23.50     | 23.04      |
| 69 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -359.55 | 38.05  | -9.739E-01 | 3.124E-02  | -7.879E-02 | 55.01      |
|    | 1.65        | -354.80 | 38.05  | -9.739E-01 | 3.124E-02  | 1.41       | 5.05       |
|    | 3.05        | -350.04 | 38.05  | -9.739E-01 | 3.124E-02  | 49.57      | 89.65      |
| 69 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -383.56 | -60.44 | -35.02     | -1.442E-01 | -48.51     | -79.58     |
|    | 1.65        | -378.81 | -60.44 | -35.02     | -1.442E-01 | 4.021E-01  | 1.72       |
|    | 3.05        | -374.06 | -60.44 | -35.02     | -1.442E-01 | 2.63       | -51.54     |
| 69 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -358.69 | 4.82   | 35.58      | 8.753E-02  | 51.92      | 9.48       |
|    | 1.65        | -353.94 | 4.82   | 35.58      | 8.753E-02  | 2.14       | 4.09       |
|    | 3.05        | -349.18 | 4.82   | 35.58      | 8.753E-02  | 99.92      | 42.14      |
| 69 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -384.42 | -27.21 | -71.58     | -2.005E-01 | -100.50    | -34.05     |
|    | 1.65        | -379.67 | -27.21 | -71.58     | -2.005E-01 | -3.307E-01 | 2.68       |
|    | 3.05        | -374.92 | -27.21 | -71.58     | -2.005E-01 | -47.72     | -4.04      |

|    |             |         |            |        |            |            |         |  |
|----|-------------|---------|------------|--------|------------|------------|---------|--|
| 70 | CU          |         |            |        |            |            |         |  |
|    | 2.5E-01     | -687.22 | 70.84      | -51.58 | -1.716E-01 | -70.96     | 55.58   |  |
|    | 1.65        | -679.83 | 70.84      | -51.58 | -1.716E-01 | 1.25       | -43.60  |  |
|    | 3.05        | -672.44 | 70.84      | -51.58 | -1.716E-01 | 73.46      | -142.78 |  |
| 70 | COLUMN1 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -496.36 | 80.84      | -19.95 | -5.117E-02 | -26.43     | 80.71   |  |
|    | 1.65        | -490.82 | 80.84      | -19.95 | -5.117E-02 | 1.51       | -32.46  |  |
|    | 3.05        | -485.28 | 80.84      | -19.95 | -5.117E-02 | 80.76      | -68.54  |  |
| 70 | COLUMN1 MIN |         |            |        |            |            |         |  |
|    | 2.5E-01     | -534.46 | 25.43      | -57.42 | -2.063E-01 | -80.01     | 2.66    |  |
|    | 1.65        | -528.92 | 25.43      | -57.42 | -2.063E-01 | 3.712E-01  | -32.94  |  |
|    | 3.05        | -523.38 | 25.43      | -57.42 | -2.063E-01 | 29.44      | -145.64 |  |
| 70 | COLUMN2 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -505.10 | 62.03      | 20.01  | 1.242E-02  | 30.71      | 54.24   |  |
|    | 1.65        | -499.56 | 62.03      | 20.01  | 1.242E-02  | 2.69       | -32.59  |  |
|    | 3.05        | -494.02 | 62.03      | 20.01  | 1.242E-02  | 135.51     | -94.72  |  |
| 70 | COLUMN2 MIN |         |            |        |            |            |         |  |
|    | 2.5E-01     | -525.72 | 44.23      | -97.38 | -2.699E-01 | -137.15    | 29.12   |  |
|    | 1.65        | -520.18 | 44.23      | -97.38 | -2.699E-01 | -8.176E-01 | -32.81  |  |
|    | 3.05        | -514.63 | 44.23      | -97.38 | -2.699E-01 | -25.32     | -119.46 |  |
| 70 | COLUMN3 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -285.13 | 56.95      | -1.41  | 1.760E-02  | -9.435E-01 | 67.95   |  |
|    | 1.65        | -280.38 | 56.95      | -1.41  | 1.760E-02  | 1.04       | -11.77  |  |
|    | 3.05        | -275.63 | 56.95      | -1.41  | 1.760E-02  | 54.34      | -14.40  |  |
| 70 | COLUMN3 MIN |         |            |        |            |            |         |  |
|    | 2.5E-01     | -323.23 | 1.54       | -38.88 | -1.375E-01 | -54.53     | -10.10  |  |
|    | 1.65        | -318.48 | 1.54       | -38.88 | -1.375E-01 | -9.650E-02 | -12.26  |  |
|    | 3.05        | -313.73 | 1.54       | -38.88 | -1.375E-01 | 3.02       | -91.50  |  |
| 70 | COLUMN4 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -293.87 | 38.15      | 38.55  | 8.120E-02  | 56.19      | 41.49   |  |
|    | 1.65        | -289.12 | 38.15      | 38.55  | 8.120E-02  | 2.23       | -11.91  |  |
|    | 3.05        | -284.37 | 38.15      | 38.55  | 8.120E-02  | 109.09     | -40.58  |  |
| 70 | COLUMN4 MIN |         |            |        |            |            |         |  |
|    | 2.5E-01     | -314.49 | 20.34      | -78.84 | -2.011E-01 | -111.66    | 16.37   |  |
|    | 1.65        | -309.74 | 20.34      | -78.84 | -2.011E-01 | -1.29      | -12.12  |  |
|    | 3.05        | -304.98 | 20.34      | -78.84 | -2.011E-01 | -51.74     | -65.32  |  |
| 71 | CU          |         |            |        |            |            |         |  |
|    | 2.5E-01     | -510.22 | -11.03     | -26.08 | -1.054E-01 | -37.71     | -9.38   |  |
|    | 1.65        | -504.56 | -11.03     | -26.08 | -1.054E-01 | -1.20      | 6.06    |  |
|    | 3.05        | -498.90 | -11.03     | -26.08 | -1.054E-01 | 35.32      | 21.51   |  |
| 71 | COLUMN1 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -353.76 | 16.46      | -7.85  | -3.055E-02 | -11.37     | 28.17   |  |
|    | 1.65        | -349.51 | 16.46      | -7.85  | -3.055E-02 | -3.855E-01 | 5.12    |  |
|    | 3.05        | -345.27 | 16.46      | -7.85  | -3.055E-02 | 42.39      | 50.19   |  |
| 71 | COLUMN1 MIN |         |            |        |            |            |         |  |
|    | 2.5E-01     | -411.57 | -33.01     | -31.28 | -1.275E-01 | -45.20     | -42.24  |  |
|    | 1.65        | -407.32 | -33.01     | -31.28 | -1.275E-01 | -1.41      | 3.97    |  |
|    | 3.05        | -403.08 | -33.01     | -31.28 | -1.275E-01 | 10.60      | -17.93  |  |
| 71 | COLUMN2 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -373.47 | -1.708E-01 | 16.64  | 8.178E-03  | 23.96      | 4.49    |  |
|    | 1.65        | -369.23 | -1.708E-01 | 16.64  | 8.178E-03  | 6.572E-01  | 4.73    |  |
|    | 3.05        | -364.99 | -1.708E-01 | 16.64  | 8.178E-03  | 75.62      | 27.30   |  |
| 71 | COLUMN2 MIN |         |            |        |            |            |         |  |
|    | 2.5E-01     | -391.85 | -16.38     | -55.77 | -1.662E-01 | -80.53     | -18.56  |  |
|    | 1.65        | -387.61 | -16.38     | -55.77 | -1.662E-01 | -2.45      | 4.36    |  |
|    | 3.05        | -383.36 | -16.38     | -55.77 | -1.662E-01 | -22.64     | 4.96    |  |
| 71 | COLUMN3 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -238.16 | 19.00      | 2.03   | 1.174E-02  | 2.86       | 29.87   |  |
|    | 1.65        | -234.52 | 19.00      | 2.03   | 1.174E-02  | 1.494E-02  | 3.27    |  |
|    | 3.05        | -230.89 | 19.00      | 2.03   | 1.174E-02  | 28.96      | 44.79   |  |
| 71 | COLUMN3 MIN |         |            |        |            |            |         |  |
|    | 2.5E-01     | -295.97 | -30.48     | -21.40 | -8.520E-02 | -30.97     | -40.54  |  |
|    | 1.65        | -292.33 | -30.48     | -21.40 | -8.520E-02 | -1.01      | 2.12    |  |
|    | 3.05        | -288.70 | -30.48     | -21.40 | -8.520E-02 | -2.83      | -23.34  |  |
| 71 | COLUMN4 MAX |         |            |        |            |            |         |  |
|    | 2.5E-01     | -257.88 | 2.37       | 26.52  | 5.047E-02  | 38.19      | 6.19    |  |
|    | 1.65        | -254.24 | 2.37       | 26.52  | 5.047E-02  | 1.06       | 2.88    |  |
|    | 3.05        | -250.60 | 2.37       | 26.52  | 5.047E-02  | 62.19      | 21.89   |  |
| 71 | COLUMN4 MIN |         |            |        |            |            |         |  |

|                |         |         |        |           |            |            |            |
|----------------|---------|---------|--------|-----------|------------|------------|------------|
|                | 2.5E-01 | -276.25 | -13.84 | -45.89    | -1.239E-01 | -66.30     | -16.86     |
|                | 1.65    | -272.62 | -13.84 | -45.89    | -1.239E-01 | -2.05      | 2.51       |
|                | 3.05    | -268.98 | -13.84 | -45.89    | -1.239E-01 | -36.07     | -4.392E-01 |
| 72 CU          |         |         |        |           |            |            |            |
|                | 2.5E-01 | -508.62 | 3.11   | -4.06     | -1.009E-01 | -7.79      | 3.61       |
|                | 1.65    | -502.96 | 3.11   | -4.06     | -1.009E-01 | -2.10      | -7.469E-01 |
|                | 3.05    | -497.31 | 3.11   | -4.06     | -1.009E-01 | 3.59       | -5.10      |
| 72 COLUMN1 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -371.56 | 41.78  | 4.791E-04 | -2.874E-02 | -1.77      | 57.47      |
|                | 1.65    | -367.32 | 41.78  | 4.791E-04 | -2.874E-02 | -1.28      | -8.209E-02 |
|                | 3.05    | -363.07 | 41.78  | 4.791E-04 | -2.874E-02 | 7.22       | 51.85      |
| 72 COLUMN1 MIN |         |         |        |           |            |            |            |
|                | 2.5E-01 | -391.37 | -37.11 | -6.10     | -1.226E-01 | -9.90      | -52.06     |
|                | 1.65    | -387.13 | -37.11 | -6.10     | -1.226E-01 | -1.87      | -1.04      |
|                | 3.05    | -382.88 | -37.11 | -6.10     | -1.226E-01 | -1.83      | -59.51     |
| 72 COLUMN2 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -376.19 | 14.92  | 6.38      | 8.289E-03  | 6.95       | 20.20      |
|                | 1.65    | -371.95 | 14.92  | 6.38      | 8.289E-03  | -1.13      | -3.685E-01 |
|                | 3.05    | -367.71 | 14.92  | 6.38      | 8.289E-03  | 16.33      | 13.92      |
| 72 COLUMN2 MIN |         |         |        |           |            |            |            |
|                | 2.5E-01 | -386.74 | -10.25 | -12.48    | -1.597E-01 | -18.63     | -14.79     |
|                | 1.65    | -382.50 | -10.25 | -12.48    | -1.597E-01 | -2.02      | -7.519E-01 |
|                | 3.05    | -378.25 | -10.25 | -12.48    | -1.597E-01 | -10.94     | -21.57     |
| 72 COLUMN3 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -238.33 | 40.81  | 1.95      | 1.177E-02  | 1.55       | 56.43      |
|                | 1.65    | -234.70 | 40.81  | 1.95      | 1.177E-02  | -6.814E-01 | 2.335E-01  |
|                | 3.05    | -231.06 | 40.81  | 1.95      | 1.177E-02  | 5.09       | 53.52      |
| 72 COLUMN3 MIN |         |         |        |           |            |            |            |
|                | 2.5E-01 | -258.14 | -38.08 | -4.15     | -8.212E-02 | -6.58      | -53.09     |
|                | 1.65    | -254.50 | -38.08 | -4.15     | -8.212E-02 | -1.27      | -7.226E-01 |
|                | 3.05    | -250.87 | -38.08 | -4.15     | -8.212E-02 | -3.96      | -57.84     |
| 72 COLUMN4 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -242.96 | 13.95  | 8.33      | 4.880E-02  | 10.27      | 19.16      |
|                | 1.65    | -239.33 | 13.95  | 8.33      | 4.880E-02  | -5.298E-01 | -5.288E-02 |
|                | 3.05    | -235.69 | 13.95  | 8.33      | 4.880E-02  | 14.20      | 15.59      |
| 72 COLUMN4 MIN |         |         |        |           |            |            |            |
|                | 2.5E-01 | -253.51 | -11.22 | -10.53    | -1.191E-01 | -15.30     | -15.83     |
|                | 1.65    | -249.87 | -11.22 | -10.53    | -1.191E-01 | -1.42      | -4.362E-01 |
|                | 3.05    | -246.23 | -11.22 | -10.53    | -1.191E-01 | -13.08     | -19.91     |
| 73 CU          |         |         |        |           |            |            |            |
|                | 2.5E-01 | -817.71 | 2.49   | -5.89     | -1.056E-01 | -16.37     | 3.02       |
|                | 1.65    | -812.05 | 2.49   | -5.89     | -1.056E-01 | -8.12      | -4.684E-01 |
|                | 3.05    | -806.40 | 2.49   | -5.89     | -1.056E-01 | 1.293E-01  | -3.96      |
| 73 COLUMN1 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -602.87 | 35.85  | 7.96      | -3.229E-02 | 4.82       | 49.80      |
|                | 1.65    | -598.63 | 35.85  | 7.96      | -3.229E-02 | -5.30      | -3.114E-01 |
|                | 3.05    | -594.38 | 35.85  | 7.96      | -3.229E-02 | 17.69      | 44.64      |
| 73 COLUMN1 MIN |         |         |        |           |            |            |            |
|                | 2.5E-01 | -623.70 | -32.11 | -16.80    | -1.261E-01 | -29.38     | -45.26     |
|                | 1.65    | -619.45 | -32.11 | -16.80    | -1.261E-01 | -6.88      | -3.912E-01 |
|                | 3.05    | -615.21 | -32.11 | -16.80    | -1.261E-01 | -17.49     | -50.58     |
| 73 COLUMN2 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -594.28 | 14.40  | 31.22     | 6.735E-03  | 38.31      | 19.72      |
|                | 1.65    | -590.04 | 14.40  | 31.22     | 6.735E-03  | -5.10      | -2.537E-01 |
|                | 3.05    | -585.79 | 14.40  | 31.22     | 6.735E-03  | 49.32      | 14.67      |
| 73 COLUMN2 MIN |         |         |        |           |            |            |            |
|                | 2.5E-01 | -632.29 | -10.66 | -40.06    | -1.652E-01 | -62.86     | -15.19     |
|                | 1.65    | -628.04 | -10.66 | -40.06    | -1.652E-01 | -7.08      | -4.490E-01 |
|                | 3.05    | -623.80 | -10.66 | -40.06    | -1.652E-01 | -49.13     | -20.61     |
| 73 COLUMN3 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -379.65 | 35.54  | 13.22     | 1.006E-02  | 14.76      | 49.02      |
|                | 1.65    | -376.01 | 35.54  | 13.22     | 1.006E-02  | -2.73      | -6.527E-01 |
|                | 3.05    | -372.37 | 35.54  | 13.22     | 1.006E-02  | 12.90      | 44.73      |
| 73 COLUMN3 MIN |         |         |        |           |            |            |            |
|                | 2.5E-01 | -400.47 | -32.42 | -11.55    | -8.378E-02 | -19.44     | -46.04     |
|                | 1.65    | -396.84 | -32.42 | -11.55    | -8.378E-02 | -4.30      | -7.325E-01 |
|                | 3.05    | -393.20 | -32.42 | -11.55    | -8.378E-02 | -22.28     | -50.48     |
| 73 COLUMN4 MAX |         |         |        |           |            |            |            |
|                | 2.5E-01 | -371.06 | 14.09  | 36.48     | 4.909E-02  | 48.24      | 18.94      |

|    |             |         |           |            |            |            |            |
|----|-------------|---------|-----------|------------|------------|------------|------------|
|    | 1.65        | -367.42 | 14.09     | 36.48      | 4.909E-02  | -2.53      | -5.949E-01 |
|    | 3.05        | -363.78 | 14.09     | 36.48      | 4.909E-02  | 44.54      | 14.77      |
| 73 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -409.06 | -10.97    | -34.81     | -1.228E-01 | -52.93     | -15.96     |
|    | 1.65        | -405.43 | -10.97    | -34.81     | -1.228E-01 | -4.51      | -7.902E-01 |
|    | 3.05        | -401.79 | -10.97    | -34.81     | -1.228E-01 | -53.91     | -20.52     |
| 74 | CU          |         |           |            |            |            |            |
|    | 2.5E-01     | -182.50 | -1.64     | -31.96     | -1.022E-01 | -44.66     | -4.127E-01 |
|    | 1.65        | -176.84 | -1.64     | -31.96     | -1.022E-01 | 8.204E-02  | 1.88       |
|    | 3.05        | -171.18 | -1.64     | -31.96     | -1.022E-01 | 44.82      | 4.18       |
| 74 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -135.19 | 4.30      | -10.29     | -2.954E-02 | -14.37     | 8.72       |
|    | 1.65        | -130.95 | 4.30      | -10.29     | -2.954E-02 | 1.352E-01  | 2.70       |
|    | 3.05        | -126.71 | 4.30      | -10.29     | -2.954E-02 | 52.79      | 9.59       |
| 74 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -138.55 | -6.76     | -37.64     | -1.238E-01 | -52.61     | -9.34      |
|    | 1.65        | -134.31 | -6.76     | -37.64     | -1.238E-01 | -1.217E-02 | 1.225E-01  |
|    | 3.05        | -130.07 | -6.76     | -37.64     | -1.238E-01 | 14.44      | -3.32      |
| 74 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -134.35 | 6.202E-01 | 18.35      | 8.018E-03  | 25.61      | 2.72       |
|    | 1.65        | -130.11 | 6.202E-01 | 18.35      | 8.018E-03  | 2.216E-01  | 1.85       |
|    | 3.05        | -125.86 | 6.202E-01 | 18.35      | 8.018E-03  | 93.01      | 5.29       |
| 74 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -139.40 | -3.08     | -66.28     | -1.613E-01 | -92.59     | -3.34      |
|    | 1.65        | -135.15 | -3.08     | -66.28     | -1.613E-01 | -9.853E-02 | 9.735E-01  |
|    | 3.05        | -130.91 | -3.08     | -66.28     | -1.613E-01 | -25.78     | 9.832E-01  |
| 74 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -98.98  | 4.62      | 1.30       | 1.149E-02  | 1.83       | 8.54       |
|    | 1.65        | -95.34  | 4.62      | 1.30       | 1.149E-02  | 1.088E-01  | 2.08       |
|    | 3.05        | -91.70  | 4.62      | 1.30       | 1.149E-02  | 36.53      | 8.52       |
| 74 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -102.34 | -6.45     | -26.05     | -8.274E-02 | -36.40     | -9.52      |
|    | 1.65        | -98.70  | -6.45     | -26.05     | -8.274E-02 | -3.861E-02 | -4.997E-01 |
|    | 3.05        | -95.06  | -6.45     | -26.05     | -8.274E-02 | -1.82      | -4.38      |
| 74 | COLUMN4 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -98.13  | 9.351E-01 | 29.95      | 4.904E-02  | 41.81      | 2.54       |
|    | 1.65        | -94.50  | 9.351E-01 | 29.95      | 4.904E-02  | 1.951E-01  | 1.23       |
|    | 3.05        | -90.86  | 9.351E-01 | 29.95      | 4.904E-02  | 76.75      | 4.22       |
| 74 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -103.18 | -2.77     | -54.69     | -1.203E-01 | -76.39     | -3.52      |
|    | 1.65        | -99.54  | -2.77     | -54.69     | -1.203E-01 | -1.250E-01 | 3.512E-01  |
|    | 3.05        | -95.91  | -2.77     | -54.69     | -1.203E-01 | -42.04     | -7.987E-02 |
| 75 | CU          |         |           |            |            |            |            |
|    | 2.5E-01     | -317.74 | -4.46     | -35.31     | -1.037E-01 | -49.47     | -4.81      |
|    | 1.65        | -312.08 | -4.46     | -35.31     | -1.037E-01 | -4.001E-02 | 1.43       |
|    | 3.05        | -306.42 | -4.46     | -35.31     | -1.037E-01 | 49.39      | 7.67       |
| 75 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -210.82 | 22.93     | -12.63     | -2.939E-02 | -17.29     | 33.67      |
|    | 1.65        | -206.58 | 22.93     | -12.63     | -2.939E-02 | 4.759E-01  | 1.57       |
|    | 3.05        | -202.33 | 22.93     | -12.63     | -2.939E-02 | 56.03      | 42.04      |
| 75 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -265.79 | -29.62    | -40.34     | -1.261E-01 | -56.91     | -40.88     |
|    | 1.65        | -261.55 | -29.62    | -40.34     | -1.261E-01 | -5.359E-01 | 5.777E-01  |
|    | 3.05        | -257.30 | -29.62    | -40.34     | -1.261E-01 | 18.06      | -30.54     |
| 75 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -225.95 | 5.43      | 16.38      | 8.643E-03  | 24.34      | 8.88       |
|    | 1.65        | -221.71 | 5.43      | 16.38      | 8.643E-03  | 1.44       | 1.29       |
|    | 3.05        | -217.47 | 5.43      | 16.38      | 8.643E-03  | 95.61      | 17.82      |
| 75 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -250.66 | -12.11    | -69.34     | -1.642E-01 | -98.55     | -16.09     |
|    | 1.65        | -246.41 | -12.11    | -69.34     | -1.642E-01 | -1.50      | 8.584E-01  |
|    | 3.05        | -242.17 | -12.11    | -69.34     | -1.642E-01 | -21.52     | -6.32      |
| 75 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -129.80 | 24.07     | -9.745E-02 | 1.224E-02  | 2.672E-01  | 34.49      |
|    | 1.65        | -126.17 | 24.07     | -9.745E-02 | 1.224E-02  | 4.957E-01  | 7.852E-01  |
|    | 3.05        | -122.53 | 24.07     | -9.745E-02 | 1.224E-02  | 38.51      | 39.66      |
| 75 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -184.78 | -28.47    | -27.81     | -8.451E-02 | -39.35     | -40.07     |
|    | 1.65        | -181.14 | -28.47    | -27.81     | -8.451E-02 | -5.161E-01 | -2.049E-01 |

|    |             |         |           |        |            |            |           |
|----|-------------|---------|-----------|--------|------------|------------|-----------|
|    | 3.05        | -177.50 | -28.47    | -27.81 | -8.451E-02 | 5.370E-01  | -32.92    |
| 75 | COLUMN4 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -144.94 | 6.57      | 28.91  | 5.028E-02  | 41.90      | 9.70      |
|    | 1.65        | -141.30 | 6.57      | 28.91  | 5.028E-02  | 1.46       | 5.045E-01 |
|    | 3.05        | -137.67 | 6.57      | 28.91  | 5.028E-02  | 78.09      | 15.44     |
| 75 | COLUMN4 MIN |         |           |        |            |            |           |
|    | 2.5E-01     | -169.64 | -10.97    | -56.81 | -1.225E-01 | -80.99     | -15.28    |
|    | 1.65        | -166.00 | -10.97    | -56.81 | -1.225E-01 | -1.48      | 7.581E-02 |
|    | 3.05        | -162.37 | -10.97    | -56.81 | -1.225E-01 | -39.04     | -8.70     |
| 76 | CU          |         |           |        |            |            |           |
|    | 2.5E-01     | -711.03 | -14.28    | -18.34 | -7.427E-02 | -27.24     | -13.10    |
|    | 1.65        | -706.59 | -14.28    | -18.34 | -7.427E-02 | -1.56      | 6.89      |
|    | 3.05        | -702.14 | -14.28    | -18.34 | -7.427E-02 | 24.12      | 26.88     |
| 76 | COLUMN1 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -495.83 | 11.96     | -4.52  | -2.266E-02 | -7.51      | 22.73     |
|    | 1.65        | -492.49 | 11.96     | -4.52  | -2.266E-02 | -5.980E-01 | 5.98      |
|    | 3.05        | -489.16 | 11.96     | -4.52  | -2.266E-02 | 31.08      | 51.09     |
| 76 | COLUMN1 MIN |         |           |        |            |            |           |
|    | 2.5E-01     | -570.72 | -33.38    | -22.99 | -8.875E-02 | -33.36     | -42.38    |
|    | 1.65        | -567.39 | -33.38    | -22.99 | -8.875E-02 | -1.74      | 4.36      |
|    | 3.05        | -564.06 | -33.38    | -22.99 | -8.875E-02 | 5.10       | -10.77    |
| 76 | COLUMN2 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -498.39 | -3.15     | 14.58  | 4.763E-03  | 19.89      | 1.03      |
|    | 1.65        | -495.05 | -3.15     | 14.58  | 4.763E-03  | -3.516E-01 | 5.45      |
|    | 3.05        | -491.72 | -3.15     | 14.58  | 4.763E-03  | 57.13      | 30.47     |
| 76 | COLUMN2 MIN |         |           |        |            |            |           |
|    | 2.5E-01     | -568.16 | -18.27    | -42.10 | -1.162E-01 | -60.75     | -20.68    |
|    | 1.65        | -564.83 | -18.27    | -42.10 | -1.162E-01 | -1.99      | 4.89      |
|    | 3.05        | -561.50 | -18.27    | -42.10 | -1.162E-01 | -20.96     | 9.86      |
| 76 | COLUMN3 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -278.05 | 16.02     | 2.56   | 7.126E-03  | 2.95       | 26.01     |
|    | 1.65        | -275.19 | 16.02     | 2.56   | 7.126E-03  | -6.256E-02 | 3.58      |
|    | 3.05        | -272.33 | 16.02     | 2.56   | 7.126E-03  | 21.70      | 43.01     |
| 76 | COLUMN3 MIN |         |           |        |            |            |           |
|    | 2.5E-01     | -352.95 | -29.32    | -15.91 | -5.896E-02 | -22.90     | -39.09    |
|    | 1.65        | -350.09 | -29.32    | -15.91 | -5.896E-02 | -1.21      | 1.96      |
|    | 3.05        | -347.23 | -29.32    | -15.91 | -5.896E-02 | -4.29      | -18.85    |
| 76 | COLUMN4 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -280.61 | 9.089E-01 | 21.67  | 3.455E-02  | 30.34      | 4.32      |
|    | 1.65        | -277.75 | 9.089E-01 | 21.67  | 3.455E-02  | 1.838E-01  | 3.05      |
|    | 3.05        | -274.90 | 9.089E-01 | 21.67  | 3.455E-02  | 47.75      | 22.38     |
| 76 | COLUMN4 MIN |         |           |        |            |            |           |
|    | 2.5E-01     | -350.38 | -14.21    | -35.01 | -8.638E-02 | -50.30     | -17.40    |
|    | 1.65        | -347.53 | -14.21    | -35.01 | -8.638E-02 | -1.46      | 2.49      |
|    | 3.05        | -344.67 | -14.21    | -35.01 | -8.638E-02 | -30.34     | 1.77      |
| 77 | CU          |         |           |        |            |            |           |
|    | 2.5E-01     | -921.28 | 10.43     | -27.43 | -1.052E-01 | -41.52     | 8.89      |
|    | 1.65        | -915.63 | 10.43     | -27.43 | -1.052E-01 | -3.11      | -5.70     |
|    | 3.05        | -909.97 | 10.43     | -27.43 | -1.052E-01 | 35.29      | -20.30    |
| 77 | COLUMN1 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -684.30 | 37.83     | -7.25  | -3.134E-02 | -12.02     | 49.02     |
|    | 1.65        | -680.05 | 37.83     | -7.25  | -3.134E-02 | -1.79      | -3.93     |
|    | 3.05        | -675.81 | 37.83     | -7.25  | -3.134E-02 | 44.68      | 26.44     |
| 77 | COLUMN1 MIN |         |           |        |            |            |           |
|    | 2.5E-01     | -697.63 | -22.19    | -33.90 | -1.265E-01 | -50.26     | -35.68    |
|    | 1.65        | -693.39 | -22.19    | -33.90 | -1.265E-01 | -2.88      | -4.63     |
|    | 3.05        | -689.14 | -22.19    | -33.90 | -1.265E-01 | 8.26       | -56.90    |
| 77 | COLUMN2 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -675.81 | 17.85     | 21.36  | 7.670E-03  | 29.04      | 20.79     |
|    | 1.65        | -671.56 | 17.85     | 21.36  | 7.670E-03  | -8.436E-01 | -4.15     |
|    | 3.05        | -667.32 | 17.85     | 21.36  | 7.670E-03  | 83.72      | -1.28     |
| 77 | COLUMN2 MIN |         |           |        |            |            |           |
|    | 2.5E-01     | -706.12 | -2.20     | -62.51 | -1.655E-01 | -91.32     | -7.45     |
|    | 1.65        | -701.88 | -2.20     | -62.51 | -1.655E-01 | -3.82      | -4.40     |
|    | 3.05        | -697.63 | -2.20     | -62.51 | -1.655E-01 | -30.78     | -29.17    |
| 77 | COLUMN3 MAX |         |           |        |            |            |           |
|    | 2.5E-01     | -427.51 | 33.06     | 3.45   | 1.081E-02  | 4.09       | 44.64     |
|    | 1.65        | -423.88 | 33.06     | 3.45   | 1.081E-02  | -6.479E-01 | -1.64     |
|    | 3.05        | -420.24 | 33.06     | 3.45   | 1.081E-02  | 30.86      | 35.41     |

|    |             |         |        |        |            |            |            |
|----|-------------|---------|--------|--------|------------|------------|------------|
| 77 | COLUMN3 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -440.85 | -26.95 | -23.21 | -8.431E-02 | -34.15     | -40.06     |
|    | 1.65        | -437.21 | -26.95 | -23.21 | -8.431E-02 | -1.74      | -2.34      |
|    | 3.05        | -433.57 | -26.95 | -23.21 | -8.431E-02 | -5.57      | -47.93     |
| 77 | COLUMN4 MAX |         |        |        |            |            |            |
|    | 2.5E-01     | -419.02 | 13.08  | 32.05  | 4.983E-02  | 45.15      | 16.41      |
|    | 1.65        | -415.39 | 13.08  | 32.05  | 4.983E-02  | 2.990E-01  | -1.86      |
|    | 3.05        | -411.75 | 13.08  | 32.05  | 4.983E-02  | 69.90      | 7.68       |
| 77 | COLUMN4 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -449.34 | -6.97  | -51.82 | -1.233E-01 | -75.21     | -11.84     |
|    | 1.65        | -445.70 | -6.97  | -51.82 | -1.233E-01 | -2.68      | -2.11      |
|    | 3.05        | -442.06 | -6.97  | -51.82 | -1.233E-01 | -44.60     | -20.21     |
| 78 | CU          |         |        |        |            |            |            |
|    | 2.5E-01     | -367.41 | 39.34  | -10.25 | -9.898E-02 | -20.54     | 39.41      |
|    | 1.65        | -361.75 | 39.34  | -10.25 | -9.898E-02 | -6.19      | -15.66     |
|    | 3.05        | -356.09 | 39.34  | -10.25 | -9.898E-02 | 8.17       | -70.73     |
| 78 | COLUMN1 MAX |         |        |        |            |            |            |
|    | 2.5E-01     | -253.22 | 50.78  | 2.44   | -2.820E-02 | -9.544E-01 | 59.70      |
|    | 1.65        | -248.98 | 50.78  | 2.44   | -2.820E-02 | -4.37      | -11.39     |
|    | 3.05        | -244.73 | 50.78  | 2.44   | -2.820E-02 | 20.05      | -23.60     |
| 78 | COLUMN1 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -297.89 | 8.22   | -17.82 | -1.203E-01 | -29.86     | -5.828E-01 |
|    | 1.65        | -293.64 | 8.22   | -17.82 | -1.203E-01 | -4.91      | -12.10     |
|    | 3.05        | -289.40 | 8.22   | -17.82 | -1.203E-01 | -7.79      | -82.49     |
| 78 | COLUMN2 MAX |         |        |        |            |            |            |
|    | 2.5E-01     | -246.04 | 36.64  | 24.06  | 8.018E-03  | 29.87      | 39.66      |
|    | 1.65        | -241.79 | 36.64  | 24.06  | 8.018E-03  | -3.81      | -11.63     |
|    | 3.05        | -237.55 | 36.64  | 24.06  | 8.018E-03  | 49.75      | -43.16     |
| 78 | COLUMN2 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -305.07 | 22.36  | -39.44 | -1.565E-01 | -60.69     | 19.46      |
|    | 1.65        | -300.83 | 22.36  | -39.44 | -1.565E-01 | -5.47      | -11.86     |
|    | 3.05        | -296.58 | 22.36  | -39.44 | -1.565E-01 | -37.50     | -62.94     |
| 78 | COLUMN3 MAX |         |        |        |            |            |            |
|    | 2.5E-01     | -164.61 | 41.35  | 8.36   | 1.156E-02  | 9.57       | 52.43      |
|    | 1.65        | -160.97 | 41.35  | 8.36   | 1.156E-02  | -2.14      | -5.45      |
|    | 3.05        | -157.34 | 41.35  | 8.36   | 1.156E-02  | 13.99      | -4.45      |
| 78 | COLUMN3 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -209.28 | -1.21  | -11.90 | -8.051E-02 | -19.34     | -7.85      |
|    | 1.65        | -205.64 | -1.21  | -11.90 | -8.051E-02 | -2.68      | -6.15      |
|    | 3.05        | -202.00 | -1.21  | -11.90 | -8.051E-02 | -13.85     | -63.34     |
| 78 | COLUMN4 MAX |         |        |        |            |            |            |
|    | 2.5E-01     | -157.43 | 27.20  | 29.98  | 4.778E-02  | 40.40      | 32.39      |
|    | 1.65        | -153.79 | 27.20  | 29.98  | 4.778E-02  | -1.58      | -5.69      |
|    | 3.05        | -150.15 | 27.20  | 29.98  | 4.778E-02  | 43.69      | -24.01     |
| 78 | COLUMN4 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -216.46 | 12.93  | -33.52 | -1.167E-01 | -50.16     | 12.19      |
|    | 1.65        | -212.82 | 12.93  | -33.52 | -1.167E-01 | -3.24      | -5.92      |
|    | 3.05        | -209.19 | 12.93  | -33.52 | -1.167E-01 | -43.56     | -43.78     |
| 79 | CU          |         |        |        |            |            |            |
|    | 2.5E-01     | -259.44 | -5.27  | -15.28 | -1.025E-01 | -23.24     | -4.79      |
|    | 1.65        | -253.78 | -5.27  | -15.28 | -1.025E-01 | -1.86      | 2.58       |
|    | 3.05        | -248.12 | -5.27  | -15.28 | -1.025E-01 | 19.53      | 9.95       |
| 79 | COLUMN1 MAX |         |        |        |            |            |            |
|    | 2.5E-01     | -161.21 | 21.29  | -2.47  | -2.967E-02 | -4.43      | 33.02      |
|    | 1.65        | -156.97 | 21.29  | -2.47  | -2.967E-02 | -9.123E-01 | 3.22       |
|    | 3.05        | -152.73 | 21.29  | -2.47  | -2.967E-02 | 26.81      | 41.51      |
| 79 | COLUMN1 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -227.94 | -29.19 | -20.44 | -1.241E-01 | -30.43     | -40.21     |
|    | 1.65        | -223.70 | -29.19 | -20.44 | -1.241E-01 | -1.88      | 6.475E-01  |
|    | 3.05        | -219.46 | -29.19 | -20.44 | -1.241E-01 | 2.48       | -26.58     |
| 79 | COLUMN2 MAX |         |        |        |            |            |            |
|    | 2.5E-01     | -158.21 | 4.69   | 16.07  | 8.008E-03  | 22.53      | 8.99       |
|    | 1.65        | -153.97 | 4.69   | 16.07  | 8.008E-03  | 5.380E-02  | 2.42       |
|    | 3.05        | -149.73 | 4.69   | 16.07  | 8.008E-03  | 51.75      | 19.08      |
| 79 | COLUMN2 MIN |         |        |        |            |            |            |
|    | 2.5E-01     | -230.95 | -12.59 | -38.98 | -1.618E-01 | -57.40     | -16.17     |
|    | 1.65        | -226.70 | -12.59 | -38.98 | -1.618E-01 | -2.84      | 1.45       |
|    | 3.05        | -222.46 | -12.59 | -38.98 | -1.618E-01 | -22.46     | -4.16      |
| 79 | COLUMN3 MAX |         |        |        |            |            |            |



|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
|    | 2.5E-01     | -112.29 | 22.05  | 4.28       | 1.148E-02  | 5.65       | 33.22      |
|    | 1.65        | -108.65 | 22.05  | 4.28       | 1.148E-02  | -2.797E-01 | 2.36       |
|    | 3.05        | -105.01 | 22.05  | 4.28       | 1.148E-02  | 18.00      | 39.57      |
| 79 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -179.02 | -28.42 | -13.69     | -8.297E-02 | -20.35     | -40.01     |
|    | 1.65        | -175.38 | -28.42 | -13.69     | -8.297E-02 | -1.24      | -2.202E-01 |
|    | 3.05        | -171.74 | -28.42 | -13.69     | -8.297E-02 | -6.34      | -28.51     |
| 79 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -109.29 | 5.46   | 22.82      | 4.916E-02  | 32.61      | 9.19       |
|    | 1.65        | -105.65 | 5.46   | 22.82      | 4.916E-02  | 6.865E-01  | 1.55       |
|    | 3.05        | -102.01 | 5.46   | 22.82      | 4.916E-02  | 42.93      | 17.15      |
| 79 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -182.02 | -11.83 | -32.23     | -1.207E-01 | -47.31     | -15.97     |
|    | 1.65        | -178.38 | -11.83 | -32.23     | -1.207E-01 | -2.21      | 5.855E-01  |
|    | 3.05        | -174.75 | -11.83 | -32.23     | -1.207E-01 | -31.28     | -6.09      |
| 80 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -241.54 | 4.71   | -2.82      | -1.027E-01 | -5.44      | 6.07       |
|    | 1.65        | -235.88 | 4.71   | -2.82      | -1.027E-01 | -1.49      | -5.303E-01 |
|    | 3.05        | -230.22 | 4.71   | -2.82      | -1.027E-01 | 2.46       | -7.13      |
| 80 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -178.39 | 43.05  | -4.343E-01 | -2.965E-02 | -1.31      | 59.87      |
|    | 1.65        | -174.15 | 43.05  | -4.343E-01 | -2.965E-02 | -6.975E-01 | -3.943E-01 |
|    | 3.05        | -169.91 | 43.05  | -4.343E-01 | -2.965E-02 | 3.79       | 49.98      |
| 80 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -183.92 | -35.98 | -3.80      | -1.244E-01 | -6.85      | -50.76     |
|    | 1.65        | -179.67 | -35.98 | -3.80      | -1.244E-01 | -1.54      | -4.012E-01 |
|    | 3.05        | -175.43 | -35.98 | -3.80      | -1.244E-01 | -9.870E-02 | -60.67     |
| 80 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -179.72 | 17.11  | 3.13       | 8.073E-03  | 4.52       | 23.55      |
|    | 1.65        | -175.48 | 17.11  | 3.13       | 8.073E-03  | 1.330E-01  | -3.926E-01 |
|    | 3.05        | -171.23 | 17.11  | 3.13       | 8.073E-03  | 7.95       | 13.66      |
| 80 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -182.59 | -10.04 | -7.37      | -1.621E-01 | -12.68     | -14.45     |
|    | 1.65        | -178.35 | -10.04 | -7.37      | -1.621E-01 | -2.37      | -4.029E-01 |
|    | 3.05        | -174.10 | -10.04 | -7.37      | -1.621E-01 | -4.26      | -24.36     |
| 80 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -123.96 | 41.51  | 8.312E-01  | 1.156E-02  | 1.01       | 57.94      |
|    | 1.65        | -120.32 | 41.51  | 8.312E-01  | 1.156E-02  | -1.535E-01 | -1.661E-01 |
|    | 3.05        | -116.68 | 41.51  | 8.312E-01  | 1.156E-02  | 2.56       | 52.36      |
| 80 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -129.48 | -37.52 | -2.54      | -8.314E-02 | -4.54      | -52.69     |
|    | 1.65        | -125.84 | -37.52 | -2.54      | -8.314E-02 | -9.934E-01 | -1.730E-01 |
|    | 3.05        | -122.21 | -37.52 | -2.54      | -8.314E-02 | -1.33      | -58.29     |
| 80 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -125.28 | 15.57  | 4.40       | 4.928E-02  | 6.84       | 21.63      |
|    | 1.65        | -121.65 | 15.57  | 4.40       | 4.928E-02  | 6.770E-01  | -1.644E-01 |
|    | 3.05        | -118.01 | 15.57  | 4.40       | 4.928E-02  | 6.72       | 16.04      |
| 80 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -128.16 | -11.58 | -6.10      | -1.209E-01 | -10.37     | -16.37     |
|    | 1.65        | -124.52 | -11.58 | -6.10      | -1.209E-01 | -1.82      | -1.747E-01 |
|    | 3.05        | -120.88 | -11.58 | -6.10      | -1.209E-01 | -5.49      | -21.97     |
| 81 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -310.73 | 3.41   | -19.03     | -1.730E-01 | -31.13     | 4.27       |
|    | 1.65        | -303.34 | 3.41   | -19.03     | -1.730E-01 | -4.49      | -5.068E-01 |
|    | 3.05        | -295.95 | 3.41   | -19.03     | -1.730E-01 | 22.15      | -5.28      |
| 81 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -219.79 | 51.70  | -1.82      | -5.031E-02 | -5.74      | 73.84      |
|    | 1.65        | -214.24 | 51.70  | -1.82      | -5.031E-02 | -2.89      | 1.47       |
|    | 3.05        | -208.70 | 51.70  | -1.82      | -5.031E-02 | 33.96      | 62.99      |
| 81 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -246.31 | -46.58 | -26.72     | -2.092E-01 | -40.95     | -67.44     |
|    | 1.65        | -240.77 | -46.58 | -26.72     | -2.092E-01 | -3.84      | -2.23      |
|    | 3.05        | -235.23 | -46.58 | -26.72     | -2.092E-01 | -7.249E-01 | -70.91     |
| 81 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -193.95 | 19.57  | 24.90      | 1.329E-02  | 32.02      | 27.58      |
|    | 1.65        | -188.41 | 19.57  | 24.90      | 1.329E-02  | -2.75      | 2.075E-01  |
|    | 3.05        | -182.87 | 19.57  | 24.90      | 1.329E-02  | 70.96      | 19.28      |
| 81 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -272.14 | -14.45 | -53.44     | -2.728E-01 | -78.71     | -21.19     |

|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
|    | 1.65        | -266.60 | -14.45 | -53.44     | -2.728E-01 | -3.98      | -9.676E-01 |
|    | 3.05        | -261.06 | -14.45 | -53.44     | -2.728E-01 | -37.73     | -27.20     |
| 81 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -149.83 | 50.75  | 7.05       | 1.912E-02  | 8.13       | 72.16      |
|    | 1.65        | -145.08 | 50.75  | 7.05       | 1.912E-02  | -1.45      | 1.10       |
|    | 3.05        | -140.33 | 50.75  | 7.05       | 1.912E-02  | 22.97      | 63.95      |
| 81 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -176.35 | -47.53 | -17.85     | -1.397E-01 | -27.09     | -69.12     |
|    | 1.65        | -171.60 | -47.53 | -17.85     | -1.397E-01 | -2.40      | -2.59      |
|    | 3.05        | -166.85 | -47.53 | -17.85     | -1.397E-01 | -11.71     | -69.96     |
| 81 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -124.00 | 18.62  | 33.77      | 8.272E-02  | 45.88      | 25.90      |
|    | 1.65        | -119.24 | 18.62  | 33.77      | 8.272E-02  | -1.31      | -1.573E-01 |
|    | 3.05        | -114.49 | 18.62  | 33.77      | 8.272E-02  | 59.98      | 20.23      |
| 81 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -202.18 | -15.39 | -44.57     | -2.033E-01 | -64.85     | -22.87     |
|    | 1.65        | -197.43 | -15.39 | -44.57     | -2.033E-01 | -2.54      | -1.33      |
|    | 3.05        | -192.68 | -15.39 | -44.57     | -2.033E-01 | -48.71     | -26.24     |
| 82 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -259.26 | 4.87   | -20.44     | -1.720E-01 | -32.79     | 7.52       |
|    | 1.65        | -251.87 | 4.87   | -20.44     | -1.720E-01 | -4.17      | 6.927E-01  |
|    | 3.05        | -244.48 | 4.87   | -20.44     | -1.720E-01 | 24.44      | -6.13      |
| 82 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -179.92 | 54.49  | -2.88      | -4.919E-02 | -7.18      | 78.46      |
|    | 1.65        | -174.38 | 54.49  | -2.88      | -4.919E-02 | -2.80      | 2.22       |
|    | 3.05        | -168.84 | 54.49  | -2.88      | -4.919E-02 | 35.83      | 64.92      |
| 82 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -208.97 | -47.18 | -27.77     | -2.089E-01 | -42.00     | -67.18     |
|    | 1.65        | -203.42 | -47.18 | -27.77     | -2.089E-01 | -3.45      | -1.18      |
|    | 3.05        | -197.88 | -47.18 | -27.77     | -2.089E-01 | 8.375E-01  | -74.11     |
| 82 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -155.44 | 21.30  | 23.83      | 1.397E-02  | 30.03      | 30.78      |
|    | 1.65        | -149.89 | 21.30  | 23.83      | 1.397E-02  | -2.83      | 1.11       |
|    | 3.05        | -144.35 | 21.30  | 23.83      | 1.397E-02  | 73.38      | 19.66      |
| 82 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -233.45 | -13.99 | -54.49     | -2.720E-01 | -79.21     | -19.50     |
|    | 1.65        | -227.91 | -13.99 | -54.49     | -2.720E-01 | -3.42      | -6.883E-02 |
|    | 3.05        | -222.36 | -13.99 | -54.49     | -2.720E-01 | -36.71     | -28.86     |
| 82 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -117.38 | 52.49  | 5.77       | 1.988E-02  | 6.57       | 75.80      |
|    | 1.65        | -112.62 | 52.49  | 5.77       | 1.988E-02  | -1.17      | 2.36       |
|    | 3.05        | -107.87 | 52.49  | 5.77       | 1.988E-02  | 25.35      | 67.87      |
| 82 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -146.42 | -49.18 | -19.12     | -1.398E-01 | -28.25     | -69.84     |
|    | 1.65        | -141.67 | -49.18 | -19.12     | -1.398E-01 | -1.82      | -1.03      |
|    | 3.05        | -136.92 | -49.18 | -19.12     | -1.398E-01 | -9.64      | -71.16     |
| 82 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -92.89  | 19.29  | 32.48      | 8.304E-02  | 43.78      | 28.12      |
|    | 1.65        | -88.14  | 19.29  | 32.48      | 8.304E-02  | -1.20      | 1.25       |
|    | 3.05        | -83.39  | 19.29  | 32.48      | 8.304E-02  | 62.90      | 22.61      |
| 82 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -170.90 | -15.99 | -45.84     | -2.030E-01 | -65.46     | -22.16     |
|    | 1.65        | -166.15 | -15.99 | -45.84     | -2.030E-01 | -1.79      | 7.619E-02  |
|    | 3.05        | -161.40 | -15.99 | -45.84     | -2.030E-01 | -47.19     | -25.91     |
| 83 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -192.69 | 3.77   | -7.144E-02 | -1.033E-01 | -5.20      | 4.47       |
|    | 1.65        | -187.03 | 3.77   | -7.144E-02 | -1.033E-01 | -5.10      | -8.088E-01 |
|    | 3.05        | -181.37 | 3.77   | -7.144E-02 | -1.033E-01 | -5.00      | -6.09      |
| 83 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -140.44 | 42.13  | 2.50       | -3.003E-02 | -7.709E-01 | 58.48      |
|    | 1.65        | -136.20 | 42.13  | 2.50       | -3.003E-02 | -3.32      | -4.937E-01 |
|    | 3.05        | -131.96 | 42.13  | 2.50       | -3.003E-02 | 2.932E-01  | 50.34      |
| 83 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -148.59 | -36.47 | -2.61      | -1.249E-01 | -7.03      | -51.77     |
|    | 1.65        | -144.35 | -36.47 | -2.61      | -1.249E-01 | -4.32      | -7.194E-01 |
|    | 3.05        | -140.10 | -36.47 | -2.61      | -1.249E-01 | -7.79      | -59.48     |
| 83 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -139.68 | 16.11  | 7.96       | 7.968E-03  | 5.94       | 22.13      |
|    | 1.65        | -135.43 | 16.11  | 7.96       | 7.968E-03  | -2.43      | -4.089E-01 |

|     |             |         |         |        |        |            |            |            |
|-----|-------------|---------|---------|--------|--------|------------|------------|------------|
|     |             | 3.05    | -131.19 | 16.11  | 7.96   | 7.968E-03  | 8.86       | 13.85      |
| 83  | COLUMN2 MIN | 2.5E-01 | -149.36 | -10.46 | -8.07  | -1.629E-01 | -13.74     | -15.42     |
|     |             | 1.65    | -145.11 | -10.46 | -8.07  | -1.629E-01 | -5.22      | -8.042E-01 |
|     |             | 3.05    | -140.87 | -10.46 | -8.07  | -1.629E-01 | -16.36     | -22.99     |
| 83  | COLUMN3 MAX | 2.5E-01 | -93.80  | 40.72  | 2.97   | 1.143E-02  | 1.50       | 56.64      |
|     |             | 1.65    | -90.16  | 40.72  | 2.97   | 1.143E-02  | -1.71      | -3.629E-01 |
|     |             | 3.05    | -86.53  | 40.72  | 2.97   | 1.143E-02  | 1.25       | 52.45      |
| 83  | COLUMN3 MIN | 2.5E-01 | -101.95 | -37.88 | -2.14  | -8.347E-02 | -4.76      | -53.61     |
|     |             | 1.65    | -98.31  | -37.88 | -2.14  | -8.347E-02 | -2.71      | -5.887E-01 |
|     |             | 3.05    | -94.68  | -37.88 | -2.14  | -8.347E-02 | -6.83      | -57.38     |
| 83  | COLUMN4 MAX | 2.5E-01 | -93.04  | 14.71  | 8.43   | 4.943E-02  | 8.22       | 20.29      |
|     |             | 1.65    | -89.40  | 14.71  | 8.43   | 4.943E-02  | -8.102E-01 | -2.782E-01 |
|     |             | 3.05    | -85.76  | 14.71  | 8.43   | 4.943E-02  | 9.82       | 15.96      |
| 83  | COLUMN4 MIN | 2.5E-01 | -102.72 | -11.86 | -7.60  | -1.215E-01 | -11.47     | -17.26     |
|     |             | 1.65    | -99.08  | -11.86 | -7.60  | -1.215E-01 | -3.61      | -6.734E-01 |
|     |             | 3.05    | -95.44  | -11.86 | -7.60  | -1.215E-01 | -15.41     | -20.89     |
| 84  | CU          | 2.5E-01 | -208.92 | 7.21   | -15.41 | -1.018E-01 | -25.47     | 9.08       |
|     |             | 1.65    | -203.26 | 7.21   | -15.41 | -1.018E-01 | -3.89      | -1.02      |
|     |             | 3.05    | -197.60 | 7.21   | -15.41 | -1.018E-01 | 17.69      | -11.13     |
| 84  | COLUMN1 MAX | 2.5E-01 | -122.00 | 32.69  | -1.99  | -2.918E-02 | -5.47      | 46.17      |
|     |             | 1.65    | -117.75 | 32.69  | -1.99  | -2.918E-02 | -2.69      | 4.671E-01  |
|     |             | 3.05    | -113.51 | 32.69  | -1.99  | -2.918E-02 | 26.44      | 28.66      |
| 84  | COLUMN1 MIN | 2.5E-01 | -191.38 | -21.86 | -21.13 | -1.235E-01 | -32.73     | -32.56     |
|     |             | 1.65    | -187.14 | -21.86 | -21.13 | -1.235E-01 | -3.15      | -2.00      |
|     |             | 3.05    | -182.89 | -21.86 | -21.13 | -1.235E-01 | 9.745E-02  | -45.35     |
| 84  | COLUMN2 MAX | 2.5E-01 | -114.40 | 14.96  | 18.56  | 8.131E-03  | 23.80      | 20.45      |
|     |             | 1.65    | -110.15 | 14.96  | 18.56  | 8.131E-03  | -2.19      | -3.020E-01 |
|     |             | 3.05    | -105.91 | 14.96  | 18.56  | 8.131E-03  | 54.71      | 4.76       |
| 84  | COLUMN2 MIN | 2.5E-01 | -198.98 | -4.14  | -41.68 | -1.608E-01 | -62.00     | -6.84      |
|     |             | 1.65    | -194.74 | -4.14  | -41.68 | -1.608E-01 | -3.64      | -1.24      |
|     |             | 3.05    | -190.49 | -4.14  | -41.68 | -1.608E-01 | -28.18     | -21.45     |
| 84  | COLUMN3 MAX | 2.5E-01 | -81.54  | 30.60  | 5.03   | 1.169E-02  | 5.51       | 43.83      |
|     |             | 1.65    | -77.91  | 30.60  | 5.03   | 1.169E-02  | -1.53      | 1.05       |
|     |             | 3.05    | -74.27  | 30.60  | 5.03   | 1.169E-02  | 17.76      | 32.16      |
| 84  | COLUMN3 MIN | 2.5E-01 | -150.93 | -23.95 | -14.11 | -8.263E-02 | -21.75     | -34.89     |
|     |             | 1.65    | -147.29 | -23.95 | -14.11 | -8.263E-02 | -2.00      | -1.42      |
|     |             | 3.05    | -143.65 | -23.95 | -14.11 | -8.263E-02 | -8.58      | -41.85     |
| 84  | COLUMN4 MAX | 2.5E-01 | -73.94  | 12.88  | 25.59  | 4.901E-02  | 34.78      | 18.12      |
|     |             | 1.65    | -70.31  | 12.88  | 25.59  | 4.901E-02  | -1.04      | 2.792E-01  |
|     |             | 3.05    | -66.67  | 12.88  | 25.59  | 4.901E-02  | 46.04      | 8.26       |
| 84  | COLUMN4 MIN | 2.5E-01 | -158.53 | -6.23  | -34.66 | -1.199E-01 | -51.02     | -9.18      |
|     |             | 1.65    | -154.89 | -6.23  | -34.66 | -1.199E-01 | -2.49      | -6.541E-01 |
|     |             | 3.05    | -151.25 | -6.23  | -34.66 | -1.199E-01 | -36.86     | -17.95     |
| 140 | CU          | 2.5E-01 | -102.35 | -28.66 | -20.98 | 1.108E-01  | -20.17     | -28.81     |
|     |             | 1.48    | -97.40  | -28.66 | -20.98 | 1.108E-01  | 5.53       | 6.30       |
|     |             | 2.70    | -92.45  | -28.66 | -20.98 | 1.108E-01  | 31.23      | 41.42      |
| 140 | COLUMN1 MAX | 2.5E-01 | -71.54  | -13.64 | -13.23 | 1.434E-01  | -13.29     | -15.72     |
|     |             | 1.48    | -67.83  | -13.64 | -13.23 | 1.434E-01  | 5.46       | 8.56       |
|     |             | 2.70    | -64.12  | -13.64 | -13.23 | 1.434E-01  | 27.78      | 44.51      |
| 140 | COLUMN1 MIN | 2.5E-01 | -81.98  | -29.36 | -18.24 | 2.283E-02  | -16.97     | -27.49     |
|     |             | 1.48    | -78.27  | -29.36 | -18.24 | 2.283E-02  | 2.84       | 8.924E-01  |
|     |             | 2.70    | -74.56  | -29.36 | -18.24 | 2.283E-02  | 19.07      | 17.62      |

|     |             |        |           |            |            |            |            |
|-----|-------------|--------|-----------|------------|------------|------------|------------|
| 140 | COLUMN2 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -71.44 | -19.00    | -7.90      | 1.114E-01  | -9.39      | -19.62     |
|     | 1.48        | -67.73 | -19.00    | -7.90      | 1.114E-01  | 8.04       | 6.09       |
|     | 2.70        | -64.02 | -19.00    | -7.90      | 1.114E-01  | 36.91      | 35.41      |
| 140 | COLUMN2 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -82.08 | -23.99    | -23.58     | 5.476E-02  | -20.87     | -23.59     |
|     | 1.48        | -78.37 | -23.99    | -23.58     | 5.476E-02  | 2.568E-01  | 3.37       |
|     | 2.70        | -74.66 | -23.99    | -23.58     | 5.476E-02  | 9.93       | 26.72      |
| 140 | COLUMN3 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -52.75 | -7.24     | -8.88      | 1.123E-01  | -9.31      | -9.14      |
|     | 1.48        | -49.57 | -7.24     | -8.88      | 1.123E-01  | 4.10       | 7.31       |
|     | 2.70        | -46.39 | -7.24     | -8.88      | 1.123E-01  | 21.08      | 35.42      |
| 140 | COLUMN3 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -63.19 | -22.96    | -13.88     | -8.221E-03 | -12.99     | -20.90     |
|     | 1.48        | -60.01 | -22.96    | -13.88     | -8.221E-03 | 1.48       | -3.591E-01 |
|     | 2.70        | -56.83 | -22.96    | -13.88     | -8.221E-03 | 12.37      | 8.53       |
| 140 | COLUMN4 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -52.65 | -12.60    | -3.54      | 8.038E-02  | -5.41      | -13.04     |
|     | 1.48        | -49.47 | -12.60    | -3.54      | 8.038E-02  | 6.68       | 4.84       |
|     | 2.70        | -46.29 | -12.60    | -3.54      | 8.038E-02  | 30.22      | 26.32      |
| 140 | COLUMN4 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -63.29 | -17.60    | -19.22     | 2.371E-02  | -16.89     | -17.00     |
|     | 1.48        | -60.11 | -17.60    | -19.22     | 2.371E-02  | -1.10      | 2.12       |
|     | 2.70        | -56.93 | -17.60    | -19.22     | 2.371E-02  | 3.24       | 17.63      |
| 141 | CU          |        |           |            |            |            |            |
|     | 2.5E-01     | -90.16 | 27.92     | -16.85     | 5.440E-02  | -21.06     | 28.21      |
|     | 1.48        | -85.21 | 27.92     | -16.85     | 5.440E-02  | -4.159E-01 | -5.99      |
|     | 2.70        | -80.26 | 27.92     | -16.85     | 5.440E-02  | 20.23      | -40.19     |
| 141 | COLUMN1 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -62.58 | 29.18     | -9.06      | 3.080E-01  | -12.84     | 27.68      |
|     | 1.48        | -58.86 | 29.18     | -9.06      | 3.080E-01  | 1.16       | -9.106E-01 |
|     | 2.70        | -55.15 | 29.18     | -9.06      | 3.080E-01  | 20.98      | -16.47     |
| 141 | COLUMN1 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -72.66 | 12.70     | -16.21     | -2.264E-01 | -18.74     | 14.64      |
|     | 1.48        | -68.95 | 12.70     | -16.21     | -2.264E-01 | -1.78      | -8.07      |
|     | 2.70        | -65.23 | 12.70     | -16.21     | -2.264E-01 | 9.36       | -43.81     |
| 141 | COLUMN2 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -59.34 | 23.65     | -4.92      | 2.401E-01  | -10.90     | 23.35      |
|     | 1.48        | -55.63 | 23.65     | -4.92      | 2.401E-01  | 4.26       | -3.35      |
|     | 2.70        | -51.92 | 23.65     | -4.92      | 2.401E-01  | 29.18      | -25.68     |
| 141 | COLUMN2 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -75.90 | 18.23     | -20.35     | -1.585E-01 | -20.69     | 18.97      |
|     | 1.48        | -72.18 | 18.23     | -20.35     | -1.585E-01 | -4.88      | -5.63      |
|     | 2.70        | -68.47 | 18.23     | -20.35     | -1.585E-01 | 1.16       | -34.60     |
| 141 | COLUMN3 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -45.18 | 23.01     | -4.63      | 2.903E-01  | -7.57      | 21.24      |
|     | 1.48        | -42.00 | 23.01     | -4.63      | 2.903E-01  | 1.01       | 2.064E-01  |
|     | 2.70        | -38.82 | 23.01     | -4.63      | 2.903E-01  | 15.41      | -7.80      |
| 141 | COLUMN3 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -55.27 | 6.54      | -11.78     | -2.441E-01 | -13.47     | 8.21       |
|     | 1.48        | -52.08 | 6.54      | -11.78     | -2.441E-01 | -1.93      | -6.95      |
|     | 2.70        | -48.90 | 6.54      | -11.78     | -2.441E-01 | 3.78       | -35.14     |
| 141 | COLUMN4 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -41.95 | 17.49     | -4.927E-01 | 2.224E-01  | -5.63      | 16.92      |
|     | 1.48        | -38.76 | 17.49     | -4.927E-01 | 2.224E-01  | 4.11       | -2.23      |
|     | 2.70        | -35.58 | 17.49     | -4.927E-01 | 2.224E-01  | 23.60      | -17.01     |
| 141 | COLUMN4 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -58.50 | 12.06     | -15.93     | -1.762E-01 | -15.41     | 12.53      |
|     | 1.48        | -55.32 | 12.06     | -15.93     | -1.762E-01 | -5.04      | -4.52      |
|     | 2.70        | -52.13 | 12.06     | -15.93     | -1.762E-01 | -4.42      | -25.93     |
| 142 | CU          |        |           |            |            |            |            |
|     | 2.5E-01     | -97.91 | -11.59    | -9.91      | 8.339E-02  | -7.89      | -17.28     |
|     | 1.48        | -92.96 | -11.59    | -9.91      | 8.339E-02  | 4.25       | -3.07      |
|     | 2.70        | -88.01 | -11.59    | -9.91      | 8.339E-02  | 16.39      | 11.13      |
| 142 | COLUMN1 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -66.56 | 3.370E-01 | -1.28      | 1.773E-01  | 1.03       | -5.47      |
|     | 1.48        | -62.85 | 3.370E-01 | -1.28      | 1.773E-01  | 3.78       | 1.27       |
|     | 2.70        | -59.14 | 3.370E-01 | -1.28      | 1.773E-01  | 20.42      | 22.98      |
| 142 | COLUMN1 MIN |        |           |            |            |            |            |

|     |             |        |        |            |            |            |            |
|-----|-------------|--------|--------|------------|------------|------------|------------|
|     | 2.5E-01     | -80.30 | -17.73 | -13.59     | -5.221E-02 | -12.87     | -20.45     |
|     | 1.48        | -76.59 | -17.73 | -13.59     | -5.221E-02 | 2.59       | -5.89      |
|     | 2.70        | -72.87 | -17.73 | -13.59     | -5.221E-02 | 4.16       | -6.29      |
| 142 | COLUMN2 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -69.49 | -5.48  | 9.09       | 1.474E-01  | 12.51      | -10.16     |
|     | 1.48        | -65.78 | -5.48  | 9.09       | 1.474E-01  | 5.00       | -1.15      |
|     | 2.70        | -62.06 | -5.48  | 9.09       | 1.474E-01  | 34.34      | 13.42      |
| 142 | COLUMN2 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -77.37 | -11.91 | -23.96     | -2.234E-02 | -24.35     | -15.75     |
|     | 1.48        | -73.66 | -11.91 | -23.96     | -2.234E-02 | 1.37       | -3.46      |
|     | 2.70        | -69.95 | -11.91 | -23.96     | -2.234E-02 | -9.76      | 3.27       |
| 142 | COLUMN3 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -47.49 | 3.02   | 3.07       | 1.498E-01  | 5.01       | -9.623E-01 |
|     | 1.48        | -44.31 | 3.02   | 3.07       | 1.498E-01  | 2.44       | 2.49       |
|     | 2.70        | -41.13 | 3.02   | 3.07       | 1.498E-01  | 13.75      | 20.91      |
| 142 | COLUMN3 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -61.23 | -15.04 | -9.24      | -7.973E-02 | -8.89      | -15.94     |
|     | 1.48        | -58.05 | -15.04 | -9.24      | -7.973E-02 | 1.25       | -4.67      |
|     | 2.70        | -54.87 | -15.04 | -9.24      | -7.973E-02 | -2.50      | -8.36      |
| 142 | COLUMN4 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -50.42 | -2.80  | 13.44      | 1.199E-01  | 16.49      | -5.66      |
|     | 1.48        | -47.24 | -2.80  | 13.44      | 1.199E-01  | 3.65       | 6.875E-02  |
|     | 2.70        | -44.06 | -2.80  | 13.44      | 1.199E-01  | 27.67      | 11.36      |
| 142 | COLUMN4 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -58.30 | -9.22  | -19.61     | -4.985E-02 | -20.37     | -11.24     |
|     | 1.48        | -55.12 | -9.22  | -19.61     | -4.985E-02 | 2.954E-02  | -2.24      |
|     | 2.70        | -51.94 | -9.22  | -19.61     | -4.985E-02 | -16.43     | 1.20       |
| 143 | CU          |        |        |            |            |            |            |
|     | 2.5E-01     | -85.41 | 4.90   | -2.23      | 8.339E-02  | -2.95      | 7.63       |
|     | 1.48        | -80.46 | 4.90   | -2.23      | 8.339E-02  | -2.232E-01 | 1.62       |
|     | 2.70        | -75.51 | 4.90   | -2.23      | 8.339E-02  | 2.50       | -4.38      |
| 143 | COLUMN1 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -63.35 | 21.08  | -1.10      | 1.773E-01  | -1.55      | 24.82      |
|     | 1.48        | -59.64 | 21.08  | -1.10      | 1.773E-01  | 1.810E-01  | 3.44       |
|     | 2.70        | -55.92 | 21.08  | -1.10      | 1.773E-01  | 2.82       | 20.25      |
| 143 | COLUMN1 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -64.76 | -13.73 | -2.24      | -5.221E-02 | -2.87      | -13.37     |
|     | 1.48        | -61.05 | -13.73 | -2.24      | -5.221E-02 | -5.157E-01 | -1.01      |
|     | 2.70        | -57.34 | -13.73 | -2.24      | -5.221E-02 | 9.376E-01  | -26.82     |
| 143 | COLUMN2 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -63.32 | 9.41   | 6.398E-02  | 1.474E-01  | -6.663E-01 | 12.04      |
|     | 1.48        | -59.61 | 9.41   | 6.398E-02  | 1.474E-01  | 5.031E-01  | 1.93       |
|     | 2.70        | -55.89 | 9.41   | 6.398E-02  | 1.474E-01  | 4.64       | 4.44       |
| 143 | COLUMN2 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -64.79 | -2.06  | -3.40      | -2.234E-02 | -3.76      | -6.013E-01 |
|     | 1.48        | -61.08 | -2.06  | -3.40      | -2.234E-02 | -8.378E-01 | 5.072E-01  |
|     | 2.70        | -57.37 | -2.06  | -3.40      | -2.234E-02 | -8.848E-01 | -11.02     |
| 143 | COLUMN3 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -49.92 | 19.40  | -2.501E-01 | 1.498E-01  | -4.196E-01 | 22.01      |
|     | 1.48        | -46.74 | 19.40  | -2.501E-01 | 1.498E-01  | 2.729E-01  | 2.69       |
|     | 2.70        | -43.56 | 19.40  | -2.501E-01 | 1.498E-01  | 1.87       | 21.55      |
| 143 | COLUMN3 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -51.33 | -15.40 | -1.39      | -7.973E-02 | -1.74      | -16.18     |
|     | 1.48        | -48.15 | -15.40 | -1.39      | -7.973E-02 | -4.238E-01 | -1.76      |
|     | 2.70        | -44.97 | -15.40 | -1.39      | -7.973E-02 | -1.271E-02 | -25.52     |
| 143 | COLUMN4 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -49.89 | 7.73   | 9.148E-01  | 1.199E-01  | 4.679E-01  | 9.24       |
|     | 1.48        | -46.71 | 7.73   | 9.148E-01  | 1.199E-01  | 5.950E-01  | 1.18       |
|     | 2.70        | -43.53 | 7.73   | 9.148E-01  | 1.199E-01  | 3.69       | 5.75       |
| 143 | COLUMN4 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -51.36 | -3.74  | -2.55      | -4.985E-02 | -2.62      | -3.41      |
|     | 1.48        | -48.18 | -3.74  | -2.55      | -4.985E-02 | -7.459E-01 | -2.444E-01 |
|     | 2.70        | -45.00 | -3.74  | -2.55      | -4.985E-02 | -1.84      | -9.71      |
| 144 | CU          |        |        |            |            |            |            |
|     | 2.5E-01     | -84.93 | 1.70   | 2.98       | 8.339E-02  | 8.34       | 4.49       |
|     | 1.48        | -79.98 | 1.70   | 2.98       | 8.339E-02  | 4.68       | 2.41       |
|     | 2.70        | -75.03 | 1.70   | 2.98       | 8.339E-02  | 1.03       | 3.293E-01  |
| 144 | COLUMN1 MAX |        |        |            |            |            |            |

|     |             |         |        |            |            |            |            |
|-----|-------------|---------|--------|------------|------------|------------|------------|
|     | 2.5E-01     | -61.53  | 18.99  | 3.68       | 1.773E-01  | 10.14      | 23.01      |
|     | 1.48        | -57.82  | 18.99  | 3.68       | 1.773E-01  | 5.64       | 3.88       |
|     | 2.70        | -54.11  | 18.99  | 3.68       | 1.773E-01  | 1.16       | 24.02      |
| 144 | COLUMN1 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -65.86  | -16.44 | 8.003E-01  | -5.221E-02 | 2.37       | -16.27     |
|     | 1.48        | -62.15  | -16.44 | 8.003E-01  | -5.221E-02 | 1.39       | -2.591E-01 |
|     | 2.70        | -58.44  | -16.44 | 8.003E-01  | -5.221E-02 | 3.832E-01  | -23.52     |
| 144 | COLUMN2 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -62.13  | 7.27   | 6.65       | 1.474E-01  | 18.27      | 10.04      |
|     | 1.48        | -58.42  | 7.27   | 6.65       | 1.474E-01  | 10.12      | 2.49       |
|     | 2.70        | -54.70  | 7.27   | 6.65       | 1.474E-01  | 1.98       | 8.27       |
| 144 | COLUMN2 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -65.27  | -4.72  | -2.18      | -2.234E-02 | -5.76      | -3.30      |
|     | 1.48        | -61.56  | -4.72  | -2.18      | -2.234E-02 | -3.10      | 1.13       |
|     | 2.70        | -57.84  | -4.72  | -2.18      | -2.234E-02 | -4.371E-01 | -7.77      |
| 144 | COLUMN3 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -44.24  | 18.73  | 2.50       | 1.498E-01  | 6.89       | 21.84      |
|     | 1.48        | -41.06  | 18.73  | 2.50       | 1.498E-01  | 3.83       | 3.02       |
|     | 2.70        | -37.88  | 18.73  | 2.50       | 1.498E-01  | 7.984E-01  | 23.48      |
| 144 | COLUMN3 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -48.57  | -16.70 | -3.794E-01 | -7.973E-02 | -8.857E-01 | -17.44     |
|     | 1.48        | -45.39  | -16.70 | -3.794E-01 | -7.973E-02 | -4.223E-01 | -1.11      |
|     | 2.70        | -42.21  | -16.70 | -3.794E-01 | -7.973E-02 | 2.025E-02  | -24.06     |
| 144 | COLUMN4 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -44.84  | 7.01   | 5.47       | 1.199E-01  | 15.02      | 8.87       |
|     | 1.48        | -41.65  | 7.01   | 5.47       | 1.199E-01  | 8.32       | 1.63       |
|     | 2.70        | -38.47  | 7.01   | 5.47       | 1.199E-01  | 1.62       | 7.73       |
| 144 | COLUMN4 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -47.98  | -4.98  | -3.36      | -4.985E-02 | -9.02      | -4.47      |
|     | 1.48        | -44.79  | -4.98  | -3.36      | -4.985E-02 | -4.91      | 2.779E-01  |
|     | 2.70        | -41.61  | -4.98  | -3.36      | -4.985E-02 | -8.001E-01 | -8.31      |
| 145 | CU          |         |        |            |            |            |            |
|     | 2.5E-01     | -110.55 | -35.82 | -17.55     | 8.339E-02  | -22.57     | -56.61     |
|     | 1.48        | -105.60 | -35.82 | -17.55     | 8.339E-02  | -1.07      | -12.73     |
|     | 2.70        | -100.65 | -35.82 | -17.55     | 8.339E-02  | 20.43      | 31.16      |
| 145 | COLUMN1 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -75.13  | -11.28 | -10.19     | 1.773E-01  | -14.53     | -25.84     |
|     | 1.48        | -71.41  | -11.28 | -10.19     | 1.773E-01  | 5.804E-01  | -7.06      |
|     | 2.70        | -67.70  | -11.28 | -10.19     | 1.773E-01  | 20.22      | 44.94      |
| 145 | COLUMN1 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -90.70  | -42.45 | -16.13     | -5.221E-02 | -19.33     | -59.07     |
|     | 1.48        | -86.98  | -42.45 | -16.13     | -5.221E-02 | -2.19      | -12.03     |
|     | 2.70        | -83.27  | -42.45 | -16.13     | -5.221E-02 | 10.42      | 1.79       |
| 145 | COLUMN2 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -74.09  | -21.37 | -4.70      | 1.474E-01  | -10.82     | -36.54     |
|     | 1.48        | -70.38  | -21.37 | -4.70      | 1.474E-01  | 3.50       | -8.73      |
|     | 2.70        | -66.67  | -21.37 | -4.70      | 1.474E-01  | 29.95      | 30.91      |
| 145 | COLUMN2 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -91.73  | -32.36 | -21.63     | -2.234E-02 | -23.04     | -48.37     |
|     | 1.48        | -88.02  | -32.36 | -21.63     | -2.234E-02 | -5.11      | -10.36     |
|     | 2.70        | -84.31  | -32.36 | -21.63     | -2.234E-02 | 6.902E-01  | 15.82      |
| 145 | COLUMN3 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -55.28  | -1.09  | -4.75      | 1.498E-01  | -7.89      | -8.73      |
|     | 1.48        | -52.10  | -1.09  | -4.75      | 1.498E-01  | 5.496E-01  | -2.44      |
|     | 2.70        | -48.91  | -1.09  | -4.75      | 1.498E-01  | 13.52      | 37.08      |
| 145 | COLUMN3 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -70.85  | -32.26 | -10.69     | -7.973E-02 | -12.69     | -41.96     |
|     | 1.48        | -67.66  | -32.26 | -10.69     | -7.973E-02 | -2.22      | -7.40      |
|     | 2.70        | -64.48  | -32.26 | -10.69     | -7.973E-02 | 3.72       | -6.06      |
| 145 | COLUMN4 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -54.24  | -11.18 | 7.445E-01  | 1.199E-01  | -4.18      | -19.43     |
|     | 1.48        | -51.06  | -11.18 | 7.445E-01  | 1.199E-01  | 3.47       | -4.10      |
|     | 2.70        | -47.88  | -11.18 | 7.445E-01  | 1.199E-01  | 23.25      | 23.06      |
| 145 | COLUMN4 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -71.88  | -22.17 | -16.18     | -4.985E-02 | -16.40     | -31.26     |
|     | 1.48        | -68.70  | -22.17 | -16.18     | -4.985E-02 | -5.14      | -5.74      |
|     | 2.70        | -65.52  | -22.17 | -16.18     | -4.985E-02 | -6.01      | 7.96       |
| 146 | CU          |         |        |            |            |            |            |
|     | 2.5E-01     | -82.89  | 48.97  | -16.92     | 1.718E-01  | -21.92     | 81.30      |

|     |             |         |        |            |            |            |            |
|-----|-------------|---------|--------|------------|------------|------------|------------|
|     | 1.48        | -77.94  | 48.97  | -16.92     | 1.718E-01  | -1.20      | 21.31      |
|     | 2.70        | -72.99  | 48.97  | -16.92     | 1.718E-01  | 19.53      | -38.67     |
| 146 | COLUMN1 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -57.12  | 42.12  | -10.79     | 1.771E-01  | -15.53     | 63.05      |
|     | 1.48        | -53.40  | 42.12  | -10.79     | 1.771E-01  | 5.375E-01  | 20.52      |
|     | 2.70        | -49.69  | 42.12  | -10.79     | 1.771E-01  | 18.40      | -17.86     |
| 146 | COLUMN1 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -67.22  | 31.33  | -14.59     | 8.060E-02  | -17.35     | 58.89      |
|     | 1.48        | -63.51  | 31.33  | -14.59     | 8.060E-02  | -2.34      | 11.45      |
|     | 2.70        | -59.79  | 31.33  | -14.59     | 8.060E-02  | 10.88      | -40.15     |
| 146 | COLUMN2 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -55.23  | 38.55  | -6.86      | 2.086E-01  | -13.81     | 61.79      |
|     | 1.48        | -51.52  | 38.55  | -6.86      | 2.086E-01  | 3.61       | 17.43      |
|     | 2.70        | -47.81  | 38.55  | -6.86      | 2.086E-01  | 26.28      | -25.33     |
| 146 | COLUMN2 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -69.10  | 34.90  | -18.51     | 4.916E-02  | -19.08     | 60.16      |
|     | 1.48        | -65.39  | 34.90  | -18.51     | 4.916E-02  | -5.40      | 14.53      |
|     | 2.70        | -61.68  | 34.90  | -18.51     | 4.916E-02  | 3.01       | -32.68     |
| 146 | COLUMN3 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -41.95  | 28.98  | -5.99      | 1.076E-01  | -9.44      | 39.15      |
|     | 1.48        | -38.77  | 28.98  | -5.99      | 1.076E-01  | 7.561E-01  | 12.72      |
|     | 2.70        | -35.59  | 28.98  | -5.99      | 1.076E-01  | 12.75      | -9.57      |
| 146 | COLUMN3 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -52.06  | 18.19  | -9.80      | 1.102E-02  | -11.27     | 34.99      |
|     | 1.48        | -48.88  | 18.19  | -9.80      | 1.102E-02  | -2.12      | 3.64       |
|     | 2.70        | -45.69  | 18.19  | -9.80      | 1.102E-02  | 5.23       | -31.86     |
| 146 | COLUMN4 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -40.07  | 25.41  | -2.07      | 1.390E-01  | -7.72      | 37.89      |
|     | 1.48        | -36.89  | 25.41  | -2.07      | 1.390E-01  | 3.82       | 9.63       |
|     | 2.70        | -33.71  | 25.41  | -2.07      | 1.390E-01  | 20.63      | -17.04     |
| 146 | COLUMN4 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -53.94  | 21.76  | -13.72     | -2.042E-02 | -12.99     | 36.26      |
|     | 1.48        | -50.76  | 21.76  | -13.72     | -2.042E-02 | -5.19      | 6.73       |
|     | 2.70        | -47.58  | 21.76  | -13.72     | -2.042E-02 | -2.65      | -24.38     |
| 147 | CU          |         |        |            |            |            |            |
|     | 2.5E-01     | -159.70 | -44.27 | -8.22      | 1.108E-01  | -10.16     | -52.44     |
|     | 1.48        | -154.75 | -44.27 | -8.22      | 1.108E-01  | -8.788E-02 | 1.78       |
|     | 2.70        | -149.80 | -44.27 | -8.22      | 1.108E-01  | 9.98       | 56.01      |
| 147 | COLUMN1 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -115.44 | -25.86 | -9.640E-01 | 1.434E-01  | -1.89      | -34.53     |
|     | 1.48        | -111.73 | -25.86 | -9.640E-01 | 1.434E-01  | 5.762E-01  | 5.54       |
|     | 2.70        | -108.02 | -25.86 | -9.640E-01 | 1.434E-01  | 14.50      | 55.18      |
| 147 | COLUMN1 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -124.11 | -40.53 | -11.37     | 2.283E-02  | -13.35     | -44.14     |
|     | 1.48        | -120.39 | -40.53 | -11.37     | 2.283E-02  | -7.080E-01 | -2.87      |
|     | 2.70        | -116.68 | -40.53 | -11.37     | 2.283E-02  | 4.732E-01  | 28.83      |
| 147 | COLUMN2 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -117.84 | -30.82 | 9.88       | 1.114E-01  | 10.04      | -37.67     |
|     | 1.48        | -114.13 | -30.82 | 9.88       | 1.114E-01  | 1.93       | 2.68       |
|     | 2.70        | -110.41 | -30.82 | 9.88       | 1.114E-01  | 29.14      | 46.22      |
| 147 | COLUMN2 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -121.71 | -35.58 | -22.21     | 5.476E-02  | -25.28     | -40.99     |
|     | 1.48        | -118.00 | -35.58 | -22.21     | 5.476E-02  | -2.06      | -9.983E-03 |
|     | 2.70        | -114.28 | -35.58 | -22.21     | 5.476E-02  | -14.17     | 37.80      |
| 147 | COLUMN3 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -82.89  | -13.15 | 2.28       | 1.123E-01  | 1.78       | -19.59     |
|     | 1.48        | -79.70  | -13.15 | 2.28       | 1.123E-01  | 2.709E-01  | 4.91       |
|     | 2.70        | -76.52  | -13.15 | 2.28       | 1.123E-01  | 10.22      | 38.98      |
| 147 | COLUMN3 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -91.55  | -27.82 | -8.12      | -8.221E-03 | -9.68      | -29.20     |
|     | 1.48        | -88.37  | -27.82 | -8.12      | -8.221E-03 | -1.01      | -3.50      |
|     | 2.70        | -85.19  | -27.82 | -8.12      | -8.221E-03 | -3.81      | 12.63      |
| 147 | COLUMN4 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -85.28  | -18.11 | 13.13      | 8.038E-02  | 13.71      | -22.73     |
|     | 1.48        | -82.10  | -18.11 | 13.13      | 8.038E-02  | 1.62       | 2.05       |
|     | 2.70        | -78.92  | -18.11 | 13.13      | 8.038E-02  | 24.86      | 30.01      |
| 147 | COLUMN4 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -89.15  | -22.87 | -18.97     | 2.371E-02  | -21.61     | -26.06     |
|     | 1.48        | -85.97  | -22.87 | -18.97     | 2.371E-02  | -2.37      | -6.435E-01 |
|     | 2.70        | -82.79  | -22.87 | -18.97     | 2.371E-02  | -18.45     | 21.59      |

|     |             |         |            |           |            |            |         |  |
|-----|-------------|---------|------------|-----------|------------|------------|---------|--|
| 148 | CU          |         |            |           |            |            |         |  |
|     | 2.5E-01     | -127.20 | 20.59      | -38.28    | 8.339E-02  | -51.08     | 8.99    |  |
|     | 1.48        | -122.25 | 20.59      | -38.28    | 8.339E-02  | -4.19      | -16.23  |  |
|     | 2.70        | -117.29 | 20.59      | -38.28    | 8.339E-02  | 42.70      | -41.45  |  |
| 148 | COLUMN1 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -89.29  | 26.70      | -23.84    | 1.773E-01  | -33.10     | 19.79   |  |
|     | 1.48        | -85.57  | 26.70      | -23.84    | 1.773E-01  | -2.08      | -11.42  |  |
|     | 2.70        | -81.86  | 26.70      | -23.84    | 1.773E-01  | 38.75      | -16.54  |  |
| 148 | COLUMN1 MIN |         |            |           |            |            |         |  |
|     | 2.5E-01     | -101.51 | 4.18       | -33.58    | -5.221E-02 | -43.52     | -6.30   |  |
|     | 1.48        | -97.79  | 4.18       | -33.58    | -5.221E-02 | -4.21      | -12.92  |  |
|     | 2.70        | -94.08  | 4.18       | -33.58    | -5.221E-02 | 25.31      | -45.63  |  |
| 148 | COLUMN2 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -87.22  | 19.03      | -15.42    | 1.474E-01  | -24.97     | 10.90   |  |
|     | 1.48        | -83.51  | 19.03      | -15.42    | 1.474E-01  | -1.135E-01 | -11.91  |  |
|     | 2.70        | -79.80  | 19.03      | -15.42    | 1.474E-01  | 51.24      | -26.44  |  |
| 148 | COLUMN2 MIN |         |            |           |            |            |         |  |
|     | 2.5E-01     | -103.57 | 11.85      | -41.99    | -2.234E-02 | -51.65     | 2.59    |  |
|     | 1.48        | -99.86  | 11.85      | -41.99    | -2.234E-02 | -6.17      | -12.43  |  |
|     | 2.70        | -96.14  | 11.85      | -41.99    | -2.234E-02 | 12.82      | -35.74  |  |
| 148 | COLUMN3 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -57.39  | 22.31      | -12.89    | 1.498E-01  | -19.00     | 19.70   |  |
|     | 1.48        | -54.21  | 22.31      | -12.89    | 1.498E-01  | -1.40      | -6.12   |  |
|     | 2.70        | -51.02  | 22.31      | -12.89    | 1.498E-01  | 26.01      | -5.86   |  |
| 148 | COLUMN3 MIN |         |            |           |            |            |         |  |
|     | 2.5E-01     | -69.61  | -2.124E-01 | -22.62    | -7.973E-02 | -29.42     | -6.39   |  |
|     | 1.48        | -66.43  | -2.124E-01 | -22.62    | -7.973E-02 | -3.52      | -7.63   |  |
|     | 2.70        | -63.24  | -2.124E-01 | -22.62    | -7.973E-02 | 12.57      | -34.95  |  |
| 148 | COLUMN4 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -55.33  | 14.64      | -4.47     | 1.199E-01  | -10.87     | 10.81   |  |
|     | 1.48        | -52.14  | 14.64      | -4.47     | 1.199E-01  | 5.692E-01  | -6.61   |  |
|     | 2.70        | -48.96  | 14.64      | -4.47     | 1.199E-01  | 38.50      | -15.76  |  |
| 148 | COLUMN4 MIN |         |            |           |            |            |         |  |
|     | 2.5E-01     | -71.67  | 7.46       | -31.04    | -4.985E-02 | -37.55     | 2.51    |  |
|     | 1.48        | -68.49  | 7.46       | -31.04    | -4.985E-02 | -5.49      | -7.13   |  |
|     | 2.70        | -65.31  | 7.46       | -31.04    | -4.985E-02 | 8.049E-02  | -25.06  |  |
| 149 | CU          |         |            |           |            |            |         |  |
|     | 2.5E-01     | -117.70 | -84.55     | -8.61     | 1.423E-01  | -4.05      | -151.32 |  |
|     | 1.48        | -111.23 | -84.55     | -8.61     | 1.423E-01  | 6.49       | -47.75  |  |
|     | 2.70        | -104.77 | -84.55     | -8.61     | 1.423E-01  | 17.04      | 55.82   |  |
| 149 | COLUMN1 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -83.88  | -55.00     | 3.272E-01 | 3.025E-01  | 3.32       | -109.60 |  |
|     | 1.48        | -79.03  | -55.00     | 3.272E-01 | 3.025E-01  | 6.96       | -29.38  |  |
|     | 2.70        | -74.18  | -55.00     | 3.272E-01 | 3.025E-01  | 23.05      | 58.59   |  |
| 149 | COLUMN1 MIN |         |            |           |            |            |         |  |
|     | 2.5E-01     | -92.67  | -71.82     | -13.24    | -8.908E-02 | -9.40      | -117.37 |  |
|     | 1.48        | -87.82  | -71.82     | -13.24    | -8.908E-02 | 2.78       | -42.24  |  |
|     | 2.70        | -82.97  | -71.82     | -13.24    | -8.908E-02 | 2.51       | 25.14   |  |
| 149 | COLUMN2 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -86.79  | -60.67     | 12.08     | 2.515E-01  | 13.14      | -112.13 |  |
|     | 1.48        | -81.94  | -60.67     | 12.08     | 2.515E-01  | 11.44      | -33.77  |  |
|     | 2.70        | -77.09  | -60.67     | 12.08     | 2.515E-01  | 42.02      | 47.24   |  |
| 149 | COLUMN2 MIN |         |            |           |            |            |         |  |
|     | 2.5E-01     | -89.76  | -66.15     | -24.99    | -3.810E-02 | -19.22     | -114.85 |  |
|     | 1.48        | -84.91  | -66.15     | -24.99    | -3.810E-02 | -1.70      | -37.85  |  |
|     | 2.70        | -80.06  | -66.15     | -24.99    | -3.810E-02 | -16.46     | 36.49   |  |
| 149 | COLUMN3 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -56.37  | -24.43     | 3.85      | 2.555E-01  | 5.27       | -49.92  |  |
|     | 1.48        | -52.22  | -24.43     | 3.85      | 2.555E-01  | 4.59       | -7.14   |  |
|     | 2.70        | -48.06  | -24.43     | 3.85      | 2.555E-01  | 16.36      | 43.38   |  |
| 149 | COLUMN3 MIN |         |            |           |            |            |         |  |
|     | 2.5E-01     | -65.17  | -41.25     | -9.71     | -1.360E-01 | -7.45      | -57.69  |  |
|     | 1.48        | -61.01  | -41.25     | -9.71     | -1.360E-01 | 4.049E-01  | -20.00  |  |
|     | 2.70        | -56.86  | -41.25     | -9.71     | -1.360E-01 | -4.18      | 9.94    |  |
| 149 | COLUMN4 MAX |         |            |           |            |            |         |  |
|     | 2.5E-01     | -59.29  | -30.10     | 15.61     | 2.045E-01  | 15.09      | -52.44  |  |
|     | 1.48        | -55.13  | -30.10     | 15.61     | 2.045E-01  | 9.07       | -11.53  |  |
|     | 2.70        | -50.97  | -30.10     | 15.61     | 2.045E-01  | 35.32      | 32.03   |  |
| 149 | COLUMN4 MIN |         |            |           |            |            |         |  |



|     |             |         |        |           |            |            |        |
|-----|-------------|---------|--------|-----------|------------|------------|--------|
|     | 2.5E-01     | -62.26  | -35.58 | -21.47    | -8.505E-02 | -17.27     | -55.16 |
|     | 1.48        | -58.10  | -35.58 | -21.47    | -8.505E-02 | -4.07      | -15.61 |
|     | 2.70        | -53.94  | -35.58 | -21.47    | -8.505E-02 | -23.15     | 21.29  |
| 150 | CU          |         |        |           |            |            |        |
|     | 2.5E-01     | -111.20 | 77.01  | -5.38     | 2.257E-01  | 5.237E-01  | 143.36 |
|     | 1.48        | -104.73 | 77.01  | -5.38     | 2.257E-01  | 7.11       | 49.03  |
|     | 2.70        | -98.26  | 77.01  | -5.38     | 2.257E-01  | 13.70      | -45.31 |
| 150 | COLUMN1 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -78.49  | 65.91  | 1.812E-01 | 2.789E-01  | 3.40       | 110.70 |
|     | 1.48        | -73.64  | 65.91  | 1.812E-01 | 2.789E-01  | 7.51       | 43.60  |
|     | 2.70        | -68.79  | 65.91  | 1.812E-01 | 2.789E-01  | 17.60      | -17.18 |
| 150 | COLUMN1 MIN |         |        |           |            |            |        |
|     | 2.5E-01     | -88.31  | 49.60  | -8.25     | 5.962E-02  | -2.61      | 104.34 |
|     | 1.48        | -83.46  | 49.60  | -8.25     | 5.962E-02  | 3.16       | 29.94  |
|     | 2.70        | -78.61  | 49.60  | -8.25     | 5.962E-02  | 2.95       | -50.78 |
| 150 | COLUMN2 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -81.84  | 60.39  | 8.96      | 2.065E-01  | 9.51       | 108.66 |
|     | 1.48        | -76.99  | 60.39  | 8.96      | 2.065E-01  | 12.14      | 38.94  |
|     | 2.70        | -72.14  | 60.39  | 8.96      | 2.065E-01  | 33.00      | -28.62 |
| 150 | COLUMN2 MIN |         |        |           |            |            |        |
|     | 2.5E-01     | -84.96  | 55.12  | -17.03    | 1.320E-01  | -8.73      | 106.38 |
|     | 1.48        | -80.11  | 55.12  | -17.03    | 1.320E-01  | -1.47      | 34.60  |
|     | 2.70        | -75.26  | 55.12  | -17.03    | 1.320E-01  | -12.45     | -39.34 |
| 150 | COLUMN3 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -58.06  | 37.35  | 2.63      | 1.892E-01  | 3.74       | 53.19  |
|     | 1.48        | -53.90  | 37.35  | 2.63      | 1.892E-01  | 4.85       | 21.06  |
|     | 2.70        | -49.75  | 37.35  | 2.63      | 1.892E-01  | 11.95      | -4.74  |
| 150 | COLUMN3 MIN |         |        |           |            |            |        |
|     | 2.5E-01     | -67.88  | 21.05  | -5.80     | -3.010E-02 | -2.26      | 46.82  |
|     | 1.48        | -63.72  | 21.05  | -5.80     | -3.010E-02 | 5.074E-01  | 7.40   |
|     | 2.70        | -59.57  | 21.05  | -5.80     | -3.010E-02 | -2.71      | -38.35 |
| 150 | COLUMN4 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -61.41  | 31.84  | 11.41     | 1.168E-01  | 9.86       | 51.14  |
|     | 1.48        | -57.25  | 31.84  | 11.41     | 1.168E-01  | 9.49       | 16.40  |
|     | 2.70        | -53.10  | 31.84  | 11.41     | 1.168E-01  | 27.34      | -16.18 |
| 150 | COLUMN4 MIN |         |        |           |            |            |        |
|     | 2.5E-01     | -64.53  | 26.57  | -14.58    | 4.231E-02  | -8.38      | 48.86  |
|     | 1.48        | -60.37  | 26.57  | -14.58    | 4.231E-02  | -4.12      | 12.06  |
|     | 2.70        | -56.21  | 26.57  | -14.58    | 4.231E-02  | -18.11     | -26.91 |
| 151 | CU          |         |        |           |            |            |        |
|     | 2.5E-01     | -120.94 | -51.70 | -18.04    | 1.423E-01  | -18.26     | -82.70 |
|     | 1.48        | -114.48 | -51.70 | -18.04    | 1.423E-01  | 3.84       | -19.37 |
|     | 2.70        | -108.01 | -51.70 | -18.04    | 1.423E-01  | 25.94      | 43.97  |
| 151 | COLUMN1 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -83.59  | -20.44 | -7.13     | 3.025E-01  | -7.94      | -37.89 |
|     | 1.48        | -78.74  | -20.44 | -7.13     | 3.025E-01  | 5.11       | -12.84 |
|     | 2.70        | -73.89  | -20.44 | -7.13     | 3.025E-01  | 29.40      | 53.76  |
| 151 | COLUMN1 MIN |         |        |           |            |            |        |
|     | 2.5E-01     | -97.83  | -57.11 | -19.93    | -8.908E-02 | -19.45     | -86.16 |
|     | 1.48        | -92.98  | -57.11 | -19.93    | -8.908E-02 | 6.535E-01  | -16.21 |
|     | 2.70        | -88.13  | -57.11 | -19.93    | -8.908E-02 | 9.52       | 12.19  |
| 151 | COLUMN2 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -86.49  | -32.72 | 3.38      | 2.515E-01  | 6.062E-02  | -53.88 |
|     | 1.48        | -81.64  | -32.72 | 3.38      | 2.515E-01  | 9.89       | -13.77 |
|     | 2.70        | -76.79  | -32.72 | 3.38      | 2.515E-01  | 47.14      | 39.69  |
| 151 | COLUMN2 MIN |         |        |           |            |            |        |
|     | 2.5E-01     | -94.92  | -44.83 | -30.44    | -3.810E-02 | -27.45     | -70.16 |
|     | 1.48        | -90.07  | -44.83 | -30.44    | -3.810E-02 | -4.13      | -15.28 |
|     | 2.70        | -85.22  | -44.83 | -30.44    | -3.810E-02 | -8.23      | 26.26  |
| 151 | COLUMN3 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -55.11  | -2.20  | -1.51     | 2.555E-01  | -2.64      | -4.07  |
|     | 1.48        | -50.95  | -2.20  | -1.51     | 2.555E-01  | 3.53       | -1.36  |
|     | 2.70        | -46.79  | -2.20  | -1.51     | 2.555E-01  | 20.93      | 42.89  |
| 151 | COLUMN3 MIN |         |        |           |            |            |        |
|     | 2.5E-01     | -69.34  | -38.87 | -14.32    | -1.360E-01 | -14.15     | -52.34 |
|     | 1.48        | -65.18  | -38.87 | -14.32    | -1.360E-01 | -9.309E-01 | -4.74  |
|     | 2.70        | -61.03  | -38.87 | -14.32    | -1.360E-01 | 1.05       | 1.32   |
| 151 | COLUMN4 MAX |         |        |           |            |            |        |
|     | 2.5E-01     | -58.01  | -14.48 | 9.00      | 2.045E-01  | 5.35       | -20.07 |

|     |             |         |        |        |            |            |            |
|-----|-------------|---------|--------|--------|------------|------------|------------|
|     | 1.48        | -53.85  | -14.48 | 9.00   | 2.045E-01  | 8.31       | -2.30      |
|     | 2.70        | -49.70  | -14.48 | 9.00   | 2.045E-01  | 38.68      | 28.82      |
| 151 | COLUMN4 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -66.44  | -26.59 | -24.83 | -8.505E-02 | -22.15     | -36.35     |
|     | 1.48        | -62.28  | -26.59 | -24.83 | -8.505E-02 | -5.71      | -3.80      |
|     | 2.70        | -58.12  | -26.59 | -24.83 | -8.505E-02 | -16.69     | 15.39      |
| 152 | CU          |         |        |        |            |            |            |
|     | 2.5E-01     | -117.52 | 79.30  | -12.71 | 6.771E-02  | -12.96     | 144.33     |
|     | 1.48        | -111.06 | 79.30  | -12.71 | 6.771E-02  | 2.61       | 47.19      |
|     | 2.70        | -104.59 | 79.30  | -12.71 | 6.771E-02  | 18.19      | -49.95     |
| 152 | COLUMN1 MAX |         |        |        |            |            |            |
|     | 2.5E-01     | -81.94  | 67.90  | -5.61  | 1.467E-01  | -7.17      | 110.58     |
|     | 1.48        | -77.09  | 67.90  | -5.61  | 1.467E-01  | 4.23       | 43.44      |
|     | 2.70        | -72.24  | 67.90  | -5.61  | 1.467E-01  | 20.72      | -19.09     |
| 152 | COLUMN1 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -94.35  | 51.04  | -13.46 | -4.517E-02 | -12.27     | 105.92     |
|     | 1.48        | -89.50  | 51.04  | -13.46 | -4.517E-02 | -3.169E-01 | 27.35      |
|     | 2.70        | -84.65  | 51.04  | -13.46 | -4.517E-02 | 6.56       | -55.83     |
| 152 | COLUMN2 MAX |         |        |        |            |            |            |
|     | 2.5E-01     | -85.28  | 62.16  | 2.59   | 9.132E-02  | -1.99      | 109.06     |
|     | 1.48        | -80.43  | 62.16  | 2.59   | 9.132E-02  | 9.09       | 38.02      |
|     | 2.70        | -75.58  | 62.16  | 2.59   | 9.132E-02  | 35.63      | -31.56     |
| 152 | COLUMN2 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -91.01  | 56.79  | -21.66 | 1.025E-02  | -17.45     | 107.44     |
|     | 1.48        | -86.16  | 56.79  | -21.66 | 1.025E-02  | -5.17      | 32.77      |
|     | 2.70        | -81.31  | 56.79  | -21.66 | 1.025E-02  | -8.35      | -43.35     |
| 152 | COLUMN3 MAX |         |        |        |            |            |            |
|     | 2.5E-01     | -59.93  | 38.67  | -1.84  | 1.402E-01  | -3.62      | 53.19      |
|     | 1.48        | -55.77  | 38.67  | -1.84  | 1.402E-01  | 3.18       | 21.86      |
|     | 2.70        | -51.61  | 38.67  | -1.84  | 1.402E-01  | 15.04      | -4.86      |
| 152 | COLUMN3 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -72.34  | 21.81  | -9.69  | -5.167E-02 | -8.71      | 48.54      |
|     | 1.48        | -68.19  | 21.81  | -9.69  | -5.167E-02 | -1.38      | 5.77       |
|     | 2.70        | -64.03  | 21.81  | -9.69  | -5.167E-02 | 8.870E-01  | -41.60     |
| 152 | COLUMN4 MAX |         |        |        |            |            |            |
|     | 2.5E-01     | -63.27  | 32.93  | 6.36   | 8.482E-02  | 1.56       | 51.67      |
|     | 1.48        | -59.11  | 32.93  | 6.36   | 8.482E-02  | 8.03       | 16.44      |
|     | 2.70        | -54.96  | 32.93  | 6.36   | 8.482E-02  | 29.95      | -17.33     |
| 152 | COLUMN4 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -69.00  | 27.56  | -17.90 | 3.756E-03  | -13.89     | 50.06      |
|     | 1.48        | -64.84  | 27.56  | -17.90 | 3.756E-03  | -6.23      | 11.19      |
|     | 2.70        | -60.69  | 27.56  | -17.90 | 3.756E-03  | -14.02     | -29.12     |
| 153 | CU          |         |        |        |            |            |            |
|     | 2.5E-01     | -161.38 | -42.70 | -9.00  | -2.004E-01 | -7.95      | -49.13     |
|     | 1.48        | -156.43 | -42.70 | -9.00  | -2.004E-01 | 3.07       | 3.18       |
|     | 2.70        | -151.48 | -42.70 | -9.00  | -2.004E-01 | 14.09      | 55.48      |
| 153 | COLUMN1 MAX |         |        |        |            |            |            |
|     | 2.5E-01     | -116.13 | -21.65 | -1.70  | 6.733E-02  | -5.458E-01 | -26.93     |
|     | 1.48        | -112.41 | -21.65 | -1.70  | 6.733E-02  | 3.07       | 5.18       |
|     | 2.70        | -108.70 | -21.65 | -1.70  | 6.733E-02  | 17.52      | 57.12      |
| 153 | COLUMN1 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -125.94 | -42.40 | -11.80 | -3.679E-01 | -11.38     | -46.76     |
|     | 1.48        | -122.23 | -42.40 | -11.80 | -3.679E-01 | 1.53       | -4.140E-01 |
|     | 2.70        | -118.52 | -42.40 | -11.80 | -3.679E-01 | 3.61       | 26.11      |
| 153 | COLUMN2 MAX |         |        |        |            |            |            |
|     | 2.5E-01     | -119.17 | -28.59 | 8.81   | -7.028E-02 | 10.77      | -33.53     |
|     | 1.48        | -115.46 | -28.59 | 8.81   | -7.028E-02 | 4.63       | 3.28       |
|     | 2.70        | -111.75 | -28.59 | 8.81   | -7.028E-02 | 31.95      | 46.71      |
| 153 | COLUMN2 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -122.90 | -35.46 | -22.31 | -2.303E-01 | -22.70     | -40.16     |
|     | 1.48        | -119.18 | -35.46 | -22.31 | -2.303E-01 | -2.389E-02 | 1.49       |
|     | 2.70        | -115.47 | -35.46 | -22.31 | -2.303E-01 | -10.82     | 36.51      |
| 153 | COLUMN3 MAX |         |        |        |            |            |            |
|     | 2.5E-01     | -83.16  | -9.32  | 1.32   | 1.688E-01  | 2.30       | -12.87     |
|     | 1.48        | -79.97  | -9.32  | 1.32   | 1.688E-01  | 2.22       | 4.14       |
|     | 2.70        | -76.79  | -9.32  | 1.32   | 1.688E-01  | 12.98      | 40.98      |
| 153 | COLUMN3 MIN |         |        |        |            |            |            |
|     | 2.5E-01     | -92.97  | -30.07 | -8.78  | -2.664E-01 | -8.54      | -32.70     |
|     | 1.48        | -89.79  | -30.07 | -8.78  | -2.664E-01 | 6.786E-01  | -1.45      |

|     |             |         |        |           |            |            |            |
|-----|-------------|---------|--------|-----------|------------|------------|------------|
|     | 2.70        | -86.61  | -30.07 | -8.78     | -2.664E-01 | -9.349E-01 | 9.97       |
| 153 | COLUMN4 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -86.20  | -16.26 | 11.83     | 3.123E-02  | 13.62      | -19.47     |
|     | 1.48        | -83.02  | -16.26 | 11.83     | 3.123E-02  | 3.78       | 2.24       |
|     | 2.70        | -79.84  | -16.26 | 11.83     | 3.123E-02  | 27.41      | 30.58      |
| 153 | COLUMN4 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -89.93  | -23.14 | -19.29    | -1.288E-01 | -19.86     | -26.10     |
|     | 1.48        | -86.74  | -23.14 | -19.29    | -1.288E-01 | -8.759E-01 | 4.481E-01  |
|     | 2.70        | -83.56  | -23.14 | -19.29    | -1.288E-01 | -15.37     | 20.37      |
| 154 | CU          |         |        |           |            |            |            |
|     | 2.5E-01     | -142.02 | 26.11  | 18.26     | 8.339E-02  | 32.12      | 19.58      |
|     | 1.48        | -137.06 | 26.11  | 18.26     | 8.339E-02  | 9.76       | -12.41     |
|     | 2.70        | -132.11 | 26.11  | 18.26     | 8.339E-02  | -12.61     | -44.40     |
| 154 | COLUMN1 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -100.74 | 34.14  | 17.78     | 1.773E-01  | 29.08      | 33.62      |
|     | 1.48        | -97.02  | 34.14  | 17.78     | 1.773E-01  | 9.31       | -8.19      |
|     | 2.70        | -93.31  | 34.14  | 17.78     | 1.773E-01  | -3.02      | -16.59     |
| 154 | COLUMN1 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -112.29 | 5.03   | 9.60      | -5.221E-02 | 19.10      | -4.26      |
|     | 1.48        | -108.57 | 5.03   | 9.60      | -5.221E-02 | 5.32       | -10.43     |
|     | 2.70        | -104.86 | 5.03   | 9.60      | -5.221E-02 | -15.89     | -50.02     |
| 154 | COLUMN2 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -99.48  | 25.03  | 26.35     | 1.474E-01  | 36.71      | 22.36      |
|     | 1.48        | -95.76  | 25.03  | 26.35     | 1.474E-01  | 10.80      | -8.29      |
|     | 2.70        | -92.05  | 25.03  | 26.35     | 1.474E-01  | 9.37       | -27.62     |
| 154 | COLUMN2 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -113.55 | 14.14  | 1.03      | -2.234E-02 | 11.47      | 7.00       |
|     | 1.48        | -109.83 | 14.14  | 1.03      | -2.234E-02 | 3.83       | -10.33     |
|     | 2.70        | -106.12 | 14.14  | 1.03      | -2.234E-02 | -28.28     | -38.99     |
| 154 | COLUMN3 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -63.71  | 27.87  | 13.85     | 1.498E-01  | 21.45      | 29.87      |
|     | 1.48        | -60.53  | 27.87  | 13.85     | 1.498E-01  | 6.51       | -4.27      |
|     | 2.70        | -57.35  | 27.87  | 13.85     | 1.498E-01  | -9.969E-01 | -4.99      |
| 154 | COLUMN3 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -75.26  | -1.23  | 5.66      | -7.973E-02 | 11.48      | -8.01      |
|     | 1.48        | -72.08  | -1.23  | 5.66      | -7.973E-02 | 2.52       | -6.51      |
|     | 2.70        | -68.90  | -1.23  | 5.66      | -7.973E-02 | -13.87     | -38.43     |
| 154 | COLUMN4 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -62.46  | 18.77  | 22.42     | 1.199E-01  | 29.08      | 18.61      |
|     | 1.48        | -59.27  | 18.77  | 22.42     | 1.199E-01  | 8.00       | -4.37      |
|     | 2.70        | -56.09  | 18.77  | 22.42     | 1.199E-01  | 11.39      | -16.03     |
| 154 | COLUMN4 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -76.52  | 7.88   | -2.91     | -4.985E-02 | 3.85       | 3.25       |
|     | 1.48        | -73.34  | 7.88   | -2.91     | -4.985E-02 | 1.03       | -6.41      |
|     | 2.70        | -70.16  | 7.88   | -2.91     | -4.985E-02 | -26.26     | -27.40     |
| 155 | CU          |         |        |           |            |            |            |
|     | 2.5E-01     | -71.38  | -10.09 | -14.39    | 8.339E-02  | -19.11     | -15.80     |
|     | 1.48        | -66.43  | -10.09 | -14.39    | 8.339E-02  | -1.48      | -3.44      |
|     | 2.70        | -61.48  | -10.09 | -14.39    | 8.339E-02  | 16.15      | 8.92       |
| 155 | COLUMN1 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -45.83  | 4.22   | -4.02     | 1.773E-01  | -6.36      | 2.786E-01  |
|     | 1.48        | -42.12  | 4.22   | -4.02     | 1.773E-01  | -3.935E-01 | -2.725E-01 |
|     | 2.70        | -38.41  | 4.22   | -4.02     | 1.773E-01  | 20.73      | 23.43      |
| 155 | COLUMN1 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -61.24  | -19.35 | -17.56    | -5.221E-02 | -22.30     | -23.98     |
|     | 1.48        | -57.53  | -19.35 | -17.56    | -5.221E-02 | -1.83      | -4.89      |
|     | 2.70        | -53.81  | -19.35 | -17.56    | -5.221E-02 | 3.49       | -10.06     |
| 155 | COLUMN2 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -50.57  | -3.77  | 6.78      | 1.474E-01  | 5.54       | -7.93      |
|     | 1.48        | -46.86  | -3.77  | 6.78      | 1.474E-01  | 6.658E-01  | -1.84      |
|     | 2.70        | -43.15  | -3.77  | 6.78      | 1.474E-01  | 35.30      | 12.08      |
| 155 | COLUMN2 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -56.50  | -11.37 | -28.36    | -2.234E-02 | -34.20     | -15.77     |
|     | 1.48        | -52.78  | -11.37 | -28.36    | -2.234E-02 | -2.88      | -3.32      |
|     | 2.70        | -49.07  | -11.37 | -28.36    | -2.234E-02 | -11.07     | 1.30       |
| 155 | COLUMN3 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -29.65  | 7.81   | 8.199E-01 | 1.498E-01  | -1.308E-01 | 5.90       |
|     | 1.48        | -26.47  | 7.81   | 8.199E-01 | 1.498E-01  | -9.373E-02 | 9.423E-01  |
|     | 2.70        | -23.29  | 7.81   | 8.199E-01 | 1.498E-01  | 15.10      | 20.24      |

|     |             |         |            |        |            |           |            |
|-----|-------------|---------|------------|--------|------------|-----------|------------|
| 155 | COLUMN3 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -45.06  | -15.75     | -12.72 | -7.973E-02 | -16.07    | -18.36     |
|     | 1.48        | -41.88  | -15.75     | -12.72 | -7.973E-02 | -1.53     | -3.67      |
|     | 2.70        | -38.70  | -15.75     | -12.72 | -7.973E-02 | -2.14     | -13.24     |
| 155 | COLUMN4 MAX |         |            |        |            |           |            |
|     | 2.5E-01     | -34.40  | -1.701E-01 | 11.62  | 1.199E-01  | 11.77     | -2.31      |
|     | 1.48        | -31.21  | -1.701E-01 | 11.62  | 1.199E-01  | 9.656E-01 | -6.290E-01 |
|     | 2.70        | -28.03  | -1.701E-01 | 11.62  | 1.199E-01  | 29.66     | 8.89       |
| 155 | COLUMN4 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -40.32  | -7.77      | -23.52 | -4.985E-02 | -27.97    | -10.15     |
|     | 1.48        | -37.14  | -7.77      | -23.52 | -4.985E-02 | -2.59     | -2.10      |
|     | 2.70        | -33.95  | -7.77      | -23.52 | -4.985E-02 | -16.70    | -1.89      |
| 156 | CU          |         |            |        |            |           |            |
|     | 2.5E-01     | -97.67  | -28.12     | -3.94  | 5.813E-02  | -3.95     | -40.23     |
|     | 1.48        | -93.78  | -28.12     | -3.94  | 5.813E-02  | 8.725E-01 | -5.79      |
|     | 2.70        | -89.89  | -28.12     | -3.94  | 5.813E-02  | 5.70      | 28.66      |
| 156 | COLUMN1 MAX |         |            |        |            |           |            |
|     | 2.5E-01     | -65.81  | -7.31      | 1.65   | 1.236E-01  | 2.97      | -14.29     |
|     | 1.48        | -62.89  | -7.31      | 1.65   | 1.236E-01  | 9.643E-01 | -3.35      |
|     | 2.70        | -59.98  | -7.31      | 1.65   | 1.236E-01  | 9.61      | 39.36      |
| 156 | COLUMN1 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -80.70  | -34.86     | -7.56  | -3.640E-02 | -8.90     | -46.06     |
|     | 1.48        | -77.78  | -34.86     | -7.56  | -3.640E-02 | 3.444E-01 | -5.33      |
|     | 2.70        | -74.86  | -34.86     | -7.56  | -3.640E-02 | -1.06     | 3.63       |
| 156 | COLUMN2 MAX |         |            |        |            |           |            |
|     | 2.5E-01     | -62.38  | -16.53     | 8.97   | 1.028E-01  | 11.72     | -24.90     |
|     | 1.48        | -59.46  | -16.53     | 8.97   | 1.028E-01  | 7.547E-01 | -4.03      |
|     | 2.70        | -56.55  | -16.53     | 8.97   | 1.028E-01  | 18.79     | 27.39      |
| 156 | COLUMN2 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -84.13  | -25.65     | -14.87 | -1.557E-02 | -17.65    | -35.45     |
|     | 1.48        | -81.21  | -25.65     | -14.87 | -1.557E-02 | 5.540E-01 | -4.66      |
|     | 2.70        | -78.30  | -25.65     | -14.87 | -1.557E-02 | -10.24    | 15.59      |
| 156 | COLUMN3 MAX |         |            |        |            |           |            |
|     | 2.5E-01     | -43.88  | 1.20       | 3.06   | 1.044E-01  | 4.52      | -1.83      |
|     | 1.48        | -41.38  | 1.20       | 3.06   | 1.044E-01  | 7.799E-01 | -1.31      |
|     | 2.70        | -38.88  | 1.20       | 3.06   | 1.044E-01  | 7.70      | 30.97      |
| 156 | COLUMN3 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -58.77  | -26.35     | -6.14  | -5.558E-02 | -7.36     | -33.60     |
|     | 1.48        | -56.27  | -26.35     | -6.14  | -5.558E-02 | 1.600E-01 | -3.29      |
|     | 2.70        | -53.77  | -26.35     | -6.14  | -5.558E-02 | -2.98     | -4.76      |
| 156 | COLUMN4 MAX |         |            |        |            |           |            |
|     | 2.5E-01     | -40.45  | -8.02      | 10.38  | 8.358E-02  | 13.27     | -12.43     |
|     | 1.48        | -37.95  | -8.02      | 10.38  | 8.358E-02  | 5.703E-01 | -1.99      |
|     | 2.70        | -35.45  | -8.02      | 10.38  | 8.358E-02  | 16.88     | 19.01      |
| 156 | COLUMN4 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -62.20  | -17.14     | -13.46 | -3.475E-02 | -16.11    | -22.99     |
|     | 1.48        | -59.70  | -17.14     | -13.46 | -3.475E-02 | 3.696E-01 | -2.62      |
|     | 2.70        | -57.20  | -17.14     | -13.46 | -3.475E-02 | -12.16    | 7.21       |
| 157 | CU          |         |            |        |            |           |            |
|     | 2.5E-01     | -160.26 | 10.41      | -1.64  | 8.339E-02  | 1.21      | 16.72      |
|     | 1.48        | -155.31 | 10.41      | -1.64  | 8.339E-02  | 3.22      | 3.97       |
|     | 2.70        | -150.36 | 10.41      | -1.64  | 8.339E-02  | 5.23      | -8.78      |
| 157 | COLUMN1 MAX |         |            |        |            |           |            |
|     | 2.5E-01     | -118.54 | 23.76      | 4.76   | 1.773E-01  | 7.45      | 30.20      |
|     | 1.48        | -114.82 | 23.76      | 4.76   | 1.773E-01  | 3.21      | 4.85       |
|     | 2.70        | -111.11 | 23.76      | 4.76   | 1.773E-01  | 12.05     | 14.83      |
| 157 | COLUMN1 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -121.86 | -8.15      | -7.22  | -5.221E-02 | -5.64     | -5.13      |
|     | 1.48        | -118.14 | -8.15      | -7.22  | -5.221E-02 | 1.62      | 1.10       |
|     | 2.70        | -114.43 | -8.15      | -7.22  | -5.221E-02 | -4.21     | -28.00     |
| 157 | COLUMN2 MAX |         |            |        |            |           |            |
|     | 2.5E-01     | -117.23 | 13.30      | 15.58  | 1.474E-01  | 19.20     | 18.63      |
|     | 1.48        | -113.51 | 13.30      | 15.58  | 1.474E-01  | 4.71      | 3.61       |
|     | 2.70        | -109.80 | 13.30      | 15.58  | 1.474E-01  | 26.82     | 7.877E-01  |
| 157 | COLUMN2 MIN |         |            |        |            |           |            |
|     | 2.5E-01     | -123.16 | 2.31       | -18.05 | -2.234E-02 | -17.39    | 6.44       |
|     | 1.48        | -119.45 | 2.31       | -18.05 | -2.234E-02 | 1.124E-01 | 2.34       |
|     | 2.70        | -115.74 | 2.31       | -18.05 | -2.234E-02 | -18.98    | -13.96     |
| 157 | COLUMN3 MAX |         |            |        |            |           |            |

|     |             |        |        |        |            |            |            |
|-----|-------------|--------|--------|--------|------------|------------|------------|
|     | 2.5E-01     | -85.25 | 18.44  | 5.41   | 1.498E-01  | 7.19       | 22.02      |
|     | 1.48        | -82.06 | 18.44  | 5.41   | 1.498E-01  | 2.15       | 3.19       |
|     | 2.70        | -78.88 | 18.44  | 5.41   | 1.498E-01  | 10.19      | 19.69      |
| 157 | COLUMN3 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -88.57 | -13.47 | -6.57  | -7.973E-02 | -5.90      | -13.31     |
|     | 1.48        | -85.38 | -13.47 | -6.57  | -7.973E-02 | 5.621E-01  | -5.617E-01 |
|     | 2.70        | -82.20 | -13.47 | -6.57  | -7.973E-02 | -6.07      | -23.15     |
| 157 | COLUMN4 MAX |        |        |        |            |            |            |
|     | 2.5E-01     | -83.94 | 7.98   | 16.24  | 1.199E-01  | 18.94      | 10.45      |
|     | 1.48        | -80.76 | 7.98   | 16.24  | 1.199E-01  | 3.66       | 1.95       |
|     | 2.70        | -77.57 | 7.98   | 16.24  | 1.199E-01  | 24.96      | 5.65       |
| 157 | COLUMN4 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -89.87 | -3.02  | -17.39 | -4.985E-02 | -17.65     | -1.74      |
|     | 1.48        | -86.69 | -3.02  | -17.39 | -4.985E-02 | -9.445E-01 | 6.744E-01  |
|     | 2.70        | -83.51 | -3.02  | -17.39 | -4.985E-02 | -20.83     | -9.10      |
| 158 | CU          |        |        |        |            |            |            |
|     | 2.5E-01     | -79.51 | 42.75  | 15.97  | 3.752E-03  | 29.73      | 68.86      |
|     | 1.48        | -74.56 | 42.75  | 15.97  | 3.752E-03  | 10.18      | 16.50      |
|     | 2.70        | -69.61 | 42.75  | 15.97  | 3.752E-03  | -9.38      | -35.87     |
| 158 | COLUMN1 MAX |        |        |        |            |            |            |
|     | 2.5E-01     | -54.17 | 40.72  | 13.67  | 3.791E-02  | 22.88      | 58.69      |
|     | 1.48        | -50.46 | 40.72  | 13.67  | 3.791E-02  | 9.14       | 15.93      |
|     | 2.70        | -46.75 | 40.72  | 13.67  | 3.791E-02  | -3.46      | -12.74     |
| 158 | COLUMN1 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -65.09 | 23.41  | 10.28  | -3.228E-02 | 21.72      | 44.60      |
|     | 1.48        | -61.38 | 23.41  | 10.28  | -3.228E-02 | 6.12       | 8.82       |
|     | 2.70        | -57.66 | 23.41  | 10.28  | -3.228E-02 | -10.61     | -41.06     |
| 158 | COLUMN2 MAX |        |        |        |            |            |            |
|     | 2.5E-01     | -53.73 | 35.09  | 17.16  | 8.747E-02  | 23.93      | 54.17      |
|     | 1.48        | -50.02 | 35.09  | 17.16  | 8.747E-02  | 12.36      | 13.56      |
|     | 2.70        | -46.30 | 35.09  | 17.16  | 8.747E-02  | 4.05       | -22.00     |
| 158 | COLUMN2 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -65.53 | 29.03  | 6.79   | -8.185E-02 | 20.67      | 49.13      |
|     | 1.48        | -61.82 | 29.03  | 6.79   | -8.185E-02 | 2.90       | 11.18      |
|     | 2.70        | -58.11 | 29.03  | 6.79   | -8.185E-02 | -18.12     | -31.80     |
| 158 | COLUMN3 MAX |        |        |        |            |            |            |
|     | 2.5E-01     | -40.78 | 29.81  | 9.79   | 4.962E-02  | 14.59      | 39.56      |
|     | 1.48        | -37.59 | 29.81  | 9.79   | 4.962E-02  | 5.60       | 10.16      |
|     | 2.70        | -34.41 | 29.81  | 9.79   | 4.962E-02  | -2.26      | -5.15      |
| 158 | COLUMN3 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -51.70 | 12.50  | 6.41   | -2.057E-02 | 13.43      | 25.47      |
|     | 1.48        | -48.51 | 12.50  | 6.41   | -2.057E-02 | 2.58       | 3.04       |
|     | 2.70        | -45.33 | 12.50  | 6.41   | -2.057E-02 | -9.41      | -33.48     |
| 158 | COLUMN4 MAX |        |        |        |            |            |            |
|     | 2.5E-01     | -40.34 | 24.18  | 13.29  | 9.919E-02  | 15.64      | 35.04      |
|     | 1.48        | -37.15 | 24.18  | 13.29  | 9.919E-02  | 8.82       | 7.79       |
|     | 2.70        | -33.97 | 24.18  | 13.29  | 9.919E-02  | 5.25       | -14.42     |
| 158 | COLUMN4 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -52.14 | 18.13  | 2.91   | -7.013E-02 | 12.38      | 30.00      |
|     | 1.48        | -48.96 | 18.13  | 2.91   | -7.013E-02 | -6.425E-01 | 5.41       |
|     | 2.70        | -45.77 | 18.13  | 2.91   | -7.013E-02 | -16.92     | -24.21     |
| 159 | CU          |        |        |        |            |            |            |
|     | 2.5E-01     | -90.91 | -26.41 | 14.63  | -2.004E-01 | 17.50      | -28.39     |
|     | 1.48        | -85.96 | -26.41 | 14.63  | -2.004E-01 | -4.320E-01 | 3.97       |
|     | 2.70        | -81.01 | -26.41 | 14.63  | -2.004E-01 | -18.36     | 36.32      |
| 159 | COLUMN1 MAX |        |        |        |            |            |            |
|     | 2.5E-01     | -62.89 | -12.52 | 13.59  | 6.733E-02  | 15.24      | -16.20     |
|     | 1.48        | -59.18 | -12.52 | 13.59  | 6.733E-02  | 8.550E-01  | 6.91       |
|     | 2.70        | -55.47 | -12.52 | 13.59  | 6.733E-02  | -9.45      | 40.10      |
| 159 | COLUMN1 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -73.48 | -27.10 | 8.36   | -3.679E-01 | 11.01      | -26.38     |
|     | 1.48        | -69.77 | -27.10 | 8.36   | -3.679E-01 | -1.50      | -9.648E-01 |
|     | 2.70        | -66.05 | -27.10 | 8.36   | -3.679E-01 | -18.09     | 14.38      |
| 159 | COLUMN2 MAX |        |        |        |            |            |            |
|     | 2.5E-01     | -62.92 | -17.48 | 18.88  | -7.028E-02 | 19.16      | -19.57     |
|     | 1.48        | -59.21 | -17.48 | 18.88  | -7.028E-02 | 3.35       | 4.41       |
|     | 2.70        | -55.49 | -17.48 | 18.88  | -7.028E-02 | -4.267E-01 | 31.49      |
| 159 | COLUMN2 MIN |        |        |        |            |            |            |
|     | 2.5E-01     | -73.45 | -22.14 | 3.07   | -2.303E-01 | 7.09       | -23.02     |

|     |             |        |        |           |            |            |            |
|-----|-------------|--------|--------|-----------|------------|------------|------------|
|     | 1.48        | -69.74 | -22.14 | 3.07      | -2.303E-01 | -4.00      | 1.53       |
|     | 2.70        | -66.03 | -22.14 | 3.07      | -2.303E-01 | -27.11     | 22.99      |
| 159 | COLUMN3 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -46.49 | -6.53  | 11.67     | 1.688E-01  | 12.18      | -9.70      |
|     | 1.48        | -43.30 | -6.53  | 11.67     | 1.688E-01  | 1.476E-01  | 6.08       |
|     | 2.70        | -40.12 | -6.53  | 11.67     | 1.688E-01  | -7.81      | 31.93      |
| 159 | COLUMN3 MIN |        |        |           |            |            |            |
|     | 2.5E-01     | -57.07 | -21.12 | 6.44      | -2.664E-01 | 7.95       | -19.88     |
|     | 1.48        | -53.89 | -21.12 | 6.44      | -2.664E-01 | -2.21      | -1.80      |
|     | 2.70        | -50.71 | -21.12 | 6.44      | -2.664E-01 | -16.44     | 6.21       |
| 159 | COLUMN4 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -46.51 | -11.49 | 16.96     | 3.123E-02  | 16.10      | -13.07     |
|     | 1.48        | -43.33 | -11.49 | 16.96     | 3.123E-02  | 2.65       | 3.58       |
|     | 2.70        | -40.15 | -11.49 | 16.96     | 3.123E-02  | 1.22       | 23.32      |
| 159 | COLUMN4 MIN |        |        |           |            |            |            |
|     | 2.5E-01     | -57.05 | -16.15 | 1.15      | -1.288E-01 | 4.03       | -16.52     |
|     | 1.48        | -53.86 | -16.15 | 1.15      | -1.288E-01 | -4.71      | 6.986E-01  |
|     | 2.70        | -50.68 | -16.15 | 1.15      | -1.288E-01 | -25.47     | 14.82      |
| 160 | CU          |        |        |           |            |            |            |
|     | 2.5E-01     | -66.35 | 25.74  | 5.00      | -8.511E-01 | 18.27      | 19.22      |
|     | 1.48        | -59.88 | 25.74  | 5.00      | -8.511E-01 | 12.14      | -12.32     |
|     | 2.70        | -53.41 | 25.74  | 5.00      | -8.511E-01 | 6.01       | -43.85     |
| 160 | COLUMN1 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -42.73 | 30.14  | 6.31      | 1.434E-01  | 15.04      | 25.58      |
|     | 1.48        | -37.88 | 30.14  | 6.31      | 1.434E-01  | 12.01      | -7.12      |
|     | 2.70        | -33.03 | 30.14  | 6.31      | 1.434E-01  | 10.41      | -17.49     |
| 160 | COLUMN1 MIN |        |        |           |            |            |            |
|     | 2.5E-01     | -56.79 | 8.47   | 1.19      | -1.42      | 12.35      | 3.25       |
|     | 1.48        | -51.94 | 8.47   | 1.19      | -1.42      | 6.19       | -11.35     |
|     | 2.70        | -47.09 | 8.47   | 1.19      | -1.42      | -1.39      | -48.28     |
| 160 | COLUMN2 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -39.88 | 22.87  | 10.12     | -2.240E-01 | 15.53      | 18.07      |
|     | 1.48        | -35.03 | 22.87  | 10.12     | -2.240E-01 | 18.26      | -8.52      |
|     | 2.70        | -30.18 | 22.87  | 10.12     | -2.240E-01 | 21.42      | -27.79     |
| 160 | COLUMN2 MIN |        |        |           |            |            |            |
|     | 2.5E-01     | -59.64 | 15.74  | -2.61     | -1.05      | 11.87      | 10.76      |
|     | 1.48        | -54.79 | 15.74  | -2.61     | -1.05      | -5.250E-02 | -9.96      |
|     | 2.70        | -49.94 | 15.74  | -2.61     | -1.05      | -12.40     | -37.98     |
| 160 | COLUMN3 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -30.81 | 24.49  | 5.68      | 5.139E-01  | 10.23      | 21.78      |
|     | 1.48        | -26.65 | 24.49  | 5.68      | 5.139E-01  | 7.98       | -3.99      |
|     | 2.70        | -22.49 | 24.49  | 5.68      | 5.139E-01  | 7.15       | -7.44      |
| 160 | COLUMN3 MIN |        |        |           |            |            |            |
|     | 2.5E-01     | -44.87 | 2.81   | 5.591E-01 | -1.05      | 7.54       | -5.475E-01 |
|     | 1.48        | -40.71 | 2.81   | 5.591E-01 | -1.05      | 2.16       | -8.22      |
|     | 2.70        | -36.55 | 2.81   | 5.591E-01 | -1.05      | -4.65      | -38.23     |
| 160 | COLUMN4 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -27.96 | 17.22  | 9.48      | 1.464E-01  | 10.72      | 14.27      |
|     | 1.48        | -23.80 | 17.22  | 9.48      | 1.464E-01  | 14.22      | -5.39      |
|     | 2.70        | -19.64 | 17.22  | 9.48      | 1.464E-01  | 18.16      | -17.74     |
| 160 | COLUMN4 MIN |        |        |           |            |            |            |
|     | 2.5E-01     | -47.72 | 10.08  | -3.25     | -6.823E-01 | 7.06       | 6.96       |
|     | 1.48        | -43.56 | 10.08  | -3.25     | -6.823E-01 | -4.09      | -6.83      |
|     | 2.70        | -39.40 | 10.08  | -3.25     | -6.823E-01 | -15.66     | -27.92     |
| 161 | CU          |        |        |           |            |            |            |
|     | 2.5E-01     | -67.84 | -21.86 | 11.83     | -8.781E-01 | 23.93      | -17.47     |
|     | 1.48        | -61.38 | -21.86 | 11.83     | -8.781E-01 | 9.44       | 9.31       |
|     | 2.70        | -54.91 | -21.86 | 11.83     | -8.781E-01 | -5.05      | 36.09      |
| 161 | COLUMN1 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -44.74 | -6.19  | 11.59     | 2.436E-01  | 18.35      | -3.06      |
|     | 1.48        | -39.89 | -6.19  | 11.59     | 2.436E-01  | 10.17      | 9.45       |
|     | 2.70        | -35.04 | -6.19  | 11.59     | 2.436E-01  | 2.63       | 42.04      |
| 161 | COLUMN1 MIN |        |        |           |            |            |            |
|     | 2.5E-01     | -57.03 | -26.61 | 6.15      | -1.56      | 17.55      | -23.15     |
|     | 1.48        | -52.18 | -26.61 | 6.15      | -1.56      | 4.00       | 4.51       |
|     | 2.70        | -47.33 | -26.61 | 6.15      | -1.56      | -10.20     | 12.09      |
| 161 | COLUMN2 MAX |        |        |           |            |            |            |
|     | 2.5E-01     | -40.23 | -12.92 | 16.15     | -3.590E-01 | 18.27      | -9.62      |
|     | 1.48        | -35.38 | -12.92 | 16.15     | -3.590E-01 | 16.12      | 7.77       |

|     |             |        |        |            |            |            |            |
|-----|-------------|--------|--------|------------|------------|------------|------------|
|     | 2.70        | -30.53 | -12.92 | 16.15      | -3.590E-01 | 14.17      | 32.11      |
| 161 | COLUMN2 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -61.54 | -19.88 | 1.59       | -9.581E-01 | 17.63      | -16.60     |
|     | 1.48        | -56.69 | -19.88 | 1.59       | -9.581E-01 | -1.96      | 6.19       |
|     | 2.70        | -51.84 | -19.88 | 1.59       | -9.581E-01 | -21.74     | 22.03      |
| 161 | COLUMN3 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -33.03 | -1.71  | 8.25       | 4.261E-01  | 10.54      | 5.887E-01  |
|     | 1.48        | -28.87 | -1.71  | 8.25       | 4.261E-01  | 6.44       | 7.61       |
|     | 2.70        | -24.71 | -1.71  | 8.25       | 4.261E-01  | 2.99       | 34.72      |
| 161 | COLUMN3 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -45.32 | -22.13 | 2.81       | -1.38      | 9.74       | -19.50     |
|     | 1.48        | -41.16 | -22.13 | 2.81       | -1.38      | 2.756E-01  | 2.68       |
|     | 2.70        | -37.01 | -22.13 | 2.81       | -1.38      | -9.83      | 4.77       |
| 161 | COLUMN4 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -28.52 | -8.44  | 12.81      | -1.765E-01 | 10.45      | -5.97      |
|     | 1.48        | -24.36 | -8.44  | 12.81      | -1.765E-01 | 12.40      | 5.93       |
|     | 2.70        | -20.20 | -8.44  | 12.81      | -1.765E-01 | 14.54      | 24.79      |
| 161 | COLUMN4 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -49.83 | -15.40 | -1.75      | -7.756E-01 | 9.82       | -12.95     |
|     | 1.48        | -45.67 | -15.40 | -1.75      | -7.756E-01 | -5.68      | 4.36       |
|     | 2.70        | -41.52 | -15.40 | -1.75      | -7.756E-01 | -21.38     | 14.71      |
| 162 | CU          |        |        |            |            |            |            |
|     | 2.5E-01     | -70.09 | 19.14  | 10.43      | -4.827E-01 | 18.16      | 18.70      |
|     | 1.48        | -65.14 | 19.14  | 10.43      | -4.827E-01 | 5.39       | -4.74      |
|     | 2.70        | -60.19 | 19.14  | 10.43      | -4.827E-01 | -7.38      | -28.19     |
| 162 | COLUMN1 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -46.97 | 21.14  | 11.40      | 2.135E-01  | 16.71      | 18.80      |
|     | 1.48        | -43.25 | 21.14  | 11.40      | 2.135E-01  | 5.45       | -1.284E-02 |
|     | 2.70        | -39.54 | 21.14  | 11.40      | 2.135E-01  | 1.464E-01  | -9.30      |
| 162 | COLUMN1 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -58.17 | 7.57   | 4.24       | -9.375E-01 | 10.54      | 9.26       |
|     | 1.48        | -54.46 | 7.57   | 4.24       | -9.375E-01 | 2.64       | -7.10      |
|     | 2.70        | -50.74 | 7.57   | 4.24       | -9.375E-01 | -11.22     | -32.98     |
| 162 | COLUMN2 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -43.58 | 16.75  | 16.47      | -1.710E-01 | 19.84      | 15.86      |
|     | 1.48        | -39.86 | 16.75  | 16.47      | -1.710E-01 | 8.46       | -2.43      |
|     | 2.70        | -36.15 | 16.75  | 16.47      | -1.710E-01 | 9.45       | -17.10     |
| 162 | COLUMN2 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -61.56 | 11.96  | -8.322E-01 | -5.530E-01 | 7.40       | 12.19      |
|     | 1.48        | -57.85 | 11.96  | -8.322E-01 | -5.530E-01 | -3.713E-01 | -4.69      |
|     | 2.70        | -54.13 | 11.96  | -8.322E-01 | -5.530E-01 | -20.52     | -25.18     |
| 162 | COLUMN3 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -35.25 | 17.24  | 9.31       | 3.140E-01  | 12.27      | 14.79      |
|     | 1.48        | -32.07 | 17.24  | 9.31       | 3.140E-01  | 3.57       | 7.538E-01  |
|     | 2.70        | -28.89 | 17.24  | 9.31       | 3.140E-01  | 8.271E-01  | -3.76      |
| 162 | COLUMN3 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -46.46 | 3.68   | 2.15       | -8.369E-01 | 6.10       | 5.25       |
|     | 1.48        | -43.27 | 3.68   | 2.15       | -8.369E-01 | 7.568E-01  | -6.33      |
|     | 2.70        | -40.09 | 3.68   | 2.15       | -8.369E-01 | -10.54     | -27.44     |
| 162 | COLUMN4 MAX |        |        |            |            |            |            |
|     | 2.5E-01     | -31.86 | 12.85  | 14.38      | -7.045E-02 | 15.40      | 11.86      |
|     | 1.48        | -28.68 | 12.85  | 14.38      | -7.045E-02 | 6.58       | -1.66      |
|     | 2.70        | -25.50 | 12.85  | 14.38      | -7.045E-02 | 10.13      | -11.56     |
| 162 | COLUMN4 MIN |        |        |            |            |            |            |
|     | 2.5E-01     | -49.85 | 8.06   | -2.92      | -4.524E-01 | 2.97       | 8.19       |
|     | 1.48        | -46.66 | 8.06   | -2.92      | -4.524E-01 | -2.25      | -3.92      |
|     | 2.70        | -43.48 | 8.06   | -2.92      | -4.524E-01 | -19.84     | -19.64     |

## BLOQUE B

LOAD COMBINATION MULTIPLIERS

| COMBO   | TYPE | CASE   | FACTOR | TYPE         | TITLE                     |
|---------|------|--------|--------|--------------|---------------------------|
| CU      | ADD  | MUERTA | 1.4000 | STATIC(DEAD) | Estado CU                 |
|         |      | VIVA   | 1.7000 | STATIC(LIVE) |                           |
| COLUMN1 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|         |      | SISMOX | 1.2000 | COMBO        |                           |
|         |      | SISMOY | 0.3600 | COMBO        |                           |
| COLUMN2 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|         |      | SISMOX | 0.3600 | COMBO        |                           |
|         |      | SISMOY | 1.2000 | COMBO        |                           |
| COLUMN3 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|         |      | SISMOX | 1.2000 | COMBO        |                           |
|         |      | SISMOY | 0.3600 | COMBO        |                           |
| COLUMN4 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|         |      | SISMOX | 0.3600 | COMBO        |                           |
|         |      | SISMOY | 1.2000 | COMBO        |                           |

FRAME ELEMENT FORCES

| FRAME       | LOAD        | LOC     | P       | V2        | V3         | T          | M2         | M3         |
|-------------|-------------|---------|---------|-----------|------------|------------|------------|------------|
| 45          | CU          | 2.5E-01 | -229.05 | -5.44     | -3.66      | -5.202E-03 | -4.48      | -6.85      |
|             |             | 1.65    | -223.39 | -5.44     | -3.66      | -5.202E-03 | 6.439E-01  | 7.594E-01  |
|             |             | 3.05    | -217.73 | -5.44     | -3.66      | -5.202E-03 | 5.77       | 8.37       |
|             | COLUMN1 MAX | 2.5E-01 | -140.67 | 20.31     | 3.58       | 2.846E-02  | 5.86       | 30.11      |
|             |             | 1.65    | -136.43 | 20.31     | 3.58       | 2.846E-02  | 9.892E-01  | 1.67       |
|             |             | 3.05    | -132.19 | 20.31     | 3.58       | 2.846E-02  | 12.83      | 39.33      |
|             | COLUMN1 MIN | 2.5E-01 | -202.90 | -28.47    | -9.07      | -3.627E-02 | -12.58     | -40.39     |
|             |             | 1.65    | -198.65 | -28.47    | -9.07      | -3.627E-02 | -2.324E-02 | -5.304E-01 |
|             |             | 3.05    | -194.41 | -28.47    | -9.07      | -3.627E-02 | -4.18      | -26.77     |
| COLUMN2 MAX | 2.5E-01     | -137.20 | 4.29    | 18.10     | 1.007E-01  | 27.23      | 7.02       |            |
|             | 1.65        | -132.96 | 4.29    | 18.10     | 1.007E-01  | 1.93       | 1.01       |            |
|             | 3.05        | -128.72 | 4.29    | 18.10     | 1.007E-01  | 32.11      | 17.56      |            |
| COLUMN2 MIN | 2.5E-01     | -206.37 | -12.45  | -23.59    | -1.085E-01 | -33.94     | -17.30     |            |
|             | 1.65        | -202.12 | -12.45  | -23.59    | -1.085E-01 | -9.633E-01 | 1.306E-01  |            |
|             | 3.05        | -197.88 | -12.45  | -23.59    | -1.085E-01 | -23.46     | -5.00      |            |
| COLUMN3 MAX | 2.5E-01     | -91.62  | 21.70   | 4.22      | 2.837E-02  | 6.54       | 31.45      |            |
|             | 1.65        | -87.99  | 21.70   | 4.22      | 2.837E-02  | 7.736E-01  | 1.07       |            |
|             | 3.05        | -84.35  | 21.70   | 4.22      | 2.837E-02  | 11.73      | 36.79      |            |
| COLUMN3 MIN | 2.5E-01     | -153.85 | -27.08  | -8.43     | -3.636E-02 | -11.90     | -39.05     |            |
|             | 1.65        | -150.21 | -27.08  | -8.43     | -3.636E-02 | -2.388E-01 | -1.13      |            |
|             | 3.05        | -146.57 | -27.08  | -8.43     | -3.636E-02 | -5.29      | -29.31     |            |
| COLUMN4 MAX | 2.5E-01     | -88.15  | 5.68    | 18.74     | 1.007E-01  | 27.90      | 8.36       |            |
|             | 1.65        | -84.52  | 5.68    | 18.74     | 1.007E-01  | 1.71       | 4.093E-01  |            |
|             | 3.05        | -80.88  | 5.68    | 18.74     | 1.007E-01  | 31.00      | 15.02      |            |
| COLUMN4 MIN | 2.5E-01     | -157.32 | -11.06  | -22.95    | -1.086E-01 | -33.27     | -15.95     |            |
|             | 1.65        | -153.68 | -11.06  | -22.95    | -1.086E-01 | -1.18      | -4.686E-01 |            |
|             | 3.05        | -150.04 | -11.06  | -22.95    | -1.086E-01 | -24.57     | -7.54      |            |
| 46          | CU          | 2.5E-01 | -155.79 | 2.706E-01 | -7.364E-01 | -5.131E-03 | -8.478E-01 | -9.447E-02 |



|    |             |         |           |            |            |            |            |
|----|-------------|---------|-----------|------------|------------|------------|------------|
|    | 1.65        | -150.13 | 2.706E-01 | -7.364E-01 | -5.131E-03 | 1.831E-01  | -4.733E-01 |
|    | 3.05        | -144.47 | 2.706E-01 | -7.364E-01 | -5.131E-03 | 1.21       | -8.521E-01 |
| 46 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -111.88 | 37.16     | 7.870E-01  | 2.807E-02  | 1.67       | 51.68      |
|    | 1.65        | -107.64 | 37.16     | 7.870E-01  | 2.807E-02  | 5.818E-01  | -3.494E-01 |
|    | 3.05        | -103.39 | 37.16     | 7.870E-01  | 2.807E-02  | 2.38       | 51.10      |
| 46 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -121.80 | -36.76    | -1.89      | -3.577E-02 | -2.94      | -51.82     |
|    | 1.65        | -117.56 | -36.76    | -1.89      | -3.577E-02 | -3.071E-01 | -3.604E-01 |
|    | 3.05        | -113.31 | -36.76    | -1.89      | -3.577E-02 | -5.557E-01 | -52.38     |
| 46 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -114.98 | 12.96     | 3.89       | 9.936E-02  | 7.00       | 17.78      |
|    | 1.65        | -110.74 | 12.96     | 3.89       | 9.936E-02  | 1.56       | -3.478E-01 |
|    | 3.05        | -106.49 | 12.96     | 3.89       | 9.936E-02  | 5.72       | 17.22      |
| 46 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -118.70 | -12.55    | -4.99      | -1.071E-01 | -8.27      | -17.92     |
|    | 1.65        | -114.46 | -12.55    | -4.99      | -1.071E-01 | -1.28      | -3.621E-01 |
|    | 3.05        | -110.21 | -12.55    | -4.99      | -1.071E-01 | -3.89      | -18.50     |
| 46 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -69.41  | 37.15     | 9.130E-01  | 2.798E-02  | 1.76       | 51.91      |
|    | 1.65        | -65.78  | 37.15     | 9.130E-01  | 2.798E-02  | 4.982E-01  | -9.361E-02 |
|    | 3.05        | -62.14  | 37.15     | 9.130E-01  | 2.798E-02  | 2.12       | 51.38      |
| 46 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -79.33  | -36.77    | -1.77      | -3.586E-02 | -2.85      | -51.59     |
|    | 1.65        | -75.69  | -36.77    | -1.77      | -3.586E-02 | -3.908E-01 | -1.046E-01 |
|    | 3.05        | -72.06  | -36.77    | -1.77      | -3.586E-02 | -8.158E-01 | -52.10     |
| 46 | COLUMN4 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -72.51  | 12.94     | 4.01       | 9.927E-02  | 7.09       | 18.01      |
|    | 1.65        | -68.87  | 12.94     | 4.01       | 9.927E-02  | 1.48       | -9.201E-02 |
|    | 3.05        | -65.24  | 12.94     | 4.01       | 9.927E-02  | 5.46       | 17.50      |
| 46 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -76.23  | -12.57    | -4.87      | -1.071E-01 | -8.18      | -17.69     |
|    | 1.65        | -72.60  | -12.57    | -4.87      | -1.071E-01 | -1.37      | -1.062E-01 |
|    | 3.05        | -68.96  | -12.57    | -4.87      | -1.071E-01 | -4.15      | -18.22     |
| 47 | CU          |         |           |            |            |            |            |
|    | 2.5E-01     | -336.36 | -5.31     | -3.76      | -5.275E-03 | -4.61      | -5.24      |
|    | 1.65        | -330.70 | -5.31     | -3.76      | -5.275E-03 | 6.569E-01  | 2.18       |
|    | 3.05        | -325.04 | -5.31     | -3.76      | -5.275E-03 | 5.92       | 9.61       |
| 47 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -239.91 | 27.52     | 3.73       | 2.886E-02  | 6.21       | 41.23      |
|    | 1.65        | -235.66 | 27.52     | 3.73       | 2.886E-02  | 9.904E-01  | 2.70       |
|    | 3.05        | -231.42 | 27.52     | 3.73       | 2.886E-02  | 13.11      | 50.25      |
| 47 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -264.63 | -35.48    | -9.37      | -3.677E-02 | -13.12     | -49.10     |
|    | 1.65        | -260.39 | -35.48    | -9.37      | -3.677E-02 | -5.129E-03 | 5.742E-01  |
|    | 3.05        | -256.14 | -35.48    | -9.37      | -3.677E-02 | -4.24      | -35.83     |
| 47 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -222.63 | 6.99      | 18.91      | 1.021E-01  | 28.60      | 11.75      |
|    | 1.65        | -218.39 | 6.99      | 18.91      | 1.021E-01  | 2.13       | 1.96       |
|    | 3.05        | -214.14 | 6.99      | 18.91      | 1.021E-01  | 33.23      | 22.25      |
| 47 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -281.91 | -14.95    | -24.55     | -1.101E-01 | -35.51     | -19.61     |
|    | 1.65        | -277.66 | -14.95    | -24.55     | -1.101E-01 | -1.14      | 1.32       |
|    | 3.05        | -273.42 | -14.95    | -24.55     | -1.101E-01 | -24.35     | -7.83      |
| 47 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -150.28 | 29.17     | 4.41       | 2.876E-02  | 6.93       | 42.70      |
|    | 1.65        | -146.64 | 29.17     | 4.41       | 2.876E-02  | 7.572E-01  | 1.86       |
|    | 3.05        | -143.01 | 29.17     | 4.41       | 2.876E-02  | 11.93      | 47.11      |
| 47 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -175.01 | -33.84    | -8.69      | -3.686E-02 | -12.40     | -47.64     |
|    | 1.65        | -171.37 | -33.84    | -8.69      | -3.686E-02 | -2.384E-01 | -2.660E-01 |
|    | 3.05        | -167.73 | -33.84    | -8.69      | -3.686E-02 | -5.42      | -38.98     |
| 47 | COLUMN4 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -133.01 | 8.64      | 19.59      | 1.020E-01  | 29.31      | 13.21      |
|    | 1.65        | -129.37 | 8.64      | 19.59      | 1.020E-01  | 1.89       | 1.12       |
|    | 3.05        | -125.73 | 8.64      | 19.59      | 1.020E-01  | 32.05      | 19.11      |
| 47 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -192.28 | -13.31    | -23.87     | -1.101E-01 | -34.79     | -18.15     |
|    | 1.65        | -188.64 | -13.31    | -23.87     | -1.101E-01 | -1.37      | 4.768E-01  |
|    | 3.05        | -185.01 | -13.31    | -23.87     | -1.101E-01 | -25.53     | -10.98     |

|    |             |         |        |            |            |            |            |  |
|----|-------------|---------|--------|------------|------------|------------|------------|--|
| 48 | CU          |         |        |            |            |            |            |  |
|    | 2.8E-01     | -330.63 | 3.12   | -3.77      | -5.280E-03 | -4.51      | 2.35       |  |
|    | 1.66        | -325.02 | 3.12   | -3.77      | -5.280E-03 | 7.195E-01  | -1.98      |  |
|    | 3.05        | -319.41 | 3.12   | -3.77      | -5.280E-03 | 5.95       | -6.31      |  |
| 48 | COLUMN1 MAX |         |        |            |            |            |            |  |
|    | 2.8E-01     | -236.83 | 34.16  | 4.24       | 2.889E-02  | 7.02       | 46.74      |  |
|    | 1.66        | -232.62 | 34.16  | 4.24       | 2.889E-02  | 1.14       | -6.580E-01 |  |
|    | 3.05        | -228.42 | 34.16  | 4.24       | 2.889E-02  | 13.66      | 38.58      |  |
| 48 | COLUMN1 MIN |         |        |            |            |            |            |  |
|    | 2.8E-01     | -259.11 | -29.47 | -9.89      | -3.681E-02 | -13.79     | -43.20     |  |
|    | 1.66        | -254.91 | -29.47 | -9.89      | -3.681E-02 | -6.555E-02 | -2.31      |  |
|    | 3.05        | -250.70 | -29.47 | -9.89      | -3.681E-02 | -4.74      | -48.05     |  |
| 48 | COLUMN2 MAX |         |        |            |            |            |            |  |
|    | 2.8E-01     | -218.30 | 13.27  | 20.61      | 1.023E-01  | 31.14      | 17.26      |  |
|    | 1.66        | -214.10 | 13.27  | 20.61      | 1.023E-01  | 2.54       | -1.15      |  |
|    | 3.05        | -209.89 | 13.27  | 20.61      | 1.023E-01  | 34.99      | 10.09      |  |
| 48 | COLUMN2 MIN |         |        |            |            |            |            |  |
|    | 2.8E-01     | -277.64 | -8.58  | -26.27     | -1.102E-01 | -37.91     | -13.73     |  |
|    | 1.66        | -273.43 | -8.58  | -26.27     | -1.102E-01 | -1.46      | -1.82      |  |
|    | 3.05        | -269.23 | -8.58  | -26.27     | -1.102E-01 | -26.06     | -19.56     |  |
| 48 | COLUMN3 MAX |         |        |            |            |            |            |  |
|    | 2.8E-01     | -145.11 | 33.42  | 4.90       | 2.880E-02  | 7.71       | 46.36      |  |
|    | 1.66        | -141.50 | 33.42  | 4.90       | 2.880E-02  | 9.212E-01  | -5.273E-03 |  |
|    | 3.05        | -137.90 | 33.42  | 4.90       | 2.880E-02  | 12.53      | 40.27      |  |
| 48 | COLUMN3 MIN |         |        |            |            |            |            |  |
|    | 2.8E-01     | -167.39 | -30.22 | -9.24      | -3.690E-02 | -13.10     | -43.58     |  |
|    | 1.66        | -163.79 | -30.22 | -9.24      | -3.690E-02 | -2.892E-01 | -1.66      |  |
|    | 3.05        | -160.18 | -30.22 | -9.24      | -3.690E-02 | -5.87      | -46.37     |  |
| 48 | COLUMN4 MAX |         |        |            |            |            |            |  |
|    | 2.8E-01     | -126.58 | 12.53  | 21.27      | 1.022E-01  | 31.83      | 16.88      |  |
|    | 1.66        | -122.98 | 12.53  | 21.27      | 1.022E-01  | 2.32       | -4.969E-01 |  |
|    | 3.05        | -119.37 | 12.53  | 21.27      | 1.022E-01  | 33.85      | 11.77      |  |
| 48 | COLUMN4 MIN |         |        |            |            |            |            |  |
|    | 2.8E-01     | -185.92 | -9.33  | -25.61     | -1.103E-01 | -37.22     | -14.11     |  |
|    | 1.66        | -182.31 | -9.33  | -25.61     | -1.103E-01 | -1.68      | -1.17      |  |
|    | 3.05        | -178.71 | -9.33  | -25.61     | -1.103E-01 | -27.20     | -17.88     |  |
| 49 | CU          |         |        |            |            |            |            |  |
|    | 2.5E-01     | -167.76 | -2.42  | -8.136E-01 | -5.146E-03 | -8.635E-01 | -2.89      |  |
|    | 1.65        | -162.11 | -2.42  | -8.136E-01 | -5.146E-03 | 2.755E-01  | 4.926E-01  |  |
|    | 3.05        | -156.45 | -2.42  | -8.136E-01 | -5.146E-03 | 1.41       | 3.88       |  |
| 49 | COLUMN1 MAX |         |        |            |            |            |            |  |
|    | 2.5E-01     | -120.41 | 35.58  | 9.582E-01  | 2.815E-02  | 2.05       | 50.21      |  |
|    | 1.65        | -116.17 | 35.58  | 9.582E-01  | 2.815E-02  | 7.339E-01  | 4.014E-01  |  |
|    | 3.05        | -111.92 | 35.58  | 9.582E-01  | 2.815E-02  | 2.75       | 55.22      |  |
| 49 | COLUMN1 MIN |         |        |            |            |            |            |  |
|    | 2.5E-01     | -131.24 | -39.20 | -2.18      | -3.587E-02 | -3.35      | -54.54     |  |
|    | 1.65        | -126.99 | -39.20 | -2.18      | -3.587E-02 | -3.207E-01 | 3.375E-01  |  |
|    | 3.05        | -122.75 | -39.20 | -2.18      | -3.587E-02 | -6.320E-01 | -49.41     |  |
| 49 | COLUMN2 MAX |         |        |            |            |            |            |  |
|    | 2.5E-01     | -123.29 | 11.07  | 4.57       | 9.965E-02  | 8.31       | 15.89      |  |
|    | 1.65        | -119.05 | 11.07  | 4.57       | 9.965E-02  | 1.92       | 3.869E-01  |  |
|    | 3.05        | -114.80 | 11.07  | 4.57       | 9.965E-02  | 6.60       | 20.93      |  |
| 49 | COLUMN2 MIN |         |        |            |            |            |            |  |
|    | 2.5E-01     | -128.36 | -14.70 | -5.79      | -1.074E-01 | -9.61      | -20.22     |  |
|    | 1.65        | -124.11 | -14.70 | -5.79      | -1.074E-01 | -1.51      | 3.520E-01  |  |
|    | 3.05        | -119.87 | -14.70 | -5.79      | -1.074E-01 | -4.47      | -15.11     |  |
| 49 | COLUMN3 MAX |         |        |            |            |            |            |  |
|    | 2.5E-01     | -64.52  | 36.25  | 1.11       | 2.806E-02  | 2.14       | 50.88      |  |
|    | 1.65        | -60.89  | 36.25  | 1.11       | 2.806E-02  | 6.108E-01  | 1.305E-01  |  |
|    | 3.05        | -57.25  | 36.25  | 1.11       | 2.806E-02  | 2.42       | 54.01      |  |
| 49 | COLUMN3 MIN |         |        |            |            |            |            |  |
|    | 2.5E-01     | -75.35  | -38.53 | -2.03      | -3.596E-02 | -3.26      | -53.87     |  |
|    | 1.65        | -71.71  | -38.53 | -2.03      | -3.596E-02 | -4.438E-01 | 6.665E-02  |  |
|    | 3.05        | -68.07  | -38.53 | -2.03      | -3.596E-02 | -9.665E-01 | -50.62     |  |
| 49 | COLUMN4 MAX |         |        |            |            |            |            |  |
|    | 2.5E-01     | -67.40  | 11.75  | 4.72       | 9.956E-02  | 8.40       | 16.56      |  |
|    | 1.65        | -63.77  | 11.75  | 4.72       | 9.956E-02  | 1.80       | 1.160E-01  |  |
|    | 3.05        | -60.13  | 11.75  | 4.72       | 9.956E-02  | 6.26       | 19.71      |  |
| 49 | COLUMN4 MIN |         |        |            |            |            |            |  |

|    |             |         |           |            |            |            |            |
|----|-------------|---------|-----------|------------|------------|------------|------------|
|    | 2.5E-01     | -72.47  | -14.02    | -5.64      | -1.075E-01 | -9.52      | -19.55     |
|    | 1.65        | -68.83  | -14.02    | -5.64      | -1.075E-01 | -1.63      | 8.115E-02  |
|    | 3.05        | -65.20  | -14.02    | -5.64      | -1.075E-01 | -4.81      | -16.33     |
| 50 | CU          |         |           |            |            |            |            |
|    | 2.8E-01     | -233.95 | 4.04      | -4.28      | -5.198E-03 | -4.89      | 4.42       |
|    | 1.66        | -228.34 | 4.04      | -4.28      | -5.198E-03 | 1.04       | -1.19      |
|    | 3.05        | -222.73 | 4.04      | -4.28      | -5.198E-03 | 6.97       | -6.80      |
| 50 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.8E-01     | -143.45 | 27.94     | 4.42       | 2.844E-02  | 7.31       | 38.70      |
|    | 1.66        | -139.25 | 27.94     | 4.42       | 2.844E-02  | 1.31       | -4.272E-02 |
|    | 3.05        | -135.04 | 27.94     | 4.42       | 2.844E-02  | 15.42      | 28.62      |
| 50 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.8E-01     | -207.47 | -21.87    | -10.84     | -3.624E-02 | -14.65     | -32.08     |
|    | 1.66        | -203.26 | -21.87    | -10.84     | -3.624E-02 | 2.487E-01  | -1.74      |
|    | 3.05        | -199.06 | -21.87    | -10.84     | -3.624E-02 | -4.97      | -38.82     |
| 50 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.8E-01     | -142.42 | 11.76     | 21.78      | 1.007E-01  | 32.50      | 15.65      |
|    | 1.66        | -138.22 | 11.76     | 21.78      | 1.007E-01  | 2.33       | -6.126E-01 |
|    | 3.05        | -134.01 | 11.76     | 21.78      | 1.007E-01  | 38.38      | 6.79       |
| 50 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.8E-01     | -208.50 | -5.70     | -28.19     | -1.085E-01 | -39.85     | -9.02      |
|    | 1.66        | -204.29 | -5.70     | -28.19     | -1.085E-01 | -7.736E-01 | -1.17      |
|    | 3.05        | -200.09 | -5.70     | -28.19     | -1.085E-01 | -27.93     | -16.99     |
| 50 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.8E-01     | -88.17  | 26.62     | 5.31       | 2.835E-02  | 8.14       | 37.79      |
|    | 1.66        | -84.57  | 26.62     | 5.31       | 2.835E-02  | 9.000E-01  | 8.709E-01  |
|    | 3.05        | -80.96  | 26.62     | 5.31       | 2.835E-02  | 13.78      | 31.36      |
| 50 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.8E-01     | -152.19 | -23.19    | -9.94      | -3.633E-02 | -13.82     | -32.99     |
|    | 1.66        | -148.58 | -23.19    | -9.94      | -3.633E-02 | -1.590E-01 | -8.281E-01 |
|    | 3.05        | -144.98 | -23.19    | -9.94      | -3.633E-02 | -6.61      | -36.08     |
| 50 | COLUMN4 MAX |         |           |            |            |            |            |
|    | 2.8E-01     | -87.14  | 10.45     | 22.67      | 1.006E-01  | 33.33      | 14.74      |
|    | 1.66        | -83.53  | 10.45     | 22.67      | 1.006E-01  | 1.92       | 3.011E-01  |
|    | 3.05        | -79.93  | 10.45     | 22.67      | 1.006E-01  | 36.74      | 9.53       |
| 50 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.8E-01     | -153.22 | -7.01     | -27.30     | -1.086E-01 | -39.02     | -9.93      |
|    | 1.66        | -149.61 | -7.01     | -27.30     | -1.086E-01 | -1.18      | -2.583E-01 |
|    | 3.05        | -146.01 | -7.01     | -27.30     | -1.086E-01 | -29.57     | -14.25     |
| 51 | CU          |         |           |            |            |            |            |
|    | 2.5E-01     | -167.04 | -2.36     | -3.801E-01 | -5.177E-03 | -1.330E-01 | -1.29      |
|    | 1.65        | -161.38 | -2.36     | -3.801E-01 | -5.177E-03 | 3.991E-01  | 2.02       |
|    | 3.05        | -155.72 | -2.36     | -3.801E-01 | -5.177E-03 | 9.312E-01  | 5.32       |
| 51 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -122.49 | 3.72      | 9.31       | 2.833E-02  | 13.23      | 8.31       |
|    | 1.65        | -118.25 | 3.72      | 9.31       | 2.833E-02  | 3.959E-01  | 3.11       |
|    | 3.05        | -114.00 | 3.72      | 9.31       | 2.833E-02  | 14.22      | 10.08      |
| 51 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -128.06 | -7.26     | -9.88      | -3.609E-02 | -13.43     | -10.25     |
|    | 1.65        | -123.82 | -7.26     | -9.88      | -3.609E-02 | 2.028E-01  | -8.645E-02 |
|    | 3.05        | -119.58 | -7.26     | -9.88      | -3.609E-02 | -12.82     | -2.10      |
| 51 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -119.50 | 4.680E-02 | 31.38      | 1.003E-01  | 43.99      | 2.12       |
|    | 1.65        | -115.26 | 4.680E-02 | 31.38      | 1.003E-01  | 5.347E-01  | 2.05       |
|    | 3.05        | -111.01 | 4.680E-02 | 31.38      | 1.003E-01  | 45.26      | 5.99       |
| 51 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -131.05 | -3.59     | -31.95     | -1.080E-01 | -44.19     | -4.05      |
|    | 1.65        | -126.81 | -3.59     | -31.95     | -1.080E-01 | 6.398E-02  | 9.719E-01  |
|    | 3.05        | -122.57 | -3.59     | -31.95     | -1.080E-01 | -43.86     | 1.99       |
| 51 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -89.56  | 4.33      | 9.46       | 2.823E-02  | 13.37      | 8.41       |
|    | 1.65        | -85.92  | 4.33      | 9.46       | 2.823E-02  | 3.179E-01  | 2.35       |
|    | 3.05        | -82.28  | 4.33      | 9.46       | 2.823E-02  | 13.92      | 8.47       |
| 51 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -95.13  | -6.65     | -9.72      | -3.618E-02 | -13.29     | -10.16     |
|    | 1.65        | -91.49  | -6.65     | -9.72      | -3.618E-02 | 1.248E-01  | -8.429E-01 |
|    | 3.05        | -87.86  | -6.65     | -9.72      | -3.618E-02 | -13.12     | -3.70      |
| 51 | COLUMN4 MAX |         |           |            |            |            |            |

|    |             |         |           |            |            |            |            |
|----|-------------|---------|-----------|------------|------------|------------|------------|
|    | 2.5E-01     | -86.57  | 6.535E-01 | 31.53      | 1.002E-01  | 44.13      | 2.21       |
|    | 1.65        | -82.93  | 6.535E-01 | 31.53      | 1.002E-01  | 4.567E-01  | 1.29       |
|    | 3.05        | -79.29  | 6.535E-01 | 31.53      | 1.002E-01  | 44.96      | 4.39       |
| 51 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -98.12  | -2.98     | -31.79     | -1.081E-01 | -44.05     | -3.96      |
|    | 1.65        | -94.48  | -2.98     | -31.79     | -1.081E-01 | -1.397E-02 | 2.155E-01  |
|    | 3.05        | -90.85  | -2.98     | -31.79     | -1.081E-01 | -44.16     | 3.796E-01  |
| 52 | CU          |         |           |            |            |            |            |
|    | 2.5E-01     | -186.54 | -1.63     | -9.383E-01 | -5.153E-03 | -6.287E-01 | -5.893E-01 |
|    | 1.65        | -180.88 | -1.63     | -9.383E-01 | -5.153E-03 | 6.849E-01  | 1.69       |
|    | 3.05        | -175.22 | -1.63     | -9.383E-01 | -5.153E-03 | 2.00       | 3.98       |
| 52 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -138.15 | 6.04      | 9.27       | 2.819E-02  | 13.41      | 11.44      |
|    | 1.65        | -133.91 | 6.04      | 9.27       | 2.819E-02  | 6.150E-01  | 2.98       |
|    | 3.05        | -129.66 | 6.04      | 9.27       | 2.819E-02  | 15.55      | 11.44      |
| 52 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -141.65 | -8.49     | -10.68     | -3.592E-02 | -14.36     | -12.32     |
|    | 1.65        | -137.41 | -8.49     | -10.68     | -3.592E-02 | 4.123E-01  | -4.405E-01 |
|    | 3.05        | -133.17 | -8.49     | -10.68     | -3.592E-02 | -12.55     | -5.48      |
| 52 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -134.10 | 1.19      | 32.41      | 9.978E-02  | 45.59      | 3.50       |
|    | 1.65        | -129.86 | 1.19      | 32.41      | 9.978E-02  | 8.107E-01  | 1.83       |
|    | 3.05        | -125.61 | 1.19      | 32.41      | 9.978E-02  | 48.14      | 5.81       |
| 52 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -145.70 | -3.64     | -33.81     | -1.075E-01 | -46.53     | -4.38      |
|    | 1.65        | -141.46 | -3.64     | -33.81     | -1.075E-01 | 2.167E-01  | 7.156E-01  |
|    | 3.05        | -137.22 | -3.64     | -33.81     | -1.075E-01 | -45.15     | 1.546E-01  |
| 52 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -94.14  | 6.65      | 9.63       | 2.810E-02  | 13.71      | 11.54      |
|    | 1.65        | -90.50  | 6.65      | 9.63       | 2.810E-02  | 4.214E-01  | 2.22       |
|    | 3.05        | -86.86  | 6.65      | 9.63       | 2.810E-02  | 14.87      | 9.82       |
| 52 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -97.64  | -7.88     | -10.33     | -3.601E-02 | -14.06     | -12.23     |
|    | 1.65        | -94.00  | -7.88     | -10.33     | -3.601E-02 | 2.187E-01  | -1.20      |
|    | 3.05        | -90.37  | -7.88     | -10.33     | -3.601E-02 | -13.24     | -7.10      |
| 52 | COLUMN4 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -90.09  | 1.81      | 32.76      | 9.969E-02  | 45.89      | 3.59       |
|    | 1.65        | -86.45  | 1.81      | 32.76      | 9.969E-02  | 6.171E-01  | 1.06       |
|    | 3.05        | -82.81  | 1.81      | 32.76      | 9.969E-02  | 47.46      | 4.19       |
| 52 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -101.69 | -3.03     | -33.46     | -1.076E-01 | -46.23     | -4.28      |
|    | 1.65        | -98.05  | -3.03     | -33.46     | -1.076E-01 | 2.310E-02  | -4.551E-02 |
|    | 3.05        | -94.42  | -3.03     | -33.46     | -1.076E-01 | -45.83     | -1.46      |
| 53 | CU          |         |           |            |            |            |            |
|    | 2.8E-01     | -186.89 | 1.09      | -1.13      | -5.177E-03 | -8.319E-01 | -7.449E-02 |
|    | 1.66        | -181.28 | 1.09      | -1.13      | -5.177E-03 | 7.341E-01  | -1.59      |
|    | 3.05        | -175.67 | 1.09      | -1.13      | -5.177E-03 | 2.30       | -3.10      |
| 53 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.8E-01     | -138.30 | 8.55      | 9.69       | 2.832E-02  | 13.93      | 12.75      |
|    | 1.66        | -134.10 | 8.55      | 9.69       | 2.832E-02  | 6.178E-01  | 8.887E-01  |
|    | 3.05        | -129.89 | 8.55      | 9.69       | 2.832E-02  | 16.40      | 6.33       |
| 53 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.8E-01     | -142.03 | -6.92     | -11.38     | -3.609E-02 | -15.18     | -12.87     |
|    | 1.66        | -137.82 | -6.92     | -11.38     | -3.609E-02 | 4.835E-01  | -3.27      |
|    | 3.05        | -133.62 | -6.92     | -11.38     | -3.609E-02 | -12.95     | -10.98     |
| 53 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.8E-01     | -134.08 | 3.37      | 34.03      | 1.003E-01  | 47.60      | 4.19       |
|    | 1.66        | -129.88 | 3.37      | 34.03      | 1.003E-01  | 7.253E-01  | -4.882E-01 |
|    | 3.05        | -125.67 | 3.37      | 34.03      | 1.003E-01  | 50.30      | 5.230E-01  |
| 53 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.8E-01     | -146.25 | -1.74     | -35.73     | -1.080E-01 | -48.85     | -4.30      |
|    | 1.66        | -142.04 | -1.74     | -35.73     | -1.080E-01 | 3.759E-01  | -1.89      |
|    | 3.05        | -137.84 | -1.74     | -35.73     | -1.080E-01 | -46.85     | -5.17      |
| 53 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.8E-01     | -93.80  | 8.19      | 10.11      | 2.823E-02  | 14.29      | 12.89      |
|    | 1.66        | -90.20  | 8.19      | 10.11      | 2.823E-02  | 3.879E-01  | 1.53       |
|    | 3.05        | -86.59  | 8.19      | 10.11      | 2.823E-02  | 15.58      | 7.48       |
| 53 | COLUMN3 MIN |         |           |            |            |            |            |

|    |             |         |            |            |            |            |            |
|----|-------------|---------|------------|------------|------------|------------|------------|
|    | 2.8E-01     | -97.53  | -7.28      | -10.95     | -3.618E-02 | -14.81     | -12.73     |
|    | 1.66        | -93.92  | -7.28      | -10.95     | -3.618E-02 | 2.536E-01  | -2.62      |
|    | 3.05        | -90.32  | -7.28      | -10.95     | -3.618E-02 | -13.77     | -9.83      |
| 53 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -89.59  | 3.01       | 34.46      | 1.002E-01  | 47.96      | 4.33       |
|    | 1.66        | -85.98  | 3.01       | 34.46      | 1.002E-01  | 4.955E-01  | 1.534E-01  |
|    | 3.05        | -82.38  | 3.01       | 34.46      | 1.002E-01  | 49.47      | 1.67       |
| 53 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -101.75 | -2.10      | -35.30     | -1.081E-01 | -48.49     | -4.16      |
|    | 1.66        | -98.14  | -2.10      | -35.30     | -1.081E-01 | 1.461E-01  | -1.25      |
|    | 3.05        | -94.54  | -2.10      | -35.30     | -1.081E-01 | -47.67     | -4.02      |
| 54 | CU          |         |            |            |            |            |            |
|    | 2.8E-01     | -161.17 | 1.80       | 1.24       | -5.255E-03 | 1.16       | 2.778E-01  |
|    | 1.66        | -155.56 | 1.80       | 1.24       | -5.255E-03 | -5.513E-01 | -2.23      |
|    | 3.05        | -149.96 | 1.80       | 1.24       | -5.255E-03 | -2.27      | -4.73      |
| 54 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -119.54 | 6.83       | 12.17      | 2.875E-02  | 16.47      | 9.56       |
|    | 1.66        | -115.34 | 6.83       | 12.17      | 2.875E-02  | -4.065E-01 | 8.433E-02  |
|    | 3.05        | -111.13 | 6.83       | 12.17      | 2.875E-02  | 13.89      | 2.29       |
| 54 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -122.21 | -4.12      | -10.31     | -3.664E-02 | -14.72     | -9.14      |
|    | 1.66        | -118.01 | -4.12      | -10.31     | -3.664E-02 | -4.205E-01 | -3.42      |
|    | 3.05        | -113.80 | -4.12      | -10.31     | -3.664E-02 | -17.29     | -9.39      |
| 54 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -120.06 | 3.17       | 38.18      | 1.018E-01  | 52.58      | 3.30       |
|    | 1.66        | -115.86 | 3.17       | 38.18      | 1.018E-01  | -3.985E-01 | -1.10      |
|    | 3.05        | -111.65 | 3.17       | 38.18      | 1.018E-01  | 49.98      | -1.59      |
| 54 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -121.70 | -4.659E-01 | -36.33     | -1.097E-01 | -50.83     | -2.89      |
|    | 1.66        | -117.49 | -4.659E-01 | -36.33     | -1.097E-01 | -4.285E-01 | -2.24      |
|    | 3.05        | -113.29 | -4.659E-01 | -36.33     | -1.097E-01 | -53.38     | -5.50      |
| 54 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -82.38  | 6.29       | 11.93      | 2.866E-02  | 16.33      | 9.78       |
|    | 1.66        | -78.78  | 6.29       | 11.93      | 2.866E-02  | -2.169E-01 | 1.04       |
|    | 3.05        | -75.17  | 6.29       | 11.93      | 2.866E-02  | 14.41      | 3.99       |
| 54 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -85.05  | -4.65      | -10.55     | -3.673E-02 | -14.87     | -8.92      |
|    | 1.66        | -81.45  | -4.65      | -10.55     | -3.673E-02 | -2.310E-01 | -2.46      |
|    | 3.05        | -77.84  | -4.65      | -10.55     | -3.673E-02 | -16.77     | -7.69      |
| 54 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -82.90  | 2.64       | 37.94      | 1.017E-01  | 52.44      | 3.52       |
|    | 1.66        | -79.30  | 2.64       | 37.94      | 1.017E-01  | -2.090E-01 | -1.393E-01 |
|    | 3.05        | -75.69  | 2.64       | 37.94      | 1.017E-01  | 50.50      | 1.055E-01  |
| 54 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -84.54  | -9.975E-01 | -36.57     | -1.097E-01 | -50.97     | -2.66      |
|    | 1.66        | -80.93  | -9.975E-01 | -36.57     | -1.097E-01 | -2.390E-01 | -1.28      |
|    | 3.05        | -77.33  | -9.975E-01 | -36.57     | -1.097E-01 | -52.86     | -3.80      |
| 55 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -493.42 | -16.26     | -9.870E-01 | -5.315E-03 | -1.14      | -14.22     |
|    | 1.65        | -487.76 | -16.26     | -9.870E-01 | -5.315E-03 | 2.370E-01  | 8.55       |
|    | 3.05        | -482.10 | -16.26     | -9.870E-01 | -5.315E-03 | 1.62       | 31.32      |
| 55 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -342.06 | 9.39       | 7.25       | 2.908E-02  | 10.71      | 21.59      |
|    | 1.65        | -337.82 | 9.39       | 7.25       | 2.908E-02  | 5.624E-01  | 8.44       |
|    | 3.05        | -333.57 | 9.39       | 7.25       | 2.908E-02  | 12.02      | 51.69      |
| 55 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -398.06 | -33.78     | -8.73      | -3.705E-02 | -12.43     | -42.91     |
|    | 1.65        | -393.82 | -33.78     | -8.73      | -3.705E-02 | -2.069E-01 | 4.39       |
|    | 3.05        | -389.58 | -33.78     | -8.73      | -3.705E-02 | -9.59      | -4.71      |
| 55 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -359.79 | -5.35      | 25.70      | 1.029E-01  | 37.43      | -4.443E-01 |
|    | 1.65        | -355.55 | -5.35      | 25.70      | 1.029E-01  | 1.45       | 7.05       |
|    | 3.05        | -351.30 | -5.35      | 25.70      | 1.029E-01  | 36.96      | 32.43      |
| 55 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -380.33 | -19.04     | -27.18     | -1.109E-01 | -39.15     | -20.88     |
|    | 1.65        | -376.09 | -19.04     | -27.18     | -1.109E-01 | -1.10      | 5.78       |
|    | 3.05        | -371.85 | -19.04     | -27.18     | -1.109E-01 | -34.53     | 14.55      |
| 55 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -230.68 | 13.75      | 7.44       | 2.899E-02  | 10.92      | 24.96      |
|    | 1.65        | -227.04 | 13.75      | 7.44       | 2.899E-02  | 5.043E-01  | 5.70       |

|    |             |         |            |            |            |            |            |
|----|-------------|---------|------------|------------|------------|------------|------------|
|    | 3.05        | -223.41 | 13.75      | 7.44       | 2.899E-02  | 11.69      | 42.84      |
| 55 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -286.68 | -29.42     | -8.54      | -3.715E-02 | -12.22     | -39.54     |
|    | 1.65        | -283.05 | -29.42     | -8.54      | -3.715E-02 | -2.650E-01 | 1.65       |
|    | 3.05        | -279.41 | -29.42     | -8.54      | -3.715E-02 | -9.92      | -13.55     |
| 55 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -248.41 | -9.913E-01 | 25.89      | 1.028E-01  | 37.64      | 2.93       |
|    | 1.65        | -244.77 | -9.913E-01 | 25.89      | 1.028E-01  | 1.40       | 4.32       |
|    | 3.05        | -241.14 | -9.913E-01 | 25.89      | 1.028E-01  | 36.63      | 23.59      |
| 55 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -268.95 | -14.68     | -26.99     | -1.110E-01 | -38.94     | -17.51     |
|    | 1.65        | -265.31 | -14.68     | -26.99     | -1.110E-01 | -1.16      | 3.04       |
|    | 3.05        | -261.68 | -14.68     | -26.99     | -1.110E-01 | -34.85     | 5.70       |
| 56 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -462.11 | 2.80       | -2.043E-01 | -5.087E-03 | -2.058E-01 | 1.16       |
|    | 1.65        | -456.45 | 2.80       | -2.043E-01 | -5.087E-03 | 8.019E-02  | -2.76      |
|    | 3.05        | -450.79 | 2.80       | -2.043E-01 | -5.087E-03 | 3.662E-01  | -6.68      |
| 56 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -339.99 | 39.46      | 1.54       | 2.783E-02  | 2.68       | 52.89      |
|    | 1.65        | -335.75 | 39.46      | 1.54       | 2.783E-02  | 5.194E-01  | -1.79      |
|    | 3.05        | -331.50 | 39.46      | 1.54       | 2.783E-02  | 2.19       | 47.57      |
| 56 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -353.17 | -35.26     | -1.85      | -3.546E-02 | -2.99      | -51.15     |
|    | 1.65        | -348.93 | -35.26     | -1.85      | -3.546E-02 | -3.991E-01 | -2.35      |
|    | 3.05        | -344.69 | -35.26     | -1.85      | -3.546E-02 | -1.64      | -57.60     |
| 56 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -344.43 | 13.93      | 5.46       | 9.850E-02  | 9.23       | 17.34      |
|    | 1.65        | -340.19 | 13.93      | 5.46       | 9.850E-02  | 1.58       | -1.98      |
|    | 3.05        | -335.94 | 13.93      | 5.46       | 9.850E-02  | 6.61       | 11.64      |
| 56 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -348.73 | -9.73      | -5.77      | -1.061E-01 | -9.54      | -15.60     |
|    | 1.65        | -344.49 | -9.73      | -5.77      | -1.061E-01 | -1.46      | -2.16      |
|    | 3.05        | -340.25 | -9.73      | -5.77      | -1.061E-01 | -6.06      | -21.66     |
| 56 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -219.30 | 38.60      | 1.58       | 2.774E-02  | 2.71       | 52.71      |
|    | 1.65        | -215.66 | 38.60      | 1.58       | 2.774E-02  | 4.957E-01  | -7.613E-01 |
|    | 3.05        | -212.02 | 38.60      | 1.58       | 2.774E-02  | 2.11       | 49.81      |
| 56 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -232.48 | -36.12     | -1.81      | -3.555E-02 | -2.95      | -51.33     |
|    | 1.65        | -228.84 | -36.12     | -1.81      | -3.555E-02 | -4.228E-01 | -1.33      |
|    | 3.05        | -225.21 | -36.12     | -1.81      | -3.555E-02 | -1.72      | -55.36     |
| 56 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -223.74 | 13.07      | 5.50       | 9.841E-02  | 9.26       | 17.16      |
|    | 1.65        | -220.10 | 13.07      | 5.50       | 9.841E-02  | 1.56       | -9.549E-01 |
|    | 3.05        | -216.46 | 13.07      | 5.50       | 9.841E-02  | 6.53       | 13.87      |
| 56 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -228.04 | -10.59     | -5.73      | -1.062E-01 | -9.50      | -15.78     |
|    | 1.65        | -224.40 | -10.59     | -5.73      | -1.062E-01 | -1.49      | -1.13      |
|    | 3.05        | -220.77 | -10.59     | -5.73      | -1.062E-01 | -6.14      | -19.43     |
| 57 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -728.28 | -9.91      | -1.10      | -5.342E-03 | -1.28      | -8.44      |
|    | 1.65        | -722.63 | -9.91      | -1.10      | -5.342E-03 | 2.510E-01  | 5.44       |
|    | 3.05        | -716.97 | -9.91      | -1.10      | -5.342E-03 | 1.79       | 19.32      |
| 57 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -542.69 | 22.22      | 7.50       | 2.923E-02  | 11.12      | 36.67      |
|    | 1.65        | -538.45 | 22.22      | 7.50       | 2.923E-02  | 6.195E-01  | 5.56       |
|    | 3.05        | -534.21 | 22.22      | 7.50       | 2.923E-02  | 12.56      | 54.53      |
| 57 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -549.73 | -37.09     | -9.14      | -3.724E-02 | -13.04     | -49.32     |
|    | 1.65        | -545.49 | -37.09     | -9.14      | -3.724E-02 | -2.430E-01 | 2.60       |
|    | 3.05        | -541.25 | -37.09     | -9.14      | -3.724E-02 | -9.88      | -25.54     |
| 57 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -542.63 | 1.95       | 26.76      | 1.034E-01  | 39.08      | 7.28       |
|    | 1.65        | -538.39 | 1.95       | 26.76      | 1.034E-01  | 1.62       | 4.55       |
|    | 3.05        | -534.14 | 1.95       | 26.76      | 1.034E-01  | 38.52      | 27.16      |
| 57 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -549.80 | -16.82     | -28.40     | -1.115E-01 | -41.01     | -19.94     |
|    | 1.65        | -545.55 | -16.82     | -28.40     | -1.115E-01 | -1.24      | 3.61       |
|    | 3.05        | -541.31 | -16.82     | -28.40     | -1.115E-01 | -35.84     | 1.82       |

|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
| 57 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -337.06 | 26.38  | 7.72       | 2.913E-02  | 11.36      | 39.98      |
|    | 1.65        | -333.42 | 26.38  | 7.72       | 2.913E-02  | 5.476E-01  | 3.05       |
|    | 3.05        | -329.78 | 26.38  | 7.72       | 2.913E-02  | 12.18      | 46.18      |
| 57 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -344.10 | -32.93 | -8.92      | -3.734E-02 | -12.81     | -46.01     |
|    | 1.65        | -340.46 | -32.93 | -8.92      | -3.734E-02 | -3.149E-01 | 8.580E-02  |
|    | 3.05        | -336.83 | -32.93 | -8.92      | -3.734E-02 | -10.26     | -33.89     |
| 57 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -337.00 | 6.11   | 26.98      | 1.034E-01  | 39.32      | 10.59      |
|    | 1.65        | -333.36 | 6.11   | 26.98      | 1.034E-01  | 1.55       | 2.04       |
|    | 3.05        | -329.72 | 6.11   | 26.98      | 1.034E-01  | 38.14      | 18.82      |
| 57 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -344.16 | -12.66 | -28.18     | -1.116E-01 | -40.77     | -16.63     |
|    | 1.65        | -340.53 | -12.66 | -28.18     | -1.116E-01 | -1.31      | 1.09       |
|    | 3.05        | -336.89 | -12.66 | -28.18     | -1.116E-01 | -36.23     | -6.52      |
| 58 | CU          |         |        |            |            |            |            |
|    | 2.8E-01     | -752.36 | 7.37   | -1.18      | -5.337E-03 | -1.34      | 5.25       |
|    | 1.66        | -746.75 | 7.37   | -1.18      | -5.337E-03 | 2.920E-01  | -4.97      |
|    | 3.05        | -741.14 | 7.37   | -1.18      | -5.337E-03 | 1.92       | -15.19     |
| 58 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -559.85 | 35.53  | 7.93       | 2.920E-02  | 11.69      | 46.61      |
|    | 1.66        | -555.65 | 35.53  | 7.93       | 2.920E-02  | 6.960E-01  | -2.69      |
|    | 3.05        | -551.44 | 35.53  | 7.93       | 2.920E-02  | 13.19      | 29.19      |
| 58 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -568.68 | -24.48 | -9.69      | -3.721E-02 | -13.70     | -38.73     |
|    | 1.66        | -564.48 | -24.48 | -9.69      | -3.721E-02 | -2.580E-01 | -4.77      |
|    | 3.05        | -560.27 | -24.48 | -9.69      | -3.721E-02 | -10.31     | -51.99     |
| 58 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -560.60 | 15.01  | 28.34      | 1.034E-01  | 41.11      | 17.44      |
|    | 1.66        | -556.39 | 15.01  | 28.34      | 1.034E-01  | 1.79       | -3.39      |
|    | 3.05        | -552.19 | 15.01  | 28.34      | 1.034E-01  | 40.43      | 1.43       |
| 58 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -567.94 | -3.96  | -30.11     | -1.114E-01 | -43.12     | -9.56      |
|    | 1.66        | -563.73 | -3.96  | -30.11     | -1.114E-01 | -1.35      | -4.07      |
|    | 3.05        | -559.52 | -3.96  | -30.11     | -1.114E-01 | -37.54     | -24.22     |
| 58 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -336.68 | 32.68  | 8.16       | 2.910E-02  | 11.93      | 44.75      |
|    | 1.66        | -333.08 | 32.68  | 8.16       | 2.910E-02  | 6.157E-01  | -5.904E-01 |
|    | 3.05        | -329.47 | 32.68  | 8.16       | 2.910E-02  | 12.79      | 35.25      |
| 58 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -345.51 | -27.33 | -9.46      | -3.730E-02 | -13.46     | -40.59     |
|    | 1.66        | -341.91 | -27.33 | -9.46      | -3.730E-02 | -3.383E-01 | -2.67      |
|    | 3.05        | -338.30 | -27.33 | -9.46      | -3.730E-02 | -10.71     | -45.93     |
| 58 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -337.43 | 12.16  | 28.57      | 1.033E-01  | 41.35      | 15.58      |
|    | 1.66        | -333.82 | 12.16  | 28.57      | 1.033E-01  | 1.71       | -1.29      |
|    | 3.05        | -330.22 | 12.16  | 28.57      | 1.033E-01  | 40.03      | 7.48       |
| 58 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -344.76 | -6.81  | -29.88     | -1.115E-01 | -42.88     | -11.42     |
|    | 1.66        | -341.16 | -6.81  | -29.88     | -1.115E-01 | -1.43      | -1.97      |
|    | 3.05        | -337.56 | -6.81  | -29.88     | -1.115E-01 | -37.94     | -18.17     |
| 59 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -512.88 | -3.97  | -9.687E-01 | -5.155E-03 | -6.166E-01 | -3.13      |
|    | 1.65        | -507.22 | -3.97  | -9.687E-01 | -5.155E-03 | 7.395E-01  | 2.43       |
|    | 3.05        | -501.56 | -3.97  | -9.687E-01 | -5.155E-03 | 2.10       | 7.98       |
| 59 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -374.63 | 35.54  | 1.04       | 2.820E-02  | 2.54       | 51.42      |
|    | 1.65        | -370.39 | 35.54  | 1.04       | 2.820E-02  | 1.09       | 1.98       |
|    | 3.05        | -366.15 | 35.54  | 1.04       | 2.820E-02  | 3.51       | 60.07      |
| 59 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -394.68 | -41.49 | -2.49      | -3.593E-02 | -3.46      | -56.12     |
|    | 1.65        | -390.44 | -41.49 | -2.49      | -3.593E-02 | 2.414E-02  | 1.66       |
|    | 3.05        | -386.20 | -41.49 | -2.49      | -3.593E-02 | -3.686E-01 | -48.09     |
| 59 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -381.58 | 9.23   | 5.08       | 9.982E-02  | 9.38       | 14.69      |
|    | 1.65        | -377.34 | 9.23   | 5.08       | 9.982E-02  | 2.27       | 1.87       |
|    | 3.05        | -373.10 | 9.23   | 5.08       | 9.982E-02  | 7.99       | 23.11      |
| 59 | COLUMN2 MIN |         |        |            |            |            |            |

|    |             |         |            |            |            |            |            |
|----|-------------|---------|------------|------------|------------|------------|------------|
|    | 2.5E-01     | -387.73 | -15.18     | -6.54      | -1.076E-01 | -10.31     | -19.39     |
|    | 1.65        | -383.49 | -15.18     | -6.54      | -1.076E-01 | -1.16      | 1.77       |
|    | 3.05        | -379.25 | -15.18     | -6.54      | -1.076E-01 | -4.85      | -11.14     |
| 59 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -217.25 | 36.80      | 1.23       | 2.811E-02  | 2.59       | 52.24      |
|    | 1.65        | -213.61 | 36.80      | 1.23       | 2.811E-02  | 8.689E-01  | 1.04       |
|    | 3.05        | -209.97 | 36.80      | 1.23       | 2.811E-02  | 3.02       | 57.37      |
| 59 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -237.30 | -40.24     | -2.30      | -3.603E-02 | -3.41      | -55.30     |
|    | 1.65        | -233.66 | -40.24     | -2.30      | -3.603E-02 | -1.921E-01 | 7.237E-01  |
|    | 3.05        | -230.02 | -40.24     | -2.30      | -3.603E-02 | -8.570E-01 | -50.79     |
| 59 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -224.20 | 10.48      | 5.28       | 9.973E-02  | 9.44       | 15.51      |
|    | 1.65        | -220.56 | 10.48      | 5.28       | 9.973E-02  | 2.05       | 9.315E-01  |
|    | 3.05        | -216.92 | 10.48      | 5.28       | 9.973E-02  | 7.50       | 20.41      |
| 59 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -230.35 | -13.92     | -6.34      | -1.076E-01 | -10.25     | -18.57     |
|    | 1.65        | -226.71 | -13.92     | -6.34      | -1.076E-01 | -1.37      | 8.290E-01  |
|    | 3.05        | -223.07 | -13.92     | -6.34      | -1.076E-01 | -5.34      | -13.84     |
| 60 | CU          |         |            |            |            |            |            |
|    | 2.8E-01     | -593.62 | 21.86      | -14.73     | -8.721E-03 | -14.39     | 15.35      |
|    | 1.66        | -586.30 | 21.86      | -14.73     | -8.721E-03 | 6.05       | -14.98     |
|    | 3.05        | -578.97 | 21.86      | -14.73     | -8.721E-03 | 26.48      | -45.30     |
| 60 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -409.42 | 47.72      | 2.04       | 4.771E-02  | 8.21       | 57.67      |
|    | 1.66        | -403.93 | 47.72      | 2.04       | 4.771E-02  | 5.39       | -8.54      |
|    | 3.05        | -398.44 | 47.72      | 2.04       | 4.771E-02  | 37.17      | 6.81       |
| 60 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -481.01 | -14.94     | -24.13     | -6.080E-02 | -29.79     | -34.65     |
|    | 1.66        | -475.52 | -14.94     | -24.13     | -6.080E-02 | 3.69       | -13.92     |
|    | 3.05        | -470.02 | -14.94     | -24.13     | -6.080E-02 | 2.56       | -74.76     |
| 60 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -421.54 | 26.07      | 31.62      | 1.689E-01  | 50.96      | 25.83      |
|    | 1.66        | -416.04 | 26.07      | 31.62      | 1.689E-01  | 7.09       | -10.34     |
|    | 3.05        | -410.55 | 26.07      | 31.62      | 1.689E-01  | 76.51      | -21.45     |
| 60 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -468.90 | 6.72       | -53.71     | -1.820E-01 | -72.54     | -2.81      |
|    | 1.66        | -463.40 | 6.72       | -53.71     | -1.820E-01 | 1.98       | -12.13     |
|    | 3.05        | -457.91 | 6.72       | -53.71     | -1.820E-01 | -36.78     | -46.51     |
| 60 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -261.15 | 41.00      | 5.09       | 4.756E-02  | 10.78      | 53.80      |
|    | 1.66        | -256.44 | 41.00      | 5.09       | 4.756E-02  | 3.72       | -3.10      |
|    | 3.05        | -251.73 | 41.00      | 5.09       | 4.756E-02  | 31.26      | 21.58      |
| 60 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -332.74 | -21.66     | -21.08     | -6.095E-02 | -27.22     | -38.53     |
|    | 1.66        | -328.03 | -21.66     | -21.08     | -6.095E-02 | 2.02       | -8.47      |
|    | 3.05        | -323.32 | -21.66     | -21.08     | -6.095E-02 | -3.35      | -59.99     |
| 60 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -273.26 | 19.35      | 34.67      | 1.687E-01  | 53.53      | 21.95      |
|    | 1.66        | -268.55 | 19.35      | 34.67      | 1.687E-01  | 5.42       | -4.89      |
|    | 3.05        | -263.85 | 19.35      | 34.67      | 1.687E-01  | 70.60      | -6.67      |
| 60 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -320.62 | -6.834E-03 | -50.66     | -1.821E-01 | -69.97     | -6.69      |
|    | 1.66        | -315.92 | -6.834E-03 | -50.66     | -1.821E-01 | 3.142E-01  | -6.68      |
|    | 3.05        | -311.21 | -6.834E-03 | -50.66     | -1.821E-01 | -42.68     | -31.73     |
| 61 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -180.18 | -3.30      | -1.413E-01 | -5.124E-03 | -2.041E-01 | -8.464E-01 |
|    | 1.65        | -174.53 | -3.30      | -1.413E-01 | -5.124E-03 | -6.261E-03 | 3.78       |
|    | 3.05        | -168.87 | -3.30      | -1.413E-01 | -5.124E-03 | 1.916E-01  | 8.40       |
| 61 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -133.81 | 2.35       | 8.98       | 2.804E-02  | 12.49      | 7.87       |
|    | 1.65        | -129.57 | 2.35       | 8.98       | 2.804E-02  | 7.308E-02  | 4.58       |
|    | 3.05        | -125.32 | 2.35       | 8.98       | 2.804E-02  | 12.94      | 11.32      |
| 61 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -136.47 | -7.31      | -9.19      | -3.572E-02 | -12.79     | -9.14      |
|    | 1.65        | -132.22 | -7.31      | -9.19      | -3.572E-02 | -8.247E-02 | 1.09       |
|    | 3.05        | -127.98 | -7.31      | -9.19      | -3.572E-02 | -12.65     | 1.28       |
| 61 | COLUMN2 MAX |         |            |            |            |            |            |



|    |             |         |            |            |            |            |            |
|----|-------------|---------|------------|------------|------------|------------|------------|
|    | 2.5E-01     | -134.57 | -1.02      | 29.98      | 9.924E-02  | 41.71      | 1.93       |
|    | 1.65        | -130.33 | -1.02      | 29.98      | 9.924E-02  | 2.525E-01  | 3.36       |
|    | 3.05        | -126.08 | -1.02      | 29.98      | 9.924E-02  | 42.52      | 7.82       |
| 61 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -135.71 | -3.94      | -30.19     | -1.069E-01 | -42.02     | -3.20      |
|    | 1.65        | -131.46 | -3.94      | -30.19     | -1.069E-01 | -2.619E-01 | 2.31       |
|    | 3.05        | -127.22 | -3.94      | -30.19     | -1.069E-01 | -42.23     | 4.78       |
| 61 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -98.23  | 3.22       | 9.02       | 2.795E-02  | 12.55      | 7.86       |
|    | 1.65        | -94.59  | 3.22       | 9.02       | 2.795E-02  | 7.717E-02  | 3.35       |
|    | 3.05        | -90.95  | 3.22       | 9.02       | 2.795E-02  | 12.88      | 8.88       |
| 61 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -100.88 | -6.44      | -9.15      | -3.581E-02 | -12.73     | -9.16      |
|    | 1.65        | -97.25  | -6.44      | -9.15      | -3.581E-02 | -7.838E-02 | -1.410E-01 |
|    | 3.05        | -93.61  | -6.44      | -9.15      | -3.581E-02 | -12.71     | -1.17      |
| 61 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -98.99  | -1.504E-01 | 30.02      | 9.915E-02  | 41.78      | 1.92       |
|    | 1.65        | -95.35  | -1.504E-01 | 30.02      | 9.915E-02  | 2.566E-01  | 2.13       |
|    | 3.05        | -91.71  | -1.504E-01 | 30.02      | 9.915E-02  | 42.46      | 5.37       |
| 61 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -100.12 | -3.07      | -30.15     | -1.070E-01 | -41.95     | -3.22      |
|    | 1.65        | -96.48  | -3.07      | -30.15     | -1.070E-01 | -2.578E-01 | 1.08       |
|    | 3.05        | -92.85  | -3.07      | -30.15     | -1.070E-01 | -42.29     | 2.34       |
| 62 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -201.59 | -2.01      | -2.251E-01 | -5.111E-03 | -3.149E-01 | -3.874E-01 |
|    | 1.65        | -195.93 | -2.01      | -2.251E-01 | -5.111E-03 | 1.896E-04  | 2.43       |
|    | 3.05        | -190.27 | -2.01      | -2.251E-01 | -5.111E-03 | 3.153E-01  | 5.24       |
| 62 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -151.04 | 5.09       | 9.33       | 2.796E-02  | 12.96      | 10.68      |
|    | 1.65        | -146.80 | 5.09       | 9.33       | 2.796E-02  | 9.700E-02  | 3.55       |
|    | 3.05        | -142.55 | 5.09       | 9.33       | 2.796E-02  | 13.63      | 11.44      |
| 62 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -151.34 | -8.11      | -9.67      | -3.563E-02 | -13.44     | -11.26     |
|    | 1.65        | -147.10 | -8.11      | -9.67      | -3.563E-02 | -9.672E-02 | 8.919E-02  |
|    | 3.05        | -142.85 | -8.11      | -9.67      | -3.563E-02 | -13.16     | -3.57      |
| 62 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -150.97 | 4.821E-01  | 31.31      | 9.897E-02  | 43.52      | 3.02       |
|    | 1.65        | -146.73 | 4.821E-01  | 31.31      | 9.897E-02  | 3.176E-01  | 2.34       |
|    | 3.05        | -142.49 | 4.821E-01  | 31.31      | 9.897E-02  | 44.63      | 6.20       |
| 62 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -151.41 | -3.50      | -31.65     | -1.066E-01 | -43.99     | -3.60      |
|    | 1.65        | -147.17 | -3.50      | -31.65     | -1.066E-01 | -3.173E-01 | 1.30       |
|    | 3.05        | -142.92 | -3.50      | -31.65     | -1.066E-01 | -44.15     | 1.67       |
| 62 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -103.18 | 5.93       | 9.38       | 2.787E-02  | 13.03      | 10.71      |
|    | 1.65        | -99.55  | 5.93       | 9.38       | 2.787E-02  | 9.898E-02  | 2.42       |
|    | 3.05        | -95.91  | 5.93       | 9.38       | 2.787E-02  | 13.56      | 9.13       |
| 62 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -103.48 | -7.27      | -9.62      | -3.572E-02 | -13.36     | -11.23     |
|    | 1.65        | -99.85  | -7.27      | -9.62      | -3.572E-02 | -9.474E-02 | -1.05      |
|    | 3.05        | -96.21  | -7.27      | -9.62      | -3.572E-02 | -13.22     | -5.88      |
| 62 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -103.11 | 1.32       | 31.36      | 9.888E-02  | 43.59      | 3.05       |
|    | 1.65        | -99.48  | 1.32       | 31.36      | 9.888E-02  | 3.195E-01  | 1.21       |
|    | 3.05        | -95.84  | 1.32       | 31.36      | 9.888E-02  | 44.56      | 3.89       |
| 62 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -103.55 | -2.66      | -31.60     | -1.067E-01 | -43.92     | -3.56      |
|    | 1.65        | -99.92  | -2.66      | -31.60     | -1.067E-01 | -3.153E-01 | 1.639E-01  |
|    | 3.05        | -96.28  | -2.66      | -31.60     | -1.067E-01 | -44.22     | -6.361E-01 |
| 63 | CU          |         |            |            |            |            |            |
|    | 2.8E-01     | -202.30 | 1.60       | -2.062E-01 | -5.142E-03 | -3.293E-01 | -1.904E-01 |
|    | 1.66        | -196.69 | 1.60       | -2.062E-01 | -5.142E-03 | -4.321E-02 | -2.40      |
|    | 3.05        | -191.08 | 1.60       | -2.062E-01 | -5.142E-03 | 2.429E-01  | -4.62      |
| 63 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.8E-01     | -151.61 | 8.15       | 9.86       | 2.813E-02  | 13.61      | 11.59      |
|    | 1.66        | -147.41 | 8.15       | 9.86       | 2.813E-02  | 4.383E-03  | 2.731E-01  |
|    | 3.05        | -143.20 | 8.15       | 9.86       | 2.813E-02  | 14.11      | 4.11       |
| 63 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.8E-01     | -151.83 | -5.76      | -10.17     | -3.584E-02 | -14.11     | -11.87     |
|    | 1.66        | -147.63 | -5.76      | -10.17     | -3.584E-02 | -6.920E-02 | -3.88      |
|    | 3.05        | -143.42 | -5.76      | -10.17     | -3.584E-02 | -13.75     | -11.04     |

|    |             |         |            |           |            |            |            |
|----|-------------|---------|------------|-----------|------------|------------|------------|
| 63 | COLUMN2 MAX |         |            |           |            |            |            |
|    | 2.8E-01     | -151.67 | 3.30       | 33.07     | 9.957E-02  | 45.74      | 3.40       |
|    | 1.66        | -147.46 | 3.30       | 33.07     | 9.957E-02  | 8.209E-02  | -1.18      |
|    | 3.05        | -143.26 | 3.30       | 33.07     | 9.957E-02  | 46.39      | -1.18      |
| 63 | COLUMN2 MIN |         |            |           |            |            |            |
|    | 2.8E-01     | -151.78 | -9.020E-01 | -33.38    | -1.073E-01 | -46.23     | -3.68      |
|    | 1.66        | -147.57 | -9.020E-01 | -33.38    | -1.073E-01 | -1.469E-01 | -2.43      |
|    | 3.05        | -143.37 | -9.020E-01 | -33.38    | -1.073E-01 | -46.03     | -5.75      |
| 63 | COLUMN3 MAX |         |            |           |            |            |            |
|    | 2.8E-01     | -103.06 | 7.56       | 9.89      | 2.804E-02  | 13.67      | 11.79      |
|    | 1.66        | -99.45  | 7.56       | 9.89      | 2.804E-02  | 1.858E-02  | 1.31       |
|    | 3.05        | -95.85  | 7.56       | 9.89      | 2.804E-02  | 14.08      | 5.97       |
| 63 | COLUMN3 MIN |         |            |           |            |            |            |
|    | 2.8E-01     | -103.28 | -6.36      | -10.14    | -3.594E-02 | -14.05     | -11.67     |
|    | 1.66        | -99.67  | -6.36      | -10.14    | -3.594E-02 | -5.500E-02 | -2.85      |
|    | 3.05        | -96.07  | -6.36      | -10.14    | -3.594E-02 | -13.77     | -9.18      |
| 63 | COLUMN4 MAX |         |            |           |            |            |            |
|    | 2.8E-01     | -103.11 | 2.70       | 33.10     | 9.948E-02  | 45.79      | 3.60       |
|    | 1.66        | -99.51  | 2.70       | 33.10     | 9.948E-02  | 9.628E-02  | -1.430E-01 |
|    | 3.05        | -95.90  | 2.70       | 33.10     | 9.948E-02  | 46.36      | 6.813E-01  |
| 63 | COLUMN4 MIN |         |            |           |            |            |            |
|    | 2.8E-01     | -103.22 | -1.50      | -33.35    | -1.074E-01 | -46.17     | -3.48      |
|    | 1.66        | -99.62  | -1.50      | -33.35    | -1.074E-01 | -1.327E-01 | -1.40      |
|    | 3.05        | -96.01  | -1.50      | -33.35    | -1.074E-01 | -46.06     | -3.89      |
| 64 | CU          |         |            |           |            |            |            |
|    | 2.8E-01     | -487.84 | 22.79      | 6.64      | -5.264E-03 | 5.73       | 17.39      |
|    | 1.66        | -482.24 | 22.79      | 6.64      | -5.264E-03 | -3.48      | -14.23     |
|    | 3.05        | -476.63 | 22.79      | 6.64      | -5.264E-03 | -12.69     | -45.84     |
| 64 | COLUMN1 MAX |         |            |           |            |            |            |
|    | 2.8E-01     | -334.95 | 39.31      | 16.93     | 2.880E-02  | 21.04      | 45.75      |
|    | 1.66        | -330.75 | 39.31      | 16.93     | 2.880E-02  | -2.16      | -8.72      |
|    | 3.05        | -326.54 | 39.31      | 16.93     | 2.880E-02  | 6.90       | -5.43      |
| 64 | COLUMN1 MIN |         |            |           |            |            |            |
|    | 2.8E-01     | -396.81 | -5.13      | -6.97     | -3.670E-02 | -12.43     | -19.67     |
|    | 1.66        | -392.61 | -5.13      | -6.97     | -3.670E-02 | -3.06      | -12.62     |
|    | 3.05        | -388.40 | -5.13      | -6.97     | -3.670E-02 | -25.94     | -63.34     |
| 64 | COLUMN2 MAX |         |            |           |            |            |            |
|    | 2.8E-01     | -328.47 | 26.84      | 37.88     | 1.019E-01  | 50.92      | 27.03      |
|    | 1.66        | -324.27 | 26.84      | 37.88     | 1.019E-01  | -1.55      | -9.98      |
|    | 3.05        | -320.06 | 26.84      | 37.88     | 1.019E-01  | 35.16      | -21.32     |
| 64 | COLUMN2 MIN |         |            |           |            |            |            |
|    | 2.8E-01     | -403.29 | 7.34       | -27.92    | -1.098E-01 | -42.32     | -9.494E-01 |
|    | 1.66        | -399.08 | 7.34       | -27.92    | -1.098E-01 | -3.67      | -11.36     |
|    | 3.05        | -394.88 | 7.34       | -27.92    | -1.098E-01 | -54.20     | -47.45     |
| 64 | COLUMN3 MAX |         |            |           |            |            |            |
|    | 2.8E-01     | -205.01 | 32.15      | 15.79     | 2.871E-02  | 20.24      | 41.12      |
|    | 1.66        | -201.40 | 32.15      | 15.79     | 2.871E-02  | -1.37      | -3.42      |
|    | 3.05        | -197.80 | 32.15      | 15.79     | 2.871E-02  | 9.27       | 9.81       |
| 64 | COLUMN3 MIN |         |            |           |            |            |            |
|    | 2.8E-01     | -266.87 | -12.29     | -8.11     | -3.679E-02 | -13.23     | -24.30     |
|    | 1.66        | -263.26 | -12.29     | -8.11     | -3.679E-02 | -2.28      | -7.32      |
|    | 3.05        | -259.66 | -12.29     | -8.11     | -3.679E-02 | -23.57     | -48.10     |
| 64 | COLUMN4 MAX |         |            |           |            |            |            |
|    | 2.8E-01     | -198.53 | 19.68      | 36.74     | 1.018E-01  | 50.12      | 22.40      |
|    | 1.66        | -194.92 | 19.68      | 36.74     | 1.018E-01  | -7.633E-01 | -4.68      |
|    | 3.05        | -191.32 | 19.68      | 36.74     | 1.018E-01  | 37.53      | -6.08      |
| 64 | COLUMN4 MIN |         |            |           |            |            |            |
|    | 2.8E-01     | -273.35 | 1.812E-01  | -29.06    | -1.099E-01 | -43.11     | -5.58      |
|    | 1.66        | -269.74 | 1.812E-01  | -29.06    | -1.099E-01 | -2.88      | -6.05      |
|    | 3.05        | -266.14 | 1.812E-01  | -29.06    | -1.099E-01 | -51.83     | -32.21     |
| 65 | CU          |         |            |           |            |            |            |
|    | 2.5E-01     | -510.26 | -16.94     | 8.362E-02 | -5.313E-03 | 5.300E-02  | -14.64     |
|    | 1.65        | -504.60 | -16.94     | 8.362E-02 | -5.313E-03 | -6.408E-02 | 9.08       |
|    | 3.05        | -498.94 | -16.94     | 8.362E-02 | -5.313E-03 | -1.811E-01 | 32.80      |
| 65 | COLUMN1 MAX |         |            |           |            |            |            |
|    | 2.5E-01     | -354.74 | 8.79       | 7.99      | 2.907E-02  | 11.52      | 21.25      |
|    | 1.65        | -350.50 | 8.79       | 7.99      | 2.907E-02  | 3.449E-01  | 8.94       |
|    | 3.05        | -346.26 | 8.79       | 7.99      | 2.907E-02  | 10.57      | 52.57      |
| 65 | COLUMN1 MIN |         |            |           |            |            |            |

|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
|    | 2.5E-01     | -410.64 | -34.21 | -7.86      | -3.704E-02 | -11.44     | -43.21     |
|    | 1.65        | -406.40 | -34.21 | -7.86      | -3.704E-02 | -4.411E-01 | 4.68       |
|    | 3.05        | -402.16 | -34.21 | -7.86      | -3.704E-02 | -10.84     | -3.38      |
| 65 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -374.11 | -5.94  | 26.29      | 1.029E-01  | 38.05      | -8.337E-01 |
|    | 1.65        | -369.87 | -5.94  | 26.29      | 1.029E-01  | 1.25       | 7.48       |
|    | 3.05        | -365.63 | -5.94  | 26.29      | 1.029E-01  | 35.28      | 33.40      |
| 65 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -391.27 | -19.48 | -26.16     | -1.109E-01 | -37.97     | -21.13     |
|    | 1.65        | -387.03 | -19.48 | -26.16     | -1.109E-01 | -1.35      | 6.13       |
|    | 3.05        | -382.79 | -19.48 | -26.16     | -1.109E-01 | -35.55     | 15.80      |
| 65 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -239.67 | 13.35  | 8.01       | 2.897E-02  | 11.56      | 24.75      |
|    | 1.65        | -236.04 | 13.35  | 8.01       | 2.897E-02  | 3.542E-01  | 6.06       |
|    | 3.05        | -232.40 | 13.35  | 8.01       | 2.897E-02  | 10.55      | 43.32      |
| 65 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -295.58 | -29.65 | -7.84      | -3.713E-02 | -11.40     | -39.71     |
|    | 1.65        | -291.94 | -29.65 | -7.84      | -3.713E-02 | -4.318E-01 | 1.80       |
|    | 3.05        | -288.30 | -29.65 | -7.84      | -3.713E-02 | -10.86     | -12.63     |
| 65 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -259.05 | -1.38  | 26.31      | 1.028E-01  | 38.08      | 2.67       |
|    | 1.65        | -255.41 | -1.38  | 26.31      | 1.028E-01  | 1.26       | 4.60       |
|    | 3.05        | -251.77 | -1.38  | 26.31      | 1.028E-01  | 35.26      | 24.14      |
| 65 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -276.20 | -14.92 | -26.14     | -1.110E-01 | -37.93     | -17.63     |
|    | 1.65        | -272.57 | -14.92 | -26.14     | -1.110E-01 | -1.34      | 3.26       |
|    | 3.05        | -268.93 | -14.92 | -26.14     | -1.110E-01 | -35.57     | 6.54       |
| 66 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -479.51 | 3.06   | -2.401E-03 | -5.087E-03 | -1.577E-02 | 1.34       |
|    | 1.65        | -473.86 | 3.06   | -2.401E-03 | -5.087E-03 | -1.241E-02 | -2.94      |
|    | 3.05        | -468.20 | 3.06   | -2.401E-03 | -5.087E-03 | -9.046E-03 | -7.22      |
| 66 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -352.86 | 39.65  | 1.68       | 2.783E-02  | 2.80       | 52.99      |
|    | 1.65        | -348.62 | 39.65  | 1.68       | 2.783E-02  | 4.513E-01  | -1.89      |
|    | 3.05        | -344.38 | 39.65  | 1.68       | 2.783E-02  | 1.89       | 47.19      |
| 66 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -366.41 | -35.06 | -1.68      | -3.546E-02 | -2.82      | -50.98     |
|    | 1.65        | -362.16 | -35.06 | -1.68      | -3.546E-02 | -4.699E-01 | -2.52      |
|    | 3.05        | -357.92 | -35.06 | -1.68      | -3.546E-02 | -1.90      | -58.03     |
| 66 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -357.49 | 14.06  | 5.57       | 9.851E-02  | 9.31       | 17.38      |
|    | 1.65        | -353.25 | 14.06  | 5.57       | 9.851E-02  | 1.52       | -2.10      |
|    | 3.05        | -349.01 | 14.06  | 5.57       | 9.851E-02  | 6.26       | 11.16      |
| 66 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -361.78 | -9.47  | -5.57      | -1.061E-01 | -9.33      | -15.36     |
|    | 1.65        | -357.53 | -9.47  | -5.57      | -1.061E-01 | -1.54      | -2.30      |
|    | 3.05        | -353.29 | -9.47  | -5.57      | -1.061E-01 | -6.27      | -21.99     |
| 66 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -227.91 | 38.73  | 1.69       | 2.774E-02  | 2.81       | 52.79      |
|    | 1.65        | -224.27 | 38.73  | 1.69       | 2.774E-02  | 4.517E-01  | -8.048E-01 |
|    | 3.05        | -220.63 | 38.73  | 1.69       | 2.774E-02  | 1.88       | 49.57      |
| 66 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -241.45 | -35.99 | -1.68      | -3.555E-02 | -2.81      | -51.18     |
|    | 1.65        | -237.81 | -35.99 | -1.68      | -3.555E-02 | -4.694E-01 | -1.43      |
|    | 3.05        | -234.18 | -35.99 | -1.68      | -3.555E-02 | -1.91      | -55.65     |
| 66 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -232.54 | 13.14  | 5.57       | 9.842E-02  | 9.32       | 17.17      |
|    | 1.65        | -228.90 | 13.14  | 5.57       | 9.842E-02  | 1.52       | -1.02      |
|    | 3.05        | -225.26 | 13.14  | 5.57       | 9.842E-02  | 6.25       | 13.54      |
| 66 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -236.82 | -10.39 | -5.56      | -1.062E-01 | -9.32      | -15.57     |
|    | 1.65        | -233.19 | -10.39 | -5.56      | -1.062E-01 | -1.54      | -1.22      |
|    | 3.05        | -229.55 | -10.39 | -5.56      | -1.062E-01 | -6.28      | -19.61     |
| 67 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -758.54 | -10.40 | -9.663E-02 | -5.342E-03 | -1.232E-01 | -8.75      |
|    | 1.65        | -752.88 | -10.40 | -9.663E-02 | -5.342E-03 | 1.210E-02  | 5.81       |
|    | 3.05        | -747.22 | -10.40 | -9.663E-02 | -5.342E-03 | 1.474E-01  | 20.37      |
| 67 | COLUMN1 MAX |         |        |            |            |            |            |

|    |             |         |        |            |            |            |            |
|----|-------------|---------|--------|------------|------------|------------|------------|
|    | 2.5E-01     | -566.65 | 21.90  | 8.18       | 2.923E-02  | 11.90      | 36.53      |
|    | 1.65        | -562.41 | 21.90  | 8.18       | 2.923E-02  | 4.512E-01  | 5.87       |
|    | 3.05        | -558.16 | 21.90  | 8.18       | 2.923E-02  | 11.22      | 55.35      |
| 67 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -571.16 | -37.50 | -8.32      | -3.724E-02 | -12.08     | -49.65     |
|    | 1.65        | -566.91 | -37.50 | -8.32      | -3.724E-02 | -4.330E-01 | 2.85       |
|    | 3.05        | -562.67 | -37.50 | -8.32      | -3.724E-02 | -11.00     | -24.80     |
| 67 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -567.92 | 1.55   | 27.29      | 1.034E-01  | 39.67      | 7.01       |
|    | 1.65        | -563.67 | 1.55   | 27.29      | 1.034E-01  | 1.47       | 4.84       |
|    | 3.05        | -559.43 | 1.55   | 27.29      | 1.034E-01  | 36.96      | 27.90      |
| 67 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -569.89 | -17.15 | -27.43     | -1.115E-01 | -39.85     | -20.13     |
|    | 1.65        | -565.65 | -17.15 | -27.43     | -1.115E-01 | -1.45      | 3.88       |
|    | 3.05        | -561.40 | -17.15 | -27.43     | -1.115E-01 | -36.73     | 2.66       |
| 67 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -352.45 | 26.28  | 8.23       | 2.913E-02  | 11.95      | 39.97      |
|    | 1.65        | -348.81 | 26.28  | 8.23       | 2.913E-02  | 4.391E-01  | 3.19       |
|    | 3.05        | -345.17 | 26.28  | 8.23       | 2.913E-02  | 11.14      | 46.55      |
| 67 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -356.96 | -33.12 | -8.27      | -3.733E-02 | -12.03     | -46.20     |
|    | 1.65        | -353.32 | -33.12 | -8.27      | -3.733E-02 | -4.451E-01 | 1.753E-01  |
|    | 3.05        | -349.68 | -33.12 | -8.27      | -3.733E-02 | -11.08     | -33.60     |
| 67 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.5E-01     | -353.71 | 5.93   | 27.33      | 1.034E-01  | 39.72      | 10.46      |
|    | 1.65        | -350.08 | 5.93   | 27.33      | 1.034E-01  | 1.45       | 2.16       |
|    | 3.05        | -346.44 | 5.93   | 27.33      | 1.034E-01  | 36.88      | 19.09      |
| 67 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.5E-01     | -355.69 | -12.78 | -27.38     | -1.116E-01 | -39.79     | -16.68     |
|    | 1.65        | -352.05 | -12.78 | -27.38     | -1.116E-01 | -1.46      | 1.20       |
|    | 3.05        | -348.41 | -12.78 | -27.38     | -1.116E-01 | -36.82     | -6.14      |
| 68 | CU          |         |        |            |            |            |            |
|    | 2.8E-01     | -768.34 | 9.16   | -1.809E-01 | -5.328E-03 | -2.251E-01 | 6.68       |
|    | 1.66        | -762.73 | 9.16   | -1.809E-01 | -5.328E-03 | 2.598E-02  | -6.03      |
|    | 3.05        | -757.12 | 9.16   | -1.809E-01 | -5.328E-03 | 2.770E-01  | -18.74     |
| 68 | COLUMN1 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -574.73 | 36.13  | 8.67       | 2.915E-02  | 12.53      | 46.92      |
|    | 1.66        | -570.52 | 36.13  | 8.67       | 2.915E-02  | 5.031E-01  | -3.22      |
|    | 3.05        | -566.32 | 36.13  | 8.67       | 2.915E-02  | 11.94      | 25.25      |
| 68 | COLUMN1 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -577.78 | -22.39 | -8.94      | -3.714E-02 | -12.87     | -36.90     |
|    | 1.66        | -573.57 | -22.39 | -8.94      | -3.714E-02 | -4.641E-01 | -5.83      |
|    | 3.05        | -569.37 | -22.39 | -8.94      | -3.714E-02 | -11.53     | -53.35     |
| 68 | COLUMN2 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -575.61 | 16.07  | 29.08      | 1.032E-01  | 41.96      | 18.19      |
|    | 1.66        | -571.41 | 16.07  | 29.08      | 1.032E-01  | 1.62       | -4.11      |
|    | 3.05        | -567.20 | 16.07  | 29.08      | 1.032E-01  | 39.14      | -1.69      |
| 68 | COLUMN2 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -576.89 | -2.33  | -29.35     | -1.112E-01 | -42.30     | -8.17      |
|    | 1.66        | -572.69 | -2.33  | -29.35     | -1.112E-01 | -1.58      | -4.93      |
|    | 3.05        | -568.48 | -2.33  | -29.35     | -1.112E-01 | -38.72     | -26.41     |
| 68 | COLUMN3 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -347.28 | 32.67  | 8.73       | 2.906E-02  | 12.60      | 44.67      |
|    | 1.66        | -343.67 | 32.67  | 8.73       | 2.906E-02  | 4.852E-01  | -6.644E-01 |
|    | 3.05        | -340.07 | 32.67  | 8.73       | 2.906E-02  | 11.84      | 32.60      |
| 68 | COLUMN3 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -350.33 | -25.85 | -8.88      | -3.724E-02 | -12.80     | -39.15     |
|    | 1.66        | -346.72 | -25.85 | -8.88      | -3.724E-02 | -4.820E-01 | -3.27      |
|    | 3.05        | -343.12 | -25.85 | -8.88      | -3.724E-02 | -11.63     | -46.00     |
| 68 | COLUMN4 MAX |         |        |            |            |            |            |
|    | 2.8E-01     | -348.16 | 12.61  | 29.14      | 1.031E-01  | 42.03      | 15.94      |
|    | 1.66        | -344.56 | 12.61  | 29.14      | 1.031E-01  | 1.60       | -1.56      |
|    | 3.05        | -340.96 | 12.61  | 29.14      | 1.031E-01  | 39.03      | 5.66       |
| 68 | COLUMN4 MIN |         |        |            |            |            |            |
|    | 2.8E-01     | -349.44 | -5.80  | -29.28     | -1.113E-01 | -42.23     | -10.42     |
|    | 1.66        | -345.84 | -5.80  | -29.28     | -1.113E-01 | -1.60      | -2.38      |
|    | 3.05        | -342.23 | -5.80  | -29.28     | -1.113E-01 | -38.83     | -19.06     |
| 69 | CU          |         |        |            |            |            |            |
|    | 2.5E-01     | -760.94 | -16.47 | -6.323E-02 | -5.210E-03 | -2.122E-01 | -14.47     |

|    |             |         |           |            |            |            |           |
|----|-------------|---------|-----------|------------|------------|------------|-----------|
|    | 1.65        | -755.28 | -16.47    | -6.323E-02 | -5.210E-03 | -1.237E-01 | 8.59      |
|    | 3.05        | -749.63 | -16.47    | -6.323E-02 | -5.210E-03 | -3.513E-02 | 31.65     |
| 69 | COLUMN1 MAX |         |           |            |            |            |           |
|    | 2.5E-01     | -550.98 | 28.33     | 4.02       | 2.851E-02  | 5.95       | 45.73     |
|    | 1.65        | -546.74 | 28.33     | 4.02       | 2.851E-02  | 3.508E-01  | 6.82      |
|    | 3.05        | -542.50 | 28.33     | 4.02       | 2.851E-02  | 5.28       | 81.06     |
| 69 | COLUMN1 MIN |         |           |            |            |            |           |
|    | 2.5E-01     | -590.43 | -53.04    | -4.12      | -3.632E-02 | -6.27      | -67.44    |
|    | 1.65        | -586.19 | -53.04    | -4.12      | -3.632E-02 | -5.363E-01 | 6.06      |
|    | 3.05        | -581.94 | -53.04    | -4.12      | -3.632E-02 | -5.33      | -33.59    |
| 69 | COLUMN2 MAX |         |           |            |            |            |           |
|    | 2.5E-01     | -564.41 | 5.003E-01 | 13.45      | 1.009E-01  | 20.12      | 7.03      |
|    | 1.65        | -560.17 | 5.003E-01 | 13.45      | 1.009E-01  | 1.30       | 6.56      |
|    | 3.05        | -555.92 | 5.003E-01 | 13.45      | 1.009E-01  | 17.49      | 41.84     |
| 69 | COLUMN2 MIN |         |           |            |            |            |           |
|    | 2.5E-01     | -577.00 | -25.21    | -13.55     | -1.087E-01 | -20.44     | -28.75    |
|    | 1.65        | -572.76 | -25.21    | -13.55     | -1.087E-01 | -1.48      | 6.32      |
|    | 3.05        | -568.52 | -25.21    | -13.55     | -1.087E-01 | -17.55     | 5.63      |
| 69 | COLUMN3 MAX |         |           |            |            |            |           |
|    | 2.5E-01     | -309.27 | 33.70     | 4.02       | 2.841E-02  | 5.99       | 49.95     |
|    | 1.65        | -305.64 | 33.70     | 4.02       | 2.841E-02  | 3.889E-01  | 3.53      |
|    | 3.05        | -302.00 | 33.70     | 4.02       | 2.841E-02  | 5.32       | 70.26     |
| 69 | COLUMN3 MIN |         |           |            |            |            |           |
|    | 2.5E-01     | -348.72 | -47.67    | -4.12      | -3.641E-02 | -6.24      | -63.21    |
|    | 1.65        | -345.08 | -47.67    | -4.12      | -3.641E-02 | -4.982E-01 | 2.78      |
|    | 3.05        | -341.45 | -47.67    | -4.12      | -3.641E-02 | -5.29      | -44.39    |
| 69 | COLUMN4 MAX |         |           |            |            |            |           |
|    | 2.5E-01     | -322.70 | 5.87      | 13.45      | 1.008E-01  | 20.16      | 11.26     |
|    | 1.65        | -319.06 | 5.87      | 13.45      | 1.008E-01  | 1.34       | 3.27      |
|    | 3.05        | -315.43 | 5.87      | 13.45      | 1.008E-01  | 17.54      | 31.03     |
| 69 | COLUMN4 MIN |         |           |            |            |            |           |
|    | 2.5E-01     | -335.30 | -19.84    | -13.55     | -1.088E-01 | -20.40     | -24.52    |
|    | 1.65        | -331.66 | -19.84    | -13.55     | -1.088E-01 | -1.45      | 3.03      |
|    | 3.05        | -328.02 | -19.84    | -13.55     | -1.088E-01 | -17.51     | -5.17     |
| 70 | CU          |         |           |            |            |            |           |
|    | 2.8E-01     | -489.36 | 22.31     | -7.18      | -5.304E-03 | -6.63      | 17.17     |
|    | 1.66        | -483.75 | 22.31     | -7.18      | -5.304E-03 | 3.33       | -13.77    |
|    | 3.05        | -478.14 | 22.31     | -7.18      | -5.304E-03 | 13.29      | -44.72    |
| 70 | COLUMN1 MAX |         |           |            |            |            |           |
|    | 2.8E-01     | -337.38 | 38.86     | 6.98       | 2.902E-02  | 12.43      | 45.32     |
|    | 1.66        | -333.18 | 38.86     | 6.98       | 2.902E-02  | 3.03       | -8.45     |
|    | 3.05        | -328.97 | 38.86     | 6.98       | 2.902E-02  | 26.87      | -4.56     |
| 70 | COLUMN1 MIN |         |           |            |            |            |           |
|    | 2.8E-01     | -396.65 | -5.40     | -17.75     | -3.698E-02 | -22.38     | -19.56    |
|    | 1.66        | -392.44 | -5.40     | -17.75     | -3.698E-02 | 1.96       | -12.21    |
|    | 3.05        | -388.24 | -5.40     | -17.75     | -3.698E-02 | -6.93      | -62.52    |
| 70 | COLUMN2 MAX |         |           |            |            |            |           |
|    | 2.8E-01     | -333.31 | 25.65     | 28.78      | 1.027E-01  | 43.70      | 25.55     |
|    | 1.66        | -329.10 | 25.65     | 28.78      | 1.027E-01  | 3.85       | -9.54     |
|    | 3.05        | -324.90 | 25.65     | 28.78      | 1.027E-01  | 56.11      | -21.45    |
| 70 | COLUMN2 MIN |         |           |            |            |            |           |
|    | 2.8E-01     | -400.72 | 7.81      | -39.55     | -1.107E-01 | -53.65     | 2.106E-01 |
|    | 1.66        | -396.52 | 7.81      | -39.55     | -1.107E-01 | 1.15       | -11.13    |
|    | 3.05        | -392.31 | 7.81      | -39.55     | -1.107E-01 | -36.17     | -45.64    |
| 70 | COLUMN3 MAX |         |           |            |            |            |           |
|    | 2.8E-01     | -207.53 | 31.86     | 8.14       | 2.892E-02  | 13.27      | 40.77     |
|    | 1.66        | -203.93 | 31.86     | 8.14       | 2.892E-02  | 2.26       | -3.30     |
|    | 3.05        | -200.32 | 31.86     | 8.14       | 2.892E-02  | 24.47      | 10.30     |
| 70 | COLUMN3 MIN |         |           |            |            |            |           |
|    | 2.8E-01     | -266.80 | -12.40    | -16.58     | -3.707E-02 | -21.53     | -24.11    |
|    | 1.66        | -263.19 | -12.40    | -16.58     | -3.707E-02 | 1.19       | -7.06     |
|    | 3.05        | -259.59 | -12.40    | -16.58     | -3.707E-02 | -9.33      | -47.66    |
| 70 | COLUMN4 MAX |         |           |            |            |            |           |
|    | 2.8E-01     | -203.46 | 18.66     | 29.95      | 1.026E-01  | 44.55      | 21.00     |
|    | 1.66        | -199.85 | 18.66     | 29.95      | 1.026E-01  | 3.07       | -4.38     |
|    | 3.05        | -196.25 | 18.66     | 29.95      | 1.026E-01  | 53.72      | -6.59     |
| 70 | COLUMN4 MIN |         |           |            |            |            |           |
|    | 2.8E-01     | -270.87 | 8.089E-01 | -38.39     | -1.108E-01 | -52.80     | -4.34     |
|    | 1.66        | -267.27 | 8.089E-01 | -38.39     | -1.108E-01 | 3.705E-01  | -5.97     |
|    | 3.05        | -263.66 | 8.089E-01 | -38.39     | -1.108E-01 | -38.57     | -30.78    |

|    |             |         |            |            |            |            |            |
|----|-------------|---------|------------|------------|------------|------------|------------|
| 71 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -177.53 | -2.49      | -2.069E-01 | -5.158E-03 | -5.940E-01 | -1.10      |
|    | 1.65        | -171.87 | -2.49      | -2.069E-01 | -5.158E-03 | -3.044E-01 | 2.39       |
|    | 3.05        | -166.21 | -2.49      | -2.069E-01 | -5.158E-03 | -1.483E-02 | 5.87       |
| 71 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -130.63 | 3.32       | 9.26       | 2.822E-02  | 12.68      | 8.04       |
|    | 1.65        | -126.39 | 3.32       | 9.26       | 2.822E-02  | -1.341E-01 | 3.39       |
|    | 3.05        | -122.15 | 3.32       | 9.26       | 2.822E-02  | 13.23      | 10.05      |
| 71 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -135.66 | -7.05      | -9.57      | -3.595E-02 | -13.57     | -9.68      |
|    | 1.65        | -131.42 | -7.05      | -9.57      | -3.595E-02 | -3.226E-01 | 1.851E-01  |
|    | 3.05        | -127.17 | -7.05      | -9.57      | -3.595E-02 | -13.25     | -1.25      |
| 71 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -127.79 | -1.527E-01 | 31.08      | 9.988E-02  | 43.07      | 2.12       |
|    | 1.65        | -123.55 | -1.527E-01 | 31.08      | 9.988E-02  | -1.948E-05 | 2.33       |
|    | 3.05        | -119.31 | -1.527E-01 | 31.08      | 9.988E-02  | 43.94      | 6.25       |
| 71 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -138.50 | -3.58      | -31.39     | -1.076E-01 | -43.96     | -3.76      |
|    | 1.65        | -134.26 | -3.58      | -31.39     | -1.076E-01 | -4.566E-01 | 1.25       |
|    | 3.05        | -130.02 | -3.58      | -31.39     | -1.076E-01 | -43.96     | 2.55       |
| 71 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -95.68  | 3.93       | 9.24       | 2.813E-02  | 12.72      | 8.10       |
|    | 1.65        | -92.05  | 3.93       | 9.24       | 2.813E-02  | -7.267E-02 | 2.60       |
|    | 3.05        | -88.41  | 3.93       | 9.24       | 2.813E-02  | 13.31      | 8.40       |
| 71 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -100.71 | -6.44      | -9.58      | -3.605E-02 | -13.53     | -9.62      |
|    | 1.65        | -97.07  | -6.44      | -9.58      | -3.605E-02 | -2.612E-01 | -6.097E-01 |
|    | 3.05        | -93.44  | -6.44      | -9.58      | -3.605E-02 | -13.17     | -2.91      |
| 71 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -92.84  | 4.605E-01  | 31.07      | 9.979E-02  | 43.11      | 2.18       |
|    | 1.65        | -89.21  | 4.605E-01  | 31.07      | 9.979E-02  | 6.136E-02  | 1.54       |
|    | 3.05        | -85.57  | 4.605E-01  | 31.07      | 9.979E-02  | 44.02      | 4.60       |
| 71 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -103.55 | -2.96      | -31.41     | -1.077E-01 | -43.92     | -3.70      |
|    | 1.65        | -99.92  | -2.96      | -31.41     | -1.077E-01 | -3.952E-01 | 4.521E-01  |
|    | 3.05        | -96.28  | -2.96      | -31.41     | -1.077E-01 | -43.88     | 8.919E-01  |
| 72 | CU          |         |            |            |            |            |            |
|    | 2.5E-01     | -197.25 | -1.37      | 1.690E-01  | -5.131E-03 | -3.297E-01 | -4.701E-01 |
|    | 1.65        | -191.59 | -1.37      | 1.690E-01  | -5.131E-03 | -5.663E-01 | 1.45       |
|    | 3.05        | -185.94 | -1.37      | 1.690E-01  | -5.131E-03 | -8.030E-01 | 3.37       |
| 72 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -146.30 | 5.85       | 10.00      | 2.807E-02  | 13.48      | 10.98      |
|    | 1.65        | -142.06 | 5.85       | 10.00      | 2.807E-02  | -3.257E-01 | 2.78       |
|    | 3.05        | -137.81 | 5.85       | 10.00      | 2.807E-02  | 13.32      | 10.47      |
| 72 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -149.58 | -7.91      | -9.75      | -3.577E-02 | -13.98     | -11.68     |
|    | 1.65        | -145.34 | -7.91      | -9.75      | -3.577E-02 | -5.238E-01 | -6.073E-01 |
|    | 3.05        | -141.09 | -7.91      | -9.75      | -3.577E-02 | -14.52     | -5.42      |
| 72 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -142.53 | 1.26       | 32.82      | 9.936E-02  | 45.23      | 3.40       |
|    | 1.65        | -138.29 | 1.26       | 32.82      | 9.936E-02  | -1.332E-01 | 1.64       |
|    | 3.05        | -134.05 | 1.26       | 32.82      | 9.936E-02  | 45.45      | 5.17       |
| 72 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -153.34 | -3.31      | -32.56     | -1.071E-01 | -45.72     | -4.10      |
|    | 1.65        | -149.10 | -3.31      | -32.56     | -1.071E-01 | -7.163E-01 | 5.354E-01  |
|    | 3.05        | -144.86 | -3.31      | -32.56     | -1.071E-01 | -46.66     | -1.206E-01 |
| 72 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -99.96  | 6.43       | 9.80       | 2.798E-02  | 13.37      | 11.04      |
|    | 1.65        | -96.33  | 6.43       | 9.80       | 2.798E-02  | -1.546E-01 | 2.04       |
|    | 3.05        | -92.69  | 6.43       | 9.80       | 2.798E-02  | 13.78      | 8.92       |
| 72 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 2.5E-01     | -103.24 | -7.33      | -9.95      | -3.586E-02 | -14.09     | -11.61     |
|    | 1.65        | -99.61  | -7.33      | -9.95      | -3.586E-02 | -3.527E-01 | -1.35      |
|    | 3.05        | -95.97  | -7.33      | -9.95      | -3.586E-02 | -14.07     | -6.97      |
| 72 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 2.5E-01     | -96.20  | 1.83       | 32.61      | 9.927E-02  | 45.11      | 3.46       |
|    | 1.65        | -92.56  | 1.83       | 32.61      | 9.927E-02  | 3.786E-02  | 8.959E-01  |
|    | 3.05        | -88.92  | 1.83       | 32.61      | 9.927E-02  | 45.91      | 3.62       |
| 72 | COLUMN4 MIN |         |            |            |            |            |            |

|    |             |         |        |           |            |            |            |
|----|-------------|---------|--------|-----------|------------|------------|------------|
|    | 2.5E-01     | -107.01 | -2.73  | -32.77    | -1.071E-01 | -45.84     | -4.03      |
|    | 1.65        | -103.37 | -2.73  | -32.77    | -1.071E-01 | -5.452E-01 | -2.064E-01 |
|    | 3.05        | -99.73  | -2.73  | -32.77    | -1.071E-01 | -46.20     | -1.67      |
| 73 | CU          |         |        |           |            |            |            |
|    | 2.8E-01     | -197.55 | 1.08   | 1.890E-01 | -5.164E-03 | -3.154E-01 | -5.753E-02 |
|    | 1.66        | -191.94 | 1.08   | 1.890E-01 | -5.164E-03 | -5.776E-01 | -1.56      |
|    | 3.05        | -186.34 | 1.08   | 1.890E-01 | -5.164E-03 | -8.399E-01 | -3.06      |
| 73 | COLUMN1 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -146.41 | 8.04   | 10.52     | 2.825E-02  | 14.13      | 12.08      |
|    | 1.66        | -142.20 | 8.04   | 10.52     | 2.825E-02  | -3.884E-01 | 9.229E-01  |
|    | 3.05        | -138.00 | 8.04   | 10.52     | 2.825E-02  | 13.81      | 5.65       |
| 73 | COLUMN1 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -149.92 | -6.42  | -10.24    | -3.600E-02 | -14.60     | -12.17     |
|    | 1.66        | -145.71 | -6.42  | -10.24    | -3.600E-02 | -4.780E-01 | -3.26      |
|    | 3.05        | -141.51 | -6.42  | -10.24    | -3.600E-02 | -15.07     | -10.23     |
| 73 | COLUMN2 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -142.34 | 3.20   | 34.58     | 1.000E-01  | 47.42      | 3.97       |
|    | 1.66        | -138.13 | 3.20   | 34.58     | 1.000E-01  | -3.047E-01 | -4.683E-01 |
|    | 3.05        | -133.93 | 3.20   | 34.58     | 1.000E-01  | 47.28      | 3.171E-01  |
| 73 | COLUMN2 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -153.99 | -1.57  | -34.30    | -1.077E-01 | -47.90     | -4.05      |
|    | 1.66        | -149.78 | -1.57  | -34.30    | -1.077E-01 | -5.617E-01 | -1.87      |
|    | 3.05        | -145.58 | -1.57  | -34.30    | -1.077E-01 | -48.54     | -4.90      |
| 73 | COLUMN3 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -99.65  | 7.65   | 10.27     | 2.816E-02  | 13.98      | 12.25      |
|    | 1.66        | -96.05  | 7.65   | 10.27     | 2.816E-02  | -1.980E-01 | 1.63       |
|    | 3.05        | -92.44  | 7.65   | 10.27     | 2.816E-02  | 14.34      | 6.90       |
| 73 | COLUMN3 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -103.17 | -6.81  | -10.49    | -3.609E-02 | -14.76     | -12.00     |
|    | 1.66        | -99.56  | -6.81  | -10.49    | -3.609E-02 | -2.876E-01 | -2.55      |
|    | 3.05        | -95.96  | -6.81  | -10.49    | -3.609E-02 | -14.53     | -8.98      |
| 73 | COLUMN4 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -95.58  | 2.81   | 34.33     | 9.991E-02  | 47.27      | 4.14       |
|    | 1.66        | -91.98  | 2.81   | 34.33     | 9.991E-02  | -1.143E-01 | 2.428E-01  |
|    | 3.05        | -88.37  | 2.81   | 34.33     | 9.991E-02  | 47.82      | 1.57       |
| 73 | COLUMN4 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -107.24 | -1.96  | -34.55    | -1.078E-01 | -48.05     | -3.88      |
|    | 1.66        | -103.63 | -1.96  | -34.55    | -1.078E-01 | -3.713E-01 | -1.16      |
|    | 3.05        | -100.03 | -1.96  | -34.55    | -1.078E-01 | -48.01     | -3.65      |
| 74 | CU          |         |        |           |            |            |            |
|    | 2.5E-01     | -277.35 | -7.49  | 4.04      | -5.195E-03 | 4.86       | -8.24      |
|    | 1.65        | -271.69 | -7.49  | 4.04      | -5.195E-03 | -7.856E-01 | 2.24       |
|    | 3.05        | -266.03 | -7.49  | 4.04      | -5.195E-03 | -6.44      | 12.72      |
| 74 | COLUMN1 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -177.29 | 18.73  | 9.27      | 2.842E-02  | 12.74      | 29.11      |
|    | 1.65        | -173.05 | 18.73  | 9.27      | 2.842E-02  | -9.514E-02 | 2.89       |
|    | 3.05        | -168.80 | 18.73  | 9.27      | 2.842E-02  | 3.57       | 42.42      |
| 74 | COLUMN1 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -238.73 | -29.96 | -3.22     | -3.621E-02 | -5.45      | -41.48     |
|    | 1.65        | -234.49 | -29.96 | -3.22     | -3.621E-02 | -1.08      | 4.708E-01  |
|    | 3.05        | -230.24 | -29.96 | -3.22     | -3.621E-02 | -13.22     | -23.34     |
| 74 | COLUMN2 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -175.76 | 2.75   | 23.40     | 1.006E-01  | 33.56      | 6.00       |
|    | 1.65        | -171.52 | 2.75   | 23.40     | 1.006E-01  | 8.365E-01  | 2.16       |
|    | 3.05        | -167.27 | 2.75   | 23.40     | 1.006E-01  | 22.32      | 20.77      |
| 74 | COLUMN2 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -240.26 | -13.98 | -17.35    | -1.084E-01 | -26.26     | -18.37     |
|    | 1.65        | -236.02 | -13.98 | -17.35    | -1.084E-01 | -2.01      | 1.20       |
|    | 3.05        | -231.78 | -13.98 | -17.35    | -1.084E-01 | -31.97     | -1.69      |
| 74 | COLUMN3 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -121.74 | 20.36  | 8.58      | 2.833E-02  | 12.05      | 30.63      |
|    | 1.65        | -118.10 | 20.36  | 8.58      | 2.833E-02  | 1.795E-01  | 2.13       |
|    | 3.05        | -114.47 | 20.36  | 8.58      | 2.833E-02  | 4.80       | 39.38      |
| 74 | COLUMN3 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -183.18 | -28.34 | -3.91     | -3.631E-02 | -6.13      | -39.96     |
|    | 1.65        | -179.54 | -28.34 | -3.91     | -3.631E-02 | -8.087E-01 | -2.877E-01 |
|    | 3.05        | -175.91 | -28.34 | -3.91     | -3.631E-02 | -11.98     | -26.38     |
| 74 | COLUMN4 MAX |         |        |           |            |            |            |

|    |             |         |           |            |            |            |            |
|----|-------------|---------|-----------|------------|------------|------------|------------|
|    | 2.5E-01     | -120.21 | 4.37      | 22.72      | 1.005E-01  | 32.87      | 7.52       |
|    | 1.65        | -116.57 | 4.37      | 22.72      | 1.005E-01  | 1.11       | 1.40       |
|    | 3.05        | -112.93 | 4.37      | 22.72      | 1.005E-01  | 23.56      | 17.73      |
| 74 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -184.71 | -12.35    | -18.04     | -1.085E-01 | -26.95     | -16.85     |
|    | 1.65        | -181.07 | -12.35    | -18.04     | -1.085E-01 | -1.74      | 4.400E-01  |
|    | 3.05        | -177.44 | -12.35    | -18.04     | -1.085E-01 | -30.73     | -4.73      |
| 75 | CU          |         |           |            |            |            |            |
|    | 2.5E-01     | -236.51 | 4.414E-01 | 8.067E-01  | -5.133E-03 | 8.734E-01  | 1.148E-01  |
|    | 1.65        | -230.85 | 4.414E-01 | 8.067E-01  | -5.133E-03 | -2.559E-01 | -5.032E-01 |
|    | 3.05        | -225.19 | 4.414E-01 | 8.067E-01  | -5.133E-03 | -1.39      | -1.12      |
| 75 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -172.37 | 37.35     | 1.92       | 2.808E-02  | 2.91       | 51.88      |
|    | 1.65        | -168.12 | 37.35     | 1.92       | 2.808E-02  | 2.411E-01  | -3.376E-01 |
|    | 3.05        | -163.88 | 37.35     | 1.92       | 2.808E-02  | 4.031E-01  | 51.03      |
| 75 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -182.40 | -36.69    | -7.131E-01 | -3.578E-02 | -1.60      | -51.71     |
|    | 1.65        | -178.15 | -36.69    | -7.131E-01 | -3.578E-02 | -6.249E-01 | -4.171E-01 |
|    | 3.05        | -173.91 | -36.69    | -7.131E-01 | -3.578E-02 | -2.48      | -52.71     |
| 75 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -175.57 | 13.12     | 4.95       | 9.940E-02  | 8.12       | 17.97      |
|    | 1.65        | -171.33 | 13.12     | 4.95       | 9.940E-02  | 1.20       | -3.552E-01 |
|    | 3.05        | -167.08 | 13.12     | 4.95       | 9.940E-02  | 3.65       | 17.09      |
| 75 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -179.19 | -12.46    | -3.74      | -1.071E-01 | -6.81      | -17.80     |
|    | 1.65        | -174.95 | -12.46    | -3.74      | -1.071E-01 | -1.59      | -3.996E-01 |
|    | 3.05        | -170.71 | -12.46    | -3.74      | -1.071E-01 | -5.73      | -18.77     |
| 75 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -119.83 | 37.34     | 1.78       | 2.799E-02  | 2.83       | 52.12      |
|    | 1.65        | -116.19 | 37.34     | 1.78       | 2.799E-02  | 3.585E-01  | -7.891E-02 |
|    | 3.05        | -112.56 | 37.34     | 1.78       | 2.799E-02  | 7.148E-01  | 51.30      |
| 75 | COLUMN3 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -129.86 | -36.70    | -8.518E-01 | -3.587E-02 | -1.67      | -51.46     |
|    | 1.65        | -126.22 | -36.70    | -8.518E-01 | -3.587E-02 | -5.075E-01 | -1.584E-01 |
|    | 3.05        | -122.58 | -36.70    | -8.518E-01 | -3.587E-02 | -2.17      | -52.44     |
| 75 | COLUMN4 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -123.03 | 13.11     | 4.81       | 9.931E-02  | 8.04       | 18.22      |
|    | 1.65        | -119.40 | 13.11     | 4.81       | 9.931E-02  | 1.32       | -9.647E-02 |
|    | 3.05        | -115.76 | 13.11     | 4.81       | 9.931E-02  | 3.96       | 17.36      |
| 75 | COLUMN4 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -126.66 | -12.47    | -3.87      | -1.072E-01 | -6.89      | -17.56     |
|    | 1.65        | -123.02 | -12.47    | -3.87      | -1.072E-01 | -1.47      | -1.409E-01 |
|    | 3.05        | -119.38 | -12.47    | -3.87      | -1.072E-01 | -5.42      | -18.50     |
| 76 | CU          |         |           |            |            |            |            |
|    | 2.5E-01     | -400.08 | -3.17     | 4.14       | -5.274E-03 | 4.91       | -3.47      |
|    | 1.65        | -394.42 | -3.17     | 4.14       | -5.274E-03 | -8.782E-01 | 9.716E-01  |
|    | 3.05        | -388.76 | -3.17     | 4.14       | -5.274E-03 | -6.67      | 5.41       |
| 76 | COLUMN1 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -288.26 | 29.12     | 9.51       | 2.886E-02  | 13.14      | 42.64      |
|    | 1.65        | -284.01 | 29.12     | 9.51       | 2.886E-02  | -1.687E-01 | 1.87       |
|    | 3.05        | -279.77 | 29.12     | 9.51       | 2.886E-02  | 3.49       | 47.02      |
| 76 | COLUMN1 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -311.86 | -33.88    | -3.31      | -3.677E-02 | -5.77      | -47.85     |
|    | 1.65        | -307.62 | -33.88    | -3.31      | -3.677E-02 | -1.15      | -4.112E-01 |
|    | 3.05        | -303.37 | -33.88    | -3.31      | -3.677E-02 | -13.49     | -38.90     |
| 76 | COLUMN2 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -272.96 | 8.59      | 24.33      | 1.021E-01  | 35.02      | 13.11      |
|    | 1.65        | -268.71 | 8.59      | 24.33      | 1.021E-01  | 9.590E-01  | 1.09       |
|    | 3.05        | -264.47 | 8.59      | 24.33      | 1.021E-01  | 23.10      | 19.06      |
| 76 | COLUMN2 MIN |         |           |            |            |            |            |
|    | 2.5E-01     | -327.16 | -13.35    | -18.12     | -1.100E-01 | -27.65     | -18.31     |
|    | 1.65        | -322.92 | -13.35    | -18.12     | -1.100E-01 | -2.28      | 3.721E-01  |
|    | 3.05        | -318.67 | -13.35    | -18.12     | -1.100E-01 | -33.10     | -10.94     |
| 76 | COLUMN3 MAX |         |           |            |            |            |            |
|    | 2.5E-01     | -189.16 | 30.57     | 8.73       | 2.876E-02  | 12.38      | 43.95      |
|    | 1.65        | -185.52 | 30.57     | 8.73       | 2.876E-02  | 1.601E-01  | 1.15       |
|    | 3.05        | -181.89 | 30.57     | 8.73       | 2.876E-02  | 4.91       | 44.28      |
| 76 | COLUMN3 MIN |         |           |            |            |            |            |



|    |             |         |        |           |            |            |            |
|----|-------------|---------|--------|-----------|------------|------------|------------|
|    | 2.5E-01     | -212.76 | -32.44 | -4.09     | -3.686E-02 | -6.53      | -46.54     |
|    | 1.65        | -209.13 | -32.44 | -4.09     | -3.686E-02 | -8.198E-01 | -1.13      |
|    | 3.05        | -205.49 | -32.44 | -4.09     | -3.686E-02 | -12.07     | -41.65     |
| 76 | COLUMN4 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -173.86 | 10.03  | 23.55     | 1.020E-01  | 34.25      | 14.42      |
|    | 1.65        | -170.22 | 10.03  | 23.55     | 1.020E-01  | 1.29       | 3.675E-01  |
|    | 3.05        | -166.58 | 10.03  | 23.55     | 1.020E-01  | 24.52      | 16.32      |
| 76 | COLUMN4 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -228.07 | -11.90 | -18.90    | -1.101E-01 | -28.41     | -17.01     |
|    | 1.65        | -224.43 | -11.90 | -18.90    | -1.101E-01 | -1.95      | -3.456E-01 |
|    | 3.05        | -220.79 | -11.90 | -18.90    | -1.101E-01 | -31.68     | -13.68     |
| 77 | CU          |         |        |           |            |            |            |
|    | 2.8E-01     | -396.51 | 1.87   | 4.12      | -5.261E-03 | 4.70       | 1.50       |
|    | 1.66        | -390.90 | 1.87   | 4.12      | -5.261E-03 | -1.01      | -1.09      |
|    | 3.05        | -385.30 | 1.87   | 4.12      | -5.261E-03 | -6.73      | -3.68      |
| 77 | COLUMN1 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -286.63 | 33.03  | 9.99      | 2.878E-02  | 13.70      | 45.88      |
|    | 1.66        | -282.42 | 33.03  | 9.99      | 2.878E-02  | -1.564E-01 | 5.128E-02  |
|    | 3.05        | -278.22 | 33.03  | 9.99      | 2.878E-02  | 3.93       | 40.26      |
| 77 | COLUMN1 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -308.14 | -30.23 | -3.81     | -3.667E-02 | -6.65      | -43.64     |
|    | 1.66        | -303.93 | -30.23 | -3.81     | -3.667E-02 | -1.37      | -1.69      |
|    | 3.05        | -299.72 | -30.23 | -3.81     | -3.667E-02 | -14.03     | -45.78     |
| 77 | COLUMN2 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -270.35 | 12.28  | 26.00     | 1.019E-01  | 37.29      | 16.56      |
|    | 1.66        | -266.14 | 12.28  | 26.00     | 1.019E-01  | 1.22       | -4.736E-01 |
|    | 3.05        | -261.94 | 12.28  | 26.00     | 1.019E-01  | 24.75      | 11.98      |
| 77 | COLUMN2 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -324.42 | -9.47  | -19.82    | -1.098E-01 | -30.24     | -14.31     |
|    | 1.66        | -320.21 | -9.47  | -19.82    | -1.098E-01 | -2.75      | -1.17      |
|    | 3.05        | -316.01 | -9.47  | -19.82    | -1.098E-01 | -34.85     | -17.51     |
| 77 | COLUMN3 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -182.96 | 32.36  | 9.22      | 2.869E-02  | 12.97      | 45.56      |
|    | 1.66        | -179.36 | 32.36  | 9.22      | 2.869E-02  | 1.792E-01  | 6.635E-01  |
|    | 3.05        | -175.75 | 32.36  | 9.22      | 2.869E-02  | 5.33       | 41.80      |
| 77 | COLUMN3 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -204.47 | -30.90 | -4.58     | -3.677E-02 | -7.38      | -43.96     |
|    | 1.66        | -200.86 | -30.90 | -4.58     | -3.677E-02 | -1.03      | -1.08      |
|    | 3.05        | -197.26 | -30.90 | -4.58     | -3.677E-02 | -12.63     | -44.24     |
| 77 | COLUMN4 MAX |         |        |           |            |            |            |
|    | 2.8E-01     | -166.68 | 11.60  | 25.23     | 1.018E-01  | 36.56      | 16.24      |
|    | 1.66        | -163.07 | 11.60  | 25.23     | 1.018E-01  | 1.56       | 1.386E-01  |
|    | 3.05        | -159.47 | 11.60  | 25.23     | 1.018E-01  | 26.15      | 13.52      |
| 77 | COLUMN4 MIN |         |        |           |            |            |            |
|    | 2.8E-01     | -220.75 | -10.15 | -20.58    | -1.099E-01 | -30.97     | -14.63     |
|    | 1.66        | -217.14 | -10.15 | -20.58    | -1.099E-01 | -2.41      | -5.545E-01 |
|    | 3.05        | -213.54 | -10.15 | -20.58    | -1.099E-01 | -33.45     | -15.96     |
| 78 | CU          |         |        |           |            |            |            |
|    | 2.5E-01     | -242.09 | -1.80  | 1.78      | -5.239E-03 | 1.17       | -2.15      |
|    | 1.65        | -236.43 | -1.80  | 1.78      | -5.239E-03 | -1.32      | 3.688E-01  |
|    | 3.05        | -230.77 | -1.80  | 1.78      | -5.239E-03 | -3.82      | 2.89       |
| 78 | COLUMN1 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -172.93 | 36.97  | 2.64      | 2.866E-02  | 3.13       | 52.09      |
|    | 1.65        | -168.69 | 36.97  | 2.64      | 2.866E-02  | -5.678E-01 | 3.343E-01  |
|    | 3.05        | -164.45 | 36.97  | 2.64      | 2.866E-02  | -1.46      | 55.75      |
| 78 | COLUMN1 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -190.20 | -39.67 | 3.232E-02 | -3.652E-02 | -1.37      | -55.32     |
|    | 1.65        | -185.95 | -39.67 | 3.232E-02 | -3.652E-02 | -1.42      | 2.188E-01  |
|    | 3.05        | -181.71 | -39.67 | 3.232E-02 | -3.652E-02 | -4.26      | -51.42     |
| 78 | COLUMN2 MAX |         |        |           |            |            |            |
|    | 2.5E-01     | -178.03 | 11.87  | 5.56      | 1.015E-01  | 8.16       | 16.93      |
|    | 1.65        | -173.79 | 11.87  | 5.56      | 1.015E-01  | 3.750E-01  | 3.179E-01  |
|    | 3.05        | -169.54 | 11.87  | 5.56      | 1.015E-01  | 1.69       | 20.63      |
| 78 | COLUMN2 MIN |         |        |           |            |            |            |
|    | 2.5E-01     | -185.10 | -14.57 | -2.89     | -1.093E-01 | -6.40      | -20.16     |
|    | 1.65        | -180.86 | -14.57 | -2.89     | -1.093E-01 | -2.36      | 2.352E-01  |
|    | 3.05        | -176.61 | -14.57 | -2.89     | -1.093E-01 | -7.41      | -16.30     |
| 78 | COLUMN3 MAX |         |        |           |            |            |            |

|     |             |         |        |            |            |            |            |
|-----|-------------|---------|--------|------------|------------|------------|------------|
|     | 2.5E-01     | -107.98 | 37.51  | 2.30       | 2.857E-02  | 3.10       | 52.63      |
|     | 1.65        | -104.34 | 37.51  | 2.30       | 2.857E-02  | -1.178E-01 | 1.180E-01  |
|     | 3.05        | -100.70 | 37.51  | 2.30       | 2.857E-02  | -5.315E-01 | 54.78      |
| 78  | COLUMN3 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -125.24 | -39.13 | -3.106E-01 | -3.662E-02 | -1.40      | -54.78     |
|     | 1.65        | -121.60 | -39.13 | -3.106E-01 | -3.662E-02 | -9.663E-01 | 2.493E-03  |
|     | 3.05        | -117.97 | -39.13 | -3.106E-01 | -3.662E-02 | -3.33      | -52.39     |
| 78  | COLUMN4 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -113.07 | 12.41  | 5.22       | 1.014E-01  | 8.13       | 17.47      |
|     | 1.65        | -109.44 | 12.41  | 5.22       | 1.014E-01  | 8.250E-01  | 1.016E-01  |
|     | 3.05        | -105.80 | 12.41  | 5.22       | 1.014E-01  | 2.62       | 19.66      |
| 78  | COLUMN4 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -120.14 | -14.03 | -3.23      | -1.094E-01 | -6.43      | -19.62     |
|     | 1.65        | -116.51 | -14.03 | -3.23      | -1.094E-01 | -1.91      | 1.890E-02  |
|     | 3.05        | -112.87 | -14.03 | -3.23      | -1.094E-01 | -6.48      | -17.27     |
| 79  | CU          |         |        |            |            |            |            |
|     | 2.8E-01     | -335.76 | 8.09   | 23.73      | -8.273E-03 | 22.88      | 7.45       |
|     | 1.66        | -328.44 | 8.09   | 23.73      | -8.273E-03 | -10.04     | -3.78      |
|     | 3.05        | -321.11 | 8.09   | 23.73      | -8.273E-03 | -42.96     | -15.00     |
| 79  | COLUMN1 MAX |         |        |            |            |            |            |
|     | 2.8E-01     | -219.93 | 41.11  | 26.78      | 4.526E-02  | 30.10      | 55.47      |
|     | 1.66        | -214.43 | 41.11  | 26.78      | 4.526E-02  | -7.06      | -1.57      |
|     | 3.05        | -208.94 | 41.11  | 26.78      | 4.526E-02  | -20.21     | 36.11      |
| 79  | COLUMN1 MIN |         |        |            |            |            |            |
|     | 2.8E-01     | -283.72 | -28.98 | 8.81       | -5.767E-02 | 4.23       | -44.30     |
|     | 1.66        | -278.23 | -28.98 | 8.81       | -5.767E-02 | -7.99      | -4.09      |
|     | 3.05        | -272.73 | -28.98 | 8.81       | -5.767E-02 | -44.22     | -58.62     |
| 79  | COLUMN2 MAX |         |        |            |            |            |            |
|     | 2.8E-01     | -228.28 | 18.13  | 45.89      | 1.602E-01  | 57.44      | 22.70      |
|     | 1.66        | -222.79 | 18.13  | 45.89      | 1.602E-01  | -6.22      | -2.45      |
|     | 3.05        | -217.30 | 18.13  | 45.89      | 1.602E-01  | 5.46       | 5.10       |
| 79  | COLUMN2 MIN |         |        |            |            |            |            |
|     | 2.8E-01     | -275.36 | -5.99  | -10.30     | -1.726E-01 | -23.12     | -11.52     |
|     | 1.66        | -269.87 | -5.99  | -10.30     | -1.726E-01 | -8.83      | -3.21      |
|     | 3.05        | -264.38 | -5.99  | -10.30     | -1.726E-01 | -69.89     | -27.60     |
| 79  | COLUMN3 MAX |         |        |            |            |            |            |
|     | 2.8E-01     | -145.53 | 39.21  | 21.91      | 4.511E-02  | 26.44      | 54.42      |
|     | 1.66        | -140.82 | 39.21  | 21.91      | 4.511E-02  | -3.96      | 2.040E-02  |
|     | 3.05        | -136.12 | 39.21  | 21.91      | 4.511E-02  | -10.34     | 40.34      |
| 79  | COLUMN3 MIN |         |        |            |            |            |            |
|     | 2.8E-01     | -209.33 | -30.88 | 3.93       | -5.782E-02 | 5.690E-01  | -45.35     |
|     | 1.66        | -204.62 | -30.88 | 3.93       | -5.782E-02 | -4.88      | -2.50      |
|     | 3.05        | -199.91 | -30.88 | 3.93       | -5.782E-02 | -34.35     | -54.38     |
| 79  | COLUMN4 MAX |         |        |            |            |            |            |
|     | 2.8E-01     | -153.89 | 16.22  | 41.01      | 1.601E-01  | 53.78      | 21.65      |
|     | 1.66        | -149.18 | 16.22  | 41.01      | 1.601E-01  | -3.12      | -8.609E-01 |
|     | 3.05        | -144.47 | 16.22  | 41.01      | 1.601E-01  | 15.33      | 9.33       |
| 79  | COLUMN4 MIN |         |        |            |            |            |            |
|     | 2.8E-01     | -200.97 | -7.89  | -15.17     | -1.728E-01 | -26.78     | -12.57     |
|     | 1.66        | -196.26 | -7.89  | -15.17     | -1.728E-01 | -5.73      | -1.62      |
|     | 3.05        | -191.55 | -7.89  | -15.17     | -1.728E-01 | -60.02     | -23.37     |
| 124 | CU          |         |        |            |            |            |            |
|     | 2.5E-01     | -88.03  | -23.01 | -13.64     | -5.285E-01 | -13.25     | -20.86     |
|     | 1.48        | -83.08  | -23.01 | -13.64     | -5.285E-01 | 3.46       | 7.32       |
|     | 2.70        | -78.13  | -23.01 | -13.64     | -5.285E-01 | 20.16      | 35.51      |
| 124 | COLUMN1 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -62.05  | -11.90 | -7.66      | 5.640E-02  | -7.36      | -12.28     |
|     | 1.48        | -58.33  | -11.90 | -7.66      | 5.640E-02  | 3.38       | 8.70       |
|     | 2.70        | -54.62  | -11.90 | -7.66      | 5.640E-02  | 18.85      | 36.41      |
| 124 | COLUMN1 MIN |         |        |            |            |            |            |
|     | 2.5E-01     | -70.00  | -22.62 | -12.79     | -8.492E-01 | -12.50     | -19.02     |
|     | 1.48        | -66.29  | -22.62 | -12.79     | -8.492E-01 | 1.81       | 2.28       |
|     | 2.70        | -62.57  | -22.62 | -12.79     | -8.492E-01 | 11.40      | 16.86      |
| 124 | COLUMN2 MAX |         |        |            |            |            |            |
|     | 2.5E-01     | -60.92  | -15.49 | -1.96      | -1.978E-01 | -2.03      | -14.61     |
|     | 1.48        | -57.21  | -15.49 | -1.96      | -1.978E-01 | 4.88       | 6.68       |
|     | 2.70        | -53.50  | -15.49 | -1.96      | -1.978E-01 | 27.48      | 29.98      |
| 124 | COLUMN2 MIN |         |        |            |            |            |            |

|     |             |        |        |           |            |            |           |
|-----|-------------|--------|--------|-----------|------------|------------|-----------|
|     | 2.5E-01     | -71.12 | -19.03 | -18.49    | -5.950E-01 | -17.84     | -16.68    |
|     | 1.48        | -67.41 | -19.03 | -18.49    | -5.950E-01 | 3.033E-01  | 4.31      |
|     | 2.70        | -63.69 | -19.03 | -18.49    | -5.950E-01 | 2.76       | 23.29     |
| 124 | COLUMN3 MAX |        |        |           |            |            |           |
|     | 2.5E-01     | -45.64 | -6.14  | -5.29     | 2.587E-01  | -4.96      | -6.63     |
|     | 1.48        | -42.45 | -6.14  | -5.29     | 2.587E-01  | 2.88       | 7.29      |
|     | 2.70        | -39.27 | -6.14  | -5.29     | 2.587E-01  | 15.45      | 27.94     |
| 124 | COLUMN3 MIN |        |        |           |            |            |           |
|     | 2.5E-01     | -53.59 | -16.85 | -10.42    | -6.470E-01 | -10.10     | -13.37    |
|     | 1.48        | -50.41 | -16.85 | -10.42    | -6.470E-01 | 1.31       | 8.722E-01 |
|     | 2.70        | -47.22 | -16.85 | -10.42    | -6.470E-01 | 8.00       | 8.39      |
| 124 | COLUMN4 MAX |        |        |           |            |            |           |
|     | 2.5E-01     | -44.52 | -9.73  | 4.097E-01 | 4.440E-03  | 3.717E-01  | -8.96     |
|     | 1.48        | -41.33 | -9.73  | 4.097E-01 | 4.440E-03  | 4.39       | 5.27      |
|     | 2.70        | -38.15 | -9.73  | 4.097E-01 | 4.440E-03  | 24.08      | 21.51     |
| 124 | COLUMN4 MIN |        |        |           |            |            |           |
|     | 2.5E-01     | -54.71 | -13.26 | -16.13    | -3.927E-01 | -15.43     | -11.03    |
|     | 1.48        | -51.53 | -13.26 | -16.13    | -3.927E-01 | -1.940E-01 | 2.90      |
|     | 2.70        | -48.35 | -13.26 | -16.13    | -3.927E-01 | -6.354E-01 | 14.82     |
| 125 | CU          |        |        |           |            |            |           |
|     | 2.5E-01     | -97.80 | 9.86   | -10.49    | -3.865E-01 | -10.82     | 3.29      |
|     | 1.48        | -92.85 | 9.86   | -10.49    | -3.865E-01 | 2.03       | -8.79     |
|     | 2.70        | -87.90 | 9.86   | -10.49    | -3.865E-01 | 14.88      | -20.87    |
| 125 | COLUMN1 MAX |        |        |           |            |            |           |
|     | 2.5E-01     | -68.92 | 20.01  | -5.03     | -7.917E-02 | -5.33      | 15.48     |
|     | 1.48        | -65.21 | 20.01  | -5.03     | -7.917E-02 | 2.22       | -4.16     |
|     | 2.70        | -61.50 | 20.01  | -5.03     | -7.917E-02 | 15.34      | 2.24      |
| 125 | COLUMN1 MIN |        |        |           |            |            |           |
|     | 2.5E-01     | -77.78 | -5.22  | -10.71    | -5.006E-01 | -10.90     | -10.55    |
|     | 1.48        | -74.07 | -5.22  | -10.71    | -5.006E-01 | 8.254E-01  | -9.03     |
|     | 2.70        | -70.35 | -5.22  | -10.71    | -5.006E-01 | 6.99       | -33.54    |
| 125 | COLUMN2 MAX |        |        |           |            |            |           |
|     | 2.5E-01     | -67.70 | 11.82  | 1.51      | -1.848E-01 | 1.06       | 7.10      |
|     | 1.48        | -63.98 | 11.82  | 1.51      | -1.848E-01 | 3.83       | -5.81     |
|     | 2.70        | -60.27 | 11.82  | 1.51      | -1.848E-01 | 24.96      | -9.46     |
| 125 | COLUMN2 MIN |        |        |           |            |            |           |
|     | 2.5E-01     | -79.01 | 2.97   | -17.25    | -3.950E-01 | -17.30     | -2.17     |
|     | 1.48        | -75.29 | 2.97   | -17.25    | -3.950E-01 | -7.853E-01 | -7.38     |
|     | 2.70        | -71.58 | 2.97   | -17.25    | -3.950E-01 | -2.64      | -21.85    |
| 125 | COLUMN3 MAX |        |        |           |            |            |           |
|     | 2.5E-01     | -47.47 | 18.62  | -2.86     | 6.784E-02  | -3.04      | 15.96     |
|     | 1.48        | -44.28 | 18.62  | -2.86     | 6.784E-02  | 1.86       | -1.96     |
|     | 2.70        | -41.10 | 18.62  | -2.86     | 6.784E-02  | 12.32      | 6.13      |
| 125 | COLUMN3 MIN |        |        |           |            |            |           |
|     | 2.5E-01     | -56.33 | -6.61  | -8.54     | -3.536E-01 | -8.61      | -10.06    |
|     | 1.48        | -53.14 | -6.61  | -8.54     | -3.536E-01 | 4.640E-01  | -6.84     |
|     | 2.70        | -49.96 | -6.61  | -8.54     | -3.536E-01 | 3.97       | -29.65    |
| 125 | COLUMN4 MAX |        |        |           |            |            |           |
|     | 2.5E-01     | -46.24 | 10.42  | 3.68      | -3.777E-02 | 3.36       | 7.59      |
|     | 1.48        | -43.06 | 10.42  | 3.68      | -3.777E-02 | 3.47       | -3.62     |
|     | 2.70        | -39.88 | 10.42  | 3.68      | -3.777E-02 | 21.95      | -5.56     |
| 125 | COLUMN4 MIN |        |        |           |            |            |           |
|     | 2.5E-01     | -57.55 | 1.58   | -15.08    | -2.480E-01 | -15.01     | -1.68     |
|     | 1.48        | -54.37 | 1.58   | -15.08    | -2.480E-01 | -1.15      | -5.18     |
|     | 2.70        | -51.19 | 1.58   | -15.08    | -2.480E-01 | -5.65      | -17.95    |
| 126 | CU          |        |        |           |            |            |           |
|     | 2.5E-01     | -86.21 | -7.30  | -10.54    | 5.048E-01  | -10.80     | -1.16     |
|     | 1.48        | -81.26 | -7.30  | -10.54    | 5.048E-01  | 2.11       | 7.79      |
|     | 2.70        | -76.31 | -7.30  | -10.54    | 5.048E-01  | 15.02      | 16.73     |
| 126 | COLUMN1 MAX |        |        |           |            |            |           |
|     | 2.5E-01     | -60.58 | 7.26   | -5.13     | 5.277E-01  | -5.48      | 12.25     |
|     | 1.48        | -56.86 | 7.26   | -5.13     | 5.277E-01  | 2.36       | 8.33      |
|     | 2.70        | -53.15 | 7.26   | -5.13     | 5.277E-01  | 15.44      | 30.65     |
| 126 | COLUMN1 MIN |        |        |           |            |            |           |
|     | 2.5E-01     | -68.74 | -18.22 | -10.68    | 2.294E-01  | -10.72     | -13.99    |
|     | 1.48        | -65.02 | -18.22 | -10.68    | 2.294E-01  | 8.064E-01  | 3.35      |
|     | 2.70        | -61.31 | -18.22 | -10.68    | 2.294E-01  | 7.10       | -5.55     |
| 126 | COLUMN2 MAX |        |        |           |            |            |           |

|     |             |         |            |            |            |            |            |
|-----|-------------|---------|------------|------------|------------|------------|------------|
|     | 2.5E-01     | -59.46  | -1.19      | 1.10       | 5.194E-01  | 3.756E-01  | 3.46       |
|     | 1.48        | -55.75  | -1.19      | 1.10       | 5.194E-01  | 4.13       | 6.76       |
|     | 2.70        | -52.04  | -1.19      | 1.10       | 5.194E-01  | 24.84      | 18.72      |
| 126 | COLUMN2 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -69.85  | -9.77      | -16.91     | 2.377E-01  | -16.58     | -5.20      |
|     | 1.48        | -66.14  | -9.77      | -16.91     | 2.377E-01  | -9.668E-01 | 4.92       |
|     | 2.70        | -62.43  | -9.77      | -16.91     | 2.377E-01  | -2.31      | 6.38       |
| 126 | COLUMN3 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -43.48  | 8.08       | -2.96      | 3.471E-01  | -3.23      | 11.54      |
|     | 1.48        | -40.29  | 8.08       | -2.96      | 3.471E-01  | 1.95       | 6.62       |
|     | 2.70        | -37.11  | 8.08       | -2.96      | 3.471E-01  | 12.37      | 27.94      |
| 126 | COLUMN3 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -51.64  | -17.40     | -8.51      | 4.881E-02  | -8.47      | -14.70     |
|     | 1.48        | -48.45  | -17.40     | -8.51      | 4.881E-02  | 3.989E-01  | 1.64       |
|     | 2.70        | -45.27  | -17.40     | -8.51      | 4.881E-02  | 4.03       | -8.26      |
| 126 | COLUMN4 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -42.36  | -3.735E-01 | 3.27       | 3.388E-01  | 2.63       | 2.75       |
|     | 1.48        | -39.18  | -3.735E-01 | 3.27       | 3.388E-01  | 3.72       | 5.05       |
|     | 2.70        | -35.99  | -3.735E-01 | 3.27       | 3.388E-01  | 21.77      | 16.01      |
| 126 | COLUMN4 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -52.75  | -8.95      | -14.74     | 5.713E-02  | -14.33     | -5.91      |
|     | 1.48        | -49.57  | -8.95      | -14.74     | 5.713E-02  | -1.37      | 3.21       |
|     | 2.70        | -46.39  | -8.95      | -14.74     | 5.713E-02  | -5.38      | 3.67       |
| 127 | CU          |         |            |            |            |            |            |
|     | 2.5E-01     | -83.19  | 19.90      | -15.46     | 6.507E-01  | -15.56     | 19.69      |
|     | 1.48        | -78.24  | 19.90      | -15.46     | 6.507E-01  | 3.37       | -4.68      |
|     | 2.70        | -73.29  | 19.90      | -15.46     | 6.507E-01  | 22.30      | -29.05     |
| 127 | COLUMN1 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -58.49  | 20.50      | -9.77      | 8.589E-01  | -10.27     | 18.52      |
|     | 1.48        | -54.78  | 20.50      | -9.77      | 8.589E-01  | 3.55       | -4.310E-01 |
|     | 2.70        | -51.06  | 20.50      | -9.77      | 8.589E-01  | 19.80      | -11.88     |
| 127 | COLUMN1 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -66.29  | 9.34       | -13.42     | 1.172E-01  | -13.08     | 11.02      |
|     | 1.48        | -62.58  | 9.34       | -13.42     | 1.172E-01  | 1.51       | -6.59      |
|     | 2.70        | -58.87  | 9.34       | -13.42     | 1.172E-01  | 13.66      | -31.70     |
| 127 | COLUMN2 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -58.13  | 16.93      | -5.84      | 7.126E-01  | -7.69      | 16.25      |
|     | 1.48        | -54.42  | 16.93      | -5.84      | 7.126E-01  | 5.65       | -2.53      |
|     | 2.70        | -50.70  | 16.93      | -5.84      | 7.126E-01  | 26.83      | -18.35     |
| 127 | COLUMN2 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -66.65  | 12.92      | -17.34     | 2.635E-01  | -15.65     | 13.29      |
|     | 1.48        | -62.94  | 12.92      | -17.34     | 2.635E-01  | -5.892E-01 | -4.49      |
|     | 2.70        | -59.23  | 12.92      | -17.34     | 2.635E-01  | 6.63       | -25.23     |
| 127 | COLUMN3 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -44.11  | 15.47      | -6.81      | 6.202E-01  | -7.00      | 12.65      |
|     | 1.48        | -40.93  | 15.47      | -6.81      | 6.202E-01  | 3.19       | -1.309E-01 |
|     | 2.70        | -37.75  | 15.47      | -6.81      | 6.202E-01  | 15.82      | -5.41      |
| 127 | COLUMN3 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -51.92  | 4.31       | -10.46     | -1.215E-01 | -9.81      | 5.15       |
|     | 1.48        | -48.74  | 4.31       | -10.46     | -1.215E-01 | 1.15       | -6.29      |
|     | 2.70        | -45.55  | 4.31       | -10.46     | -1.215E-01 | 9.68       | -25.24     |
| 127 | COLUMN4 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -43.75  | 11.89      | -2.89      | 4.739E-01  | -4.42      | 10.38      |
|     | 1.48        | -40.57  | 11.89      | -2.89      | 4.739E-01  | 5.29       | -2.23      |
|     | 2.70        | -37.39  | 11.89      | -2.89      | 4.739E-01  | 22.85      | -11.89     |
| 127 | COLUMN4 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -52.28  | 7.88       | -14.38     | 2.482E-02  | -12.39     | 7.42       |
|     | 1.48        | -49.09  | 7.88       | -14.38     | 2.482E-02  | -9.438E-01 | -4.19      |
|     | 2.70        | -45.91  | 7.88       | -14.38     | 2.482E-02  | 2.65       | -18.76     |
| 128 | CU          |         |            |            |            |            |            |
|     | 2.5E-01     | -153.39 | -33.32     | -5.915E-01 | -4.336E-01 | -1.16      | -36.70     |
|     | 1.48        | -148.44 | -33.32     | -5.915E-01 | -4.336E-01 | -4.351E-01 | 4.12       |
|     | 2.70        | -143.49 | -33.32     | -5.915E-01 | -4.336E-01 | 2.895E-01  | 44.93      |
| 128 | COLUMN1 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -108.95 | -12.30     | 3.85       | 2.738E-02  | 3.92       | -15.21     |
|     | 1.48        | -105.23 | -12.30     | 3.85       | 2.738E-02  | 1.499E-01  | 6.32       |
|     | 2.70        | -101.52 | -12.30     | 3.85       | 2.738E-02  | 5.95       | 52.47      |
| 128 | COLUMN1 MIN |         |            |            |            |            |            |

|     |             |         |            |            |            |            |            |
|-----|-------------|---------|------------|------------|------------|------------|------------|
|     | 2.5E-01     | -121.14 | -37.67     | -4.74      | -6.778E-01 | -5.66      | -39.83     |
|     | 1.48        | -117.43 | -37.67     | -4.74      | -6.778E-01 | -8.025E-01 | -1.418E-01 |
|     | 2.70        | -113.71 | -37.67     | -4.74      | -6.778E-01 | -5.52      | 14.93      |
| 128 | COLUMN2 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -112.14 | -20.95     | 13.77      | -1.573E-01 | 14.96      | -23.60     |
|     | 1.48        | -108.42 | -20.95     | 13.77      | -1.573E-01 | 1.25       | 4.11       |
|     | 2.70        | -104.71 | -20.95     | 13.77      | -1.573E-01 | 19.20      | 39.66      |
| 128 | COLUMN2 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -117.95 | -29.02     | -14.65     | -4.931E-01 | -16.70     | -31.44     |
|     | 1.48        | -114.23 | -29.02     | -14.65     | -4.931E-01 | -1.91      | 2.07       |
|     | 2.70        | -110.52 | -29.02     | -14.65     | -4.931E-01 | -18.77     | 27.74      |
| 128 | COLUMN3 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -78.03  | -3.59      | 4.03       | 1.925E-01  | 4.19       | -5.91      |
|     | 1.48        | -74.85  | -3.59      | 4.03       | 1.925E-01  | 2.085E-01  | 4.95       |
|     | 2.70        | -71.67  | -3.59      | 4.03       | 1.925E-01  | 5.79       | 40.42      |
| 128 | COLUMN3 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -90.23  | -28.96     | -4.56      | -5.127E-01 | -5.38      | -30.53     |
|     | 1.48        | -87.04  | -28.96     | -4.56      | -5.127E-01 | -7.439E-01 | -1.51      |
|     | 2.70        | -83.86  | -28.96     | -4.56      | -5.127E-01 | -5.68      | 2.88       |
| 128 | COLUMN4 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -81.22  | -12.24     | 13.95      | 7.799E-03  | 15.24      | -14.30     |
|     | 1.48        | -78.04  | -12.24     | 13.95      | 7.799E-03  | 1.31       | 2.73       |
|     | 2.70        | -74.86  | -12.24     | 13.95      | 7.799E-03  | 19.04      | 27.61      |
| 128 | COLUMN4 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -87.04  | -20.31     | -14.47     | -3.280E-01 | -16.42     | -22.14     |
|     | 1.48        | -83.85  | -20.31     | -14.47     | -3.280E-01 | -1.85      | 6.978E-01  |
|     | 2.70        | -80.67  | -20.31     | -14.47     | -3.280E-01 | -18.93     | 15.69      |
| 129 | CU          |         |            |            |            |            |            |
|     | 2.5E-01     | -126.55 | 32.12      | -1.07      | -4.548E-01 | -1.56      | 21.68      |
|     | 1.48        | -121.59 | 32.12      | -1.07      | -4.548E-01 | -2.503E-01 | -17.67     |
|     | 2.70        | -116.64 | 32.12      | -1.07      | -4.548E-01 | 1.06       | -57.02     |
| 129 | COLUMN1 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -88.81  | 40.60      | 3.95       | 6.803E-02  | 4.16       | 36.63      |
|     | 1.48        | -85.10  | 40.60      | 3.95       | 6.803E-02  | 3.172E-01  | -13.11     |
|     | 2.70        | -81.39  | 40.60      | 3.95       | 6.803E-02  | 7.12       | -22.69     |
| 129 | COLUMN1 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -101.01 | 7.58       | -5.56      | -7.502E-01 | -6.50      | -4.11      |
|     | 1.48        | -97.29  | 7.58       | -5.56      | -7.502E-01 | -6.927E-01 | -13.40     |
|     | 2.70        | -93.58  | 7.58       | -5.56      | -7.502E-01 | -5.53      | -62.85     |
| 129 | COLUMN2 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -91.69  | 29.33      | 14.98      | -1.534E-01 | 16.52      | 22.72      |
|     | 1.48        | -87.98  | 29.33      | 14.98      | -1.534E-01 | 1.45       | -13.21     |
|     | 2.70        | -84.27  | 29.33      | 14.98      | -1.534E-01 | 21.76      | -36.39     |
| 129 | COLUMN2 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -98.13  | 18.85      | -16.58     | -5.287E-01 | -18.87     | 9.80       |
|     | 1.48        | -94.41  | 18.85      | -16.58     | -5.287E-01 | -1.83      | -13.30     |
|     | 2.70        | -90.70  | 18.85      | -16.58     | -5.287E-01 | -20.17     | -49.14     |
| 129 | COLUMN3 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -60.24  | 32.36      | 4.29       | 2.425E-01  | 4.60       | 32.26      |
|     | 1.48        | -57.06  | 32.36      | 4.29       | 2.425E-01  | 3.375E-01  | -7.37      |
|     | 2.70        | -53.88  | 32.36      | 4.29       | 2.425E-01  | 6.72       | -6.85      |
| 129 | COLUMN3 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -72.44  | -6.628E-01 | -5.22      | -5.757E-01 | -6.06      | -8.48      |
|     | 1.48        | -69.26  | -6.628E-01 | -5.22      | -5.757E-01 | -6.724E-01 | -7.67      |
|     | 2.70        | -66.08  | -6.628E-01 | -5.22      | -5.757E-01 | -5.93      | -47.01     |
| 129 | COLUMN4 MAX |         |            |            |            |            |            |
|     | 2.5E-01     | -63.12  | 21.08      | 15.32      | 2.098E-02  | 16.96      | 18.35      |
|     | 1.48        | -59.94  | 21.08      | 15.32      | 2.098E-02  | 1.47       | -7.47      |
|     | 2.70        | -56.76  | 21.08      | 15.32      | 2.098E-02  | 21.37      | -20.56     |
| 129 | COLUMN4 MIN |         |            |            |            |            |            |
|     | 2.5E-01     | -69.56  | 10.61      | -16.24     | -3.543E-01 | -18.43     | 5.44       |
|     | 1.48        | -66.38  | 10.61      | -16.24     | -3.543E-01 | -1.81      | -7.57      |
|     | 2.70        | -63.19  | 10.61      | -16.24     | -3.543E-01 | -20.57     | -33.31     |
| 130 | CU          |         |            |            |            |            |            |
|     | 2.5E-01     | -123.21 | -32.27     | -9.437E-01 | 4.553E-01  | -1.45      | -25.17     |
|     | 1.48        | -118.26 | -32.27     | -9.437E-01 | 4.553E-01  | -2.978E-01 | 14.36      |
|     | 2.70        | -113.31 | -32.27     | -9.437E-01 | 4.553E-01  | 8.582E-01  | 53.89      |
| 130 | COLUMN1 MAX |         |            |            |            |            |            |

|     |             |         |           |            |            |            |            |
|-----|-------------|---------|-----------|------------|------------|------------|------------|
|     | 2.5E-01     | -85.83  | -8.43     | 4.00       | 7.964E-01  | 4.14       | 1.050E-01  |
|     | 1.48        | -82.12  | -8.43     | 4.00       | 7.964E-01  | 3.089E-01  | 11.12      |
|     | 2.70        | -78.41  | -8.43     | 4.00       | 7.964E-01  | 6.94       | 60.07      |
| 130 | COLUMN1 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -98.98  | -39.97    | -5.41      | -1.134E-01 | -6.32      | -37.86     |
|     | 1.48        | -95.26  | -39.97    | -5.41      | -1.134E-01 | -7.556E-01 | 10.42      |
|     | 2.70        | -91.55  | -39.97    | -5.41      | -1.134E-01 | -5.65      | 20.76      |
| 130 | COLUMN2 MAX |         |           |            |            |            |            |
|     | 2.5E-01     | -89.31  | -19.05    | 14.71      | 5.105E-01  | 16.06      | -12.64     |
|     | 1.48        | -85.60  | -19.05    | 14.71      | 5.105E-01  | 1.51       | 10.90      |
|     | 2.70        | -81.88  | -19.05    | 14.71      | 5.105E-01  | 21.26      | 46.81      |
| 130 | COLUMN2 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -95.50  | -29.36    | -16.12     | 1.725E-01  | -18.24     | -25.12     |
|     | 1.48        | -91.79  | -29.36    | -16.12     | 1.725E-01  | -1.96      | 10.64      |
|     | 2.70        | -88.08  | -29.36    | -16.12     | 1.725E-01  | -19.97     | 34.02      |
| 130 | COLUMN3 MAX |         |           |            |            |            |            |
|     | 2.5E-01     | -58.14  | 4.371E-01 | 4.33       | 5.932E-01  | 4.57       | 6.59       |
|     | 1.48        | -54.96  | 4.371E-01 | 4.33       | 5.932E-01  | 3.325E-01  | 6.75       |
|     | 2.70        | -51.78  | 4.371E-01 | 4.33       | 5.932E-01  | 6.56       | 44.83      |
| 130 | COLUMN3 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -71.28  | -31.10    | -5.08      | -3.167E-01 | -5.89      | -31.37     |
|     | 1.48        | -68.10  | -31.10    | -5.08      | -3.167E-01 | -7.319E-01 | 6.04       |
|     | 2.70        | -64.92  | -31.10    | -5.08      | -3.167E-01 | -6.03      | 5.52       |
| 130 | COLUMN4 MAX |         |           |            |            |            |            |
|     | 2.5E-01     | -61.62  | -10.18    | 15.04      | 3.072E-01  | 16.49      | -6.15      |
|     | 1.48        | -58.43  | -10.18    | 15.04      | 3.072E-01  | 1.53       | 6.52       |
|     | 2.70        | -55.25  | -10.18    | 15.04      | 3.072E-01  | 20.88      | 31.57      |
| 130 | COLUMN4 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -67.81  | -20.49    | -15.79     | -3.074E-02 | -17.81     | -18.63     |
|     | 1.48        | -64.63  | -20.49    | -15.79     | -3.074E-02 | -1.93      | 6.27       |
|     | 2.70        | -61.44  | -20.49    | -15.79     | -3.074E-02 | -20.36     | 18.78      |
| 131 | CU          |         |           |            |            |            |            |
|     | 2.5E-01     | -147.61 | 33.05     | -9.03      | 1.47       | -22.03     | 38.31      |
|     | 1.48        | -141.15 | 33.05     | -9.03      | 1.47       | -10.97     | -2.18      |
|     | 2.70        | -134.68 | 33.05     | -9.03      | 1.47       | 8.468E-02  | -42.67     |
| 131 | COLUMN1 MAX |         |           |            |            |            |            |
|     | 2.5E-01     | -104.45 | 36.73     | -3.29      | 1.74       | -13.97     | 37.71      |
|     | 1.48        | -99.60  | 36.73     | -3.29      | 1.74       | -6.50      | 4.01       |
|     | 2.70        | -94.75  | 36.73     | -3.29      | 1.74       | 6.02       | -11.73     |
| 131 | COLUMN1 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -116.98 | 12.85     | -10.25     | 4.654E-01  | -19.08     | 19.75      |
|     | 1.48        | -112.13 | 12.85     | -10.25     | 4.654E-01  | -9.96      | -7.28      |
|     | 2.70        | -107.28 | 12.85     | -10.25     | 4.654E-01  | -5.90      | -52.28     |
| 131 | COLUMN2 MAX |         |           |            |            |            |            |
|     | 2.5E-01     | -108.81 | 28.71     | 4.58       | 1.46       | -8.33      | 31.70      |
|     | 1.48        | -103.96 | 28.71     | 4.58       | 1.46       | -2.52      | 1.973E-01  |
|     | 2.70        | -99.11  | 28.71     | 4.58       | 1.46       | 19.67      | -25.36     |
| 131 | COLUMN2 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -112.61 | 20.87     | -18.12     | 7.485E-01  | -24.72     | 25.76      |
|     | 1.48        | -107.76 | 20.87     | -18.12     | 7.485E-01  | -13.94     | -3.47      |
|     | 2.70        | -102.91 | 20.87     | -18.12     | 7.485E-01  | -19.55     | -38.65     |
| 131 | COLUMN3 MAX |         |           |            |            |            |            |
|     | 2.5E-01     | -75.21  | 27.64     | -8.031E-01 | 1.20       | -8.42      | 26.72      |
|     | 1.48        | -71.05  | 27.64     | -8.031E-01 | 1.20       | -4.01      | 4.16       |
|     | 2.70        | -66.89  | 27.64     | -8.031E-01 | 1.20       | 5.47       | -4.422E-01 |
| 131 | COLUMN3 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -87.74  | 3.76      | -7.75      | -7.540E-02 | -13.53     | 8.76       |
|     | 1.48        | -83.58  | 3.76      | -7.75      | -7.540E-02 | -7.46      | -7.13      |
|     | 2.70        | -79.42  | 3.76      | -7.75      | -7.540E-02 | -6.45      | -40.99     |
| 131 | COLUMN4 MAX |         |           |            |            |            |            |
|     | 2.5E-01     | -79.57  | 19.62     | 7.07       | 9.188E-01  | -2.78      | 20.71      |
|     | 1.48        | -75.41  | 19.62     | 7.07       | 9.188E-01  | -1.985E-02 | 3.472E-01  |
|     | 2.70        | -71.25  | 19.62     | 7.07       | 9.188E-01  | 19.12      | -14.07     |
| 131 | COLUMN4 MIN |         |           |            |            |            |            |
|     | 2.5E-01     | -83.37  | 11.77     | -15.63     | 2.078E-01  | -19.17     | 14.77      |
|     | 1.48        | -79.22  | 11.77     | -15.63     | 2.078E-01  | -11.45     | -3.32      |
|     | 2.70        | -75.06  | 11.77     | -15.63     | 2.078E-01  | -20.10     | -27.36     |
| 132 | CU          |         |           |            |            |            |            |
|     | 2.5E-01     | -84.93  | 17.59     | 5.83       | -1.99      | 11.76      | 31.11      |

|     |             |         |           |        |            |            |            |
|-----|-------------|---------|-----------|--------|------------|------------|------------|
|     | 1.48        | -79.98  | 17.59     | 5.83   | -1.99      | 4.61       | 9.57       |
|     | 2.70        | -75.03  | 17.59     | 5.83   | -1.99      | -2.53      | -11.98     |
| 132 | COLUMN1 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -59.37  | 20.99     | 9.94   | -1.18      | 15.77      | 33.54      |
|     | 1.48        | -55.66  | 20.99     | 9.94   | -1.18      | 4.69       | 7.83       |
|     | 2.70        | -51.95  | 20.99     | 9.94   | -1.18      | 4.80       | -9.138E-02 |
| 132 | COLUMN1 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -68.02  | 5.40      | -1.19  | -1.80      | 1.87       | 13.13      |
|     | 1.48        | -64.30  | 5.40      | -1.19  | -1.80      | 2.23       | 6.52       |
|     | 2.70        | -60.59  | 5.40      | -1.19  | -1.80      | -8.60      | -17.88     |
| 132 | COLUMN2 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -58.03  | 16.55     | 17.91  | -1.15      | 23.76      | 28.66      |
|     | 1.48        | -54.32  | 16.55     | 17.91  | -1.15      | 5.51       | 8.38       |
|     | 2.70        | -50.61  | 16.55     | 17.91  | -1.15      | 16.32      | -6.08      |
| 132 | COLUMN2 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -69.36  | 9.83      | -9.16  | -1.84      | -6.12      | 18.01      |
|     | 1.48        | -65.64  | 9.83      | -9.16  | -1.84      | 1.41       | 5.96       |
|     | 2.70        | -61.93  | 9.83      | -9.16  | -1.84      | -20.12     | -11.89     |
| 132 | COLUMN3 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -42.94  | 15.73     | 9.23   | -6.227E-01 | 13.80      | 23.98      |
|     | 1.48        | -39.75  | 15.73     | 9.23   | -6.227E-01 | 3.60       | 4.71       |
|     | 2.70        | -36.57  | 15.73     | 9.23   | -6.227E-01 | 4.57       | 3.22       |
| 132 | COLUMN3 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -51.58  | 1.432E-01 | -1.91  | -1.24      | -9.838E-02 | 3.57       |
|     | 1.48        | -48.40  | 1.432E-01 | -1.91  | -1.24      | 1.13       | 3.40       |
|     | 2.70        | -45.21  | 1.432E-01 | -1.91  | -1.24      | -8.82      | -14.57     |
| 132 | COLUMN4 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -41.60  | 11.30     | 17.20  | -5.905E-01 | 21.79      | 19.10      |
|     | 1.48        | -38.41  | 11.30     | 17.20  | -5.905E-01 | 4.42       | 5.26       |
|     | 2.70        | -35.23  | 11.30     | 17.20  | -5.905E-01 | 16.10      | -2.76      |
| 132 | COLUMN4 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -52.92  | 4.58      | -9.87  | -1.27      | -8.09      | 8.45       |
|     | 1.48        | -49.74  | 4.58      | -9.87  | -1.27      | 3.114E-01  | 2.84       |
|     | 2.70        | -46.55  | 4.58      | -9.87  | -1.27      | -20.35     | -8.58      |
| 133 | CU          |         |           |        |            |            |            |
|     | 2.5E-01     | -156.92 | -33.52    | -1.65  | 4.148E-01  | -1.29      | -37.46     |
|     | 1.48        | -151.97 | -33.52    | -1.65  | 4.148E-01  | 7.273E-01  | 3.60       |
|     | 2.70        | -147.02 | -33.52    | -1.65  | 4.148E-01  | 2.75       | 44.67      |
| 133 | COLUMN1 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -111.51 | -11.82    | 2.97   | 5.904E-01  | 3.70       | -14.95     |
|     | 1.48        | -107.80 | -11.82    | 2.97   | 5.904E-01  | 1.03       | 5.87       |
|     | 2.70        | -104.08 | -11.82    | 2.97   | 5.904E-01  | 7.69       | 52.99      |
| 133 | COLUMN1 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -123.88 | -38.46    | -5.44  | 3.183E-02  | -5.63      | -41.25     |
|     | 1.48        | -120.16 | -38.46    | -5.44  | 3.183E-02  | 6.272E-02  | -4.668E-01 |
|     | 2.70        | -116.45 | -38.46    | -5.44  | 3.183E-02  | -3.57      | 14.01      |
| 133 | COLUMN2 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -115.16 | -20.93    | 12.71  | 4.610E-01  | 14.51      | -23.93     |
|     | 1.48        | -111.45 | -20.93    | 12.71  | 4.610E-01  | 2.15       | 3.70       |
|     | 2.70        | -107.73 | -20.93    | 12.71  | 4.610E-01  | 20.74      | 39.66      |
| 133 | COLUMN2 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -120.22 | -29.36    | -15.18 | 1.612E-01  | -16.45     | -32.26     |
|     | 1.48        | -116.51 | -29.36    | -15.18 | 1.612E-01  | -1.05      | 1.70       |
|     | 2.70        | -112.80 | -29.36    | -15.18 | 1.612E-01  | -16.62     | 27.34      |
| 133 | COLUMN3 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -80.05  | -3.09     | 3.19   | 4.347E-01  | 3.88       | -5.50      |
|     | 1.48        | -76.87  | -3.09     | 3.19   | 4.347E-01  | 9.411E-01  | 4.61       |
|     | 2.70        | -73.68  | -3.09     | 3.19   | 4.347E-01  | 7.33       | 41.03      |
| 133 | COLUMN3 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -92.42  | -29.73    | -5.22  | -1.238E-01 | -5.45      | -31.80     |
|     | 1.48        | -89.23  | -29.73    | -5.22  | -1.238E-01 | -2.442E-02 | -1.72      |
|     | 2.70        | -86.05  | -29.73    | -5.22  | -1.238E-01 | -3.93      | 2.06       |
| 133 | COLUMN4 MAX |         |           |        |            |            |            |
|     | 2.5E-01     | -83.70  | -12.19    | 12.93  | 3.054E-01  | 14.70      | -14.49     |
|     | 1.48        | -80.52  | -12.19    | 12.93  | 3.054E-01  | 2.06       | 2.44       |
|     | 2.70        | -77.33  | -12.19    | 12.93  | 3.054E-01  | 20.38      | 27.70      |
| 133 | COLUMN4 MIN |         |           |        |            |            |            |
|     | 2.5E-01     | -88.76  | -20.62    | -14.96 | 5.522E-03  | -16.27     | -22.82     |
|     | 1.48        | -85.58  | -20.62    | -14.96 | 5.522E-03  | -1.14      | 4.467E-01  |
|     | 2.70        | -82.40  | -20.62    | -14.96 | 5.522E-03  | -16.98     | 15.38      |

|     |             |         |        |            |            |            |        |
|-----|-------------|---------|--------|------------|------------|------------|--------|
| 134 | CU          |         |        |            |            |            |        |
|     | 2.5E-01     | -128.86 | 32.10  | -8.360E-01 | 4.514E-01  | -7.163E-01 | 21.34  |
|     | 1.48        | -123.91 | 32.10  | -8.360E-01 | 4.514E-01  | 3.078E-01  | -17.98 |
|     | 2.70        | -118.96 | 32.10  | -8.360E-01 | 4.514E-01  | 1.33       | -57.31 |
| 134 | COLUMN1 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -90.48  | 41.34  | 4.07       | 6.743E-01  | 4.70       | 37.47  |
|     | 1.48        | -86.76  | 41.34  | 4.07       | 6.743E-01  | 7.453E-01  | -13.17 |
|     | 2.70        | -83.05  | 41.34  | 4.07       | 6.743E-01  | 7.26       | -22.15 |
| 134 | COLUMN1 MIN |         |        |            |            |            |        |
|     | 2.5E-01     | -102.82 | 6.82   | -5.32      | 2.861E-03  | -5.78      | -5.45  |
|     | 1.48        | -99.11  | 6.82   | -5.32      | 2.861E-03  | -2.837E-01 | -13.80 |
|     | 2.70        | -95.39  | 6.82   | -5.32      | 2.861E-03  | -5.27      | -63.81 |
| 134 | COLUMN2 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -93.85  | 29.54  | 14.88      | 5.099E-01  | 16.80      | 22.80  |
|     | 1.48        | -90.14  | 29.54  | 14.88      | 5.099E-01  | 1.89       | -13.39 |
|     | 2.70        | -86.43  | 29.54  | 14.88      | 5.099E-01  | 21.65      | -36.39 |
| 134 | COLUMN2 MIN |         |        |            |            |            |        |
|     | 2.5E-01     | -99.44  | 18.62  | -16.13     | 1.672E-01  | -17.87     | 9.22   |
|     | 1.48        | -95.73  | 18.62  | -16.13     | 1.672E-01  | -1.43      | -13.59 |
|     | 2.70        | -92.02  | 18.62  | -16.13     | 1.672E-01  | -19.65     | -49.58 |
| 134 | COLUMN3 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -61.49  | 33.13  | 4.15       | 5.065E-01  | 4.81       | 33.28  |
|     | 1.48        | -58.31  | 33.13  | 4.15       | 5.065E-01  | 7.484E-01  | -7.29  |
|     | 2.70        | -55.13  | 33.13  | 4.15       | 5.065E-01  | 7.17       | -6.22  |
| 134 | COLUMN3 MIN |         |        |            |            |            |        |
|     | 2.5E-01     | -73.84  | -1.40  | -5.24      | -1.650E-01 | -5.67      | -9.64  |
|     | 1.48        | -70.66  | -1.40  | -5.24      | -1.650E-01 | -2.806E-01 | -7.93  |
|     | 2.70        | -67.47  | -1.40  | -5.24      | -1.650E-01 | -5.36      | -47.87 |
| 134 | COLUMN4 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -64.87  | 21.33  | 14.96      | 3.421E-01  | 16.90      | 18.61  |
|     | 1.48        | -61.69  | 21.33  | 14.96      | 3.421E-01  | 1.89       | -7.51  |
|     | 2.70        | -58.50  | 21.33  | 14.96      | 3.421E-01  | 21.55      | -20.45 |
| 134 | COLUMN4 MIN |         |        |            |            |            |        |
|     | 2.5E-01     | -70.46  | 10.40  | -16.05     | -6.112E-04 | -17.77     | 5.03   |
|     | 1.48        | -67.28  | 10.40  | -16.05     | -6.112E-04 | -1.42      | -7.71  |
|     | 2.70        | -64.10  | 10.40  | -16.05     | -6.112E-04 | -19.75     | -33.64 |
| 135 | CU          |         |        |            |            |            |        |
|     | 2.5E-01     | -128.84 | -32.00 | -6.076E-01 | -5.267E-01 | -5.092E-01 | -21.56 |
|     | 1.48        | -123.89 | -32.00 | -6.076E-01 | -5.267E-01 | 2.351E-01  | 17.64  |
|     | 2.70        | -118.94 | -32.00 | -6.076E-01 | -5.267E-01 | 9.795E-01  | 56.85  |
| 135 | COLUMN1 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -90.79  | -5.82  | 4.19       | -1.154E-01 | 4.79       | 6.85   |
|     | 1.48        | -87.08  | -5.82  | 4.19       | -1.154E-01 | 7.126E-01  | 13.98  |
|     | 2.70        | -83.36  | -5.82  | 4.19       | -1.154E-01 | 6.93       | 64.16  |
| 135 | COLUMN1 MIN |         |        |            |            |            |        |
|     | 2.5E-01     | -102.48 | -42.18 | -5.10      | -6.747E-01 | -5.56      | -39.19 |
|     | 1.48        | -98.76  | -42.18 | -5.10      | -6.747E-01 | -3.599E-01 | 12.48  |
|     | 2.70        | -95.05  | -42.18 | -5.10      | -6.747E-01 | -5.46      | 21.11  |
| 135 | COLUMN2 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -94.16  | -18.24 | 14.89      | -2.299E-01 | 16.68      | -8.87  |
|     | 1.48        | -90.45  | -18.24 | 14.89      | -2.299E-01 | 1.92       | 13.47  |
|     | 2.70        | -86.74  | -18.24 | 14.89      | -2.299E-01 | 21.26      | 49.46  |
| 135 | COLUMN2 MIN |         |        |            |            |            |        |
|     | 2.5E-01     | -99.10  | -29.77 | -15.80     | -5.601E-01 | -17.44     | -23.47 |
|     | 1.48        | -95.39  | -29.77 | -15.80     | -5.601E-01 | -1.57      | 13.00  |
|     | 2.70        | -91.67  | -29.77 | -15.80     | -5.601E-01 | -19.79     | 35.81  |
| 135 | COLUMN3 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -61.72  | 3.41   | 4.21       | 7.818E-02  | 4.85       | 12.92  |
|     | 1.48        | -58.54  | 3.41   | 4.21       | 7.818E-02  | 7.385E-01  | 8.74   |
|     | 2.70        | -55.36  | 3.41   | 4.21       | 7.818E-02  | 6.92       | 47.60  |
| 135 | COLUMN3 MIN |         |        |            |            |            |        |
|     | 2.5E-01     | -73.41  | -32.95 | -5.07      | -4.811E-01 | -5.50      | -33.12 |
|     | 1.48        | -70.22  | -32.95 | -5.07      | -4.811E-01 | -3.341E-01 | 7.24   |
|     | 2.70        | -67.04  | -32.95 | -5.07      | -4.811E-01 | -5.47      | 4.56   |
| 135 | COLUMN4 MAX |         |        |            |            |            |        |
|     | 2.5E-01     | -65.10  | -9.00  | 14.91      | -3.635E-02 | 16.74      | -2.80  |
|     | 1.48        | -61.91  | -9.00  | 14.91      | -3.635E-02 | 1.94       | 8.22   |
|     | 2.70        | -58.73  | -9.00  | 14.91      | -3.635E-02 | 21.25      | 32.90  |
| 135 | COLUMN4 MIN |         |        |            |            |            |        |



|     |             |        |           |            |            |            |            |
|-----|-------------|--------|-----------|------------|------------|------------|------------|
|     | 2.5E-01     | -70.03 | -20.53    | -15.77     | -3.666E-01 | -17.38     | -17.40     |
|     | 1.48        | -66.85 | -20.53    | -15.77     | -3.666E-01 | -1.54      | 7.75       |
|     | 2.70        | -63.67 | -20.53    | -15.77     | -3.666E-01 | -19.80     | 19.25      |
| 136 | CU          |        |           |            |            |            |            |
|     | 2.5E-01     | -86.74 | 18.07     | -8.43      | 8.751E-01  | -14.78     | 32.13      |
|     | 1.48        | -81.79 | 18.07     | -8.43      | 8.751E-01  | -4.45      | 9.99       |
|     | 2.70        | -76.84 | 18.07     | -8.43      | 8.751E-01  | 5.87       | -12.14     |
| 136 | COLUMN1 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -60.86 | 20.89     | -6.178E-01 | 1.46       | -3.93      | 33.49      |
|     | 1.48        | -57.14 | 20.89     | -6.178E-01 | 1.46       | -2.16      | 7.89       |
|     | 2.70        | -53.43 | 20.89     | -6.178E-01 | 1.46       | 11.22      | -4.712E-01 |
| 136 | COLUMN1 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -69.26 | 6.21      | -12.03     | -1.438E-01 | -18.25     | 14.71      |
|     | 1.48        | -65.54 | 6.21      | -12.03     | -1.438E-01 | -4.52      | 7.10       |
|     | 2.70        | -61.83 | 6.21      | -12.03     | -1.438E-01 | -2.41      | -17.74     |
| 136 | COLUMN2 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -59.85 | 16.51     | 7.61       | 1.12       | 4.51       | 28.83      |
|     | 1.48        | -56.14 | 16.51     | 7.61       | 1.12       | -1.46      | 8.60       |
|     | 2.70        | -52.43 | 16.51     | 7.61       | 1.12       | 22.95      | -6.46      |
| 136 | COLUMN2 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -70.26 | 10.59     | -20.26     | 1.923E-01  | -26.69     | 19.36      |
|     | 1.48        | -66.55 | 10.59     | -20.26     | 1.923E-01  | -5.22      | 6.39       |
|     | 2.70        | -62.84 | 10.59     | -20.26     | 1.923E-01  | -14.14     | -11.75     |
| 136 | COLUMN3 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -44.76 | 15.49     | 5.898E-01  | 1.32       | -1.34      | 23.53      |
|     | 1.48        | -41.58 | 15.49     | 5.898E-01  | 1.32       | -1.06      | 4.56       |
|     | 2.70        | -38.39 | 15.49     | 5.898E-01  | 1.32       | 10.85      | 2.82       |
| 136 | COLUMN3 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -53.16 | 8.030E-01 | -10.82     | -2.841E-01 | -15.66     | 4.75       |
|     | 1.48        | -49.98 | 8.030E-01 | -10.82     | -2.841E-01 | -3.41      | 3.76       |
|     | 2.70        | -46.79 | 8.030E-01 | -10.82     | -2.841E-01 | -2.78      | -14.45     |
| 136 | COLUMN4 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -43.75 | 11.11     | 8.82       | 9.801E-01  | 7.10       | 18.87      |
|     | 1.48        | -40.57 | 11.11     | 8.82       | 9.801E-01  | -3.549E-01 | 5.26       |
|     | 2.70        | -37.39 | 11.11     | 8.82       | 9.801E-01  | 22.58      | -3.17      |
| 136 | COLUMN4 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -54.17 | 5.18      | -19.05     | 5.199E-02  | -24.10     | 9.40       |
|     | 1.48        | -50.98 | 5.18      | -19.05     | 5.199E-02  | -4.11      | 3.06       |
|     | 2.70        | -47.80 | 5.18      | -19.05     | 5.199E-02  | -14.51     | -8.46      |
| 137 | CU          |        |           |            |            |            |            |
|     | 2.5E-01     | -98.26 | -28.77    | 15.88      | 5.862E-01  | 15.36      | -29.33     |
|     | 1.48        | -93.31 | -28.77    | 15.88      | 5.862E-01  | -4.09      | 5.91       |
|     | 2.70        | -88.36 | -28.77    | 15.88      | 5.862E-01  | -23.54     | 41.16      |
| 137 | COLUMN1 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -69.67 | -15.60    | 14.35      | 8.613E-01  | 13.91      | -17.79     |
|     | 1.48        | -65.96 | -15.60    | 14.35      | 8.613E-01  | -2.28      | 7.55       |
|     | 2.70        | -62.24 | -15.60    | 14.35      | 8.613E-01  | -14.06     | 41.32      |
| 137 | COLUMN1 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -77.72 | -27.56    | 9.47       | 1.800E-02  | 9.14       | -26.21     |
|     | 1.48        | -74.00 | -27.56    | 9.47       | 1.800E-02  | -3.85      | 1.31       |
|     | 2.70        | -70.29 | -27.56    | 9.47       | 1.800E-02  | -21.25     | 20.42      |
| 137 | COLUMN2 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -68.96 | -19.54    | 19.76      | 6.359E-01  | 18.87      | -20.64     |
|     | 1.48        | -65.24 | -19.54    | 19.76      | 6.359E-01  | -7.347E-01 | 5.57       |
|     | 2.70        | -61.53 | -19.54    | 19.76      | 6.359E-01  | -5.75      | 34.51      |
| 137 | COLUMN2 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -78.43 | -23.62    | 4.05       | 2.434E-01  | 4.18       | -23.36     |
|     | 1.48        | -74.72 | -23.62    | 4.05       | 2.434E-01  | -5.40      | 3.29       |
|     | 2.70        | -71.01 | -23.62    | 4.05       | 2.434E-01  | -29.56     | 27.23      |
| 137 | COLUMN3 MAX |        |           |            |            |            |            |
|     | 2.5E-01     | -52.02 | -8.96     | 11.58      | 6.457E-01  | 11.07      | -10.84     |
|     | 1.48        | -48.83 | -8.96     | 11.58      | 6.457E-01  | -1.73      | 6.38       |
|     | 2.70        | -45.65 | -8.96     | 11.58      | 6.457E-01  | -10.11     | 32.01      |
| 137 | COLUMN3 MIN |        |           |            |            |            |            |
|     | 2.5E-01     | -60.06 | -20.92    | 6.70       | -1.976E-01 | 6.30       | -19.25     |
|     | 1.48        | -56.88 | -20.92    | 6.70       | -1.976E-01 | -3.29      | 1.394E-01  |
|     | 2.70        | -53.70 | -20.92    | 6.70       | -1.976E-01 | -17.30     | 11.12      |
| 137 | COLUMN4 MAX |        |           |            |            |            |            |

|     |             |         |        |           |            |            |            |
|-----|-------------|---------|--------|-----------|------------|------------|------------|
|     | 2.5E-01     | -51.30  | -12.90 | 16.99     | 4.204E-01  | 16.03      | -13.68     |
|     | 1.48        | -48.12  | -12.90 | 16.99     | 4.204E-01  | -1.770E-01 | 4.40       |
|     | 2.70        | -44.94  | -12.90 | 16.99     | 4.204E-01  | -1.80      | 25.20      |
| 137 | COLUMN4 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -60.78  | -16.98 | 1.28      | 2.782E-02  | 1.34       | -16.40     |
|     | 1.48        | -57.59  | -16.98 | 1.28      | 2.782E-02  | -4.84      | 2.12       |
|     | 2.70        | -54.41  | -16.98 | 1.28      | 2.782E-02  | -25.61     | 17.92      |
| 138 | CU          |         |        |           |            |            |            |
|     | 2.5E-01     | -116.02 | 10.31  | 12.18     | 3.821E-01  | 12.77      | 4.99       |
|     | 1.48        | -111.07 | 10.31  | 12.18     | 3.821E-01  | -2.15      | -7.64      |
|     | 2.70        | -106.12 | 10.31  | 12.18     | 3.821E-01  | -17.07     | -20.27     |
| 138 | COLUMN1 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -82.67  | 21.26  | 11.86     | 4.547E-01  | 12.20      | 17.90      |
|     | 1.48        | -78.95  | 21.26  | 11.86     | 4.547E-01  | -8.988E-01 | -3.32      |
|     | 2.70        | -75.24  | 21.26  | 11.86     | 4.547E-01  | -8.75      | 3.78       |
| 138 | COLUMN1 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -91.36  | -5.79  | 6.41      | 1.185E-01  | 6.96       | -10.42     |
|     | 1.48        | -87.65  | -5.79  | 6.41      | 1.185E-01  | -2.33      | -8.14      |
|     | 2.70        | -83.94  | -5.79  | 6.41      | 1.185E-01  | -16.85     | -34.18     |
| 138 | COLUMN2 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -81.80  | 12.54  | 18.07     | 3.775E-01  | 18.17      | 8.85       |
|     | 1.48        | -78.08  | 12.54  | 18.07     | 3.775E-01  | 7.425E-01  | -4.95      |
|     | 2.70        | -74.37  | 12.54  | 18.07     | 3.775E-01  | 5.007E-01  | -8.53      |
| 138 | COLUMN2 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -92.23  | 2.92   | 1.974E-01 | 1.957E-01  | 9.843E-01  | -1.37      |
|     | 1.48        | -88.52  | 2.92   | 1.974E-01 | 1.957E-01  | -3.97      | -6.51      |
|     | 2.70        | -84.81  | 2.92   | 1.974E-01 | 1.957E-01  | -26.11     | -21.87     |
| 138 | COLUMN3 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -59.43  | 20.19  | 9.31      | 3.081E-01  | 9.41       | 18.71      |
|     | 1.48        | -56.24  | 20.19  | 9.31      | 3.081E-01  | -5.682E-01 | -1.20      |
|     | 2.70        | -53.06  | 20.19  | 9.31      | 3.081E-01  | -5.31      | 7.20       |
| 138 | COLUMN3 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -68.12  | -6.86  | 3.87      | -2.820E-02 | 4.17       | -9.60      |
|     | 1.48        | -64.94  | -6.86  | 3.87      | -2.820E-02 | -2.00      | -6.02      |
|     | 2.70        | -61.76  | -6.86  | 3.87      | -2.820E-02 | -13.40     | -30.76     |
| 138 | COLUMN4 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -58.55  | 11.48  | 15.53     | 2.309E-01  | 15.38      | 9.67       |
|     | 1.48        | -55.37  | 11.48  | 15.53     | 2.309E-01  | 1.07       | -2.83      |
|     | 2.70        | -52.19  | 11.48  | 15.53     | 2.309E-01  | 3.95       | -5.11      |
| 138 | COLUMN4 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -68.99  | 1.86   | -2.35     | 4.903E-02  | -1.80      | -5.517E-01 |
|     | 1.48        | -65.81  | 1.86   | -2.35     | 4.903E-02  | -3.64      | -4.39      |
|     | 2.70        | -62.63  | 1.86   | -2.35     | 4.903E-02  | -22.66     | -18.45     |
| 139 | CU          |         |        |           |            |            |            |
|     | 2.5E-01     | -108.10 | -11.93 | 12.03     | -2.767E-01 | 12.83      | -7.76      |
|     | 1.48        | -103.15 | -11.93 | 12.03     | -2.767E-01 | -1.90      | 6.86       |
|     | 2.70        | -98.20  | -11.93 | 12.03     | -2.767E-01 | -16.64     | 21.48      |
| 139 | COLUMN1 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -77.44  | 4.77   | 11.60     | 4.486E-02  | 12.01      | 8.44       |
|     | 1.48        | -73.73  | 4.77   | 11.60     | 4.486E-02  | -6.436E-01 | 7.70       |
|     | 2.70        | -70.01  | 4.77   | 11.60     | 4.486E-02  | -8.54      | 35.47      |
| 139 | COLUMN1 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -84.72  | -22.67 | 6.44      | -4.600E-01 | 7.23       | -20.07     |
|     | 1.48        | -81.01  | -22.67 | 6.44      | -4.600E-01 | -2.21      | 2.60       |
|     | 2.70        | -77.29  | -22.67 | 6.44      | -4.600E-01 | -16.42     | -3.25      |
| 139 | COLUMN2 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -76.51  | -4.25  | 17.55     | -5.392E-02 | 17.48      | -9.795E-01 |
|     | 1.48        | -72.80  | -4.25  | 17.55     | -5.392E-02 | 1.17       | 6.07       |
|     | 2.70        | -69.09  | -4.25  | 17.55     | -5.392E-02 | 5.630E-01  | 22.80      |
| 139 | COLUMN2 MIN |         |        |           |            |            |            |
|     | 2.5E-01     | -85.64  | -13.65 | 4.899E-01 | -3.612E-01 | 1.76       | -10.66     |
|     | 1.48        | -81.93  | -13.65 | 4.899E-01 | -3.612E-01 | -4.02      | 4.22       |
|     | 2.70        | -78.22  | -13.65 | 4.899E-01 | -3.612E-01 | -25.52     | 9.42       |
| 139 | COLUMN3 MAX |         |        |           |            |            |            |
|     | 2.5E-01     | -56.18  | 6.73   | 9.10      | 1.773E-01  | 9.25       | 9.05       |
|     | 1.48        | -53.00  | 6.73   | 9.10      | 1.773E-01  | -3.364E-01 | 5.91       |
|     | 2.70        | -49.82  | 6.73   | 9.10      | 1.773E-01  | -5.17      | 31.28      |
| 139 | COLUMN3 MIN |         |        |           |            |            |            |

|     |              |        |        |       |            |            |            |
|-----|--------------|--------|--------|-------|------------|------------|------------|
|     | 2.5E-01      | -63.46 | -20.71 | 3.94  | -3.276E-01 | 4.48       | -19.46     |
|     | 1.48         | -60.28 | -20.71 | 3.94  | -3.276E-01 | -1.91      | 8.068E-01  |
|     | 2.70         | -57.10 | -20.71 | 3.94  | -3.276E-01 | -13.04     | -7.44      |
| 139 | COLUMNA4 MAX |        |        |       |            |            |            |
|     | 2.5E-01      | -55.26 | -2.29  | 15.05 | 7.850E-02  | 14.72      | -3.670E-01 |
|     | 1.48         | -52.08 | -2.29  | 15.05 | 7.850E-02  | 1.47       | 4.28       |
|     | 2.70         | -48.89 | -2.29  | 15.05 | 7.850E-02  | 3.94       | 18.61      |
| 139 | COLUMNA4 MIN |        |        |       |            |            |            |
|     | 2.5E-01      | -64.39 | -11.69 | -2.01 | -2.288E-01 | -9.966E-01 | -10.04     |
|     | 1.48         | -61.21 | -11.69 | -2.01 | -2.288E-01 | -3.72      | 2.43       |
|     | 2.70         | -58.02 | -11.69 | -2.01 | -2.288E-01 | -22.15     | 5.24       |
| 140 | CU           |        |        |       |            |            |            |
|     | 2.5E-01      | -95.83 | 29.13  | 27.36 | -1.95      | 44.38      | 29.85      |
|     | 1.48         | -89.36 | 29.13  | 27.36 | -1.95      | 10.86      | -5.83      |
|     | 2.70         | -82.90 | 29.13  | 27.36 | -1.95      | -22.66     | -41.51     |
| 140 | COLUMNA1 MAX |        |        |       |            |            |            |
|     | 2.5E-01      | -67.31 | 26.63  | 21.52 | -5.771E-01 | 35.25      | 22.56      |
|     | 1.48         | -62.46 | 26.63  | 21.52 | -5.771E-01 | 10.84      | 1.56       |
|     | 2.70         | -57.61 | 26.63  | 21.52 | -5.771E-01 | -13.39     | -19.34     |
| 140 | COLUMNA1 MIN |        |        |       |            |            |            |
|     | 2.5E-01      | -76.44 | 17.06  | 19.52 | -2.35      | 31.32      | 22.22      |
|     | 1.48         | -71.59 | 17.06  | 19.52 | -2.35      | 5.45       | -10.31     |
|     | 2.70         | -66.74 | 17.06  | 19.52 | -2.35      | -20.60     | -42.93     |
| 140 | COLUMNA2 MAX |        |        |       |            |            |            |
|     | 2.5E-01      | -66.94 | 23.58  | 23.24 | -8.744E-01 | 38.60      | 22.57      |
|     | 1.48         | -62.09 | 23.58  | 23.24 | -8.744E-01 | 16.65      | -2.36      |
|     | 2.70         | -57.24 | 23.58  | 23.24 | -8.744E-01 | -5.25      | -27.00     |
| 140 | COLUMNA2 MIN |        |        |       |            |            |            |
|     | 2.5E-01      | -76.81 | 20.12  | 17.80 | -2.06      | 27.97      | 22.21      |
|     | 1.48         | -71.96 | 20.12  | 17.80 | -2.06      | -3.551E-01 | -6.38      |
|     | 2.70         | -67.11 | 20.12  | 17.80 | -2.06      | -28.73     | -35.27     |
| 140 | COLUMNA3 MAX |        |        |       |            |            |            |
|     | 2.5E-01      | -50.18 | 19.60  | 15.51 | 1.369E-01  | 24.70      | 14.59      |
|     | 1.48         | -46.02 | 19.60  | 15.51 | 1.369E-01  | 7.66       | 2.20       |
|     | 2.70         | -41.86 | 19.60  | 15.51 | 1.369E-01  | -9.20      | -10.09     |
| 140 | COLUMNA3 MIN |        |        |       |            |            |            |
|     | 2.5E-01      | -59.31 | 10.04  | 13.50 | -1.64      | 20.77      | 14.26      |
|     | 1.48         | -55.15 | 10.04  | 13.50 | -1.64      | 2.27       | -9.67      |
|     | 2.70         | -50.99 | 10.04  | 13.50 | -1.64      | -16.41     | -33.69     |
| 140 | COLUMNA4 MAX |        |        |       |            |            |            |
|     | 2.5E-01      | -49.81 | 16.55  | 17.23 | -1.604E-01 | 28.05      | 14.61      |
|     | 1.48         | -45.65 | 16.55  | 17.23 | -1.604E-01 | 13.47      | -1.72      |
|     | 2.70         | -41.49 | 16.55  | 17.23 | -1.604E-01 | -1.06      | -17.76     |
| 140 | COLUMNA4 MIN |        |        |       |            |            |            |
|     | 2.5E-01      | -59.68 | 13.09  | 11.78 | -1.34      | 17.42      | 14.24      |
|     | 1.48         | -55.52 | 13.09  | 11.78 | -1.34      | -3.53      | -5.74      |
|     | 2.70         | -51.36 | 13.09  | 11.78 | -1.34      | -24.54     | -26.02     |

**5.1.8.2.4 Calculo de Refuerzo Longitudinal.** Se trabaja con una cuantía no menor a 0.01 ni mayor 0.06. Los empalmes por traslapo se hacen únicamente en el tercio central del elemento. (C.21.4.3 NSR – 98).

EJEMPLO DE DISEÑO BIAXIAL:

#### PARAMETROS DE DISEÑO:

Sección : 35 cm \* 35 cm

Recubrimiento = 4 cm

$P_u = 113,36 \text{ KN}$

$M_{ux} = 7.12 \text{ KN-m}$

$M_{uy} = 108.33 \text{ KN-m}$

$d/h = 0.89$

Para diseño se utiliza el método Bresler que consiste en hacer un chequeo biaxial para comprobar si la columna tiene la capacidad de resistir las cargas y momentos impuestos.

Bresler plantea :

$$1/P_n = 1/P_{nx} + 1/P_{ny} - 1/P_{no}$$

$P_{nx}$  : Carga axial resistente obtenida del diagrama de iteración Para  $P_u$  y  $M_x$  si solo actuara  $M_y$  sobre la columna.

$P_{ny}$  : Carga axial resistente obtenida del diagrama de iteración para  $P_u$  y  $M_y$  si solo actuara  $M_x$  sobre la columna.

$P_{no}$  : Máxima carga axial resistente cuando  $M_x = M_y = 0$

Si  $P_n \leq P_u$  la sección si resiste las cargas

Si  $P_n > P_u$  la columna requiere más refuerzo

$$M_{uR} = \sqrt{(54.57^2 + (108.33 * 0.35 / 0.35)^2)} = 121.29 \text{ KN-m}$$

$$A_g = 35 * 35 = 1225 \text{ cm}^2$$

$$g = (d-d')/h = (31 - 4)/35 = 0.77 \approx 0.7$$

$$K = P_u / (f'c bh) = 113.36 \text{ KN} / (2.11 * 35 * 35) = 0.044$$

$$K_e/h = M_{ux} / (f'c * b * h^2) = 121.29 * 100 / (2.11 * 35 * 35^2) = 0.134$$

$$e = M_{uR} / P_u = 121.29 / 113.36 = 1.06 \text{ m}$$

$$\rho_m = 0.38 \quad m = 23.53$$

$$\rho = 0.016$$

$$A_s = 0.016 * 35 * 35 = 19.6 \text{ cm}^2$$

$$4N^{\circ}6 + 4^{\circ}N7$$

#### EVALUACIÓN DEL DISEÑO BIAxIAL

Se hace un análisis del refuerzo suministrado

$$A_s = 4 * 2.86 + 4 * 3.87 = 26.92 \text{ cm}^2$$

$$A_{ss} = \rho_{ss} * b * h$$

$$\rho_{ss} = A_{ss} / b * h = 26.92 / 35 * 35 = 0.022$$

#### METODO BRESLER

$$1/P_n = 1/P_{nx} + 1/P_{ny} - 1/P_{no}$$

$$P_{no} = 0.8(0.85 f'c (A_s - A_{ss}) + (A_{ss} * f_y))$$

$$P_{no} = 0.8(0.85 * 2.11(1225 - 26.92) + (26.92 * 42)) = 2623.51 \text{ KNw}$$

Como datos de análisis se dispone el vector de carga axial en X pero para aplicar Bressler se debe calcular la componente nominal en X.

Calculo Pnx:

Componentes nominales

$$M_{ux} = 7.12 \text{ KNw-m}$$

$$P_u = 113.16 \text{ KNw}$$

$$e_y = M_{ux}/P_u = 7.12 \text{ KNw-m}/113.36 \text{ KNw} = 0.063 \text{ m} = 6.3 \text{ cm}$$

$$e_y/h = 6.3/35 = 0.18$$

$$\rho_m = \rho * m = 0.022 * 23.53 = 0.25$$

De las tablas de Diaco:

$$K = P_{unx}/f'_c * b * h = 0.5 \text{ donde } P_u = K(f'_c * b * h) = 0.57(210 \text{ Kg/cm}^2 * 35 * 35) = 146632.5 \text{ Kg}$$

$$P_u = 146.63 \text{ Tn}$$

$$P_u = 1436.9 \text{ KNw}$$

$$P_{unx} = \phi P_{nx} \quad f_i = 0.7$$

$$P_{nx} = P_{unx}/f_i = 1436.9 \text{ KNw}/0.7 = 2052.82 \text{ KNw} \text{ (Primer valor de la ecuación Bressler)}$$

Calculo de Pny:

$$M_{uy} = 108.33 \text{ KNw-m}$$

$$P_u = 113.36 \text{ KNw}$$

$$e_x = 95.56 \text{ cm}$$

$$e_x/b = 95.56/35 = 2.73 \text{ cm}$$

De las tablas de diaco:

$$K = 0.06$$

$$P_{ny} = K(f'c * b * h) = 0.06 * 210 * 35 * 35 = 15435 \text{ Kg} = 154.35 \text{ KNw}$$

$$P_{ny} = P_{ny}/0.7 = 154.35 \text{ KN}/0.7 = 220.5 \text{ KN} \text{ (segundo valor de la ecuación Bressler)}$$

Con base a esto entonces Bressler

$$1/P_n = 1/P_{nx} + 1/P_{ny} - 1/P_{no}$$

$$1/P_n = 1/2052.82 + 1/220.5 - 1/2623.51$$

$$P_n = 215.46 \text{ KNw}$$

$$\phi P_n > P_u$$

$$\phi P_n = 150.82 \text{ KN} \quad P_u = 113.36 \text{ KNw}$$

$$\phi P_n > P_u \text{ ok!}$$

**5.1.8.2.5 Evaluacion de Momentos de Plastificacion.** Se evaluan de la misma manera que el apartado 1.9.1.3.

**5.1.9.2.6 Calculo de Refuerzo Transversal.** Se utilizan estribos de confinamiento cuya cuantía minima no debe ser menor que el valor obtenido de :

$$\rho_s = 0.12 f'c/f_y h \quad \text{ni} \quad \rho_s = 0.45(A_g/A_c - 1)f'c/f_y$$

Se utilizan vallas de diámetro mínimo N°3.

El refuerzo transversal de confinamiento se espas a lo largo del eje del elemento a una separación  $s$  que no exceda  $1/4$  de la dimensión mínima de la sección del elemento o 10 mm.

Cuando la separación máxima entre ramas paralelas sea mayor que la mitad de la dimensión menor de la sección de la columna o 200 mm. Se deben utilizar tantos estribos suplementarios N°4 como sea necesario.

El primer estribo se coloca a una distancia de 50mm. De la cara del nudo.

El refuerzo transversal se coloca en una longitud  $l_o$ , medida a partir de la cara del nudo en ambos extremos de la columna, y en cualquier lugar donde pueda producirse plastificación por flexión asociada con los desplazamientos inelásticos del pórtico;  $l_o$  no puede ser menor que la máxima dimensión del elemento en la cara del nudo, o en el sitio donde pueda ocurrir plastificación por flexión,  $1/6$  de la longitud libre del elemento o 500 mm.

## BLOQUE A

### CONCRETE DESIGN OUTPUT (ACI 318-95)

#### BIAXIAL P-M INTERACTION AND SHEAR DESIGN OF COLUMN-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | <-----REQUIRED REINFORCING-----> |         |         |         |         |         |
|------------|---------------|---------------|----------------------------------|---------|---------|---------|---------|---------|
|            |               |               | LONGITUDINAL                     | COMBO   | SHEAR22 | COMBO   | SHEAR33 | COMBO   |
| 52         | 35X35C        | 25.000        | 12.250                           | COLUMN4 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 52         | 35X35C        | 165.000       | 12.250                           | COLUMN4 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 52         | 35X35C        | 305.000       | 12.250                           | COLUMN4 | 0.024   | COLUMN4 | 0.037   | COLUMN4 |
| 53         | 30X30C        | 25.000        | 9.000                            | COLUMN4 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 53         | 30X30C        | 165.000       | 9.000                            | COLUMN4 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 53         | 30X30C        | 305.000       | 9.000                            | COLUMN4 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 54         | 35X35C        | 25.000        | 12.707                           | COLUMN2 | 0.023   | COLUMN4 | 0.039   | COLUMN4 |
| 54         | 35X35C        | 165.000       | 12.250                           | COLUMN4 | 0.023   | COLUMN4 | 0.039   | COLUMN4 |
| 54         | 35X35C        | 305.000       | 13.923                           | COLUMN2 | 0.023   | COLUMN3 | 0.039   | COLUMN4 |
| 55         | 35X35C        | 25.000        | 18.427                           | COLUMN2 | 0.020   | COLUMN4 | 0.050   | COLUMN4 |
| 55         | 35X35C        | 165.000       | 12.250                           | COLUMN4 | 0.020   | COLUMN4 | 0.050   | COLUMN4 |
| 55         | 35X35C        | 305.000       | 18.433                           | COLUMN2 | 0.022   | COLUMN1 | 0.060   | COLUMN2 |
| 56         | 35X35C        | 25.000        | 18.013                           | COLUMN2 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 56         | 35X35C        | 165.000       | 12.250                           | COLUMN4 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 56         | 35X35C        | 305.000       | 16.661                           | COLUMN2 | 0.000   | COLUMN4 | 0.000   | COLUMN4 |
| 57         | 35X35C        | 25.000        | 13.347                           | COLUMN2 | 0.023   | COLUMN4 | 0.039   | COLUMN4 |
| 57         | 35X35C        | 165.000       | 12.250                           | COLUMN4 | 0.023   | COLUMN4 | 0.039   | COLUMN4 |
| 57         | 35X35C        | 305.000       | 13.286                           | COLUMN2 | 0.023   | COLUMN4 | 0.039   | COLUMN4 |
| 58         | 35X35C        | 25.000        | 12.250                           | COLUMN4 | 0.022   | COLUMN1 | 0.022   | COLUMN1 |



|    |        |         |        |         |       |         |       |         |
|----|--------|---------|--------|---------|-------|---------|-------|---------|
| 58 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.022 | COLUMN1 | 0.022 | COLUMN1 |
| 58 | 35X35C | 305.000 | 12.250 | COLUMN4 | 0.024 | CU      | 0.024 | CU      |
| 59 | 35X35C | 25.000  | 14.731 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 59 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 59 | 35X35C | 305.000 | 21.287 | COLUMN1 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 60 | 35X35C | 25.000  | 19.729 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 60 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 60 | 35X35C | 305.000 | 27.803 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 61 | 35X35C | 25.000  | 14.398 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 61 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 61 | 35X35C | 305.000 | 15.496 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 62 | 30X30C | 25.000  | 9.000  | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 62 | 30X30C | 165.000 | 9.000  | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 62 | 30X30C | 305.000 | 9.000  | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 63 | 35X35C | 25.000  | 16.289 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 63 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 63 | 35X35C | 305.000 | 19.873 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 64 | DIAM35 | 25.000  | 16.641 | COLUMN2 | 0.015 | COLUMN4 | 0.037 | COLUMN4 |
| 64 | DIAM35 | 165.000 | 9.621  | COLUMN4 | 0.015 | COLUMN4 | 0.037 | COLUMN4 |
| 64 | DIAM35 | 305.000 | 18.958 | COLUMN2 | 0.015 | COLUMN3 | 0.037 | COLUMN4 |
| 65 | 40X40C | 25.000  | 23.704 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 65 | 40X40C | 165.000 | 16.000 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 65 | 40X40C | 305.000 | 35.534 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 66 | 40X40C | 25.000  | 24.824 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 66 | 40X40C | 165.000 | 16.000 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 66 | 40X40C | 305.000 | 38.498 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 67 | 35X35C | 25.000  | 17.890 | COLUMN2 | 0.020 | COLUMN3 | 0.049 | COLUMN4 |
| 67 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.020 | COLUMN3 | 0.049 | COLUMN4 |
| 67 | 35X35C | 305.000 | 18.259 | COLUMN2 | 0.020 | COLUMN3 | 0.049 | COLUMN4 |
| 68 | DIAM35 | 25.000  | 9.621  | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 68 | DIAM35 | 165.000 | 9.621  | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 68 | DIAM35 | 305.000 | 9.621  | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 69 | 40X40C | 25.000  | 16.704 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 69 | 40X40C | 165.000 | 16.000 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 69 | 40X40C | 305.000 | 23.780 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 70 | 40X40C | 25.000  | 25.407 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 70 | 40X40C | 165.000 | 16.000 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 70 | 40X40C | 305.000 | 40.508 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 71 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 71 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 71 | 35X35C | 305.000 | 12.312 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 72 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 72 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 72 | 35X35C | 305.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 73 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 73 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 73 | 35X35C | 305.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 74 | 35X35C | 25.000  | 19.306 | COLUMN2 | 0.020 | COLUMN4 | 0.052 | COLUMN4 |
| 74 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.020 | COLUMN4 | 0.052 | COLUMN4 |
| 74 | 35X35C | 305.000 | 19.573 | COLUMN2 | 0.022 | COLUMN2 | 0.063 | COLUMN2 |
| 75 | 35X35C | 25.000  | 20.858 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 75 | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.022 | COLUMN3 | 0.022 | COLUMN3 |
| 75 | 35X35C | 305.000 | 20.308 | COLUMN2 | 0.021 | COLUMN3 | 0.021 | COLUMN3 |

|     |        |         |        |         |       |         |       |         |
|-----|--------|---------|--------|---------|-------|---------|-------|---------|
| 76  | DIAM35 | 25.000  | 9.966  | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 76  | DIAM35 | 165.000 | 9.621  | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 76  | DIAM35 | 305.000 | 10.242 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 77  | 35X35C | 25.000  | 14.934 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 77  | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 77  | 35X35C | 305.000 | 13.632 | COLUMN2 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 78  | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 78  | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 78  | 35X35C | 305.000 | 16.232 | COLUMN1 | 0.000 | COLUMN4 | 0.000 | COLUMN4 |
| 79  | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.023 | COLUMN3 | 0.031 | COLUMN4 |
| 79  | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.022 | COLUMN3 | 0.031 | COLUMN4 |
| 79  | 35X35C | 305.000 | 12.250 | COLUMN4 | 0.022 | COLUMN3 | 0.031 | COLUMN4 |
| 80  | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.024 | COLUMN4 | 0.024 | COLUMN4 |
| 80  | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.024 | COLUMN3 | 0.024 | COLUMN3 |
| 80  | 35X35C | 305.000 | 12.250 | COLUMN4 | 0.023 | COLUMN3 | 0.023 | COLUMN3 |
| 81  | 40X40C | 25.000  | 16.000 | COLUMN4 | 0.029 | COLUMN3 | 0.036 | COLUMN4 |
| 81  | 40X40C | 165.000 | 16.000 | COLUMN4 | 0.029 | COLUMN3 | 0.036 | COLUMN4 |
| 81  | 40X40C | 305.000 | 16.000 | COLUMN4 | 0.028 | COLUMN3 | 0.036 | COLUMN4 |
| 82  | 40X40C | 25.000  | 16.000 | COLUMN4 | 0.030 | COLUMN2 | 0.044 | COLUMN2 |
| 82  | 40X40C | 165.000 | 16.000 | COLUMN4 | 0.029 | COLUMN2 | 0.044 | COLUMN2 |
| 82  | 40X40C | 305.000 | 16.000 | COLUMN4 | 0.030 | COLUMN4 | 0.044 | COLUMN2 |
| 83  | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.022 | COLUMN4 | 0.022 | COLUMN4 |
| 83  | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.021 | COLUMN4 | 0.021 | COLUMN4 |
| 83  | 35X35C | 305.000 | 12.250 | COLUMN4 | 0.021 | COLUMN4 | 0.021 | COLUMN4 |
| 84  | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.023 | COLUMN1 | 0.040 | COLUMN2 |
| 84  | 35X35C | 165.000 | 12.250 | COLUMN4 | 0.023 | COLUMN1 | 0.040 | COLUMN2 |
| 84  | 35X35C | 305.000 | 12.250 | COLUMN4 | 0.023 | COLUMN1 | 0.040 | COLUMN2 |
| 140 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.025 | CU      | 0.025 | CU      |
| 140 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.024 | CU      | 0.024 | CU      |
| 140 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.024 | CU      | 0.024 | CU      |
| 141 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.023 | CU      | 0.023 | CU      |
| 141 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.023 | CU      | 0.023 | CU      |
| 141 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.022 | CU      | 0.022 | CU      |
| 142 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.024 | CU      | 0.024 | CU      |
| 142 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.024 | CU      | 0.024 | CU      |
| 142 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.023 | CU      | 0.023 | CU      |
| 143 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.023 | CU      | 0.023 | CU      |
| 143 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.022 | CU      | 0.022 | CU      |
| 143 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.022 | CU      | 0.022 | CU      |
| 144 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.023 | CU      | 0.023 | CU      |
| 144 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.022 | CU      | 0.022 | CU      |
| 144 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.021 | CU      | 0.021 | CU      |
| 145 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.026 | CU      | 0.026 | CU      |
| 145 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.025 | CU      | 0.025 | CU      |
| 145 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.025 | CU      | 0.025 | CU      |
| 146 | 35X35C | 25.000  | 18.123 | CU      | 0.022 | CU      | 0.022 | CU      |
| 146 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.021 | CU      | 0.021 | CU      |
| 146 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.021 | CU      | 0.021 | CU      |
| 147 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.027 | COLUMN1 | 0.027 | COLUMN1 |
| 147 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.027 | COLUMN1 | 0.027 | COLUMN1 |
| 147 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.026 | COLUMN1 | 0.026 | COLUMN1 |
| 148 | 35X35C | 25.000  | 12.250 | COLUMN4 | 0.025 | COLUMN2 | 0.040 | COLUMN2 |
| 148 | 35X35C | 147.500 | 12.250 | COLUMN4 | 0.027 | CU      | 0.040 | COLUMN2 |
| 148 | 35X35C | 270.000 | 12.250 | COLUMN4 | 0.026 | CU      | 0.040 | COLUMN2 |

|     |        |         |        |          |       |          |       |          |
|-----|--------|---------|--------|----------|-------|----------|-------|----------|
| 149 | 40X40C | 25.000  | 28.311 | CU       | 0.028 | CU       | 0.028 | CU       |
| 149 | 40X40C | 147.500 | 16.000 | COLUMN#4 | 0.028 | CU       | 0.028 | CU       |
| 149 | 40X40C | 270.000 | 16.000 | COLUMN#4 | 0.027 | CU       | 0.027 | CU       |
| 150 | 40X40C | 25.000  | 26.577 | CU       | 0.028 | CU       | 0.028 | CU       |
| 150 | 40X40C | 147.500 | 16.000 | COLUMN#4 | 0.027 | CU       | 0.027 | CU       |
| 150 | 40X40C | 270.000 | 16.000 | COLUMN#4 | 0.026 | CU       | 0.026 | CU       |
| 151 | 40X40C | 25.000  | 16.000 | COLUMN#4 | 0.030 | CU       | 0.030 | CU       |
| 151 | 40X40C | 147.500 | 16.000 | COLUMN#4 | 0.029 | CU       | 0.029 | CU       |
| 151 | 40X40C | 270.000 | 16.000 | COLUMN#4 | 0.028 | CU       | 0.028 | CU       |
| 152 | 40X40C | 25.000  | 26.862 | CU       | 0.028 | CU       | 0.028 | CU       |
| 152 | 40X40C | 147.500 | 16.000 | COLUMN#4 | 0.028 | CU       | 0.028 | CU       |
| 152 | 40X40C | 270.000 | 16.000 | COLUMN#4 | 0.027 | CU       | 0.027 | CU       |
| 153 | 35X35C | 25.000  | 12.250 | COLUMN#4 | 0.027 | COLUMN#1 | 0.027 | COLUMN#1 |
| 153 | 35X35C | 147.500 | 12.250 | COLUMN#4 | 0.027 | COLUMN#1 | 0.027 | COLUMN#1 |
| 153 | 35X35C | 270.000 | 12.250 | COLUMN#4 | 0.026 | COLUMN#1 | 0.026 | COLUMN#1 |
| 154 | 35X35C | 25.000  | 12.250 | COLUMN#4 | 0.026 | COLUMN#2 | 0.026 | COLUMN#2 |
| 154 | 35X35C | 147.500 | 12.250 | COLUMN#4 | 0.025 | COLUMN#2 | 0.025 | COLUMN#2 |
| 154 | 35X35C | 270.000 | 12.250 | COLUMN#4 | 0.025 | COLUMN#2 | 0.025 | COLUMN#2 |
| 155 | 35X35C | 25.000  | 12.250 | COLUMN#4 | 0.021 | CU       | 0.027 | COLUMN#2 |
| 155 | 35X35C | 147.500 | 12.250 | COLUMN#4 | 0.020 | CU       | 0.027 | COLUMN#2 |
| 155 | 35X35C | 270.000 | 12.250 | COLUMN#4 | 0.020 | CU       | 0.027 | COLUMN#2 |
| 156 | DIAM35 | 25.000  | 10.578 | COLUMN#1 | 0.019 | CU       | 0.019 | CU       |
| 156 | DIAM35 | 147.500 | 9.621  | COLUMN#4 | 0.018 | CU       | 0.018 | CU       |
| 156 | DIAM35 | 270.000 | 9.621  | COLUMN#4 | 0.018 | CU       | 0.018 | CU       |
| 157 | 35X35C | 25.000  | 12.250 | COLUMN#4 | 0.027 | COLUMN#2 | 0.027 | COLUMN#2 |
| 157 | 35X35C | 147.500 | 12.250 | COLUMN#4 | 0.026 | COLUMN#2 | 0.026 | COLUMN#2 |
| 157 | 35X35C | 270.000 | 12.250 | COLUMN#4 | 0.026 | COLUMN#2 | 0.026 | COLUMN#2 |
| 158 | 35X35C | 25.000  | 15.882 | CU       | 0.022 | CU       | 0.022 | CU       |
| 158 | 35X35C | 147.500 | 12.250 | COLUMN#4 | 0.021 | CU       | 0.021 | CU       |
| 158 | 35X35C | 270.000 | 12.250 | COLUMN#4 | 0.020 | CU       | 0.020 | CU       |
| 159 | 35X35C | 25.000  | 12.250 | COLUMN#4 | 0.023 | CU       | 0.023 | CU       |
| 159 | 35X35C | 147.500 | 12.250 | COLUMN#4 | 0.023 | CU       | 0.023 | CU       |
| 159 | 35X35C | 270.000 | 12.250 | COLUMN#4 | 0.022 | CU       | 0.022 | CU       |
| 160 | 40X40C | 25.000  | 16.000 | COLUMN#4 | 0.024 | CU       | 0.024 | CU       |
| 160 | 40X40C | 147.500 | 16.000 | COLUMN#4 | 0.023 | CU       | 0.023 | CU       |
| 160 | 40X40C | 270.000 | 16.000 | COLUMN#4 | 0.022 | CU       | 0.022 | CU       |
| 161 | 40X40C | 25.000  | 16.000 | COLUMN#4 | 0.024 | CU       | 0.024 | CU       |
| 161 | 40X40C | 147.500 | 16.000 | COLUMN#4 | 0.023 | CU       | 0.023 | CU       |
| 161 | 40X40C | 270.000 | 16.000 | COLUMN#4 | 0.022 | CU       | 0.022 | CU       |
| 162 | 35X35C | 25.000  | 12.250 | COLUMN#4 | 0.021 | CU       | 0.021 | CU       |
| 162 | 35X35C | 147.500 | 12.250 | COLUMN#4 | 0.020 | CU       | 0.020 | CU       |
| 162 | 35X35C | 270.000 | 12.250 | COLUMN#4 | 0.020 | CU       | 0.020 | CU       |

## BLOQUE B

CONCRETE DESIGN OUTPUT (ACI 318-95)

BIAXIAL P-M INTERACTION AND SHEAR DESIGN OF COLUMN-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | REQUIRED REINFORCING |          |          |          |          |          |
|------------|---------------|---------------|----------------------|----------|----------|----------|----------|----------|
|            |               |               | LONGITUDINAL         | COMBO    | SHEAR#22 | COMBO    | SHEAR#33 | COMBO    |
| 45         | 35X35C        | 25.000        | 12.250               | COLUMN#4 | 0.021    | COLUMN#3 | 0.022    | COLUMN#4 |
| 45         | 35X35C        | 165.000       | 12.250               | COLUMN#4 | 0.020    | COLUMN#3 | 0.022    | COLUMN#4 |
| 45         | 35X35C        | 305.000       | 12.250               | COLUMN#4 | 0.020    | COLUMN#3 | 0.022    | COLUMN#4 |

|    |        |         |                |               |               |
|----|--------|---------|----------------|---------------|---------------|
| 46 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.023COLUMNA1 |
| 46 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.023COLUMNA1 |
| 46 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.023COLUMNA1 |
| 47 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 47 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 47 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.024COLUMNA4 | 0.024COLUMNA4 |
| 48 | 35X35C | 27.500  | 12.250COLUMNA4 | 0.024COLUMNA4 | 0.024COLUMNA4 |
| 48 | 35X35C | 166.250 | 12.250COLUMNA4 | 0.024COLUMNA4 | 0.024COLUMNA4 |
| 48 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA4 | 0.024COLUMNA4 |
| 49 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023COLUMNA2 | 0.023COLUMNA2 |
| 49 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.024COLUMNA2 | 0.024COLUMNA2 |
| 49 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.023COLUMNA1 |
| 50 | 35X35C | 27.500  | 12.250COLUMNA4 | 0.020COLUMNA3 | 0.026COLUMNA4 |
| 50 | 35X35C | 166.250 | 12.250COLUMNA4 | 0.020COLUMNA3 | 0.026COLUMNA4 |
| 50 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.020COLUMNA3 | 0.026COLUMNA4 |
| 51 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.030COLUMNA2 |
| 51 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.024COLUMNA1 | 0.030COLUMNA2 |
| 51 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA2 | 0.030COLUMNA2 |
| 52 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.032COLUMNA4 |
| 52 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.021COLUMNA4 | 0.032COLUMNA4 |
| 52 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.024COLUMNA2 | 0.032COLUMNA2 |
| 53 | 35X35C | 27.500  | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.033COLUMNA4 |
| 53 | 35X35C | 166.250 | 12.250COLUMNA4 | 0.021COLUMNA4 | 0.033COLUMNA4 |
| 53 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.024COLUMNA2 | 0.034COLUMNA2 |
| 54 | 35X35C | 27.500  | 12.250COLUMNA4 | 0.024COLUMNA1 | 0.036COLUMNA2 |
| 54 | 35X35C | 166.250 | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.036COLUMNA2 |
| 54 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.036COLUMNA2 |
| 55 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 55 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 55 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 56 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 56 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 56 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 57 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 57 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 57 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 58 | 35X35C | 27.500  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 58 | 35X35C | 166.250 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 58 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 59 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 59 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 59 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 60 | 40X40C | 27.500  | 16.000COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 60 | 40X40C | 166.250 | 16.000COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 60 | 40X40C | 305.000 | 16.000COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |
| 61 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.022COLUMNA3 | 0.029COLUMNA4 |
| 61 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.021COLUMNA3 | 0.029COLUMNA4 |
| 61 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.024COLUMNA2 | 0.029COLUMNA2 |
| 62 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.030COLUMNA4 |
| 62 | 35X35C | 165.000 | 12.250COLUMNA4 | 0.021COLUMNA4 | 0.030COLUMNA4 |
| 62 | 35X35C | 305.000 | 12.250COLUMNA4 | 0.021COLUMNA4 | 0.030COLUMNA4 |
| 63 | 35X35C | 27.500  | 12.250COLUMNA4 | 0.022COLUMNA3 | 0.032COLUMNA4 |
| 63 | 35X35C | 166.250 | 12.250COLUMNA4 | 0.022COLUMNA3 | 0.032COLUMNA4 |

|     |        |         |                |               |               |       |    |
|-----|--------|---------|----------------|---------------|---------------|-------|----|
| 63  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.021COLUMNA3 | 0.032COLUMNA4 |       |    |
| 64  | 35X35C | 27.500  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 64  | 35X35C | 166.250 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 64  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 65  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 65  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 65  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 66  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 66  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 66  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 67  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 67  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 67  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 68  | 35X35C | 27.500  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 68  | 35X35C | 166.250 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 68  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 69  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 69  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 69  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 70  | 35X35C | 27.500  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 70  | 35X35C | 166.250 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 70  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 71  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.030COLUMNA4 |       |    |
| 71  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.024COLUMNA1 | 0.030COLUMNA4 |       |    |
| 71  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA1 | 0.030COLUMNA4 |       |    |
| 72  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.031COLUMNA4 |       |    |
| 72  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.031COLUMNA4 |       |    |
| 72  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.021COLUMNA4 | 0.031COLUMNA4 |       |    |
| 73  | 35X35C | 27.500  | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.033COLUMNA4 |       |    |
| 73  | 35X35C | 166.250 | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.033COLUMNA4 |       |    |
| 73  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.022COLUMNA4 | 0.033COLUMNA4 |       |    |
| 74  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023COLUMNA3 | 0.023COLUMNA3 |       |    |
| 74  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.023COLUMNA3 | 0.023COLUMNA3 |       |    |
| 74  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA3 | 0.023COLUMNA3 |       |    |
| 75  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.024COLUMNA4 | 0.024COLUMNA4 |       |    |
| 75  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.024COLUMNA3 | 0.024COLUMNA3 |       |    |
| 75  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA3 | 0.023COLUMNA3 |       |    |
| 76  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 76  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 76  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 77  | 35X35C | 27.500  | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 77  | 35X35C | 166.250 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 77  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.000COLUMNA4 | 0.000COLUMNA4 |       |    |
| 78  | 35X35C | 25.000  | 12.250COLUMNA4 | 0.024COLUMNA3 | 0.024COLUMNA3 |       |    |
| 78  | 35X35C | 165.000 | 12.250COLUMNA4 | 0.023COLUMNA3 | 0.023COLUMNA3 |       |    |
| 78  | 35X35C | 305.000 | 12.250COLUMNA4 | 0.023COLUMNA3 | 0.023COLUMNA3 |       |    |
| 79  | 40X40C | 27.500  | 16.000COLUMNA4 | 0.030COLUMNA4 | 0.033COLUMNA4 |       |    |
| 79  | 40X40C | 166.250 | 16.000COLUMNA4 | 0.029COLUMNA4 | 0.033COLUMNA4 |       |    |
| 79  | 40X40C | 305.000 | 16.000COLUMNA4 | 0.029COLUMNA4 | 0.033COLUMNA4 |       |    |
| 124 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023         | CU            | 0.023 | CU |
| 124 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.022         | CU            | 0.022 | CU |
| 124 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.022         | CU            | 0.022 | CU |
| 125 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.024         | CU            | 0.024 | CU |

|     |        |         |                |               |    |               |    |
|-----|--------|---------|----------------|---------------|----|---------------|----|
| 125 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.024         | CU | 0.024         | CU |
| 125 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.023         | CU | 0.023         | CU |
| 126 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023         | CU | 0.023         | CU |
| 126 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.022         | CU | 0.022         | CU |
| 126 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.022         | CU | 0.022         | CU |
| 127 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.022         | CU | 0.022         | CU |
| 127 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.022         | CU | 0.022         | CU |
| 127 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.021         | CU | 0.021         | CU |
| 128 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.027COLUMNA1 |    | 0.027COLUMNA1 |    |
| 128 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.026COLUMNA1 |    | 0.026COLUMNA1 |    |
| 128 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.026COLUMNA1 |    | 0.026COLUMNA1 |    |
| 129 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.027         | CU | 0.027         | CU |
| 129 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.027         | CU | 0.027         | CU |
| 129 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 130 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.027         | CU | 0.027         | CU |
| 130 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 130 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 131 | 40X40C | 25.000  | 16.000COLUMNA4 | 0.033         | CU | 0.033         | CU |
| 131 | 40X40C | 147.500 | 16.000COLUMNA4 | 0.032         | CU | 0.032         | CU |
| 131 | 40X40C | 270.000 | 16.000COLUMNA4 | 0.032         | CU | 0.032         | CU |
| 132 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023         | CU | 0.023         | CU |
| 132 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.022         | CU | 0.022         | CU |
| 132 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.021         | CU | 0.021         | CU |
| 133 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.027COLUMNA1 |    | 0.027COLUMNA1 |    |
| 133 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.027COLUMNA1 |    | 0.027COLUMNA1 |    |
| 133 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.026COLUMNA1 |    | 0.026COLUMNA1 |    |
| 134 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.025COLUMNA1 |    | 0.025COLUMNA1 |    |
| 134 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.027         | CU | 0.027         | CU |
| 134 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 135 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.025COLUMNA1 |    | 0.025COLUMNA1 |    |
| 135 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.027         | CU | 0.027         | CU |
| 135 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 136 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.023         | CU | 0.023         | CU |
| 136 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.022         | CU | 0.022         | CU |
| 136 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.022         | CU | 0.022         | CU |
| 137 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.024         | CU | 0.024         | CU |
| 137 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.024         | CU | 0.024         | CU |
| 137 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.023         | CU | 0.023         | CU |
| 138 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 138 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 138 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.025         | CU | 0.025         | CU |
| 139 | 35X35C | 25.000  | 12.250COLUMNA4 | 0.025         | CU | 0.025         | CU |
| 139 | 35X35C | 147.500 | 12.250COLUMNA4 | 0.025         | CU | 0.025         | CU |
| 139 | 35X35C | 270.000 | 12.250COLUMNA4 | 0.024         | CU | 0.024         | CU |
| 140 | 40X40C | 25.000  | 16.000COLUMNA4 | 0.027         | CU | 0.027         | CU |
| 140 | 40X40C | 147.500 | 16.000COLUMNA4 | 0.026         | CU | 0.026         | CU |
| 140 | 40X40C | 270.000 | 16.000COLUMNA4 | 0.026         | CU | 0.026         | CU |

## DISEÑO DE MENSULAS

$$V = 2.978 \text{ Tn}$$

$$F'c = 210 \text{ Kg/cm}^2$$

$$F'y = 4200 \text{ Kg/cm}^2$$

$$Vu = \phi \rho_D b = \phi(0.85f'cAg) = 0.7(0.85*0.22*Ag)$$

$$A = 3/0.125 = 24 \text{ cm}^2$$

Se toma la platina de un ancho = 15 cm

$$l = 24/15 = 1.6 \text{ cm} \quad \text{se escoje 5 cm}$$

Dimensiones de la ménsula

$$B = 30 \text{ cm}$$

$$L = 5+5+5+2 = 17 \text{ cm}$$

Altura de la cara del apoyo

$$Vu \leq \phi Vn = \phi(0.2f'c Ac) \text{ ó } \phi 56f'c$$

$$Vu \leq 0.85(0.2*0.21*Ac)$$

$$Ac_{\min} = 84 \text{ cm}$$

$$Ac = Bd \quad d_{\min} 84/30 = 2.8$$

Escojemos  $d = 25 \text{ cm}$

Luz de cortante "a"

$$a = 5/2+5+2(2) = 11.5 \text{ cm}$$

$$a/d = 11.5/25 = 0.46 < 1$$

Refuerzo a  $A_{vf}$  para corte por flexión

$$Vu \leq \phi Vn = \phi(A_{vf}*fy*U)$$

$$A_{vf} = Vu/\phi fy U = 3/(0.85*4.21*1.4) = 0.6 \text{ cm}^2$$

$U = 1.4$  por ser monolítica

Refuerzo An para tracción directa

Como no existe tracción  $\rightarrow Nuc \geq 0.2 Vu$

$$Nuc = 0.6 Tn$$

$$Nuc \leq \phi Anfy \quad An = Nuc/\phi fy = 0.6/0.85*4.2 = 0.17 \text{ cm}^2$$

Refuerzo Af para flexión

$$Mu = Vua + Nuc(h-d)$$

$$(h-d) \approx 5 \text{ cm}$$

$$Mu = 3*11.5+0.6*5 = 37.5 \text{ Tn-cm}$$

$$Mu \leq fyJudAf$$

$$Af = Mu/fyJud = 37.5/(0.85*4.2*0.9*25) = 0.47 \text{ cm}^2$$

Refuerzo principal As

As debe ser el  $>$  de Af+An y  $2/3 Avf+An$

$$Af+An = 0.47+0.17 = 0.64 \text{ cm}^2$$

$$2/3Avf+An = 2/3*0.6+0.17 = 0.57 \text{ cm}$$

$$As = 0.64 \text{ cm}^2$$

$$\rho = As/bd = 1.29/30*25 = 0.0017 \geq 0.04f'c/fy = 0.02$$

$$\rho = 0.02 \quad As = 0.002*30*25 = 1.5 \text{ cm}^2$$

Refuerzo Secundario Ah

Estribos paralelos al refuerzo principal As, los cuales deben colocarse en los  $2/3$  superiores de la altura efectiva d.

$$Ah \geq 0.5(As-An)$$

$$Ah \geq 0.5(1.5-0.17) = 0.67 \text{ cm}^2 \quad fy = 4200 \text{ Kg/cm}^2$$



Anclaje del refuerzo principal

**5.1.8.3 Requerimientos Especiales en Nudos.** Se tendrán en cuenta en el numeral C.21.5 de la norma.

**5.1.9 Diseño de Cimentación.** La estructura estará cimentada en zapatas aisladas cuadradas o excentricas donde se necesiten. Estas se diseñan con el programa de computador MODULO 4 , con la envolvente vigas y la envolvente cimentación se tiene la carga de servicio y la carga última respectivamente y con las recomendaciones del estudio geotécnico. El refuerzo se muestra en los respectivos despieces.

EJEMPLO DE DISEÑO:

Z5C

Sección de la columna = 35cm x 35cm

$P_u = 76.6 \text{ Ton}$

$q = 1.276 \text{ Kg/cm}^2$

Zapata de 2.3 m x 2.3 m

Esfuerzo neto =  $P_u / (B * L)$

Esfuerzo neto =  $76.6 / (2.3 * 2.3) = 14.48 \text{ Ton/m}^2$

DISEÑO A FLEXIÓN:

$M_u = \text{Esfuerzo neto} / 8 * (1-a)^2 * L$       a = dimensión de columna

$M_u = (14.48 / 8 * (2.3 - 0.35)^2 * 2.3 = 16.18 \text{ Ton} * \text{m}$

$h = 36 \text{ cm}$      $K_2 = 11.64$      $\rho = 0.0020$

$A_s = 0.0020 * 230 * 36 = 16.56 \text{ cm}^2$       14 N° 4

DISEÑO A CORTANTE

Cortante a d/2 de la columna:

$$V(d/2) = (\text{Esfuerzo neto}/2) * (a+d+B) * ((L-a-d)/2)$$

$$V(d/2) = (14.48/2) * (0.35+0.31+2.3) * (2.3-0.35-0.31)/2 = 17.57 \text{ Ton}$$

$$d = d - (a-a * ((B-a-d)/2) / ((L-a)/2))$$

$$d = 0.31 - (0.35-0.35 * ((2.3-0.35-0.31)/2) / (2.3-.35)/2) = 0.25 \text{ m}$$

$$h = 0.3 \text{ m}$$

$$v_u = V(d/2) / ((a+d)+d)$$

$$v_u = 17570 / (66 * 25) = 10.64 \text{ Kg/cm}^2$$

$$\phi_{vc} = \phi * 1.1 * \sqrt{f'_c}$$

$$\phi_{vc} = 0.85 * 1.1 * \sqrt{210} = 13.59 \text{ Kg/cm}^2$$

$$v_u < \phi_{vc}$$

Cortante a d (acción como viga):

$$V(d) = \text{Esfuerzo neto} * (((L-a)/2) - d) * L$$

$$V(d) = 14.48 * (((2.3-0.35)/2) - 0.31) * 2.3 = 22.14 \text{ Ton}$$

$$d = d - (a - (a * (((L-a)/2) - d) / ((L-a)/2)))$$

$$d = 0.31 - (0.35 - (0.35 * (((2.3-.35)/2) - 0.31) / ((2.3-0.35)/2))) = 0.19 \text{ m}; h = 0.24 \text{ m}$$

$$v_u = V(d) / (B * d) = 22140 / (230 * 19) = 5.06 \text{ Kg/cm}^2$$

$$\phi_{vc} = 0.85 * 0.53 * \sqrt{f'_c}$$

$$\phi_{vc} = 0.85 * 0.53 * \sqrt{210} = 6.55 \text{ Kg/cm}^2$$

$$\phi_{vc} > v_u$$

### 5.1.9.1 Envoltente Cimentación.

#### BLOQUE A

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#### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE     | FACTOR | TYPE  | TITLE                       |
|----------|------|----------|--------|-------|-----------------------------|
| ENVOLVIG | ENVE |          |        |       | Envoltente para Vigas       |
|          |      | CU       | 1.0000 | COMBO |                             |
|          |      | VIGAS1   | 1.0000 | COMBO |                             |
|          |      | VIGAS2   | 1.0000 | COMBO |                             |
|          |      | VIGAS3   | 1.0000 | COMBO |                             |
|          |      | VIGAS4   | 1.0000 | COMBO |                             |
| ENVOLCIM | ENVE |          |        |       | Envoltente para Cimentación |
|          |      | CIMENTAX | 1.0000 | COMBO |                             |
|          |      | CIMENTAY | 1.0000 | COMBO |                             |

J O I N T   R E A C T I O N S

| JOINT | LOAD         | F1        | F2        | F3       | M1     | M2     | M3     |
|-------|--------------|-----------|-----------|----------|--------|--------|--------|
| 1     | ENVOLVIG MAX | 24.4351   | 42.8758   | 367.9240 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLVIG MIN | -14.8573  | -11.1881  | 149.0366 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MAX | 88.8724   | 119.3369  | 442.5023 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MIN | -78.4761  | -83.1252  | 68.7692  | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLVIG MAX | 20.7858   | 7.8234    | 291.7534 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLVIG MIN | -20.4574  | -1.9893   | 156.9137 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MAX | 91.5718   | 21.6615   | 208.7644 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MIN | -91.1254  | -14.9930  | 196.6078 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLVIG MAX | 16.1807   | 46.6656   | 367.4665 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLVIG MIN | -24.2622  | -11.0459  | 141.8982 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MAX | 83.0469   | 127.4050  | 457.9467 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MIN | -91.6357  | -86.6966  | 50.9711  | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLVIG MAX | 5.9502    | 56.6677   | 226.1614 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLVIG MIN | -3.0357   | -25.1910  | 127.5280 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MAX | 20.4378   | 176.5730  | 163.8087 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MIN | -17.2590  | -139.1624 | 152.8448 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLVIG MAX | 27.0849   | 54.0782   | 399.9021 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLVIG MIN | -16.9264  | -25.5727  | 178.4481 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MAX | 99.6555   | 171.2604  | 432.4600 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MIN | -88.5982  | -136.9991 | 122.5302 | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLVIG MAX | 26.5300   | 45.0481   | 369.6764 | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLVIG MIN | -31.7904  | -16.6044  | 154.7758 | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MAX | 124.1822  | 133.5106  | 464.7612 | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MIN | -130.1572 | -100.0640 | 49.6001  | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLVIG MAX | 26.4271   | 14.8237   | 177.4701 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLVIG MIN | -31.6587  | -4.9568   | 100.1216 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MAX | 125.2181  | 43.0102   | 179.6475 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MIN | -130.8009 | -31.5003  | 73.2603  | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLVIG MAX | 46.6286   | 50.6160   | 608.8407 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLVIG MIN | -14.4335  | -11.0868  | 262.3641 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MAX | 138.6461  | 135.4113  | 637.2110 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MIN | -103.0036 | -89.9987  | 204.0796 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVIG MAX | -4.9961   | 55.0780   | 475.9332 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVIG MIN | -47.3641  | -12.0064  | 189.5862 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MAX | 43.6252   | 147.0550  | 537.5516 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MIN | -100.8550 | -97.5368  | 116.9946 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLVIG MAX | 28.9403   | 52.8799   | 556.1244 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLVIG MIN | -11.2200  | -19.3865  | 262.7128 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MAX | 91.6376   | 157.2739  | 534.7525 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MIN | -72.1798  | -118.2210 | 236.2960 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLVIG MAX | 18.9191   | 10.2845   | 516.4953 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLVIG MIN | -21.4401  | -2.6336   | 244.9465 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLCIM MAX | 87.5966   | 28.4370   | 412.9774 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLCIM MIN | -90.4079  | -19.6698  | 295.8809 | 0.0000 | 0.0000 | 0.0000 |
| 12    | ENVOLVIG MAX | 29.9413   | 65.0435   | 904.5988 | 0.0000 | 0.0000 | 0.0000 |
| 12    | ENVOLVIG MIN | -24.9049  | -10.0040  | 412.1096 | 0.0000 | 0.0000 | 0.0000 |
| 12    | ENVOLCIM MAX | 121.0613  | 167.0338  | 802.9462 | 0.0000 | 0.0000 | 0.0000 |
| 12    | ENVOLCIM MIN | -114.8749 | -104.6714 | 439.3130 | 0.0000 | 0.0000 | 0.0000 |
| 13    | ENVOLVIG MAX | 9.1106    | 43.3262   | 343.8537 | 0.0000 | 0.0000 | 0.0000 |
| 13    | ENVOLVIG MIN | -29.4070  | -13.2796  | 123.7067 | 0.0000 | 0.0000 | 0.0000 |
| 13    | ENVOLCIM MAX | 62.5352   | 123.0083  | 398.4226 | 0.0000 | 0.0000 | 0.0000 |
| 13    | ENVOLCIM MIN | -85.6135  | -88.0490  | 71.4833  | 0.0000 | 0.0000 | 0.0000 |
| 14    | ENVOLVIG MAX | 74.4873   | 81.9031   | 755.4078 | 0.0000 | 0.0000 | 0.0000 |
| 14    | ENVOLVIG MIN | -0.0863   | -33.0623  | 322.0739 | 0.0000 | 0.0000 | 0.0000 |

|    |              |           |           |           |        |        |        |
|----|--------------|-----------|-----------|-----------|--------|--------|--------|
| 14 | ENVOLCIM MAX | 161.5124  | 248.3133  | 628.6868  | 0.0000 | 0.0000 | 0.0000 |
| 14 | ENVOLCIM MIN | -75.9123  | -190.4908 | 396.7010  | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLVIG MAX | -3.9312   | 84.1853   | 744.6778  | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLVIG MIN | -76.3184  | -33.7727  | 320.9837  | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLCIM MAX | 65.0792   | 254.5648  | 626.3530  | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLCIM MIN | -157.1274 | -194.8638 | 386.3823  | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLVIG MAX | 6.2071    | 56.1198   | 227.3395  | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLVIG MIN | -3.0424   | -22.8714  | 127.7492  | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLCIM MAX | 21.0981   | 171.2967  | 164.7421  | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLCIM MIN | -17.6519  | -132.2222 | 153.4275  | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLVIG MAX | 18.3814   | 32.7881   | 811.2033  | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLVIG MIN | -11.4381  | -11.4385  | 337.7363  | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLCIM MAX | 69.0181   | 94.3890   | 670.7132  | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLCIM MIN | -62.6650  | -69.3157  | 428.7223  | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLVIG MAX | 32.6235   | 72.5848   | 140.0550  | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLVIG MIN | -8.5628   | -340.7881 | -37.4239  | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLCIM MAX | 89.3365   | 591.6215  | 385.0078  | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLCIM MIN | -61.7516  | -901.4638 | -267.8428 | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLVIG MAX | 35.9883   | 22.2362   | 177.8888  | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLVIG MIN | -11.3315  | -132.6325 | -43.1921  | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLCIM MAX | 103.0670  | 200.8795  | 488.2703  | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLCIM MIN | -74.9074  | -329.2261 | -335.0443 | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLVIG MAX | 39.7956   | -3.4423   | 73.3866   | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLVIG MIN | -22.9094  | -81.8182  | 9.3345    | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLCIM MAX | 140.7792  | 62.5285   | 135.0346  | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLCIM MIN | -122.0759 | -161.9160 | -40.2609  | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLVIG MAX | 40.3651   | 28.1365   | 52.0225   | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLVIG MIN | -22.2678  | -39.7955  | -17.1142  | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLCIM MAX | 140.0266  | 130.6571  | 150.3898  | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLCIM MIN | -119.8742 | -145.4045 | -110.4661 | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLVIG MAX | 25.8332   | 78.2424   | 97.2498   | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLVIG MIN | -17.9507  | -45.5572  | -149.6325 | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLCIM MAX | 99.5612   | 277.2568  | 480.0119  | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLCIM MIN | -91.1580  | -241.1874 | -542.1067 | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLVIG MAX | 20.1414   | 291.1527  | 43.3169   | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLVIG MIN | -19.0815  | -96.3944  | -52.9557  | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLCIM MAX | 87.0164   | 854.6288  | 203.3903  | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLCIM MIN | -86.2568  | -631.8796 | -211.9106 | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLVIG MAX | 64.5552   | 79.4727   | 975.5617  | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLVIG MIN | -29.8546  | -26.6759  | 430.3288  | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLCIM MAX | 203.8107  | 230.5721  | 733.5945  | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLCIM MIN | -162.5390 | -168.8820 | 590.5193  | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLVIG MAX | -6.1545   | 87.6123   | 788.6923  | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLVIG MIN | -76.2241  | -28.7661  | 343.2314  | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLCIM MAX | 55.7819   | 253.0860  | 643.2608  | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLCIM MIN | -150.5987 | -184.4861 | 429.2472  | 0.0000 | 0.0000 | 0.0000 |
| 26 | ENVOLVIG MAX | 28.8901   | 49.7052   | 571.6672  | 0.0000 | 0.0000 | 0.0000 |
| 26 | ENVOLVIG MIN | -14.8780  | -20.4819  | 263.5013  | 0.0000 | 0.0000 | 0.0000 |
| 26 | ENVOLCIM MAX | 99.5616   | 151.9068  | 588.0576  | 0.0000 | 0.0000 | 0.0000 |
| 26 | ENVOLCIM MIN | -84.3319  | -117.4503 | 204.6572  | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLVIG MAX | 31.5029   | 10.9056   | 555.0772  | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLVIG MIN | -35.2032  | -6.7586   | 263.9376  | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLCIM MAX | 144.9166  | 37.7026   | 441.3136  | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLCIM MIN | -149.1127 | -32.4898  | 320.8735  | 0.0000 | 0.0000 | 0.0000 |
| 28 | ENVOLVIG MAX | 26.7466   | 34.1448   | 943.2886  | 0.0000 | 0.0000 | 0.0000 |
| 28 | ENVOLVIG MIN | -30.1684  | -30.5598  | 446.4454  | 0.0000 | 0.0000 | 0.0000 |
| 28 | ENVOLCIM MAX | 122.7447  | 134.9746  | 746.7795  | 0.0000 | 0.0000 | 0.0000 |

|    |              |           |           |           |        |        |        |
|----|--------------|-----------|-----------|-----------|--------|--------|--------|
| 28 | ENVOLCIM MIN | -126.2805 | -128.3667 | 546.8202  | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLVIG MAX | 5.8409    | 59.2314   | 232.0581  | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLVIG MIN | -3.6911   | -22.8922  | 125.1879  | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLCIM MAX | 21.6529   | 178.7358  | 189.8882  | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLCIM MIN | -19.3590  | -136.2893 | 134.7313  | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLVIG MAX | 25.2449   | 62.1853   | 383.2588  | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLVIG MIN | -19.6923  | -21.7605  | 159.8656  | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLCIM MAX | 100.5172  | 182.9945  | 414.3242  | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLCIM MIN | -94.3996  | -135.9947 | 113.6899  | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLVIG MAX | 29.5854   | 37.3820   | 851.6393  | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLVIG MIN | -12.2229  | -16.9455  | 353.8295  | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLCIM MAX | 93.7330   | 117.5065  | 753.9200  | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLCIM MIN | -74.3204  | -93.3010  | 405.7764  | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLVIG MAX | 21.9408   | 55.5156   | 1071.0424 | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLVIG MIN | -32.8165  | -25.0630  | 506.5677  | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLCIM MAX | 104.5091  | 174.4328  | 830.9534  | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLCIM MIN | -117.9755 | -138.2901 | 636.8766  | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLVIG MAX | -2.3308   | 34.1613   | 422.7718  | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLVIG MIN | -47.2649  | -24.6937  | 181.9415  | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLCIM MAX | 51.8217   | 124.7486  | 461.2470  | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLCIM MIN | -106.0019 | -111.9809 | 124.4656  | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLVIG MAX | 24.9689   | 34.3601   | 281.9642  | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLVIG MIN | -17.8642  | -18.2248  | 108.8910  | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLCIM MAX | 97.0581   | 112.1582  | 400.0067  | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLCIM MIN | -89.6503  | -92.3747  | -3.5874   | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLVIG MAX | 30.9313   | 6.4888    | 289.0507  | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLVIG MIN | -36.4647  | -3.5234   | 152.6635  | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLCIM MAX | 142.9193  | 21.3792   | 221.6272  | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLCIM MIN | -149.2492 | -17.7284  | 180.1655  | 0.0000 | 0.0000 | 0.0000 |
| 36 | ENVOLVIG MAX | 39.3349   | 46.9187   | 360.9756  | 0.0000 | 0.0000 | 0.0000 |
| 36 | ENVOLVIG MIN | -43.5364  | -27.2457  | 144.0595  | 0.0000 | 0.0000 | 0.0000 |
| 36 | ENVOLCIM MAX | 179.1917  | 158.3251  | 506.9977  | 0.0000 | 0.0000 | 0.0000 |
| 36 | ENVOLCIM MIN | -183.8713 | -133.8175 | -3.4570   | 0.0000 | 0.0000 | 0.0000 |
| 37 | ENVOLVIG MAX | 40.7125   | 47.9555   | 307.5425  | 0.0000 | 0.0000 | 0.0000 |
| 37 | ENVOLVIG MIN | -46.0429  | -25.9560  | 112.9382  | 0.0000 | 0.0000 | 0.0000 |
| 37 | ENVOLCIM MAX | 184.5308  | 159.3321  | 459.5399  | 0.0000 | 0.0000 | 0.0000 |
| 37 | ENVOLCIM MIN | -190.9401 | -132.6747 | -31.7824  | 0.0000 | 0.0000 | 0.0000 |
| 38 | ENVOLVIG MAX | 31.3271   | 6.7398    | 238.3438  | 0.0000 | 0.0000 | 0.0000 |
| 38 | ENVOLVIG MIN | -35.5780  | -7.0983   | 122.2365  | 0.0000 | 0.0000 | 0.0000 |
| 38 | ENVOLCIM MAX | 143.0518  | 29.8635   | 184.2316  | 0.0000 | 0.0000 | 0.0000 |
| 38 | ENVOLCIM MIN | -148.0476 | -29.9381  | 146.1704  | 0.0000 | 0.0000 | 0.0000 |
| 39 | ENVOLVIG MAX | 19.4038   | 36.7026   | 235.2585  | 0.0000 | 0.0000 | 0.0000 |
| 39 | ENVOLVIG MIN | -28.1653  | -20.5740  | 73.9804   | 0.0000 | 0.0000 | 0.0000 |
| 39 | ENVOLCIM MAX | 95.7211   | 122.3851  | 387.8254  | 0.0000 | 0.0000 | 0.0000 |
| 39 | ENVOLCIM MIN | -105.5417 | -102.4357 | -61.8172  | 0.0000 | 0.0000 | 0.0000 |

## BLOQUE B

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### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE | FACTOR | TYPE  | TITLE                 |
|----------|------|------|--------|-------|-----------------------|
| ENVOLVIG | ENVE |      |        |       |                       |
|          |      | CJ   | 1.0000 | COMBO | Envolvente para Vigas |

VIGAS1 1.0000 COMBO  
 VIGAS2 1.0000 COMBO  
 VIGAS3 1.0000 COMBO  
 VIGAS4 1.0000 COMBO

ENVOLCIM ENVE Envoltente para Cimentación  
 CIMENTAX 1.0000 COMBO  
 CIMENTAY 1.0000 COMBO

J O I N T R E A C T I O N S

| JOINT | LOAD         | F1        | F2        | F3       | M1     | M2     | M3     |
|-------|--------------|-----------|-----------|----------|--------|--------|--------|
| 1     | ENVOLVIG MAX | 24.4151   | 20.0912   | 267.9428 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLVIG MIN | -17.6433  | -15.2427  | 94.8633  | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MAX | 103.8868  | 89.1760   | 394.6864 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MIN | -96.4313  | -84.0472  | -21.6829 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLVIG MAX | 30.6143   | 4.2563    | 204.9324 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLVIG MIN | -31.0030  | -3.2774   | 96.6396  | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MAX | 151.4756  | 19.0210   | 188.1620 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MIN | -151.8667 | -17.9873  | 94.5221  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLVIG MAX | 30.2389   | 20.9376   | 402.6331 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLVIG MIN | -23.9237  | -15.9757  | 162.3871 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MAX | 132.7117  | 93.1555   | 487.1675 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MIN | -125.5528 | -87.8928  | 66.9839  | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLVIG MAX | 24.9221   | 22.3502   | 397.5125 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLVIG MIN | -28.8621  | -17.3541  | 154.5733 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MAX | 128.4823  | 100.1839  | 495.0376 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MIN | -132.7820 | -94.8986  | 50.7316  | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLVIG MAX | 32.9700   | 4.9188    | 214.6290 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLVIG MIN | -30.0180  | -3.8498   | 89.9723  | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MAX | 155.0981  | 22.0849   | 195.7844 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MIN | -151.8080 | -20.9480  | 96.0519  | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLVIG MAX | 19.0459   | 24.0500   | 272.7879 | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLVIG MIN | -23.7924  | -18.5266  | 92.8452  | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MAX | 99.3011   | 106.9691  | 391.3046 | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MIN | -104.7279 | -101.0295 | -13.5610 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLVIG MAX | 6.3409    | 26.6702   | 208.4501 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLVIG MIN | -3.4084   | -26.2554  | 108.4942 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MAX | 24.2441   | 132.0113  | 197.2887 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MIN | -21.0122  | -131.5133 | 94.6382  | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLVIG MAX | 7.2762    | 28.2950   | 227.9401 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLVIG MIN | -5.4428   | -27.2402  | 111.8751 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MAX | 31.0170   | 138.4782  | 211.7051 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MIN | -28.8590  | -137.2367 | 104.5382 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVIG MAX | 5.9894    | 29.9138   | 232.7644 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLVIG MIN | -7.2611   | -28.6474  | 113.2021 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MAX | 31.1667   | 145.9479  | 221.6200 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MIN | -32.6264  | -144.4554 | 101.3354 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLVIG MAX | 3.7417    | 30.3580   | 205.0674 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLVIG MIN | -5.9156   | -31.9735  | 110.0624 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MAX | 21.3319   | 154.2379  | 149.6266 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MIN | -23.7759  | -155.9625 | 135.4065 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLVIG MAX | 30.1865   | 22.7551   | 556.7011 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLVIG MIN | -10.1552  | -21.4678  | 257.9495 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLCIM MAX | 100.5224  | 110.6545  | 587.2591 | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLCIM MIN | -78.3180  | -109.2797 | 184.8340 | 0.0000 | 0.0000 | 0.0000 |
| 12    | ENVOLVIG MAX | 29.8940   | 4.8314    | 508.4199 | 0.0000 | 0.0000 | 0.0000 |

|    |              |           |           |          |        |        |        |
|----|--------------|-----------|-----------|----------|--------|--------|--------|
| 12 | ENVOLVIG MIN | -33.2344  | -4.5646   | 245.0601 | 0.0000 | 0.0000 | 0.0000 |
| 12 | ENVOLCIM MAX | 152.8710  | 23.5116   | 402.9742 | 0.0000 | 0.0000 | 0.0000 |
| 12 | ENVOLCIM MIN | -156.6545 | -23.2266  | 295.5146 | 0.0000 | 0.0000 | 0.0000 |
| 13 | ENVOLVIG MAX | 32.1473   | 23.8210   | 816.3006 | 0.0000 | 0.0000 | 0.0000 |
| 13 | ENVOLVIG MIN | -21.4378  | -22.3967  | 394.0273 | 0.0000 | 0.0000 | 0.0000 |
| 13 | ENVOLCIM MAX | 129.3262  | 115.6572  | 571.6991 | 0.0000 | 0.0000 | 0.0000 |
| 13 | ENVOLCIM MIN | -116.3785 | -114.1307 | 544.5056 | 0.0000 | 0.0000 | 0.0000 |
| 14 | ENVOLVIG MAX | 22.3291   | 25.2239   | 843.3047 | 0.0000 | 0.0000 | 0.0000 |
| 14 | ENVOLVIG MIN | -30.5293  | -23.6923  | 395.6549 | 0.0000 | 0.0000 | 0.0000 |
| 14 | ENVOLCIM MAX | 119.4569  | 122.4421  | 591.9186 | 0.0000 | 0.0000 | 0.0000 |
| 14 | ENVOLCIM MIN | -129.1743 | -120.8048 | 557.0091 | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLVIG MAX | 35.0752   | 5.5547    | 554.9006 | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLVIG MIN | -30.3771  | -4.2971   | 237.8455 | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLCIM MAX | 162.2239  | 24.7808   | 462.6299 | 0.0000 | 0.0000 | 0.0000 |
| 15 | ENVOLCIM MIN | -156.8781 | -23.4336  | 290.2652 | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLVIG MAX | 16.4325   | 46.6301   | 676.4072 | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLVIG MIN | -42.4970  | -27.5872  | 295.5594 | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLCIM MAX | 115.3811  | 187.7018  | 699.6930 | 0.0000 | 0.0000 | 0.0000 |
| 16 | ENVOLCIM MIN | -144.8888 | -167.2356 | 233.1828 | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLVIG MAX | 6.5038    | 25.1771   | 222.9808 | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLVIG MIN | -2.4182   | -25.0098  | 125.9202 | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLCIM MAX | 22.3741   | 125.3351  | 161.4301 | 0.0000 | 0.0000 | 0.0000 |
| 17 | ENVOLCIM MIN | -17.8576  | -125.1448 | 150.7374 | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLVIG MAX | 7.0068    | 26.4029   | 244.4477 | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLVIG MIN | -4.8261   | -26.1147  | 130.5472 | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLCIM MAX | 28.7867   | 131.2168  | 171.0519 | 0.0000 | 0.0000 | 0.0000 |
| 18 | ENVOLCIM MIN | -26.1575  | -130.9052 | 167.8632 | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLVIG MAX | 5.1964    | 27.8408   | 249.4832 | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLVIG MIN | -6.9941   | -27.5620  | 133.4072 | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLCIM MAX | 27.9049   | 138.4724  | 173.3866 | 0.0000 | 0.0000 | 0.0000 |
| 19 | ENVOLCIM MIN | -30.0179  | -138.1811 | 172.4811 | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLVIG MAX | 8.5829    | 23.5897   | 596.7823 | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLVIG MIN | -35.6013  | -32.4102  | 253.9955 | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLCIM MAX | 72.9848   | 129.5969  | 616.8333 | 0.0000 | 0.0000 | 0.0000 |
| 20 | ENVOLCIM MIN | -103.6842 | -138.9151 | 204.8392 | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLVIG MAX | 30.6266   | 21.7702   | 575.1060 | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLVIG MIN | -9.7684   | -21.9176  | 267.6144 | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLCIM MAX | 100.6939  | 108.9944  | 601.8791 | 0.0000 | 0.0000 | 0.0000 |
| 21 | ENVOLCIM MIN | -77.5637  | -109.1269 | 195.7558 | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLVIG MAX | 29.7593   | 4.6429    | 525.7094 | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLVIG MIN | -33.4231  | -4.6463   | 253.6145 | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLCIM MAX | 152.7691  | 23.1856   | 415.5910 | 0.0000 | 0.0000 | 0.0000 |
| 22 | ENVOLCIM MIN | -156.9044 | -23.1847  | 306.6432 | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLVIG MAX | 32.5498   | 22.8846   | 847.8414 | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLVIG MIN | -21.3263  | -22.7872  | 410.6081 | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLCIM MAX | 129.8977  | 114.0303  | 588.1683 | 0.0000 | 0.0000 | 0.0000 |
| 23 | ENVOLCIM MIN | -116.3204 | -113.9061 | 571.0634 | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLVIG MAX | 20.9770   | 24.4695   | 860.7478 | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLVIG MIN | -31.2568  | -24.2621  | 406.8166 | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLCIM MAX | 115.2565  | 121.6980  | 591.1601 | 0.0000 | 0.0000 | 0.0000 |
| 24 | ENVOLCIM MIN | -127.3702 | -121.4575 | 581.4433 | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLVIG MAX | 46.2554   | 11.2858   | 825.2041 | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLVIG MIN | -26.9162  | -11.1896  | 340.0895 | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLCIM MAX | 179.6246  | 56.1824   | 718.3943 | 0.0000 | 0.0000 | 0.0000 |
| 25 | ENVOLCIM MIN | -157.5064 | -56.0896  | 398.4482 | 0.0000 | 0.0000 | 0.0000 |
| 26 | ENVOLVIG MAX | 8.7061    | 33.8716   | 598.3733 | 0.0000 | 0.0000 | 0.0000 |
| 26 | ENVOLVIG MIN | -35.1695  | -24.2690  | 263.9378 | 0.0000 | 0.0000 | 0.0000 |

|    |              |           |           |          |        |        |        |
|----|--------------|-----------|-----------|----------|--------|--------|--------|
| 26 | ENVOLCIM MAX | 74.0247   | 144.5438  | 579.0490 | 0.0000 | 0.0000 | 0.0000 |
| 26 | ENVOLCIM MIN | -104.0847 | -134.4421 | 245.2923 | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLVIG MAX | 6.1831    | 26.2010   | 222.2017 | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLVIG MIN | -3.0664   | -25.8763  | 117.1948 | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLCIM MAX | 23.0887   | 130.2184  | 203.4591 | 0.0000 | 0.0000 | 0.0000 |
| 27 | ENVOLCIM MIN | -19.6724  | -129.9086 | 107.7703 | 0.0000 | 0.0000 | 0.0000 |
| 28 | ENVOLVIG MAX | 6.7621    | 27.3187   | 241.8506 | 0.0000 | 0.0000 | 0.0000 |
| 28 | ENVOLVIG MIN | -5.2834   | -27.3683  | 120.4099 | 0.0000 | 0.0000 | 0.0000 |
| 28 | ENVOLCIM MAX | 29.2614   | 135.9921  | 217.8267 | 0.0000 | 0.0000 | 0.0000 |
| 28 | ENVOLCIM MIN | -27.4719  | -136.1608 | 117.8484 | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLVIG MAX | 5.6030    | 28.8065   | 246.8664 | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLVIG MIN | -6.8339   | -28.8422  | 121.5447 | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLCIM MAX | 29.1009   | 143.3074  | 230.0627 | 0.0000 | 0.0000 | 0.0000 |
| 29 | ENVOLCIM MIN | -30.5371  | -143.4882 | 112.6412 | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLVIG MAX | 25.9122   | 14.6182   | 317.8423 | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLVIG MIN | -16.3125  | -19.9857  | 129.1146 | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLCIM MAX | 105.1585  | 81.7533   | 412.4051 | 0.0000 | 0.0000 | 0.0000 |
| 30 | ENVOLCIM MIN | -94.7898  | -87.4199  | 31.3717  | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLVIG MAX | 30.5316   | 3.1548    | 284.4239 | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLVIG MIN | -31.1828  | -4.2257   | 146.2904 | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLCIM MAX | 151.5788  | 17.5118   | 244.9047 | 0.0000 | 0.0000 | 0.0000 |
| 31 | ENVOLCIM MIN | -152.2237 | -18.6434  | 150.7813 | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLVIG MAX | 28.6374   | 15.3758   | 467.7366 | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLVIG MIN | -25.3265  | -20.8004  | 205.2933 | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLCIM MAX | 131.1891  | 85.5181   | 514.5201 | 0.0000 | 0.0000 | 0.0000 |
| 32 | ENVOLCIM MIN | -127.0927 | -91.2959  | 131.6098 | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLVIG MAX | 25.6378   | 16.7593   | 465.0808 | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLVIG MIN | -27.7688  | -22.1718  | 196.6924 | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLCIM MAX | 128.6206  | 92.4638   | 522.7961 | 0.0000 | 0.0000 | 0.0000 |
| 33 | ENVOLCIM MIN | -131.1048 | -98.2214  | 117.5751 | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLVIG MAX | 33.2820   | 2.5046    | 287.0020 | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLVIG MIN | -31.1230  | -4.8348   | 128.9167 | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLCIM MAX | 158.4674  | 16.1944   | 279.3663 | 0.0000 | 0.0000 | 0.0000 |
| 34 | ENVOLCIM MIN | -156.0321 | -18.6807  | 115.4424 | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLVIG MAX | 25.0440   | 10.5308   | 392.3647 | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLVIG MIN | -35.2776  | -41.2398  | 162.7268 | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLCIM MAX | 138.2789  | 99.9474   | 489.7648 | 0.0000 | 0.0000 | 0.0000 |
| 35 | ENVOLCIM MIN | -149.4324 | -132.9222 | 55.4658  | 0.0000 | 0.0000 | 0.0000 |

### 5.1.9.2 Cálculo del Refuerzo

#### DISEÑO DE ZAPATAS CUADRADAS

##### BLOQUE A

ESTRUCTURAS Y PROGRAMAS  
 M O D U L O 4 NSR - 98  
 D I S E Ñ O E S T R U C T U R A L G E N E R A L. AREA VI. PROGRAMA 1a  
 DISEÑO DE ZAPATAS AISLADAS CUADRADAS  
 Nombre del Archivo Utilizado : <ROS> Directorio: C:\MODULO4\ZAPATAS\

##### INFORMACION GENERAL

-----  
 Dato      Concepto  
 -----  
 1          Resistencia del Concreto F'c <kg/cm2> =            210



2 Limite Fluencia Acero Princip Fy <kg/cm2> = 4200  
 3 Recubrimiento d' <cm> = 7  
 4 Capacidad Admisible Suelo <kg/cm2> = 1.2  
 5 No. de Zapatas Cuadradas Diseñadas = 32

INFORMACION DE LAS ZAPATAS

| Zap | Nombre | H col<br><cm> | B col<br><cm> | Carga P<br><t> | Carga Pu<br><t> |
|-----|--------|---------------|---------------|----------------|-----------------|
| 1   | A1     | 35            | 35            | 44.25          | 36.79           |
| 2   | A'1    | 30            | 30            | 20.88          | 29.18           |
| 3   | B1     | 35            | 35            | 45.79          | 36.74           |
| 4   | A1'    | 35            | 35            | 16.38          | 22.62           |
| 5   | B1'    | 35            | 35            | 43.25          | 39.99           |
| 6   | C1'    | 35            | 35            | 46.48          | 36.97           |
| 7   | D1'    | 35            | 35            | 17.96          | 17.75           |
| 8   | E1'    | 35            | 35            | 63.72          | 60.88           |
| 9   | F1'    | 35            | 35            | 53.76          | 47.59           |
| 10  | A2     | 35            | 35            | 53.48          | 55.61           |
| 11  | A'2    | 30            | 30            | 41.30          | 51.65           |
| 12  | B2     | 35            | 35            | 80.29          | 90.46           |
| 13  | C2     | 35            | 35            | 39.84          | 34.39           |
| 14  | E2'    | 40            | 40            | 62.87          | 75.54           |
| 15  | F2'    | 40            | 40            | 62.64          | 74.47           |
| 16  | A2"    | 35            | 35            | 16.47          | 22.73           |
| 17  | C2"'   | 35            | 35            | 67.07          | 81.12           |
| 18  | ESCAL  | 50            | 50            | 38.50          | 14.00           |
| 19  | ESCAL  | 50            | 50            | 48.82          | 17.79           |
| 20  | ESCAL  | 50            | 50            | 13.50          | 7.34            |
| 21  | ESCAL  | 50            | 50            | 15.04          | 5.20            |
| 22  | ESCAL  | 50            | 50            | 5.00           | 5.00            |
| 23  | ESCAL  | 50            | 50            | 5.00           | 5.00            |
| 24  | E2"'   | 40            | 40            | 73.36          | 97.56           |
| 25  | F2"'   | 40            | 40            | 64.33          | 78.87           |
| 26  | A3     | 35            | 35            | 58.81          | 57.17           |
| 27  | A'3    | 35            | 35            | 44.13          | 55.51           |
| 28  | B3     | 35            | 35            | 74.68          | 94.33           |
| 29  | A3'    | 35            | 35            | 18.99          | 23.21           |
| 30  | B3'    | 35            | 35            | 41.43          | 38.33           |
| 31  | C3'    | 35            | 35            | 75.39          | 85.16           |
| 32  | E3'    | 35            | 35            | 83.10          | 107.10          |

R E S U L T A D O S

| Referencia<br>Apoyo | Nudo<br># | Longitud   |            | Espesor Min<br><cm> | ARMADURA (Sep: cm) |            |
|---------------------|-----------|------------|------------|---------------------|--------------------|------------|
|                     |           | Paralelo H | Paralelo B |                     | Paralelo H         | Paralelo B |
| A1                  |           | 192        | 192        | 30.0                | 1 # 4 a 22         | 1 # 4 a 22 |
| A'1                 |           | 132        | 132        | 30.0                | 1 # 4 a 30         | 1 # 4 a 30 |
| B1                  |           | 195        | 195        | 30.0                | 1 # 4 a 22         | 1 # 4 a 22 |
| A1'                 |           | 117        | 117        | 30.0                | 1 # 4 a 30         | 1 # 4 a 30 |
| B1'                 |           | 190        | 190        | 30.0                | 1 # 4 a 22         | 1 # 4 a 22 |
| C1'                 |           | 197        | 197        | 30.0                | 1 # 4 a 22         | 1 # 4 a 22 |
| D1'                 |           | 122        | 122        | 30.0                | 1 # 4 a 30         | 1 # 4 a 30 |
| E1'                 |           | 230        | 230        | 34.0                | 1 # 4 a 19         | 1 # 4 a 19 |
| F1'                 |           | 212        | 212        | 30.0                | 1 # 4 a 20         | 1 # 4 a 20 |
| A2                  |           | 211        | 211        | 32.0                | 1 # 4 a 19         | 1 # 4 a 19 |
| A'2                 |           | 186        | 186        | 33.0                | 1 # 4 a 21         | 1 # 4 a 21 |
| B2                  |           | 259        | 259        | 41.0                | 1 # 4 a 16         | 1 # 4 a 16 |
| C2                  |           | 182        | 182        | 30.0                | 1 # 4 a 23         | 1 # 4 a 23 |
| E2'                 |           | 229        | 229        | 36.0                | 1 # 4 a 17         | 1 # 4 a 17 |
| F2'                 |           | 228        | 228        | 36.0                | 1 # 4 a 18         | 1 # 4 a 18 |

|       |     |     |      |            |            |
|-------|-----|-----|------|------------|------------|
| A2"   | 117 | 117 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| C2"'  | 236 | 236 | 39.0 | 1 # 4 a 17 | 1 # 4 a 17 |
| ESCAL | 179 | 179 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| ESCAL | 202 | 202 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| ESCAL | 106 | 106 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| ESCAL | 112 | 112 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| ESCAL | 65  | 65  | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| ESCAL | 65  | 65  | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| E2"'  | 247 | 247 | 41.0 | 1 # 5 a 24 | 1 # 5 a 24 |
| F2"'  | 232 | 232 | 37.0 | 1 # 4 a 17 | 1 # 4 a 17 |
| A3    | 221 | 221 | 33.0 | 1 # 4 a 19 | 1 # 4 a 19 |
| A'3   | 192 | 192 | 32.0 | 1 # 4 a 20 | 1 # 4 a 20 |
| B3    | 249 | 249 | 42.0 | 1 # 4 a 16 | 1 # 4 a 16 |
| A3'   | 126 | 126 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| B3'   | 186 | 186 | 30.0 | 1 # 4 a 22 | 1 # 4 a 22 |
| C3'   | 251 | 251 | 40.0 | 1 # 4 a 16 | 1 # 4 a 16 |
| E3'   | 263 | 263 | 44.0 | 1 # 5 a 23 | 1 # 5 a 23 |

## BLOQUE B

Nombre del Archivo Utilizado : <R02> Directorio: C:\MODULO4\ZAPATAS\

### INFORMACION GENERAL

| Dato | Concepto                                    |      |
|------|---|------|
| 1    | Resistencia del Concreto F'c <kg/cm2> =     | 210  |
| 2    | Limite Fluencia Acero Princip Fy <kg/cm2> = | 4200 |
| 3    | Recubrimiento d' <cm> =                     | 7    |
| 4    | Capacidad Admisible Suelo <kg/cm2> =        | 1.2  |
| 5    | No. de Zapatas Cuadradas Diseñadas =        | 28   |

### INFORMACION DE LAS ZAPATAS

| Zap | Nombre | H col<br><cm> | B col<br><cm> | Carga P<br><t> | Carga Pu<br><t> |
|-----|--------|---------------|---------------|----------------|-----------------|
| 1   | A4"    | 35            | 35            | 19.73          | 20.85           |
| 2   | B4"    | 35            | 35            | 21.17          | 22.79           |
| 3   | C4"    | 35            | 35            | 22.16          | 23.28           |
| 4   | E4"    | 35            | 35            | 14.96          | 20.51           |
| 5   | A5     | 35            | 35            | 58.73          | 55.67           |
| 6   | A'5    | 35            | 35            | 40.30          | 50.84           |
| 7   | B5     | 35            | 35            | 57.17          | 81.63           |
| 8   | C5     | 35            | 35            | 59.19          | 84.33           |
| 9   | D5     | 35            | 35            | 46.26          | 55.49           |
| 10  | E5     | 40            | 40            | 69.97          | 67.64           |
| 11  | A5'    | 35            | 35            | 16.14          | 22.30           |
| 12  | B5'    | 35            | 35            | 17.11          | 17.11           |
| 13  | C5'    | 35            | 35            | 17.34          | 24.95           |
| 14  | E5"    | 35            | 35            | 61.68          | 59.68           |
| 15  | A6     | 35            | 35            | 60.19          | 57.51           |
| 16  | A'6    | 35            | 35            | 41.56          | 52.57           |
| 17  | B6     | 35            | 35            | 58.82          | 84.78           |
| 18  | C6     | 35            | 35            | 59.12          | 86.07           |
| 19  | D6     | 35            | 35            | 71.84          | 82.52           |
| 20  | E6'    | 35            | 35            | 57.90          | 59.84           |
| 21  | A6"    | 35            | 35            | 20.35          | 22.22           |
| 22  | B6"    | 35            | 35            | 21.78          | 24.19           |
| 23  | C6"    | 35            | 35            | 23.01          | 24.69           |
| 24  | A7     | 35            | 35            | 41.24          | 31.78           |

|        |    |    |       |       |
|--------|----|----|-------|-------|
| 25 A'7 | 35 | 35 | 24.49 | 28.44 |
| 26 B7  | 35 | 35 | 51.45 | 46.77 |
| 27 C7  | 35 | 35 | 52.28 | 46.51 |
| 28 D7  | 35 | 35 | 27.94 | 28.70 |

R E S U L T A D O S

| Referencia Apoyo | Nudo # | Longitud Paralelo H | Lados <cm> Paralelo B | Espesor Min <cm> | ARMADURA (Sep: cm) |            |
|------------------|--------|---------------------|-----------------------|------------------|--------------------|------------|
|                  |        |                     |                       |                  | Paralelo H         | Paralelo B |
| A4"              |        | 128                 | 128                   | 30.0             | 1 # 4 a 30         | 1 # 4 a 30 |
| B4"              |        | 133                 | 133                   | 30.0             | 1 # 4 a 29         | 1 # 4 a 29 |
| C4"              |        | 136                 | 136                   | 30.0             | 1 # 4 a 28         | 1 # 4 a 28 |
| E4"              |        | 112                 | 112                   | 30.0             | 1 # 4 a 30         | 1 # 4 a 30 |
| A5               |        | 221                 | 221                   | 32.0             | 1 # 4 a 19         | 1 # 4 a 19 |
| A'5              |        | 183                 | 183                   | 31.0             | 1 # 4 a 21         | 1 # 4 a 21 |
| B5               |        | 218                 | 218                   | 39.0             | 1 # 4 a 17         | 1 # 4 a 17 |
| C5               |        | 222                 | 222                   | 39.0             | 1 # 4 a 17         | 1 # 4 a 17 |
| D5               |        | 196                 | 196                   | 32.0             | 1 # 4 a 20         | 1 # 4 a 20 |
| E5               |        | 241                 | 241                   | 34.0             | 1 # 4 a 17         | 1 # 4 a 17 |
| A5'              |        | 116                 | 116                   | 30.0             | 1 # 4 a 30         | 1 # 4 a 30 |
| B5'              |        | 119                 | 119                   | 30.0             | 1 # 4 a 30         | 1 # 4 a 30 |
| C5'              |        | 120                 | 120                   | 30.0             | 1 # 4 a 30         | 1 # 4 a 30 |
| E5"              |        | 227                 | 227                   | 33.0             | 1 # 4 a 18         | 1 # 4 a 18 |
| A6               |        | 224                 | 224                   | 33.0             | 1 # 4 a 19         | 1 # 4 a 19 |
| A'6              |        | 186                 | 186                   | 32.0             | 1 # 4 a 21         | 1 # 4 a 21 |
| B6               |        | 221                 | 221                   | 40.0             | 1 # 4 a 17         | 1 # 4 a 17 |
| C6               |        | 222                 | 222                   | 40.0             | 1 # 4 a 17         | 1 # 4 a 17 |
| D6               |        | 245                 | 245                   | 39.0             | 1 # 4 a 16         | 1 # 4 a 16 |
| E6'              |        | 220                 | 220                   | 33.0             | 1 # 4 a 18         | 1 # 4 a 18 |
| A6"              |        | 130                 | 130                   | 30.0             | 1 # 4 a 30         | 1 # 4 a 30 |
| B6"              |        | 135                 | 135                   | 30.0             | 1 # 4 a 30         | 1 # 4 a 30 |
| C6"              |        | 138                 | 138                   | 30.0             | 1 # 4 a 29         | 1 # 4 a 29 |
| A7               |        | 185                 | 185                   | 30.0             | 1 # 4 a 23         | 1 # 4 a 23 |
| A'7              |        | 143                 | 143                   | 30.0             | 1 # 4 a 27         | 1 # 4 a 27 |
| B7               |        | 207                 | 207                   | 30.0             | 1 # 4 a 20         | 1 # 4 a 20 |
| C7               |        | 209                 | 209                   | 30.0             | 1 # 4 a 21         | 1 # 4 a 21 |
| D7               |        | 153                 | 153                   | 30.0             | 1 # 4 a 26         | 1 # 4 a 26 |

DISEÑO ZAPATAS MEDIANERAS

BLOQUE A

ESTRUCTURAS Y PROGRAMAS

MODULO 4 NSR - 98

DISEÑO ESTRUCTURAL GENERAL. AREA VI. PROGRAMA 1b  
ZAPATAS EXCENTRICAS O MEDIANERAS

Nombre del Archivo Utilizado : <R01> Directorio: C:\MODULO4\ZAPATAS\

INFORMACION GENERAL

| Dato | Concepto                         |                 |
|------|----------------------------------|-----------------|
| 1    | Resistencia del Concreto F'c     | <kg/cm2> = 210  |
| 2    | Limite Fluencia Acero Princip Fy | <kg/cm2> = 4200 |
| 3    | Recubrimiento al Centroides d'   | <cm> = 7        |
| 4    | Nfmero de Ramas del Estribo      | = 2             |
| 5    | # del Diametro del Estribo       | = 3             |
| 6    | Limite Fluencia Acero Estrib Fy  | <kg/cm2> = 4200 |

7 Capacidad Admisible Suelo Qa <kg/cm2> = 1.2  
 8 No. de Zapatas Diseñadas = 7

INFORMACION DE LA GEOMETRIA DE LAS ZAPATAS

| Zap Ref | Sep Col (m) | B ColExt (m) | H ColExt (m) | Ancho Adop Zap Ext(m) | Distanc (m) Borde - Eje | Viga Trabe (m) |        |
|---------|-------------|--------------|--------------|-----------------------|-------------------------|----------------|--------|
|         |             |              |              |                       |                         | B Inic         | H Inic |
| F3'     | 7.65        | .35          | .35          | 1.5                   | .175                    | .45            | .5     |
| A4      | 3.85        | .35          | .35          | 1.5                   | .175                    | .35            | .5     |
| A'4     | 7.25        | .35          | .35          | 1                     | .175                    | .35            | .5     |
| B4      | 3.85        | .4           | .4           | 1.6                   | .2                      | .4             | .5     |
| C4      | 3.85        | .4           | .4           | 1.6                   | .2                      | .4             | .5     |
| D4      | 3.85        | .35          | .35          | 1                     | .175                    | .35            | .5     |
| E4      | 3.85        | .35          | .35          | 1.5                   | .175                    | .35            | .5     |

INFORMACION DE LAS SOLICITACIONES DE LAS ZAPATAS

| Zap Ref | Pserv (t) Zapat EXT | Pult (t) Zapat EXT | Pserv (t) Zapat INT | Pult (t) Zapat INT |
|---------|---------------------|--------------------|---------------------|--------------------|
| F3'     | 46.12               | 42.28              | 83.1                | 107.1              |
| A4      | 40                  | 28.2               | 18.99               | 23.21              |
| A'4     | 22.16               | 28.91              | 44.13               | 55.51              |
| B4      | 50.7                | 36.1               | 41.43               | 38.33              |
| C4      | 45.95               | 30.75              | 75.29               | 85.16              |
| D4      | 18.42               | 23.83              | 10                  | 15                 |
| E4      | 38.78               | 23.53              | 83.1                | 107.1              |

R E S U L T A D O S D E L D I S E N O

| Zap Ref | Zapata  |         |              | EXTERIOR      |               | Zapata INT  |
|---------|---------|---------|--------------|---------------|---------------|-------------|
|         | Largo L | Ancho B | Espes T (cm) | As Paralelo L | As Paralelo B | Lado L (cm) |
| F3'     | 277     | 150     | 52           | 1 # 5 a 17    | 1 # 3 a 25    | 257         |
| A4      | 261     | 150     | 50           | 1 # 5 a 22    | 1 # 3 a 25    | 100         |
| A'4     | 193     | 100     | 45           | 1 # 5 a 18    | 1 # 3 a 25    | 189         |
| B4      | 313     | 160     | 54           | 1 # 5 a 18    | 1 # 3 a 25    | 163         |
| C4      | 284     | 160     | 52           | 1 # 5 a 22    | 1 # 3 a 25    | 236         |
| D4      | 168     | 100     | 43           | 1 # 5 a 22    | 1 # 3 a 25    | 83          |
| E4      | 253     | 150     | 50           | 1 # 4 a 17    | 1 # 3 a 25    | 252         |

VIGA TRABE O DE ENLACE

| Zap Ref | B Mjn (cm) | H Mjn (cm) | Mu M x (t-m) | As M ximo SUP(cm2) | Extr EXT INF(cm2) | Vu M x (t) | Separac Flejes Extremo EXT |
|---------|------------|------------|--------------|--------------------|-------------------|------------|----------------------------|
| F3'     | 45.0       | 50.0       | 23.66        | 16.14              | 0.00              | 30.69      | 1FL# 3 de 2 rams c/12.1    |
| A4      | 35.0       | 50.0       | 15.62        | 10.46              | 0.00              | 23.48      | 1FL# 3 de 2 rams c/16.0    |
| A'4     | 35.0       | 50.0       | 9.03         | 5.82               | 0.00              | 29.95      | 1FL# 3 de 2 rams c/10.8    |
| B4      | 40.0       | 50.0       | 20.56        | 13.99              | 0.00              | 28.41      | 1FL# 3 de 2 rams c/12.7    |
| C4      | 40.0       | 50.0       | 17.75        | 11.88              | 0.00              | 24.52      | 1FL# 3 de 2 rams c/16.5    |
| D4      | 35.0       | 50.0       | 7.12         | 5.02               | 0.00              | 25.53      | 1FL# 3 de 2 rams c/13.9    |
| E4      | 35.0       | 50.0       | 13.45        | 8.89               | 0.00              | 20.23      | 1FL# 3 de 2 rams c/21.0    |

BLOQUE B

INFORMACION GENERAL

| Dato | Concepto                         |          |        |
|------|----------------------------------|----------|--------|
| 1    | Resistencia del Concreto F'c     | <kg/cm2> | = 210  |
| 2    | Limite Fluencia Acero Princip Fy | <kg/cm2> | = 4200 |
| 3    | Recubrimiento al Centroide d'    | <cm>     | = 7    |
| 4    | Número de Ramas del Estribo      |          | = 2    |
| 5    | # del Diametro del Estribo       |          | = 3    |
| 6    | Limite Fluencia Acero Estrib Fy  | <kg/cm2> | = 4200 |
| 7    | Capacidad Admisible Suelo Qa     | <kg/cm2> | = 1.2  |
| 8    | No. de Zapatas Diseñadas         |          | = 7    |

INFORMACION DE LA GEOMETRIA DE LAS ZAPATAS

| Zap Ref | Sep Col (m) | B ColExt (m) | H ColExt (m) | Ancho Adop Zap Ext(m) | Distanc (m) Borde - Eje | Viga Trabe (m) B Inic | H Inic |
|---------|-------------|--------------|--------------|-----------------------|-------------------------|-----------------------|--------|
| A4'     | 3.034       | .35          | .35          | 1.5                   | .175                    | .35                   | .5     |
| A'4'    | 6.554       | .35          | .35          | 1                     | .175                    | .35                   | .5     |
| B4'     | 3.034       | .35          | .35          | 1.7                   | .175                    | .45                   | .5     |
| C4'     | 3.034       | .35          | .35          | 1.7                   | .175                    | .45                   | .5     |
| D4'     | 6.554       | .35          | .35          | 1                     | .175                    | .35                   | .5     |
| E4'     | 3.034       | .35          | .35          | 1.5                   | .175                    | .35                   | .5     |
| E7      | 3.73        | .4           | .4           | 1.7                   | .2                      | .45                   | .5     |

INFORMACION DE LAS SOLICITACIONES DE LAS ZAPATAS

| Zap Ref | Pserv (t) Zapat EXT | Pult (t) Zapat EXT | Pserv (t) Zapat INT | Pult (t) Zapat INT |
|---------|---------------------|--------------------|---------------------|--------------------|
| A4'     | 39.47               | 26.79              | 19.73               | 20.85              |
| A'4'    | 18.82               | 20.49              | 40.3                | 50.84              |
| B4'     | 48.72               | 40.26              | 21.17               | 22.79              |
| C4'     | 49.5                | 39.75              | 22.16               | 23.28              |
| D4'     | 19.58               | 21.46              | 46.26               | 55.49              |
| E4'     | 39.13               | 27.28              | 14.96               | 20.51              |
| E7      | 48.98               | 39.24              | 27.94               | 28.7               |

RESULTADOS DEL DISEÑO

| Zap Ref | Largo L | Ancho B | Zapata Espes T (cm) | EXTERIOR As Paralelo L | As Paralelo B | Zapata INT Lado L (cm) |
|---------|---------|---------|---------------------|------------------------|---------------|------------------------|
| A4'     | 271     | 150     | 51                  | 1 # 5 a 22             | 1 # 3 a 25    | 94                     |
| A'4'    | 165     | 100     | 43                  | 1 # 4 a 18             | 1 # 3 a 25    | 181                    |
| B4'     | 307     | 170     | 54                  | 1 # 6 a 23             | 1 # 3 a 25    | 78                     |
| C4'     | 312     | 170     | 55                  | 1 # 5 a 17             | 1 # 3 a 25    | 82                     |
| D4'     | 172     | 100     | 43                  | 1 # 5 a 25             | 1 # 3 a 25    | 194                    |
| E4'     | 268     | 150     | 51                  | 1 # 5 a 22             | 1 # 3 a 25    | 70                     |
| E7      | 291     | 170     | 52                  | 1 # 5 a 18             | 1 # 3 a 25    | 121                    |

VIGA TRABE O DE ENLACE

| Zap Ref | B Mjn (cm) | H Mjn (cm) | Mu M x (t-m) | As M ximo SUP(cm2) | Extr EXT INF(cm2) | Vu M x (t) | Separac Extremo  | Flejes EXT |
|---------|------------|------------|--------------|--------------------|-------------------|------------|------------------|------------|
| A4'     | 35.0       | 50.0       | 14.39        | 9.57               | 0.00              | 24.01      | 1FL# 3 de 2 rams | c/15.4     |
| A'4'    | 35.0       | 50.0       | 6.42         | 5.02               | 0.00              | 21.47      | 1FL# 3 de 2 rams | c/18.8     |
| B4'     | 45.0       | 50.0       | 23.40        | 15.94              | 0.00              | 31.88      | 1FL# 3 de 2 rams | c/11.4     |
| C4'     | 45.0       | 50.0       | 23.28        | 15.85              | 0.00              | 31.71      | 1FL# 3 de 2 rams | c/11.5     |
| D4'     | 35.0       | 50.0       | 6.72         | 5.02               | 0.00              | 22.48      | 1FL# 3 de 2 rams | c/17.3     |
| E4'     | 35.0       | 50.0       | 14.56        | 9.69               | 0.00              | 24.29      | 1FL# 3 de 2 rams | c/15.1     |
| E7      | 45.0       | 50.0       | 23.33        | 15.89              | 0.00              | 29.16      | 1FL# 3 de 2 rams | c/13.2     |

#### **5.1.10. Diseño de Elementos no Estructurales.**

**5.1.10.1. Grado de Desempeño.** Se entiende por desempeño al comportamiento de los elementos no estructurales ante un sismo.

Se tendrá en cuenta que los elementos no estructurales a construir en esta edificación tendrán un grado de desempeño bueno, osea que el daño que se presenta es totalmente reparable y puede haber alguna interferencia con la operación de la edificación después del sismo (A.9.2.1).

**5.1.10.2. Criterio de Diseño.** Se puede adoptar en el diseño una de las siguientes estrategias:

- **Separarlos de la estructura** : Los elementos no estructurales se aíslan de la estructura dejando una separación para que en caso de sismo la estructura al deformarse no los afecte adversamente.
- **Disponer de elementos que admitan las deformaciones de la estructura:** Se utilizan elementos no estructurales que tocan la estructura y son tan flexibles como resistir las deformaciones que se producen en la estructura sin sufrir un grado mayor que el que admite el grado de desempeño.

**5.1.10.2.1. Fuerzas Sísmicas de Diseño.** Las fuerzas sísmicas horizontales reducidas de diseño se calculan con la expresión :

$$F_p = (a_x a_p / R_p) g M_p \geq (A_a I / 2) g M_p \quad \text{donde:}$$

Ax: Aceleración horizontal, que ocurre en el punto donde el elemento no estructural está anclado al sistema estructural de la edificación, cuando esta se ve afectada por los movimientos sísmicos de diseño. Se evalúa por medio del análisis dinámico de la estructura que tenga en cuenta su capacidad de disipación de energía en el rango inelástico; o por la expresión:

$$A_x = C_v \times V_s / m g \leq 2 S_a$$

Ap: Amplificación dinámica del elemento no estructural. Dependiendo de la rigidez, distribución de su masa y características de apoyo sobre la estructura, el elemento no estructural amplifica las aceleraciones que se presentan en su punto de apoyo debido a efectos de resonancia. Ap se determina por medio de análisis dinámicos detallados o experimentales. En caso de ausencia de estos, se puede utilizar los valores aproximados de las tablas A.9.1 y A.9.2 (NSR 98), que varían entre 1 y 2.5.

Rp: Capacidad de disipación de energía en el rango inelástico del elemento no estructural. Este coeficiente representa en conjunto, la capacidad de disipación de energía en el rango inelástico de respuesta del elemento en si y de su sistema de anclaje o amarre a la estructura. En las tablas A.9-2. Y A.9.-3 se muestran los valores mínimos de Rp según el grado de desempeño, los cuales varían entre 0.5 y 6.

**5.1.10.2.2. Capacidad de Deformación.** Los desplazamientos de los elementos no estructurales no deben exceder la separación que se deje, o deformaciones del mismo elemento que pongan en peligro su integridad. Los desplazamientos de verificación

De estos elementos y sus anclajes o amarres se fijan en función de las derivas máximas aceptables para la estructura.

**5.1.10.2.3. Aplicación de las Fuerzas Sísmicas.** Las fuerzas sísmicas de cualquier elemento no estructural actúan de acuerdo con la distribución de masa y la rigidez del elemento. Estos elementos deben anclarse o amarrarse de tal manera que estas fuerzas sean transferidas a la estructura de la edificación. El amarre debe ser una conexión que permita resistir tensiones y compresiones, sin contar con efectos de fricción, ni de resistencia a la tensión de morteros de pega.

**5.1.10.2.4. Elementos no Estructurales Localizados en la Base de la Estructura y por Debajo de ella o fuera de ella.** Estan deben diseñarse para una fuerzas sísmica reducida calculada con la ecuación :

$$F_p = (a_x a_p / R_p) g M_p \geq (A_a I / 2) g M_p \quad \text{para } a_x = A_a I$$

**5.1.10.2.5. Tipos de Anclaje Según el Valor de Rp Permitido para el Elemento no Estructural.**

- **Especiales:** ( $R_p = 6$ ); anclajes diseñados siguiendo las especificaciones del título F para acero estructural, para capacidad de disipación especial (DES).
- **Ductiles:** ( $R_p = 3$ ); el anclaje se realiza por medio de anclajes profundos que emplean químicos (epóxicos), anclajes profundos vaciados en el sitio, o anclajes vaciados en sitio que cumplen los requisitos de C.21 (NSR 98).



- **No dúctiles:** ( $R_p = 1.5$ ); cuando el anclaje se realiza por medio de pernos de expansión, anclajes superficiales que emplean químicos (apóxicos), anclajes superficiales vaciados en el sitio o anclajes colocados por medio de explosivos.
- **Húmedos:** ( $R_p = 0.5$ ); cuando se utiliza mortero o adhesivo que pega directamente al mortero o al concreto, sin ningún tipo de anclaje mecánico. Resiste a tracción.

**5.1.10.2.6 Elementos de Conexión para Componentes no Estructurales.** El elemento de conexión es el aditamento que une el elemento no estructural con los anclajes a la estructura. Las conexiones que permiten movimiento deben disponerse de tal manera que pueda haber movimiento relativo entre la estructura y el elemento no estructural, por medio de agujeros alargados de un tamaño mayor que los espigos o tornillos, por medio de un elemento de acero que se flexionan u otros procedimientos, pero capaces de resistir las fuerzas sísmicas reducidas de diseño presentadas en las direcciones donde no se permite el movimiento. En fachadas el elemento de conexión se diseña para una fuerza sísmica reducida igual a  $1.33F_p$  y los pernos, tornillos, soldadura y espigos deben diseñarse para  $3.0F_p$ .

### **5.1.10.3. Acabados y Elementos Arquitectónicos.**

#### **5.1.10.3.1. Elementos que Requieren Especial Cuidado en su Diseño.**

- **Muros interiores:** se diseñan de tal manera que los componentes no se disgreguen en caso de sismo y además amarren adecuadamente el conjunto de la estructura.
- **Muros interiores:** se deben tener precauciones para evitar el vuelco de estos y particiones.

- **Cielos rasos:** el desprendimiento y caída de cielos rasos es un peligro grave para las personas.
- **Enchapes de fachada:** el desprendimiento y caída de estos es un peligro para los transeuntes.
- **Aticos, parapetos y antepechos:** se debe considerar la posibilidad de que el parapeto falle hacia adentro en el caso de cubierta con tejas, para que produciendo su falla, caiga sobre la cubierta; colocando en peligro a los habitantes del último piso.
- **Vidrios:** se debe prevenir la deformación del marco, dejando holgura suficiente dentro del montaje del vidrio o de la ventanería para evitar su rotura. La colocación de películas protectoras, vidrios templados y vidrios triplados; son otras alternativas para evitar el peligro, asociado con la rotura del vidrio.
- **Paneles prefabricados de fachada:** cuando se utilicen estos paneles se dejan holguras suficientes que permitan la deformación de la estructura sin afectar el panel, además se debe adherir bien el sistema estructural de resistencia sísmica para evitar su desprendimiento.
- **Columnas cortas o columnas cautivas:** se debe evitar la interacción entre las columnas cortas y la estructura de la edificación en la cual la columna está restringida en su desplazamiento lateral por un muro no estructural que no llega hasta la losa de entrepiso en su parte superior. En este caso el muro se separa de la columna, o se lleva hasta la losa de entrepiso en su parte superior, si se deja adherido a la columna.

**5.1.10.3.2. Fuerzas Sísmicas de Diseño.** Los elementos arquitectónicos, acabados y anclajes a la estructura deben diseñarse para resistir las fuerzas sísmicas reducidas de diseño determinadas por la ecuación del numeral 1.11.2.1.

**5.1.10.3.3. Fuerzas de Viento.** Cuando sobrepasa 0.7 Fp para muros no estructurales de fachada, estas deben ser diseñadas para resistir 1.4 veces la fuerza del viento.

**5.1.10.3.4. Anclajes de las Fachadas.** Deben resistir las fuerzas sísmicas reducidas de diseño obtenidas y tener suficiente ductilidad y capacidad de rotación para aceptar desplazamientos, en cada piso, entre su base y la parte superior iguales a la deriva de diseño. El muro debe resistir la flexión que le imponen las fuerzas sísmicas reducidas de diseño actuando en una dirección perpendicular al muro.

**5.1.10.3.5 Capacidad de Deformación.** Los acabados y elementos arquitectónicos deben ser capaces de resistir las deformaciones dictadas por la deriva ya calculada, en los elementos no estructurales y acabados colocados sobre elementos estructurales en voladizo debe tenerse en cuenta la deflexión vertical causada por rotación en el apoyo del voladizo.

**5.1.10.3.6. Fuerza Sísmica en la Dirección Perpendicular al Plano del Muro no Estructural.** Se verifica que las deflexiones del muro, causadas por estas fuerzas, no excedan la capacidad de deformación del muro.

**5.1.10.3.7. Cielos Rasos.** Se tiene en cuenta la iteración de los elementos arquitectónicos, hidráulicos, mecánicos y eléctricos que se incorporen dentro de él.

**5.1.10.4. Instalaciones Hidráulicas, Sanitarias, Mecánicas y Eléctricas.**

**5.1.10.4.1. Fuerzas Sísmicas de Diseño.** Se determinan con la ecuación del numeral 1.11.2.1.

**5.1.10.4.2. Soportes.** Se diseñan para fuerzas sísmicas reducidas de diseño y de acuerdo con los requisitos correspondientes del material estructural de soporte. Los soportes deben ser capaces de resistir los desplazamientos de la estructura inducidos por los movimientos sísmicos.

**5.1.10.4.3. Empates con las Redes de Servicios Públicos.** Se disponen conexiones flexibles en los empates con las redes de servicios públicos en todos los casos, en los cuales el empare está localizado en un lugar donde la estructura se puede desplazar con respecto al terreno como consecuencia de los movimientos sísmicos. El empare flexible debe resistir sin daños los desplazamientos.

**5.1.10.4.4. Interruptores Automáticos.** En los empates con las redes de electricidad y de gas en edificaciones que pertenecen al grupo de uso IV en zonas de amenaza sísmica intermedia y alta, se coloca al lado de la edificación, un interruptor automático que debe activarse cuando se presente una aceleración horizontal en el terreno mayor que  $0.5 A_a$ .

EJEMPLO DE DISEÑO: Este se hizo con un muro de la estructura de los baños, pero el procedimiento es el mismo para todas las estructuras.

Muro = 2.45 m \* 4 m

$\gamma = 13 \text{ KNw/m}^3$

e = 0.12 m

$$\gamma_{\text{mor}} = 22 \text{ KNw/m}^3$$

$$e_{\text{mor}} = 0.03 \text{ m}$$

$$w = (\gamma_e + \gamma_{\text{mor}} e_{\text{mor}})bh$$

$$w = (13 \cdot 0.12 + 22 \cdot 0.03) \cdot 2.45 \cdot 4 = 21.756 \text{ KNw}$$

$$M_p = 21.756 \text{ KNw} / 9.8 \text{ m/seg}^2 = 2.22 \text{ KNw} \cdot \text{seg}^2 / \text{m}$$

$$F_p = a_x a_p \cdot g \cdot M_p / R_p \geq A_a l / 2 \cdot g M_p$$

$$a_x = C_v x \quad V_s / m_x g \leq 2 S_a \quad \text{Donde:}$$

$$C_v x = 1$$

$$V_s = S_a \cdot W_p \quad \text{Del análisis de Fuerza Sísmica}$$

$$S_a = 0.825 \%; \quad W_p = 493 \text{ KNw}$$

$$V_s = 407 \text{ KNw}$$

$$m_x = 50.30 \text{ KNw seg}^2 / \text{m}$$

$$a_x = 1 \cdot 407 / (50.30 \cdot 9.8) = 0.825 \leq 1.65 \%$$

$$a_p = 1$$

$$R_p = 1.5$$

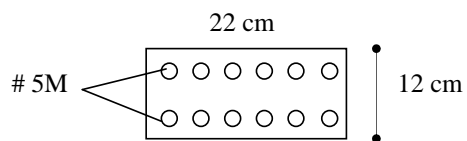
$$F_p = 0.825 \cdot 1 \cdot 9.8 \cdot 2.22 / 1.5 = 11.97 \text{ KNw}$$

Muro apoyado arriba y abajo

$$M_u = F_p \cdot l / 8 = 11.96 \text{ KNw} \cdot (2.45 \text{ m}) / 8 = 3.67 \text{ KNw} \cdot \text{m} \equiv 36.7 \text{ T} \cdot \text{cm}$$

$$K = M_u / b d^2 = 36.7 / (22 \cdot 9^2) = 0.0206 \rightarrow \rho = 0.00583$$

$$A_s = \rho b d = 0.00583 \cdot 22 \cdot 9 = 1.15 \text{ cm}^2 \rightarrow 6 \# 5M$$



## 5.2. DISEÑO ESTRUCTURAL DE OFICINAS

NORMA NSR-98

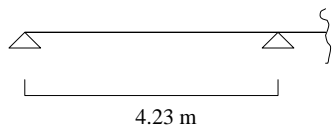
5.2.1 MATERIALES: (Ver capítulo 7)

### 5.2.2 PREDIMENSIONAMIENTO Y SECCIONES DEFINITIVAS.

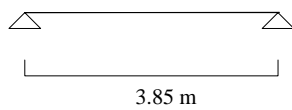
Sistema de Pórtico

5.2.2.1 Vigas aéreas:

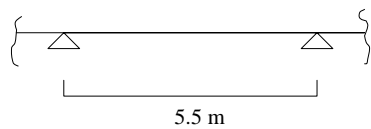
5.2.2.1.1 Evaluación de peraltes: Tabla C.9-1(b)



$$h=l/18.5 = 0.23 \text{ m}$$



$$h=l/16 = 0.24 \text{ m}$$



$$h=l/21 = 0.26 \text{ m}$$

Nota: Se selecciona la tabla C.9-1(b) debido a que las vigas no soportan muros ni particiones frágiles.

Peralte seleccionado = 30 cm

#### 5.2.2.1.2 Ancho de Alma:

$b_w \geq 0.25 \text{ mt}$  C.21.3.1(d)

Ancho seleccionado = 0.25 mt

Para vigas que presentan torsión tomamos un ancho de 30 cm.

#### 5.2.2.2 Columnas:

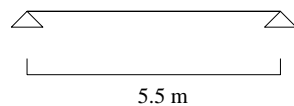
Como la estructura es sencilla no vale la pena hacer un predimensionamiento analítico de las columnas.

Rectangulares 30 x 30 cm C.21.4.1(b)

Circulares  $\phi$  35 cm C.21.4.1(b)

#### 5.2.2.3 Vigas de cimentación.

##### 5.2.2.3.1 Evaluación de peralte: (como viga de amarre) C.15.13.3



$$h = l/20 = 0.28 \text{ mt}$$

Peralte seleccionado 30 cm y para las columnas susceptibles de ladeo se ha tomado unas vigas de peralte igual a 35 cm

#### **5.2.2.3.2 Ancho del Alma:** (como viga de amarre)

La selección de la viga de amarre debe ser capaz de soportar una fuerza de compresión o tensión de 0.25 veces la carga vertical total del elemento que tenga la mayor carga entre los que interconecta, por tanto.

$$P = 0.25 F_{vmax} \quad A.3.6.4.2$$

Por tratarse de una viga de cimentación podemos escoger un ancho de 25 cm

$$A_g \approx 0.3 * 0.25 = 0.075 \text{ m}^2$$

$$P_{max} = 0.1 f_c A_g \quad C.21.3.1(a)$$

$$F_{vmax} = \frac{0.1 f_c A_g}{0.25} = \frac{0.1 * 21 * 0.075}{0.25} = 0.63 \text{ MNw} = 630 \text{ KNw}$$

#### **5.2.2.4 Recubrimientos:** (ver capítulo 7)

### **5.2.3 Evaluacion de Carga Permanente**

#### **5.2.3.1 Carga Muerta:** (B.3)

- ◆ Peso propio de los elementos estructurales
  - Los elementos estructurales como vigas y columnas son analizados inherentemente en el programa por tal motivo no son especificados en este análisis.



◆ Mampostería (primer nivel):

|                           |   |                         |
|---------------------------|---|-------------------------|
| Altura de muro            | : | 2.45 m                  |
| Espesor del muro          | : | 0.12 m                  |
| Peso unitario de ladrillo |   |                         |
| Farol                     | : | 13 KNw/m <sup>3</sup>   |
| Peso unitario de repello  | : | 21 KNw/m <sup>3</sup>   |
| <br>                      |   |                         |
| Carga de repello (4 cm)   | : | 0.84 KNw/m <sup>2</sup> |
| Carga de mampostería      | : | 1.56 KNw/m <sup>2</sup> |
| <br>                      |   |                         |
| Carga total por longitud  | = | 5.88 KNw/m              |
| Longitud de Muros         | = | 120.91 m                |
| Total peso de Mampostería | = | 5.88 * 120.91 = 711 KNw |

Total peso propio de mampostería referido a la losa de cubierta en la evaluación de la carga permanente para efectos sísmicos.

$$0.233 * 711 = 166 \text{ KNw}$$

◆ Cubierta:

|                            |   |                                      |
|----------------------------|---|--------------------------------------|
| Carga de teja AC           | = | 0.18 KNw/m <sup>2</sup>              |
| Carga de la estructura     | = | 0.10 KNw/m <sup>2</sup>              |
| Carga adicional            | = | <u>0.10 KNw/m<sup>2</sup></u>        |
| Total carga de cubierta    | = | 0.38 KNw/m <sup>2</sup>              |
| <br>                       |   |                                      |
| Area de cubierta(planta)   | = | 252.23 m <sup>2</sup>                |
| Inclinación de la cubierta | = | 15°                                  |
| Area de Cubierta inclinada | = | 252.23/cos15° = 261.1 m <sup>2</sup> |
| Peso de cubierta           | = | 261.1*0.38 = 99 KNw                  |

◆ Cielo Raso:

|                    |   |                         |
|--------------------|---|-------------------------|
| Madera             | = | 0.15 KNw/m <sup>2</sup> |
| Peso de cielo raso | = | 0.15*252.23 = 38 KNw    |

◆ Domo Acrílico ( $\phi = 2$  m):

|                    |   |            |
|--------------------|---|------------|
| Carga por longitud | = | 0.30 KNw/m |
| Longitud domo      | = | 19.7 m     |
| Peso del domo      | = | 5.91 KNw   |

◆ Muro Culata:

|                                |   |                         |
|--------------------------------|---|-------------------------|
| Altura de muro                 | : | 1.5 m                   |
| Espesor del muro               | : | 0.12 m                  |
| Peso unitario de ladrillo      |   |                         |
| Farol (FS)                     | : | 18 KNw/m <sup>3</sup>   |
| Peso unitario de repello       | : | 21 KNw/m <sup>3</sup>   |
| Carga de repello (4 cm)        | : | 0.84 KNw/m <sup>2</sup> |
| Carga de mampostería           | : | 2.16 KNw/m <sup>2</sup> |
| Carga de Cinta de amarre       |   |                         |
| Secc. 0.12*0.15 mt             | : | 0.432 KNw/m             |
| Carga total sin viga de culata | = | 3.0 KNw/m <sup>2</sup>  |
| Carga total por longitud       | = | 4.93 KNw/m              |
| Longitud de Muros              | = | 62.71 m                 |
| Total peso de Culata           | = | 4.93 * 62.71 = 309 KNw  |

◆ Total Carga Muerta = 618 KNw

(Este valor no incluye el peso de los elementos estructurales)

**5.2.3.2 Carga Viva: (B.4)**

|   |   |                         |
|---|---|-------------------------|
| ◆ Para cubierta con pendiente mayor al 20 % | = | 0.35 KNw/m <sup>2</sup> |
| Total Carga Viva                            | = | 0.35 * 252.23 = 88 KNw  |

### 5.2.3.3 Carga Permanente en la estructura: (Wp)

100 % : Carga Muerta

10 % : Carga Viva

$$\text{Total Carga Permanente} = 618 + 0.1 \cdot 88 = 758 \text{ KNw}$$

Total Carga Permanente = 758 KNw

(Este valor no incluye el peso de los elementos estructurales debido a que el mismo se analiza inherentemente en el programa, con el que también se analiza las masas aferentes de los mismos.)

### 5.2.3.4 Transferencia de cargas a pórticos:

#### 5.2.3.4.1 Cargas sobre N + 2.75

Cargas Distribuidas por metro cuadrado

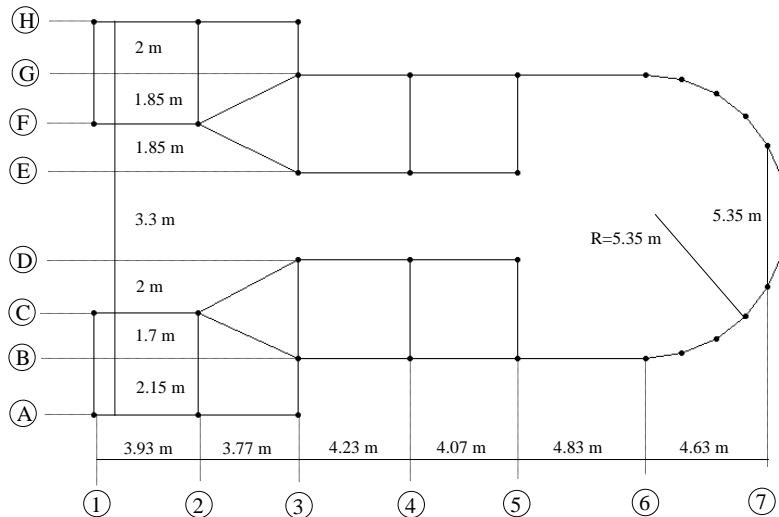
Carga Muerta :  $137/252.23 = 0.54 \text{ KNw/m}^2$  \*

Carga Viva :  $0.35 \text{ KNw/m}^2$

(\*) La carga no incluye el peso propio de vigas, columnas, mampostería (primer piso) ni muro culata, por estar analizados directamente sobre los pórticos.

Momentos sobre las vigas que soportan las culatas =  $4.93 \cdot 0.40 = 1.97 \text{ KNw-m/m}$

### 5.2.3.4.2 Disposición de los Ejes

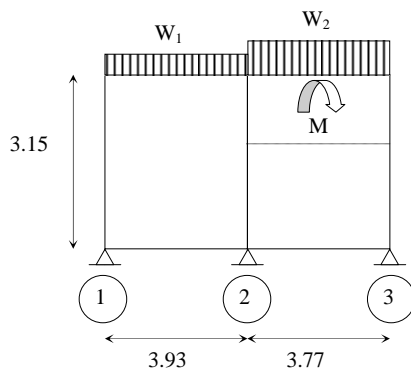


### 5.2.3.4.3 Cargas en Pórticos:

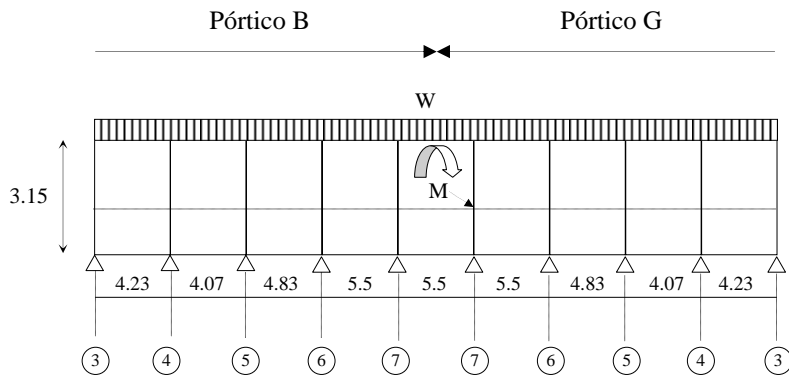
Las cargas que se han analizado son las siguientes:

- Muerta y Viva para la condición de vigas que dan arriostramiento, por tanto, se considera una aferencia de 1.5 m para vigas canal C.13.3.2.2
- Carga de muro culata sobre vigas canal, incluyendo el efecto torsor.
- Las vigas que conforman los timpanos no hacen parte del sistema de resistencia sísmica, por tal motivo se ha dispuesto en el programa SAP2000 de una liberación de restricciones en sus apoyos, concernientes a los giros de los mismos.

#### Pórtico A

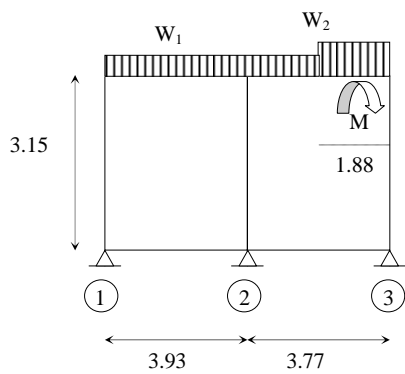


| CARGA  | W <sub>1</sub><br>(KNw/m) | W <sub>2</sub><br>(KNw/m) | M<br>(KNw-m/m) |
|--------|---------------------------|---------------------------|----------------|
| Muerta | 0.81                      | 5.74                      | 1.97           |
| Viva   | 0.53                      | 0.53                      | -              |



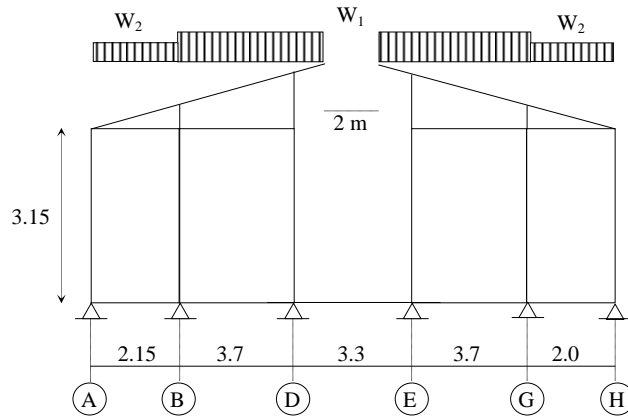
| CARGA  | W (KNw/m) | M (KNw-m/m) |
|--------|-----------|-------------|
| Muerta | 5.74      | 1.97        |
| Viva   | 0.53      | -           |

Pórtico H



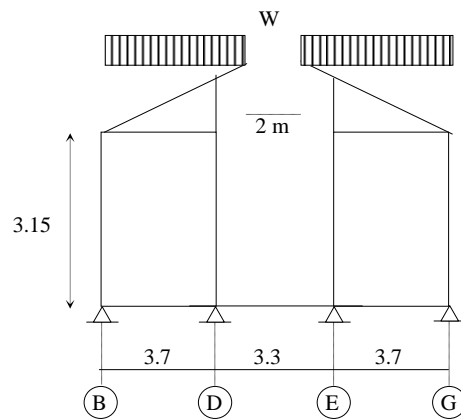
| CARGA  | W <sub>1</sub> (KNw/m) | W <sub>2</sub> (KNw/m) | M (KNw-m/m) |
|--------|------------------------|------------------------|-------------|
| Muerta | 0.81                   | 5.74                   | -1.97       |
| Viva   | 0.53                   | 0.53                   | -           |

Pórtico 3



| CARGA  | $W_1$ (KNw/m) | $W_2$ (KNw/m) |
|--------|---------------|---------------|
| Muerta | 2.16          | 1.02          |
| Viva   | 1.4           | 0.66          |

Pórticos 4 y 5



| CARGA  | $W$ (KNw/m) |
|--------|-------------|
| Muerta | 2.47        |
| Viva   | 1.6         |

Las vigas que en servicio muy posiblemente y basados en la disposición arquitectónica, no tengan cargas sobre si son evaluadas con una carga mínima de 0.81 KNw/m para carga muerta y de 0.53 KNw/m para carga viva

Las cargas sobre los pórticos están evaluadas sin peso propio.

## **5.2.4 Fuerzas Sísmicas**

**5.2.4.1 Método de análisis para evaluación de carga sísmica.** Se utiliza el Análisis Dinámico Elástico y se realiza una comparación con el método de Fuerza Horizontal Equivalente, utilizando diafragma flexible, además, para poder simular las condiciones reales de la estructura hay al necesidad de representar mediante restricciones axiales al desplazamiento, la existencia de las cerchas, Esta modelación aparte de lo antes establecido tiene la ventaja de eliminar algunos modos innecesarios y también reduce el costo operacional.

**5.2.4.2 Zona de Amenaza Sísmica:** Alta (  $A_a = 0.3$  )

### **5.2.4.3 Efectos Locales.**

Perfil del suelo tipo : S3

Coefficiente de Sitio : 1.5

### **5.2.4.4 Coeficiente de Importancia.**

Estructura de ocupación especial : (Grupo II)

Coefficiente de Importancia : 1.1

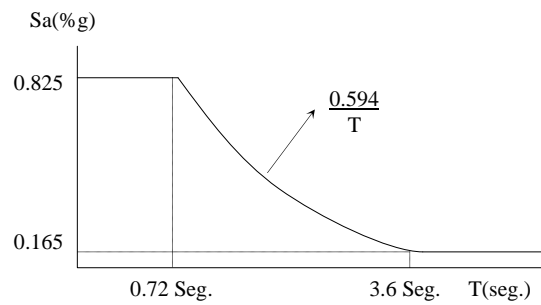
### 5.2.4.5 Espectro de Diseño.

$$S_{a_{\max}} = 2.5 A_a I = 0.825 \%g$$

$$S_{a_{\min}} = A_a I/2 = 0.165 \%g$$

$$T_c = 0.48 S = 0.72 \text{ Seg.}$$

$$T_L = 2.4 S = 3.6 \text{ Seg.}$$



### 5.2.4.6 Período Fundamental Aproximado ( $T_a$ )

$$T_a = 0.08 * 2.75^{3/4} = 0.17 \text{ Seg.}$$

### 5.2.4.7 Cortante Sísmico en la Base ( $V_s$ )

$$V_s = S_a W_p$$

$$V_s = 0.825 * 1638 = 1352 \text{ KNw}$$

### 5.2.4.8 Análisis Dinámico Elástico.

#### 5.2.4.8.1 Modelo Matemático a emplear.

Modelo Tridimensional con diafragma flexible.

Se tiene en cuenta los siguientes puntos:

- Efectos directos en la dirección bajo estudio.
- Torsión Natural.



- Efectos direccionales (Tomando 30% de incidencia en la dirección perpendicular a la de estudio).

#### **5.2.4.8.2 Masa de la Edificación**

Por tratarse de una estructura de un solo piso tenemos una carga permanente aplicada en el nivel superior.

$$W_p = 1638 \text{ KNw}$$

$$\text{Masa concentrada} = 1638/9.81 = 166.97 \text{ KNw Seg}^2/\text{m}$$

Por el hecho de que a la estructura se le haya considerado un diafragma flexible entonces la masa concentrada será repartida por área aferente, este proceso ha sido evaluado determinando una losa con la masa equivalente de la cubierta, sin que esta actúe como diafragma.

#### **5.2.4.8.3 Representación de los Movimientos Sísmicos.**

Procedimiento espectral (NSR-98)

#### **5.2.4.9 Metodología de Análisis.**

##### **5.2.4.9.1 Modos de Vibración.**

El número de modos empleados es de 12 tal que por lo menos 90 % de la masa participe en el cálculo de la respuesta sísmica, esto equivale a que participen mas de 150275 Kgm. Después de el análisis, con los modos de vibración se obtiene un 95 . 76% de participación en el sentido X y de 93 . 25% en el sentido Y.

#### **5.2.4.9.2 Respuesta Espectral Modal.**

La respuesta máxima espectral se obtiene utilizando las ordenadas del espectro de diseño para el período de cada modo de vibración.

#### **5.2.4.9.3 Respuesta Total.**

Todas las respuestas del análisis se combinan de acuerdo a las características de todos los modos de vibración. Los métodos empleados son:

- Combinación Cuadrática Completa (CQC): Con una razón de amortiguamiento del 5%.

Para el caso este es el método más apropiado por las características de la estructura.

- Raíz Cuadrada de la Suma de los Cuadrados (SRSS)

#### **5.2.4.9.4 Comparación con Fuerza Horizontal Equivalente.**

Por ser una estructura irregular  $V_t \geq V_s$  A.5.4.5(a)

$1026 \text{ KNw} < 1352 \text{ KNw} \Rightarrow$  No Cumple.

Como resultado del análisis dinámico tenemos que el cortante basal modal ( $V_t$ ) es inferior al cortante sísmico en la base ( $V_s$ ) entonces hay la necesidad de modificar los factores de amplificación para carga sísmica en  $1352/1026 = 1.3177$

**5.2.4.9.5 Evaluación de las Derivas.** Se verifica las derivas para cada modo de vibración que no exceda 0.01 hpi

Se ha encontrado que el máximo desplazamiento en sentido X se presenta sobre la columna D3 y el máximo desplazamiento en sentido Y se encuentra sobre la columna A1.

| Dirección | Deriva (cm) | 0.01h <sub>pi</sub> (cm) | Observación |
|-----------|-------------|--------------------------|-------------|
| X         | 2.29        | 3.15                     | Cumple      |
| Y         | 3.08        | 3.15                     |             |

#### 5.2.4.9.6 Fuerzas de Diseño de los Elementos.

Las fuerzas combinadas de los modos en el análisis dinámico son reducidas por el coeficiente de disipación de energía.

### 5.2.5 Combinaciones de las Diferentes Solicitaciones: Generales

#### 5.2.5.1 Coeficiente de Capacidad de Disipación de Energía (R)

$$\begin{aligned}
 R &= R_o \phi_a \phi_p \\
 R_o &= 7 \quad \text{Tabla A.3-3} \\
 \phi_a &= 1 \\
 \phi_p &= 0.81 ; \text{ Tipo 3P y 5P} \quad \text{Tabla A.3-6} \\
 R &= 5.67
 \end{aligned}$$

Debido a que es necesario preservar el concepto de columna fuerte y viga débil, se ha considerado un coeficiente de capacidad de disipación de energía de 4.73 para columnas.

#### 5.2.6. Evaluación del Índice de Estabilidad (Q<sub>i</sub>).

$$Q_i = \frac{P_i \Delta_{cm}}{V_i h_{pi}} \quad \text{A.6-3}$$

#### Índice de Estabilidad (Sentido X)

| Piso | P (KNw)        |                | V <sub>x</sub> (KNw) | h <sub>p</sub> (m) | Δ (m)  | Q <sub>i</sub> | Observación      |
|------|----------------|----------------|----------------------|--------------------|--------|----------------|------------------|
|      | P <sub>m</sub> | P <sub>v</sub> |                      |                    |        |                |                  |
| 1    | 1529           | 150            | 1352                 | 3.15               | 0.0229 | 0.009          | Piso arriostrado |

**Indice de Estabilidad (Sentido Y)**

| Piso | P (KNw) |     | Vy (KNw) | hp (m) | Δ (m)  | Qi    | Observación      |
|------|---------|-----|----------|--------|--------|-------|------------------|
|      | Pm      | Pv  |          |        |        |       |                  |
| 1    | 1529    | 150 | 1171     | 3.15   | 0.0308 | 0.014 | Piso arriostrado |

**5.2.7. Efectos Locales ( Pandeo Local)**

$$\frac{Klu}{r} \leq 34 - 12 \frac{M_1}{M_2} \quad \text{C.10-8}$$

| Nivel | Columna | Klu/r  | M1 (KNw-m) | M2 (KNw-m) | 34-12M1/M2 | Observación  |
|-------|---------|--------|------------|------------|------------|--|
| 1     | A1      | 35     | -14.87     | 16.21      | 45.01      | No es necesario considerar los efectos locales de esbeltez |
|       | A2      |        | -14.84     | 17.30      | 44.29      |  |
|       | A3      |        | -13.16     | 14.31      | 45.04      |  |
|       | B3      |        | -18.12     | 19.09      | 45.39      |  |
|       | B4      |        | -15.40     | 18.78      | 43.84      |  |
|       | B5      |        | -20.89     | 23.83      | 44.52      |  |
|       | B6      | 31.5   | -12.26     | 60.76      | 36.42      |  |
|       | C1      | 35     | -16.72     | 18.69      | 44.74      |  |
|       | C2      |        | -19.98     | 21.94      | 44.93      |  |
|       | B7      | 36     | -22.88     | 29.25      | 43.39      |  |
|       | D3      | 35     | -15.08     | 15.83      | 45.43      |  |
|       | D4      |        | -12.69     | 17.05      | 42.93      |  |
|       | D5      |        | -14.24     | 22.27      | 41.67      |  |
|       | E3      | 35     | -14.16     | 14.85      | 45.44      |  |
|       | E4      |        | -12.61     | 16.98      | 42.91      |  |
|       | E5      |        | -14.18     | 22.15      | 41.68      |  |
|       | G7      | 36     | -22.75     | 29.12      | 43.38      |  |
|       | F1      | 35     | -16.71     | 18.67      | 44.74      |  |
|       | F2      |        | -19.89     | 21.23      | 45.24      |  |
|       | G3      |        | -17.36     | 18.22      | 45.43      |  |
| G4    | -15.33  |        | 18.69      | 43.84      |            |  |
| G5    | -20.80  |        | 23.73      | 44.52      |            |  |
| G6    | 31.5    | -12.25 | 60.60      | 36.43      |            |  |
| H1    | 35      | -14.86 | 16.08      | 45.09      |            |  |
| H2    |         | -15.82 | 17.12      | 45.09      |            |  |
| H3    |         | -12.40 | 13.49      | 45.03      |            |  |

Nota: Los efectos locales han sido evaluados para todas las combinaciones de carga y se presentan en la tabla los resultados más críticos

## 5.2.8. Diseño de Elementos Estructurales.

### 5.2.8.1 Diseño de Vigas.

#### 5.2.8.2 Envoltente de Diseño.

| LOAD COMBINATION MULTIPLIERS |      |        |        |       |                       |  |  |  |  |
|------------------------------|------|--------|--------|-------|-----------------------|--|--|--|--|
| COMBO                        | TYPE | CASE   | FACTOR | TYPE  | TITLE                 |  |  |  |  |
| ENVOLVIG                     | ENVE |        |        |       | Envoltente para Vigas |  |  |  |  |
|                              |      | CU     | 1.0000 | COMBO |                       |  |  |  |  |
|                              |      | VIGAS1 | 1.0000 | COMBO |                       |  |  |  |  |
|                              |      | VIGAS2 | 1.0000 | COMBO |                       |  |  |  |  |
|                              |      | VIGAS3 | 1.0000 | COMBO |                       |  |  |  |  |
|                              |      | VIGAS4 | 1.0000 | COMBO |                       |  |  |  |  |

| FRAME ELEMENT FORCES |              |            |      |        |            |            |            |           |  |
|----------------------|--------------|------------|------|--------|------------|------------|------------|-----------|--|
| FRAME                | LOAD         | LOC        | P    | V2     | V3         | T          | M2         | M3        |  |
| 2                    | ENVOLVIG MAX |            |      |        |            |            |            |           |  |
|                      | 1.5E-01      |            | 0.00 | 1.76   | 3.271E-01  | 9.549E-01  | 5.509E-01  | 10.51     |  |
|                      | 1.04         |            | 0.00 | 4.59   | 3.271E-01  | 9.549E-01  | 2.612E-01  | 7.86      |  |
|                      | 1.93         |            | 0.00 | 7.41   | 3.271E-01  | 9.549E-01  | 3.786E-02  | 4.09      |  |
|                      | 2.81         |            | 0.00 | 10.71  | 3.271E-01  | 9.549E-01  | 3.551E-01  | 8.58      |  |
|                      | 3.70         |            | 0.00 | 14.00  | 3.271E-01  | 9.549E-01  | 6.813E-01  | 11.31     |  |
| 2                    | ENVOLVIG MIN |            |      |        |            |            |            |           |  |
|                      | 1.5E-01      |            | 0.00 | -14.08 | -3.681E-01 | -9.998E-01 | -6.265E-01 | -15.75    |  |
|                      | 1.04         |            | 0.00 | -10.79 | -3.681E-01 | -9.998E-01 | -3.004E-01 | -4.88     |  |
|                      | 1.93         |            | 0.00 | -7.49  | -3.681E-01 | -9.998E-01 | -4.067E-02 | 2.37      |  |
|                      | 2.81         |            | 0.00 | -4.67  | -3.681E-01 | -9.998E-01 | -3.215E-01 | -5.46     |  |
|                      | 3.70         |            | 0.00 | -1.85  | -3.681E-01 | -9.998E-01 | -6.113E-01 | -16.26    |  |
| 3                    | ENVOLVIG MAX |            |      |        |            |            |            |           |  |
|                      | 1.5E-01      | -8.638E-01 |      | 2.25   | 2.06       | 6.190E-01  | 3.87       | 10.14     |  |
|                      | 1.04         | -8.638E-01 |      | 4.31   | 2.06       | 6.190E-01  | 2.05       | 7.72      |  |
|                      | 1.93         | -8.638E-01 |      | 6.43   | 2.06       | 6.190E-01  | 2.807E-01  | 3.34      |  |
|                      | 2.81         | -8.638E-01 |      | 9.43   | 2.06       | 6.190E-01  | 1.67       | 5.83      |  |
|                      | 3.70         | -8.638E-01 |      | 12.43  | 2.06       | 6.190E-01  | 3.56       | 8.35      |  |
| 3                    | ENVOLVIG MIN |            |      |        |            |            |            |           |  |
|                      | 1.5E-01      | -5.20      |      | -12.29 | -2.13      | -5.637E-01 | -4.01      | -14.91    |  |
|                      | 1.04         | -5.20      |      | -9.29  | -2.13      | -5.637E-01 | -2.12      | -5.82     |  |
|                      | 1.93         | -5.20      |      | -6.35  | -2.13      | -5.637E-01 | -2.875E-01 | 7.277E-01 |  |
|                      | 2.81         | -5.20      |      | -4.29  | -2.13      | -5.637E-01 | -1.61      | -4.08     |  |
|                      | 3.70         | -5.20      |      | -2.24  | -2.13      | -5.637E-01 | -3.43      | -13.40    |  |
| 4                    | ENVOLVIG MAX |            |      |        |            |            |            |           |  |
|                      | 0.00         | 0.00       |      | -3.88  | 0.00       | 4.892E-01  | 0.00       | 0.00      |  |
|                      | 1.97         | 1.75       |      | 0.00   | 0.00       | 4.892E-01  | 0.00       | 8.11      |  |
|                      | 3.94         | 3.50       |      | 8.24   | 0.00       | 4.892E-01  | 0.00       | 0.00      |  |
| 4                    | ENVOLVIG MIN |            |      |        |            |            |            |           |  |
|                      | 0.00         | 0.00       |      | -8.24  | 0.00       | -6.460E-01 | 0.00       | 0.00      |  |
|                      | 1.97         | 8.242E-01  |      | 0.00   | 0.00       | -6.460E-01 | 0.00       | 3.82      |  |
|                      | 3.94         | 1.65       |      | 3.88   | 0.00       | -6.460E-01 | 0.00       | 0.00      |  |
| 45                   | ENVOLVIG MAX |            |      |        |            |            |            |           |  |
|                      | 1.5E-01      | 0.00       |      | 1.78   | 3.336E-01  | 9.543E-01  | 6.159E-01  | 11.16     |  |
|                      | 1.04         | 0.00       |      | 4.60   | 3.336E-01  | 9.543E-01  | 3.201E-01  | 8.49      |  |

|    |              |           |            |            |            |            |           |
|----|--------------|-----------|------------|------------|------------|------------|-----------|
|    | 1.93         | 0.00      | 7.42       | 3.336E-01  | 9.543E-01  | 2.930E-02  | 4.07      |
|    | 2.81         | 0.00      | 10.71      | 3.336E-01  | 9.543E-01  | 2.375E-01  | 7.84      |
|    | 3.70         | 0.00      | 14.01      | 3.336E-01  | 9.543E-01  | 5.013E-01  | 10.47     |
| 45 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | -13.98     | -2.976E-01 | -9.530E-01 | -5.558E-01 | -16.24    |
|    | 1.04         | 0.00      | -10.69     | -2.976E-01 | -9.530E-01 | -2.919E-01 | -5.44     |
|    | 1.93         | 0.00      | -7.39      | -2.976E-01 | -9.530E-01 | -3.309E-02 | 2.37      |
|    | 2.81         | 0.00      | -4.57      | -2.976E-01 | -9.530E-01 | -2.732E-01 | -4.84     |
|    | 3.70         | 0.00      | -1.74      | -2.976E-01 | -9.530E-01 | -5.690E-01 | -15.64    |
| 46 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | -1.01     | 2.17       | 2.12       | 5.693E-01  | 3.56       | 8.28      |
|    | 1.04         | -1.01     | 4.22       | 2.12       | 5.693E-01  | 1.69       | 5.82      |
|    | 1.93         | -1.01     | 6.28       | 2.12       | 5.693E-01  | 2.322E-01  | 3.35      |
|    | 2.81         | -1.01     | 9.22       | 2.12       | 5.693E-01  | 2.05       | 7.76      |
|    | 3.70         | -1.01     | 12.22      | 2.12       | 5.693E-01  | 3.92       | 10.20     |
| 46 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | -5.14     | -12.47     | -2.10      | -5.546E-01 | -3.55      | -13.46    |
|    | 1.04         | -5.14     | -9.47      | -2.10      | -5.546E-01 | -1.69      | -4.10     |
|    | 1.93         | -5.14     | -6.47      | -2.10      | -5.546E-01 | -2.427E-01 | 7.773E-01 |
|    | 2.81         | -5.14     | -4.34      | -2.10      | -5.546E-01 | -2.07      | -5.71     |
|    | 3.70         | -5.14     | -2.28      | -2.10      | -5.546E-01 | -3.95      | -14.72    |
| 47 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 0.00         | 3.58      | -3.88      | 0.00       | 6.578E-01  | 0.00       | 0.00      |
|    | 1.97         | 1.79      | 0.00       | 0.00       | 6.578E-01  | 0.00       | 8.12      |
|    | 3.94         | 0.00      | 8.24       | 0.00       | 6.578E-01  | 0.00       | 0.00      |
| 47 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 0.00         | 1.69      | -8.24      | 0.00       | -4.701E-01 | 0.00       | 0.00      |
|    | 1.97         | 8.437E-01 | 0.00       | 0.00       | -4.701E-01 | 0.00       | 3.82      |
|    | 3.94         | 0.00      | 3.88       | 0.00       | -4.701E-01 | 0.00       | 0.00      |
| 49 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | -1.58      | 2.073E-01  | 3.858E-01  | 4.100E-01  | 5.44      |
|    | 1.06         | 0.00      | 1.30       | 2.073E-01  | 3.858E-01  | 2.240E-01  | 5.78      |
|    | 1.96         | 0.00      | 4.24       | 2.073E-01  | 3.858E-01  | 5.039E-02  | 3.81      |
|    | 2.87         | 0.00      | 7.60       | 2.073E-01  | 3.858E-01  | 1.568E-01  | 3.47      |
|    | 3.78         | 0.00      | 10.96      | 2.073E-01  | 3.858E-01  | 3.540E-01  | 2.22      |
| 49 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | -9.75      | -2.215E-01 | -3.989E-01 | -4.539E-01 | -9.32     |
|    | 1.06         | 0.00      | -6.39      | -2.215E-01 | -3.989E-01 | -2.551E-01 | -2.22     |
|    | 1.96         | 0.00      | -3.07      | -2.215E-01 | -3.989E-01 | -6.857E-02 | 1.87      |
|    | 2.87         | 0.00      | -1.914E-01 | -2.215E-01 | -3.989E-01 | -1.621E-01 | -2.02     |
|    | 3.78         | 0.00      | 2.69       | -2.215E-01 | -3.989E-01 | -3.464E-01 | -10.32    |
| 50 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 5.046E-01 | 1.250E-01  | 1.97       | 6.658E-01  | 3.43       | 5.58      |
|    | 1.06         | 5.046E-01 | 2.23       | 1.97       | 6.658E-01  | 1.65       | 5.02      |
|    | 1.96         | 5.046E-01 | 4.62       | 1.97       | 6.658E-01  | 2.609E-01  | 2.25      |
|    | 2.87         | 5.046E-01 | 7.69       | 1.97       | 6.658E-01  | 1.72       | 1.73      |
|    | 3.78         | 5.046E-01 | 10.75      | 1.97       | 6.658E-01  | 3.33       | 1.06      |
| 50 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | -3.43     | -8.26      | -1.80      | -2.044E-01 | -3.21      | -8.25     |
|    | 1.06         | -3.43     | -5.19      | -1.80      | -2.044E-01 | -1.58      | -2.66     |
|    | 1.96         | -3.43     | -2.42      | -1.80      | -2.044E-01 | -3.487E-01 | 4.861E-01 |
|    | 2.87         | -3.43     | -3.159E-01 | -1.80      | -2.044E-01 | -1.96      | -3.36     |
|    | 3.78         | -3.43     | 1.79       | -1.80      | -2.044E-01 | -3.72      | -11.71    |
| 51 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | 2.08       | 3.352E-01  | 4.449E-01  | 6.228E-01  | 12.35     |
|    | 1.06         | 0.00      | 4.96       | 3.352E-01  | 4.449E-01  | 3.206E-01  | 9.41      |
|    | 1.96         | 0.00      | 7.99       | 3.352E-01  | 4.449E-01  | 5.157E-02  | 3.69      |
|    | 2.87         | 0.00      | 11.36      | 3.352E-01  | 4.449E-01  | 3.004E-01  | 4.51      |
|    | 3.78         | 0.00      | 14.72      | 3.352E-01  | 4.449E-01  | 6.185E-01  | 5.67      |
| 51 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | -12.19     | -3.532E-01 | -4.717E-01 | -6.658E-01 | -14.92    |
|    | 1.06         | 0.00      | -8.82      | -3.532E-01 | -4.717E-01 | -3.473E-01 | -5.65     |
|    | 1.96         | 0.00      | -5.61      | -3.532E-01 | -4.717E-01 | -6.193E-02 | 7.342E-01 |
|    | 2.87         | 0.00      | -2.72      | -3.532E-01 | -4.717E-01 | -2.945E-01 | -5.08     |
|    | 3.78         | 0.00      | 1.601E-01  | -3.532E-01 | -4.717E-01 | -5.962E-01 | -16.90    |

|    |              |           |            |            |            |            |           |
|----|--------------|-----------|------------|------------|------------|------------|-----------|
| 52 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 3.24      | 9.304E-01  | 3.32       | 2.924E-01  | 5.53       | 7.68      |
|    | 1.06         | 3.24      | 3.03       | 3.32       | 2.924E-01  | 2.53       | 6.31      |
|    | 1.96         | 3.24      | 5.36       | 3.32       | 2.924E-01  | 5.329E-01  | 2.84      |
|    | 2.87         | 3.24      | 8.43       | 3.32       | 2.924E-01  | 3.27       | 3.53      |
|    | 3.78         | 3.24      | 11.49      | 3.32       | 2.924E-01  | 6.10       | 4.44      |
| 52 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | -5.59     | -10.08     | -3.13      | -3.567E-01 | -5.27      | -11.38    |
|    | 1.06         | -5.59     | -7.02      | -3.13      | -3.567E-01 | -2.44      | -4.06     |
|    | 1.96         | -5.59     | -4.18      | -3.13      | -3.567E-01 | -6.188E-01 | 6.772E-01 |
|    | 2.87         | -5.59     | -2.08      | -3.13      | -3.567E-01 | -3.53      | -3.42     |
|    | 3.78         | -5.59     | 2.652E-02  | -3.13      | -3.567E-01 | -6.54      | -12.43    |
| 53 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | 2.09       | 3.211E-01  | 3.853E-01  | 6.026E-01  | 12.35     |
|    | 1.06         | 0.00      | 4.97       | 3.211E-01  | 3.853E-01  | 3.130E-01  | 9.40      |
|    | 1.96         | 0.00      | 8.00       | 3.211E-01  | 3.853E-01  | 5.486E-02  | 3.67      |
|    | 2.87         | 0.00      | 11.36      | 3.211E-01  | 3.853E-01  | 2.692E-01  | 4.52      |
|    | 3.78         | 0.00      | 14.73      | 3.211E-01  | 3.853E-01  | 5.443E-01  | 5.70      |
| 53 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | -12.20     | -3.055E-01 | -3.600E-01 | -5.663E-01 | -14.96    |
|    | 1.06         | 0.00      | -8.84      | -3.055E-01 | -3.600E-01 | -2.910E-01 | -5.67     |
|    | 1.96         | 0.00      | -5.62      | -3.055E-01 | -3.600E-01 | -4.702E-02 | 7.319E-01 |
|    | 2.87         | 0.00      | -2.74      | -3.055E-01 | -3.600E-01 | -2.756E-01 | -5.10     |
|    | 3.78         | 0.00      | 1.430E-01  | -3.055E-01 | -3.600E-01 | -5.649E-01 | -16.92    |
| 54 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 3.37      | 9.596E-01  | 3.03       | 2.666E-01  | 5.07       | 7.76      |
|    | 1.06         | 3.37      | 3.06       | 3.03       | 2.666E-01  | 2.33       | 6.37      |
|    | 1.96         | 3.37      | 5.39       | 3.03       | 2.666E-01  | 5.787E-01  | 2.87      |
|    | 2.87         | 3.37      | 8.46       | 3.03       | 2.666E-01  | 3.36       | 3.57      |
|    | 3.78         | 3.37      | 11.52      | 3.03       | 2.666E-01  | 6.21       | 4.52      |
| 54 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | -5.68     | -10.13     | -3.15      | -2.416E-01 | -5.22      | -11.46    |
|    | 1.06         | -5.68     | -7.06      | -3.15      | -2.416E-01 | -2.37      | -4.10     |
|    | 1.96         | -5.68     | -4.22      | -3.15      | -2.416E-01 | -5.114E-01 | 6.770E-01 |
|    | 2.87         | -5.68     | -2.12      | -3.15      | -2.416E-01 | -3.19      | -3.42     |
|    | 3.78         | -5.68     | -1.831E-02 | -3.15      | -2.416E-01 | -5.93      | -12.46    |
| 55 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | -1.60      | 2.019E-01  | 2.637E-01  | 4.129E-01  | 5.26      |
|    | 1.06         | 0.00      | 1.28       | 2.019E-01  | 2.637E-01  | 2.319E-01  | 5.61      |
|    | 1.96         | 0.00      | 4.23       | 2.019E-01  | 2.637E-01  | 6.447E-02  | 3.62      |
|    | 2.87         | 0.00      | 7.59       | 2.019E-01  | 2.637E-01  | 1.510E-01  | 3.19      |
|    | 3.78         | 0.00      | 10.95      | 2.019E-01  | 2.637E-01  | 3.194E-01  | 1.83      |
| 55 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | -9.59      | -1.898E-01 | -3.124E-01 | -3.736E-01 | -9.15     |
|    | 1.06         | 0.00      | -6.22      | -1.898E-01 | -3.124E-01 | -2.035E-01 | -2.19     |
|    | 1.96         | 0.00      | -2.92      | -1.898E-01 | -3.124E-01 | -4.696E-02 | 1.76      |
|    | 2.87         | 0.00      | -3.913E-02 | -1.898E-01 | -3.124E-01 | -1.444E-01 | -2.13     |
|    | 3.78         | 0.00      | 2.84       | -1.898E-01 | -3.124E-01 | -3.238E-01 | -10.45    |
| 56 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 3.385E-01 | -3.378E-01 | 1.80       | 2.394E-01  | 3.20       | 5.10      |
|    | 1.06         | 3.385E-01 | 1.76       | 1.80       | 2.394E-01  | 1.58       | 4.96      |
|    | 1.96         | 3.385E-01 | 4.10       | 1.80       | 2.394E-01  | 3.342E-01  | 2.83      |
|    | 2.87         | 3.385E-01 | 7.16       | 1.80       | 2.394E-01  | 1.88       | 2.45      |
|    | 3.78         | 3.385E-01 | 10.23      | 1.80       | 2.394E-01  | 3.59       | 1.95      |
| 56 | ENVOLVIG MIN |           |            |            |            |            |           |
|    | 1.5E-01      | -3.55     | -8.60      | -1.90      | -3.905E-01 | -3.30      | -8.43     |
|    | 1.06         | -3.55     | -5.53      | -1.90      | -3.905E-01 | -1.59      | -2.53     |
|    | 1.96         | -3.55     | -2.70      | -1.90      | -3.905E-01 | -2.524E-01 | 8.658E-01 |
|    | 2.87         | -3.55     | -5.967E-01 | -1.90      | -3.905E-01 | -1.71      | -2.55     |
|    | 3.78         | -3.55     | 1.51       | -1.90      | -3.905E-01 | -3.33      | -10.34    |
| 58 | ENVOLVIG MAX |           |            |            |            |            |           |
|    | 1.5E-01      | 0.00      | 1.90       | 2.436E-01  | 7.574E-01  | 3.852E-01  | 11.19     |
|    | 1.04         | 0.00      | 4.73       | 2.436E-01  | 7.574E-01  | 1.728E-01  | 8.42      |
|    | 1.93         | 0.00      | 7.55       | 2.436E-01  | 7.574E-01  | 7.325E-02  | 4.09      |
|    | 2.81         | 0.00      | 10.84      | 2.436E-01  | 7.574E-01  | 2.690E-01  | 8.15      |
|    | 3.70         | 0.00      | 14.13      | 2.436E-01  | 7.574E-01  | 4.764E-01  | 10.87     |

|     |              |           |           |            |            |            |           |
|-----|--------------|-----------|-----------|------------|------------|------------|-----------|
| 58  | ENVOLVIG MIN |           |           |            |            |            |           |
|     | 1.5E-01      | 0.00      | -14.11    | -2.361E-01 | -2.700E-01 | -3.668E-01 | -16.25    |
|     | 1.04         | 0.00      | -10.81    | -2.361E-01 | -2.700E-01 | -1.610E-01 | -5.36     |
|     | 1.93         | 0.00      | -7.52     | -2.361E-01 | -2.700E-01 | -6.808E-02 | 2.55      |
|     | 2.81         | 0.00      | -4.68     | -2.361E-01 | -2.700E-01 | -2.704E-01 | -5.15     |
|     | 3.70         | 0.00      | -1.86     | -2.361E-01 | -2.700E-01 | -4.845E-01 | -16.04    |
| 59  | ENVOLVIG MAX |           |           |            |            |            |           |
|     | 1.5E-01      | 8.600E-01 | 1.97      | 1.48       | 1.290E-01  | 3.17       | 9.41      |
|     | 1.04         | 8.600E-01 | 4.03      | 1.48       | 1.290E-01  | 1.88       | 7.04      |
|     | 1.93         | 8.600E-01 | 6.09      | 1.48       | 1.290E-01  | 6.618E-01  | 3.01      |
|     | 2.81         | 8.600E-01 | 9.05      | 1.48       | 1.290E-01  | 6.886E-01  | 5.93      |
|     | 3.70         | 8.600E-01 | 12.05     | 1.48       | 1.290E-01  | 1.73       | 9.15      |
| 59  | ENVOLVIG MIN |           |           |            |            |            |           |
|     | 1.5E-01      | -7.74     | -13.18    | -1.25      | -5.526E-01 | -2.78      | -17.18    |
|     | 1.04         | -7.74     | -10.18    | -1.25      | -5.526E-01 | -1.69      | -7.12     |
|     | 1.93         | -7.74     | -7.18     | -1.25      | -5.526E-01 | -6.667E-01 | 1.270E-01 |
|     | 2.81         | -7.74     | -5.08     | -1.25      | -5.526E-01 | -8.916E-01 | -4.07     |
|     | 3.70         | -7.74     | -3.02     | -1.25      | -5.526E-01 | -2.13      | -13.06    |
| 60  | ENVOLVIG MAX |           |           |            |            |            |           |
|     | 0.00         | 0.00      | -5.64     | 0.00       | 2.136E-01  | 0.00       | 0.00      |
|     | 1.97         | 2.78      | 0.00      | 0.00       | 2.136E-01  | 0.00       | 12.89     |
|     | 3.94         | 5.57      | 13.10     | 0.00       | 2.136E-01  | 0.00       | 0.00      |
| 60  | ENVOLVIG MIN |           |           |            |            |            |           |
|     | 0.00         | 0.00      | -13.10    | 0.00       | -5.120E-01 | 0.00       | 0.00      |
|     | 1.97         | 1.20      | 0.00      | 0.00       | -5.120E-01 | 0.00       | 5.55      |
|     | 3.94         | 2.40      | 5.64      | 0.00       | -5.120E-01 | 0.00       | 0.00      |
| 101 | ENVOLVIG MAX |           |           |            |            |            |           |
|     | 1.5E-01      | 0.00      | 1.72      | 2.174E-01  | 3.006E-01  | 4.384E-01  | 10.56     |
|     | 1.04         | 0.00      | 4.54      | 2.174E-01  | 3.006E-01  | 2.475E-01  | 7.96      |
|     | 1.93         | 0.00      | 7.39      | 2.174E-01  | 3.006E-01  | 6.827E-02  | 3.99      |
|     | 2.81         | 0.00      | 10.68     | 2.174E-01  | 3.006E-01  | 1.614E-01  | 8.10      |
|     | 3.70         | 0.00      | 13.97     | 2.174E-01  | 3.006E-01  | 3.570E-01  | 10.66     |
| 101 | ENVOLVIG MIN |           |           |            |            |            |           |
|     | 1.5E-01      | 0.00      | -13.86    | -2.245E-01 | -6.891E-01 | -4.449E-01 | -15.64    |
|     | 1.04         | 0.00      | -10.56    | -2.245E-01 | -6.891E-01 | -2.478E-01 | -4.99     |
|     | 1.93         | 0.00      | -7.29     | -2.245E-01 | -6.891E-01 | -6.220E-02 | 2.49      |
|     | 2.81         | 0.00      | -4.47     | -2.245E-01 | -6.891E-01 | -1.490E-01 | -5.30     |
|     | 3.70         | 0.00      | -1.64     | -2.245E-01 | -6.891E-01 | -3.383E-01 | -16.09    |
| 102 | ENVOLVIG MAX |           |           |            |            |            |           |
|     | 1.5E-01      | 3.681E-01 | 2.48      | 1.21       | 3.521E-01  | 1.63       | 8.53      |
|     | 1.04         | 3.681E-01 | 4.53      | 1.21       | 3.521E-01  | 5.932E-01  | 5.81      |
|     | 1.93         | 3.681E-01 | 6.59      | 1.21       | 3.521E-01  | 6.125E-01  | 3.34      |
|     | 2.81         | 3.681E-01 | 9.58      | 1.21       | 3.521E-01  | 1.86       | 7.62      |
|     | 3.70         | 3.681E-01 | 12.58     | 1.21       | 3.521E-01  | 3.14       | 10.07     |
| 102 | ENVOLVIG MIN |           |           |            |            |            |           |
|     | 1.5E-01      | -8.18     | -12.33    | -1.46      | -3.112E-01 | -2.06      | -13.22    |
|     | 1.04         | -8.18     | -9.33     | -1.46      | -3.112E-01 | -8.051E-01 | -4.00     |
|     | 1.93         | -8.18     | -6.33     | -1.46      | -3.112E-01 | -6.082E-01 | 4.796E-01 |
|     | 2.81         | -8.18     | -4.26     | -1.46      | -3.112E-01 | -1.64      | -6.28     |
|     | 3.70         | -8.18     | -2.20     | -1.46      | -3.112E-01 | -2.71      | -15.71    |
| 103 | ENVOLVIG MAX |           |           |            |            |            |           |
|     | 0.00         | 5.70      | -5.64     | 0.00       | 4.234E-01  | 0.00       | 0.00      |
|     | 1.97         | 2.85      | 0.00      | 0.00       | 4.234E-01  | 0.00       | 12.90     |
|     | 3.94         | 0.00      | 13.10     | 0.00       | 4.234E-01  | 0.00       | 0.00      |
| 103 | ENVOLVIG MIN |           |           |            |            |            |           |
|     | 0.00         | 2.46      | -13.10    | 0.00       | -2.845E-01 | 0.00       | 0.00      |
|     | 1.97         | 1.23      | 0.00      | 0.00       | -2.845E-01 | 0.00       | 5.56      |
|     | 3.94         | 0.00      | 5.64      | 0.00       | -2.845E-01 | 0.00       | 0.00      |
| 105 | ENVOLVIG MAX |           |           |            |            |            |           |
|     | 1.5E-01      | 0.00      | -2.09     | 3.159E-01  | 1.06       | 4.508E-01  | 2.32      |
|     | 1.02         | 0.00      | 6.692E-01 | 3.159E-01  | 1.06       | 1.846E-01  | 2.99      |
|     | 1.89         | 0.00      | 3.43      | 3.159E-01  | 1.06       | 1.511E-01  | 2.56      |
|     | 2.76         | 0.00      | 6.66      | 3.159E-01  | 1.06       | 4.401E-01  | 4.53      |
|     | 3.63         | 0.00      | 9.88      | 3.159E-01  | 1.06       | 7.398E-01  | 4.37      |
| 105 | ENVOLVIG MIN |           |           |            |            |            |           |



|         |              |            |            |            |            |            |
|---------|--------------|------------|------------|------------|------------|------------|
| 1.5E-01 | 0.00         | -10.48     | -3.479E-01 | -5.963E-01 | -4.777E-01 | -10.18     |
| 1.02    | 0.00         | -7.26      | -3.479E-01 | -5.963E-01 | -1.838E-01 | -2.53      |
| 1.89    | 0.00         | -4.03      | -3.479E-01 | -5.963E-01 | -1.225E-01 | 1.16       |
| 2.76    | 0.00         | -1.27      | -3.479E-01 | -5.963E-01 | -3.837E-01 | -3.03      |
| 3.63    | 0.00         | 1.50       | -3.479E-01 | -5.963E-01 | -6.556E-01 | -10.15     |
| 106     | ENVOLVIG MAX |            |            |            |            |            |
| 1.5E-01 | 7.802E-01    | -8.13      | 1.60       | 4.86       | 2.80       | 3.133E-01  |
| 1.02    | 7.802E-01    | -2.26      | 1.60       | 2.78       | 1.48       | 5.27       |
| 1.89    | 7.802E-01    | 3.61       | 1.60       | 9.844E-01  | 1.00       | 8.24       |
| 2.76    | 7.802E-01    | 10.89      | 1.60       | -6.250E-01 | 2.26       | 7.35       |
| 3.63    | 7.802E-01    | 19.28      | 1.60       | -2.17      | 4.11       | 2.54       |
| 106     | ENVOLVIG MIN |            |            |            |            |            |
| 1.5E-01 | -5.27        | -20.37     | -2.18      | 2.13       | -3.60      | -13.47     |
| 1.02    | -5.27        | -11.71     | -2.18      | 5.852E-01  | -1.77      | -5.224E-01 |
| 1.89    | -5.27        | -4.27      | -2.18      | -9.551E-01 | -7.962E-01 | 4.23       |
| 2.76    | -5.27        | 1.76       | -2.18      | -2.68      | -1.55      | -1.45      |
| 3.63    | -5.27        | 7.63       | -2.18      | -4.73      | -2.90      | -13.42     |
| 107     | ENVOLVIG MAX |            |            |            |            |            |
| 1.5E-01 | 0.00         | -1.99      | 1.780E-01  | 4.965E-01  | 4.126E-01  | 4.60       |
| 1.11    | 0.00         | 1.07       | 1.780E-01  | 4.965E-01  | 2.423E-01  | 5.28       |
| 2.07    | 0.00         | 4.20       | 1.780E-01  | 4.965E-01  | 7.501E-02  | 3.94       |
| 3.03    | 0.00         | 7.76       | 1.780E-01  | 4.965E-01  | 1.096E-01  | 4.15       |
| 3.99    | 0.00         | 11.33      | 1.780E-01  | 4.965E-01  | 2.820E-01  | 2.63       |
| 107     | ENVOLVIG MIN |            |            |            |            |            |
| 1.5E-01 | 0.00         | -10.13     | -1.817E-01 | -1.05      | -4.180E-01 | -9.65      |
| 1.11    | 0.00         | -6.57      | -1.817E-01 | -1.05      | -2.442E-01 | -1.87      |
| 2.07    | 0.00         | -3.08      | -1.817E-01 | -1.05      | -7.321E-02 | 2.07       |
| 3.03    | 0.00         | -2.739E-02 | -1.817E-01 | -1.05      | -1.042E-01 | -2.90      |
| 3.99    | 0.00         | 3.03       | -1.817E-01 | -1.05      | -2.730E-01 | -11.98     |
| 108     | ENVOLVIG MAX |            |            |            |            |            |
| 1.5E-01 | 6.25         | 2.563E-01  | 1.10       | 2.630E-01  | 2.00       | 5.33       |
| 1.11    | 6.25         | 2.48       | 1.10       | 2.630E-01  | 9.812E-01  | 4.49       |
| 2.07    | 6.25         | 4.92       | 1.10       | 2.630E-01  | 5.792E-01  | 2.79       |
| 3.03    | 6.25         | 8.17       | 1.10       | 2.630E-01  | 1.61       | 3.80       |
| 3.99    | 6.25         | 11.42      | 1.10       | 2.630E-01  | 2.94       | 3.35       |
| 108     | ENVOLVIG MIN |            |            |            |            |            |
| 1.5E-01 | -5.73        | -9.22      | -1.40      | -6.310E-01 | -2.51      | -8.75      |
| 1.11    | -5.73        | -5.98      | -1.40      | -6.310E-01 | -1.21      | -1.93      |
| 2.07    | -5.73        | -2.94      | -1.40      | -6.310E-01 | -5.139E-01 | 4.888E-01  |
| 3.03    | -5.73        | -7.175E-01 | -1.40      | -6.310E-01 | -1.26      | -5.04      |
| 3.99    | -5.73        | 1.51       | -1.40      | -6.310E-01 | -2.29      | -14.38     |
| 109     | ENVOLVIG MAX |            |            |            |            |            |
| 1.5E-01 | 0.00         | -1.49      | 2.253E-01  | 7.984E-01  | 4.722E-01  | 5.58       |
| 1.14    | 0.00         | 1.67       | 2.253E-01  | 7.984E-01  | 2.514E-01  | 5.63       |
| 2.14    | 0.00         | 4.86       | 2.253E-01  | 7.984E-01  | 5.778E-02  | 3.57       |
| 3.13    | 0.00         | 8.55       | 2.253E-01  | 7.984E-01  | 1.917E-01  | 5.61       |
| 4.12    | 0.00         | 12.23      | 2.253E-01  | 7.984E-01  | 4.011E-01  | 5.54       |
| 109     | ENVOLVIG MIN |            |            |            |            |            |
| 1.5E-01 | 0.00         | -12.10     | -2.148E-01 | -1.09      | -4.590E-01 | -13.99     |
| 1.14    | 0.00         | -8.42      | -2.148E-01 | -1.09      | -2.486E-01 | -3.95      |
| 2.14    | 0.00         | -4.76      | -2.148E-01 | -1.09      | -6.542E-02 | 1.87       |
| 3.13    | 0.00         | -1.60      | -2.148E-01 | -1.09      | -2.098E-01 | -4.12      |
| 4.12    | 0.00         | 1.56       | -2.148E-01 | -1.09      | -4.295E-01 | -14.35     |
| 110     | ENVOLVIG MAX |            |            |            |            |            |
| 1.5E-01 | 9.42         | 1.14       | 7.873E-01  | 1.33       | 1.47       | 7.02       |
| 1.14    | 9.42         | 3.45       | 7.873E-01  | 1.33       | 8.145E-01  | 5.05       |
| 2.14    | 9.42         | 5.75       | 7.873E-01  | 1.33       | 7.819E-01  | 4.23       |
| 3.13    | 9.42         | 9.11       | 7.873E-01  | 1.33       | 1.45       | 8.11       |
| 4.12    | 9.42         | 12.47      | 7.873E-01  | 1.33       | 2.24       | 9.94       |
| 110     | ENVOLVIG MIN |            |            |            |            |            |
| 1.5E-01 | -13.45       | -12.32     | -8.786E-01 | -1.07      | -1.72      | -13.61     |
| 1.14    | -13.45       | -8.97      | -8.786E-01 | -1.07      | -9.760E-01 | -3.35      |
| 2.14    | -13.45       | -5.61      | -8.786E-01 | -1.07      | -8.528E-01 | 1.405E-01  |
| 3.13    | -13.45       | -3.30      | -8.786E-01 | -1.07      | -1.43      | -6.69      |
| 4.12    | -13.45       | -9.999E-01 | -8.786E-01 | -1.07      | -2.13      | -17.09     |

|                  |        |            |            |            |            |           |  |
|------------------|--------|------------|------------|------------|------------|-----------|--|
| 111 ENVOLVIG MAX |        |            |            |            |            |           |  |
| 1.5E-01          | 0.00   | -1.18      | 2.134E-01  | 1.08       | 4.410E-01  | 5.95      |  |
| 1.13             | 0.00   | 1.92       | 2.134E-01  | 1.08       | 2.355E-01  | 5.74      |  |
| 2.10             | 0.00   | 5.07       | 2.134E-01  | 1.08       | 5.810E-02  | 3.47      |  |
| 3.08             | 0.00   | 8.69       | 2.134E-01  | 1.08       | 2.088E-01  | 5.59      |  |
| 4.05             | 0.00   | 12.31      | 2.134E-01  | 1.08       | 4.221E-01  | 5.70      |  |
| 111 ENVOLVIG MIN |        |            |            |            |            |           |  |
| 1.5E-01          | 0.00   | -12.06     | -2.220E-01 | -7.829E-01 | -4.504E-01 | -13.81    |  |
| 1.13             | 0.00   | -8.43      | -2.220E-01 | -7.829E-01 | -2.365E-01 | -3.97     |  |
| 2.10             | 0.00   | -4.85      | -2.220E-01 | -7.829E-01 | -5.084E-02 | 1.83      |  |
| 3.08             | 0.00   | -1.74      | -2.220E-01 | -7.829E-01 | -1.932E-01 | -4.24     |  |
| 4.05             | 0.00   | 1.36       | -2.220E-01 | -7.829E-01 | -3.982E-01 | -14.41    |  |
| 112 ENVOLVIG MAX |        |            |            |            |            |           |  |
| 1.5E-01          | 9.30   | 1.44       | 8.742E-01  | 1.02       | 1.65       | 7.30      |  |
| 1.13             | 9.30   | 3.71       | 8.742E-01  | 1.02       | 8.997E-01  | 5.08      |  |
| 2.10             | 9.30   | 5.98       | 8.742E-01  | 1.02       | 7.314E-01  | 4.13      |  |
| 3.08             | 9.30   | 9.28       | 8.742E-01  | 1.02       | 1.28       | 8.14      |  |
| 4.05             | 9.30   | 12.58      | 8.742E-01  | 1.02       | 1.94       | 10.20     |  |
| 112 ENVOLVIG MIN |        |            |            |            |            |           |  |
| 1.5E-01          | -13.47 | -12.39     | -8.010E-01 | -1.24      | -1.45      | -13.64    |  |
| 1.13             | -13.47 | -9.09      | -8.010E-01 | -1.24      | -7.679E-01 | -3.46     |  |
| 2.10             | -13.47 | -5.79      | -8.010E-01 | -1.24      | -6.712E-01 | 3.321E-02 |  |
| 3.08             | -13.47 | -3.53      | -8.010E-01 | -1.24      | -1.30      | -6.88     |  |
| 4.05             | -13.47 | -1.26      | -8.010E-01 | -1.24      | -2.02      | -17.27    |  |
| 113 ENVOLVIG MAX |        |            |            |            |            |           |  |
| 1.5E-01          | 0.00   | -2.32      | 1.660E-01  | 1.03       | 3.841E-01  | 4.17      |  |
| 1.13             | 0.00   | 7.803E-01  | 1.660E-01  | 1.03       | 2.226E-01  | 5.16      |  |
| 2.10             | 0.00   | 3.96       | 1.660E-01  | 1.03       | 6.336E-02  | 4.08      |  |
| 3.08             | 0.00   | 7.58       | 1.660E-01  | 1.03       | 9.825E-02  | 4.12      |  |
| 4.05             | 0.00   | 11.20      | 1.660E-01  | 1.03       | 2.537E-01  | 2.35      |  |
| 113 ENVOLVIG MIN |        |            |            |            |            |           |  |
| 1.5E-01          | 0.00   | -10.12     | -1.609E-01 | -4.976E-01 | -3.758E-01 | -9.61     |  |
| 1.13             | 0.00   | -6.49      | -1.609E-01 | -4.976E-01 | -2.193E-01 | -1.74     |  |
| 2.10             | 0.00   | -2.94      | -1.609E-01 | -4.976E-01 | -6.508E-02 | 2.17      |  |
| 3.08             | 0.00   | 1.626E-01  | -1.609E-01 | -4.976E-01 | -1.050E-01 | -2.68     |  |
| 4.05             | 0.00   | 3.27       | -1.609E-01 | -4.976E-01 | -2.655E-01 | -11.75    |  |
| 114 ENVOLVIG MAX |        |            |            |            |            |           |  |
| 1.5E-01          | 6.00   | -4.329E-02 | 1.31       | 6.231E-01  | 2.34       | 4.99      |  |
| 1.13             | 6.00   | 2.22       | 1.31       | 6.231E-01  | 1.09       | 4.42      |  |
| 2.10             | 6.00   | 4.69       | 1.31       | 6.231E-01  | 3.647E-01  | 2.86      |  |
| 3.08             | 6.00   | 7.99       | 1.31       | 6.231E-01  | 1.21       | 3.69      |  |
| 4.05             | 6.00   | 11.29      | 1.31       | 6.231E-01  | 2.20       | 2.99      |  |
| 114 ENVOLVIG MIN |        |            |            |            |            |           |  |
| 1.5E-01          | -5.20  | -9.17      | -1.03      | -1.863E-01 | -1.88      | -8.66     |  |
| 1.13             | -5.20  | -5.86      | -1.03      | -1.863E-01 | -8.953E-01 | -1.82     |  |
| 2.10             | -5.20  | -2.77      | -1.03      | -1.863E-01 | -4.413E-01 | 5.821E-01 |  |
| 3.08             | -5.20  | -5.046E-01 | -1.03      | -1.863E-01 | -1.55      | -4.84     |  |
| 4.05             | -5.20  | 1.76       | -1.03      | -1.863E-01 | -2.81      | -14.16    |  |
| 115 ENVOLVIG MAX |        |            |            |            |            |           |  |
| 1.5E-01          | 0.00   | -2.21      | 3.264E-01  | 5.891E-01  | 4.475E-01  | 2.32      |  |
| 1.02             | 0.00   | 5.584E-01  | 3.264E-01  | 5.891E-01  | 1.716E-01  | 3.12      |  |
| 1.89             | 0.00   | 3.32       | 3.264E-01  | 5.891E-01  | 1.138E-01  | 2.83      |  |
| 2.76             | 0.00   | 6.54       | 3.264E-01  | 5.891E-01  | 3.577E-01  | 4.64      |  |
| 3.63             | 0.00   | 9.77       | 3.264E-01  | 5.891E-01  | 6.118E-01  | 4.37      |  |
| 115 ENVOLVIG MIN |        |            |            |            |            |           |  |
| 1.5E-01          | 0.00   | -10.39     | -2.952E-01 | -1.03      | -4.221E-01 | -9.84     |  |
| 1.02             | 0.00   | -7.17      | -2.952E-01 | -1.03      | -1.734E-01 | -2.29     |  |
| 1.89             | 0.00   | -3.94      | -2.952E-01 | -1.03      | -1.427E-01 | 1.35      |  |
| 2.76             | 0.00   | -1.18      | -2.952E-01 | -1.03      | -4.137E-01 | -2.74     |  |
| 3.63             | 0.00   | 1.59       | -2.952E-01 | -1.03      | -6.950E-01 | -9.73     |  |
| 116 ENVOLVIG MAX |        |            |            |            |            |           |  |
| 1.5E-01          | 1.34   | -2.17      | 2.08       | 4.102E-03  | 3.40       | 2.18      |  |
| 1.02             | 1.34   | -1.557E-01 | 2.08       | 4.102E-03  | 1.66       | 3.37      |  |
| 1.89             | 1.34   | 1.86       | 2.08       | 4.102E-03  | 7.981E-01  | 5.46      |  |
| 2.76             | 1.34   | 8.82       | 2.08       | 1.55       | 1.53       | 6.89      |  |
| 3.63             | 1.34   | 16.65      | 2.08       | 3.35       | 2.83       | 3.54      |  |

|     |              |           |            |            |            |            |            |
|-----|--------------|-----------|------------|------------|------------|------------|------------|
| 116 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -4.71     | -12.00     | -1.56      | -2.10      | -2.72      | -10.97     |
|     | 1.02         | -4.71     | -9.06      | -1.56      | -2.10      | -1.43      | -2.01      |
|     | 1.89         | -4.71     | -6.12      | -1.56      | -2.10      | -1.02      | 2.44       |
|     | 2.76         | -4.71     | 1.529E-01  | -1.56      | -3.411E-01 | -2.21      | -1.69      |
|     | 3.63         | -4.71     | 6.02       | -1.56      | 1.20       | -3.97      | -11.91     |
| 118 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | 11.15      | 9.702E-01  | 6.002E-01  | 1.12       | 13.07      |
|     | 6.1E-01      | 0.00      | 12.62      | 9.702E-01  | 6.002E-01  | 6.721E-01  | 7.66       |
|     | 1.08         | 0.00      | 14.27      | 9.702E-01  | 6.002E-01  | 2.269E-01  | 1.50       |
|     | 1.54         | 0.00      | 15.99      | 9.702E-01  | 6.002E-01  | 2.609E-01  | 3.84       |
|     | 2.00         | 0.00      | 17.70      | 9.702E-01  | 6.002E-01  | 7.738E-01  | 7.91       |
| 118 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -14.27     | -1.12      | -4.292E-01 | -1.29      | -12.49     |
|     | 6.1E-01      | 0.00      | -12.56     | -1.12      | -4.292E-01 | -7.784E-01 | -6.38      |
|     | 1.08         | 0.00      | -11.02     | -1.12      | -4.292E-01 | -2.657E-01 | -9.797E-01 |
|     | 1.54         | 0.00      | -9.55      | -1.12      | -4.292E-01 | -2.321E-01 | -5.56      |
|     | 2.00         | 0.00      | -8.08      | -1.12      | -4.292E-01 | -6.775E-01 | -13.35     |
| 119 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 5.47      | 8.51       | 4.57       | 2.20       | 3.11       | 9.00       |
|     | 6.1E-01      | 5.47      | 9.58       | 4.57       | 2.20       | 1.16       | 4.82       |
|     | 1.08         | 5.47      | 10.66      | 4.57       | 2.20       | 9.983E-01  | 4.001E-01  |
|     | 1.54         | 5.47      | 12.17      | 4.57       | 2.20       | 2.76       | 5.82       |
|     | 2.00         | 5.47      | 13.73      | 4.57       | 2.20       | 4.58       | 11.29      |
| 119 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -4.88     | -16.63     | -3.96      | 5.784E-01  | -2.81      | -14.17     |
|     | 6.1E-01      | -4.88     | -15.06     | -3.96      | 5.784E-01  | -1.14      | -6.85      |
|     | 1.08         | -4.88     | -13.50     | -3.96      | 5.784E-01  | -1.25      | -5.027E-01 |
|     | 1.54         | -4.88     | -12.37     | -3.96      | 5.784E-01  | -3.30      | -5.22      |
|     | 2.00         | -4.88     | -11.30     | -3.96      | 5.784E-01  | -5.40      | -11.20     |
| 120 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 0.00         | 0.00      | 8.989E-01  | 1.36       | 7.443E-01  | 1.50       | 2.97       |
|     | 1.10         | 9.540E-01 | 4.27       | 1.36       | 7.443E-01  | 3.600E-01  | 5.459E-01  |
|     | 2.20         | 1.91      | 8.41       | 1.36       | 7.443E-01  | 5.762E-01  | -3.13      |
| 120 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 0.00         | 0.00      | -1.89      | -3.581E-01 | -6.252E-01 | -2.516E-01 | -2.60      |
|     | 1.10         | 4.521E-01 | 2.403E-01  | -3.581E-01 | -6.252E-01 | -2.096E-01 | -2.12      |
|     | 2.20         | 9.041E-01 | 2.37       | -3.581E-01 | -6.252E-01 | -1.52      | -8.10      |
| 123 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -1.99      | 1.888E-01  | 6.985E-01  | 2.680E-01  | 3.05       |
|     | 1.0E+00      | 0.00      | 7.127E-01  | 1.888E-01  | 6.985E-01  | 1.087E-01  | 3.72       |
|     | 1.85         | 0.00      | 3.44       | 1.888E-01  | 6.985E-01  | 4.692E-02  | 3.25       |
|     | 2.70         | 0.00      | 6.60       | 1.888E-01  | 6.985E-01  | 1.953E-01  | 4.32       |
|     | 3.55         | 0.00      | 9.75       | 1.888E-01  | 6.985E-01  | 3.462E-01  | 3.71       |
| 123 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -9.72      | -1.781E-01 | -6.172E-01 | -2.608E-01 | -8.42      |
|     | 1.0E+00      | 0.00      | -6.57      | -1.781E-01 | -6.172E-01 | -1.105E-01 | -1.63      |
|     | 1.85         | 0.00      | -3.44      | -1.781E-01 | -6.172E-01 | -5.782E-02 | 1.50       |
|     | 2.70         | 0.00      | -7.338E-01 | -1.781E-01 | -6.172E-01 | -2.152E-01 | -2.24      |
|     | 3.55         | 0.00      | 1.97       | -1.781E-01 | -6.172E-01 | -3.752E-01 | -9.10      |
| 124 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 4.38      | 5.085E-01  | 2.00       | 1.03       | 3.23       | 5.20       |
|     | 1.00         | 4.38      | 2.48       | 2.00       | 1.03       | 1.56       | 4.29       |
|     | 1.85         | 4.38      | 4.45       | 2.00       | 1.03       | 4.398E-01  | 3.27       |
|     | 2.70         | 4.38      | 7.20       | 2.00       | 1.03       | 2.04       | 6.61       |
|     | 3.55         | 4.38      | 10.08      | 2.00       | 1.03       | 3.95       | 8.13       |
| 124 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -4.37     | -11.30     | -2.27      | -1.54      | -3.85      | -11.24     |
|     | 1.00         | -4.37     | -8.43      | -2.27      | -1.54      | -1.95      | -3.22      |
|     | 1.85         | -4.37     | -5.55      | -2.27      | -1.54      | -5.955E-01 | 8.659E-01  |
|     | 2.70         | -4.37     | -3.46      | -2.27      | -1.54      | -1.97      | -3.67      |
|     | 3.55         | -4.37     | -1.48      | -2.27      | -1.54      | -3.64      | -10.44     |
| 125 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 0.00         | 5.69      | -6.24      | 4.850E-01  | 4.117E-01  | 1.69       | -3.13      |
|     | 1.89         | 6.87      | -6.828E-01 | 4.850E-01  | 4.117E-01  | 7.937E-01  | 7.44       |

|     |              |              |            |            |            |            |            |
|-----|--------------|--------------|------------|------------|------------|------------|------------|
|     | 3.78         | 8.41         | 11.21      | 4.850E-01  | 4.117E-01  | 1.777E-01  | -5.438E-01 |
| 125 | ENVOLVIG MIN |              |            |            |            |            |            |
|     | 0.00         | -11.11       | -14.69     | -5.466E-01 | -4.214E-01 | -2.03      | -8.10      |
|     | 1.89         | -9.04        | -1.74      | -5.466E-01 | -4.214E-01 | -1.02      | 2.98       |
|     | 3.78         | -7.33        | 4.75       | -5.466E-01 | -4.214E-01 | -2.844E-01 | -1.51      |
| 128 | ENVOLVIG MAX |              |            |            |            |            |            |
|     | 0.00         | 2.586E-01    | -1.79      | 2.82       | 1.489E-04  | 1.87       | -5.434E-01 |
|     | 3.3E-01      | 4.662E-01    | -8.174E-01 | 2.82       | 1.489E-04  | 9.370E-01  | -1.096E-01 |
|     | 6.6E-01      | 6.737E-01    | 1.597E-01  | 2.82       | 1.489E-04  | 2.309E-04  | -2.270E-04 |
| 128 | ENVOLVIG MIN |              |            |            |            |            |            |
|     | 0.00         | -1.40        | -4.55      | -3.05      | -1.410E-04 | -2.03      | -1.51      |
|     | 3.3E-01      | -1.04        | -2.27      | -3.05      | -1.410E-04 | -1.01      | -3.781E-01 |
|     | 6.6E-01      | -6.737E-01   | -1.579E-01 | -3.05      | -1.410E-04 | -1.945E-04 | -6.397E-04 |
| 0   | 129          | ENVOLVIG MAX |            |            |            |            |            |
|     | 1.5E-01      | 0.00         | -8.121E-01 | 1.797E-01  | 1.02       | 3.215E-01  | 3.68       |
|     | 9.0E-01      | 0.00         | 1.57       | 1.797E-01  | 1.02       | 1.975E-01  | 3.49       |
|     | 1.65         | 0.00         | 3.96       | 1.797E-01  | 1.02       | 1.580E-01  | 2.77       |
|     | 2.40         | 0.00         | 6.74       | 1.797E-01  | 1.02       | 1.947E-01  | 3.35       |
|     | 3.15         | 0.00         | 9.52       | 1.797E-01  | 1.02       | 3.147E-01  | 3.50       |
| 129 | ENVOLVIG MIN |              |            |            |            |            |            |
|     | 1.5E-01      | 0.00         | -9.60      | -1.771E-01 | -1.02      | -2.998E-01 | -9.73      |
|     | 9.0E-01      | 0.00         | -6.82      | -1.771E-01 | -1.02      | -1.777E-01 | -3.67      |
|     | 1.65         | 0.00         | -4.03      | -1.771E-01 | -1.02      | -1.401E-01 | -9.570E-01 |
|     | 2.40         | 0.00         | -1.64      | -1.771E-01 | -1.02      | -1.787E-01 | -3.42      |
|     | 3.15         | 0.00         | 7.445E-01  | -1.771E-01 | -1.02      | -3.007E-01 | -9.34      |
| 130 | ENVOLVIG MAX |              |            |            |            |            |            |
|     | 0.00         | 6.043E-01    | 1.435E-01  | 3.13       | 1.413E-04  | 2.230E-04  | -1.986E-04 |
|     | 3.3E-01      | 3.919E-01    | 2.27       | 3.13       | 1.413E-04  | 9.592E-01  | -1.145E-01 |
|     | 6.7E-01      | 1.794E-01    | 4.55       | 3.13       | 1.413E-04  | 1.92       | -5.536E-01 |
| 130 | ENVOLVIG MIN |              |            |            |            |            |            |
|     | 0.00         | -6.043E-01   | -1.451E-01 | -2.88      | -1.411E-04 | -1.861E-04 | -5.649E-04 |
|     | 3.3E-01      | -9.755E-01   | 8.319E-01  | -2.88      | -1.411E-04 | -1.04      | -3.784E-01 |
|     | 6.7E-01      | -1.35        | 1.81       | -2.88      | -1.411E-04 | -2.09      | -1.51      |
| 133 | ENVOLVIG MAX |              |            |            |            |            |            |
|     | 1.5E-01      | 0.00         | -2.34      | 1.775E-01  | 5.578E-01  | 3.459E-01  | 3.11       |
|     | 1.0E+00      | 0.00         | 3.639E-01  | 1.775E-01  | 5.578E-01  | 1.955E-01  | 4.03       |
|     | 1.85         | 0.00         | 3.07       | 1.775E-01  | 5.578E-01  | 4.757E-02  | 3.26       |
|     | 2.70         | 0.00         | 6.19       | 1.775E-01  | 5.578E-01  | 1.056E-01  | 3.52       |
|     | 3.55         | 0.00         | 9.34       | 1.775E-01  | 5.578E-01  | 2.619E-01  | 2.64       |
| 133 | ENVOLVIG MIN |              |            |            |            |            |            |
|     | 1.5E-01      | 0.00         | -9.53      | -1.852E-01 | -6.563E-01 | -3.693E-01 | -8.74      |
|     | 1.0E+00      | 0.00         | -6.38      | -1.852E-01 | -6.563E-01 | -2.123E-01 | -2.05      |
|     | 1.85         | 0.00         | -3.22      | -1.852E-01 | -6.563E-01 | -5.783E-02 | 1.52       |
|     | 2.70         | 0.00         | -4.809E-01 | -1.852E-01 | -6.563E-01 | -1.094E-01 | -1.29      |
|     | 3.55         | 0.00         | 2.22       | -1.852E-01 | -6.563E-01 | -2.591E-01 | -7.75      |
| 134 | ENVOLVIG MAX |              |            |            |            |            |            |
|     | 1.5E-01      | 3.85         | 9.936E-01  | 1.92       | 1.47       | 3.36       | 7.34       |
|     | 1.0E+00      | 3.85         | 2.97       | 1.92       | 1.47       | 1.76       | 6.21       |
|     | 1.85         | 3.85         | 5.04       | 1.92       | 1.47       | 4.446E-01  | 3.27       |
|     | 2.70         | 3.85         | 7.91       | 1.92       | 1.47       | 1.42       | 3.98       |
|     | 3.55         | 3.85         | 10.79      | 1.92       | 1.47       | 2.76       | 4.57       |
| 134 | ENVOLVIG MIN |              |            |            |            |            |            |
|     | 1.5E-01      | -4.01        | -9.76      | -1.65      | -9.416E-01 | -3.06      | -9.93      |
|     | 1.0E+00      | -4.01        | -6.88      | -1.65      | -9.416E-01 | -1.69      | -3.42      |
|     | 1.85         | -4.01        | -4.11      | -1.65      | -9.416E-01 | -6.009E-01 | 8.432E-01  |
|     | 2.70         | -4.01        | -2.13      | -1.65      | -9.416E-01 | -1.81      | -2.77      |
|     | 3.55         | -4.01        | -1.621E-01 | -1.65      | -9.416E-01 | -3.37      | -10.33     |
| 135 | ENVOLVIG MAX |              |            |            |            |            |            |
|     | 0.00         | 7.92         | -4.75      | 4.896E-01  | 4.246E-01  | 1.520E-01  | -5.540E-01 |
|     | 1.89         | 6.34         | 1.76       | 4.896E-01  | 4.246E-01  | 7.832E-01  | 7.40       |
|     | 3.79         | 5.13         | 14.71      | 4.896E-01  | 4.246E-01  | 1.56       | -3.22      |
| 135 | ENVOLVIG MIN |              |            |            |            |            |            |
|     | 0.00         | -6.75        | -11.18     | -4.174E-01 | -4.074E-01 | -2.390E-01 | -1.51      |
|     | 1.89         | -8.49        | 7.044E-01  | -4.174E-01 | -4.074E-01 | -1.01      | 2.99       |
|     | 3.79         | -10.60       | 6.26       | -4.174E-01 | -4.074E-01 | -1.92      | -8.19      |

|     |              |           |            |            |            |            |            |
|-----|--------------|-----------|------------|------------|------------|------------|------------|
| 138 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | 8.51       | 1.24       | 2.901E-01  | 7.922E-01  | 7.29       |
|     | 5.8E-01      | 0.00      | 9.86       | 1.24       | 2.901E-01  | 2.693E-01  | 3.40       |
|     | 1.00         | 0.00      | 11.21      | 1.24       | 2.901E-01  | 2.255E-01  | 1.24       |
|     | 1.43         | 0.00      | 12.58      | 1.24       | 2.901E-01  | 6.747E-01  | 7.21       |
|     | 1.85         | 0.00      | 14.15      | 1.24       | 2.901E-01  | 1.13       | 12.55      |
| 138 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -18.10     | -1.06      | -6.555E-01 | -6.858E-01 | -12.87     |
|     | 5.8E-01      | 0.00      | -16.52     | -1.06      | -6.555E-01 | -2.364E-01 | -5.52      |
|     | 1.00         | 0.00      | -14.94     | -1.06      | -6.555E-01 | -2.662E-01 | -1.16      |
|     | 1.43         | 0.00      | -13.38     | -1.06      | -6.555E-01 | -7.889E-01 | -6.16      |
|     | 1.85         | 0.00      | -12.03     | -1.06      | -6.555E-01 | -1.31      | -11.78     |
| 139 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 5.53      | 11.49      | 4.29       | -4.454E-01 | 4.58       | 10.42      |
|     | 5.8E-01      | 5.53      | 12.47      | 4.29       | -4.454E-01 | 2.77       | 5.33       |
|     | 1.00         | 5.53      | 13.47      | 4.29       | -4.454E-01 | 1.01       | 4.363E-01  |
|     | 1.43         | 5.53      | 14.91      | 4.29       | -4.454E-01 | 1.13       | 4.75       |
|     | 1.85         | 5.53      | 16.34      | 4.29       | -4.454E-01 | 3.07       | 8.85       |
| 139 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -4.73     | -14.01     | -4.97      | -2.01      | -5.43      | -10.61     |
|     | 5.8E-01      | -4.73     | -12.57     | -4.97      | -2.01      | -3.32      | -4.96      |
|     | 1.00         | -4.73     | -11.14     | -4.97      | -2.01      | -1.27      | -5.429E-01 |
|     | 1.43         | -4.73     | -10.16     | -4.97      | -2.01      | -1.10      | -6.36      |
|     | 1.85         | -4.73     | -9.17      | -4.97      | -2.01      | -2.75      | -12.99     |
| 140 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 0.00         | 1.82      | -2.48      | 3.796E-01  | 6.273E-01  | 5.598E-01  | -3.22      |
|     | 1.02         | 9.081E-01 | -5.062E-01 | 3.796E-01  | 6.273E-01  | 3.387E-01  | 4.694E-01  |
|     | 2.05         | 0.00      | 1.47       | 3.796E-01  | 6.273E-01  | 1.40       | 3.22       |
| 140 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 0.00         | 8.609E-01 | -8.67      | -1.37      | -7.263E-01 | -1.45      | -8.19      |
|     | 1.02         | 4.305E-01 | -4.71      | -1.37      | -7.263E-01 | -2.160E-01 | -2.17      |
|     | 2.05         | 0.00      | -1.58      | -1.37      | -7.263E-01 | -2.595E-01 | -2.19      |
| 142 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -1.78      | 1.702E-01  | 1.34       | 2.571E-01  | 6.66       |
|     | 1.13         | 0.00      | 1.86       | 1.702E-01  | 1.34       | 9.637E-02  | 6.79       |
|     | 2.11         | 0.00      | 5.54       | 1.702E-01  | 1.34       | 7.608E-02  | 3.97       |
|     | 3.09         | 0.00      | 9.79       | 1.702E-01  | 1.34       | 2.265E-01  | 5.42       |
|     | 4.08         | 0.00      | 14.04      | 1.702E-01  | 1.34       | 3.825E-01  | 5.00       |
| 142 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -13.58     | -1.600E-01 | -1.34      | -2.488E-01 | -15.79     |
|     | 1.13         | 0.00      | -9.33      | -1.600E-01 | -1.34      | -9.797E-02 | -4.72      |
|     | 2.11         | 0.00      | -5.12      | -1.600E-01 | -1.34      | -8.765E-02 | 2.06       |
|     | 3.09         | 0.00      | -1.48      | -1.600E-01 | -1.34      | -2.480E-01 | -4.18      |
|     | 4.08         | 0.00      | 2.16       | -1.600E-01 | -1.34      | -4.140E-01 | -15.79     |
| 143 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 5.53      | -7.79      | 3.69       | 5.19       | 7.81       | 3.06       |
|     | 1.13         | 5.53      | -1.16      | 3.69       | 2.49       | 4.21       | 8.04       |
|     | 2.11         | 5.53      | 5.58       | 3.69       | 5.895E-01  | 8.381E-01  | 8.71       |
|     | 3.09         | 5.53      | 13.97      | 3.69       | -1.15      | 3.05       | 6.29       |
|     | 4.08         | 5.53      | 23.38      | 3.69       | -2.89      | 6.62       | 2.998E-01  |
| 143 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -4.38     | -21.41     | -3.68      | 2.92       | -7.88      | -18.15     |
|     | 1.13         | -4.38     | -12.50     | -3.68      | 1.18       | -4.29      | -2.34      |
|     | 2.11         | -4.38     | -4.21      | -3.68      | -7.407E-01 | -9.393E-01 | 4.98       |
|     | 3.09         | -4.38     | 2.42       | -3.68      | -2.93      | -3.17      | -3.28      |
|     | 4.08         | -4.38     | 9.05       | -3.68      | -5.63      | -6.76      | -20.74     |
| 144 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -1.703E-01 | 1.442E-01  | 4.043E-01  | 3.215E-01  | 8.26       |
|     | 1.13         | 0.00      | 2.95       | 1.442E-01  | 4.043E-01  | 1.861E-01  | 7.04       |
|     | 2.11         | 0.00      | 6.10       | 1.442E-01  | 4.043E-01  | 6.231E-02  | 3.46       |
|     | 3.09         | 0.00      | 9.74       | 1.442E-01  | 4.043E-01  | 1.448E-01  | 6.02       |
|     | 4.08         | 0.00      | 13.39      | 1.442E-01  | 4.043E-01  | 2.841E-01  | 6.82       |
| 144 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -12.84     | -1.439E-01 | -6.625E-01 | -3.063E-01 | -15.69     |
|     | 1.13         | 0.00      | -9.20      | -1.439E-01 | -6.625E-01 | -1.712E-01 | -5.03      |

|     |              |       |            |            |            |            |           |
|-----|--------------|-------|------------|------------|------------|------------|-----------|
|     | 2.11         | 0.00  | -5.58      | -1.439E-01 | -6.625E-01 | -4.768E-02 | 1.94      |
|     | 3.09         | 0.00  | -2.46      | -1.439E-01 | -6.625E-01 | -1.305E-01 | -5.02     |
|     | 4.08         | 0.00  | 6.592E-01  | -1.439E-01 | -6.625E-01 | -2.701E-01 | -16.29    |
| 145 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 5.02  | 4.70       | 3.43       | 1.60       | 7.12       | 16.01     |
|     | 1.13         | 5.02  | 6.97       | 3.43       | 1.60       | 3.77       | 10.58     |
|     | 2.11         | 5.02  | 9.30       | 3.43       | 1.60       | 6.446E-01  | 3.26      |
|     | 3.09         | 5.02  | 12.62      | 3.43       | 1.60       | 3.01       | 8.82      |
|     | 4.08         | 5.02  | 15.94      | 3.43       | 1.60       | 6.21       | 13.97     |
| 145 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | -8.67 | -15.45     | -3.28      | -1.23      | -6.72      | -22.01    |
|     | 1.13         | -8.67 | -12.13     | -3.28      | -1.23      | -3.52      | -8.77     |
|     | 2.11         | -8.67 | -8.86      | -3.28      | -1.23      | -5.406E-01 | 1.02      |
|     | 3.09         | -8.67 | -6.59      | -3.28      | -1.23      | -3.05      | -7.87     |
|     | 4.08         | -8.67 | -4.31      | -3.28      | -1.23      | -6.39      | -21.69    |
| 146 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -2.716E-01 | 1.427E-01  | 6.059E-01  | 3.071E-01  | 8.03      |
|     | 1.13         | 0.00  | 2.85       | 1.427E-01  | 6.059E-01  | 1.716E-01  | 6.91      |
|     | 2.11         | 0.00  | 6.00       | 1.427E-01  | 6.059E-01  | 4.757E-02  | 3.46      |
|     | 3.09         | 0.00  | 9.64       | 1.427E-01  | 6.059E-01  | 1.278E-01  | 5.94      |
|     | 4.08         | 0.00  | 13.29      | 1.427E-01  | 6.059E-01  | 2.637E-01  | 6.63      |
| 146 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -12.73     | -1.405E-01 | -3.623E-01 | -3.170E-01 | -15.45    |
|     | 1.13         | 0.00  | -9.08      | -1.405E-01 | -3.623E-01 | -1.837E-01 | -4.89     |
|     | 2.11         | 0.00  | -5.47      | -1.405E-01 | -3.623E-01 | -6.184E-02 | 1.97      |
|     | 3.09         | 0.00  | -2.35      | -1.405E-01 | -3.623E-01 | -1.442E-01 | -4.96     |
|     | 4.08         | 0.00  | 7.706E-01  | -1.405E-01 | -3.623E-01 | -2.823E-01 | -16.12    |
| 147 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 5.08  | 4.56       | 2.86       | 1.20       | 5.88       | 15.69     |
|     | 1.13         | 5.08  | 6.83       | 2.86       | 1.20       | 3.10       | 10.40     |
|     | 2.11         | 5.08  | 9.16       | 2.86       | 1.20       | 5.364E-01  | 3.26      |
|     | 3.09         | 5.08  | 12.48      | 2.86       | 1.20       | 2.66       | 8.71      |
|     | 4.08         | 5.08  | 15.80      | 2.86       | 1.20       | 5.59       | 13.70     |
| 147 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | -8.83 | -15.28     | -3.02      | -1.59      | -6.30      | -21.63    |
|     | 1.13         | -8.83 | -11.97     | -3.02      | -1.59      | -3.36      | -8.56     |
|     | 2.11         | -8.83 | -8.70      | -3.02      | -1.59      | -6.377E-01 | 1.08      |
|     | 3.09         | -8.83 | -6.42      | -3.02      | -1.59      | -2.60      | -7.78     |
|     | 4.08         | -8.83 | -4.15      | -3.02      | -1.59      | -5.37      | -21.46    |
| 148 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -1.92      | 1.595E-01  | 1.33       | 2.470E-01  | 6.38      |
|     | 1.13         | 0.00  | 1.72       | 1.595E-01  | 1.33       | 9.675E-02  | 6.65      |
|     | 2.11         | 0.00  | 5.41       | 1.595E-01  | 1.33       | 8.745E-02  | 3.94      |
|     | 3.09         | 0.00  | 9.66       | 1.595E-01  | 1.33       | 2.447E-01  | 5.31      |
|     | 4.08         | 0.00  | 13.90      | 1.595E-01  | 1.33       | 4.074E-01  | 4.81      |
| 148 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -13.50     | -1.668E-01 | -1.35      | -2.506E-01 | -15.67    |
|     | 1.13         | 0.00  | -9.25      | -1.668E-01 | -1.35      | -9.318E-02 | -4.68     |
|     | 2.11         | 0.00  | -5.04      | -1.668E-01 | -1.35      | -7.666E-02 | 2.03      |
|     | 3.09         | 0.00  | -1.40      | -1.668E-01 | -1.35      | -2.267E-01 | -4.05     |
|     | 4.08         | 0.00  | 2.24       | -1.668E-01 | -1.35      | -3.822E-01 | -15.52    |
| 149 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 5.39  | -7.88      | 3.27       | -2.94      | 7.11       | 2.91      |
|     | 1.13         | 5.39  | -1.25      | 3.27       | -1.20      | 3.92       | 7.97      |
|     | 2.11         | 5.39  | 5.49       | 3.27       | 7.127E-01  | 9.395E-01  | 8.74      |
|     | 3.09         | 5.39  | 13.89      | 3.27       | 2.91       | 2.75       | 6.21      |
|     | 4.08         | 5.39  | 23.39      | 3.27       | 5.62       | 5.95       | 1.050E-01 |
| 149 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | -4.02 | -21.40     | -3.30      | -5.21      | -7.06      | -17.91    |
|     | 1.13         | -4.02 | -12.39     | -3.30      | -2.50      | -3.85      | -2.21     |
|     | 2.11         | -4.02 | -4.10      | -3.30      | -5.822E-01 | -8.356E-01 | 5.02      |
|     | 3.09         | -4.02 | 2.53       | -3.30      | 1.16       | -2.62      | -3.18     |
|     | 4.08         | -4.02 | 9.16       | -3.30      | 2.90       | -5.79      | -20.55    |
| 151 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | 1.16       | 2.508E-01  | 6.846E-01  | 4.729E-01  | 10.08     |

|     |              |           |            |            |            |            |            |
|-----|--------------|-----------|------------|------------|------------|------------|------------|
|     | 1.0E+00      | 0.00      | 3.86       | 2.508E-01  | 6.846E-01  | 2.600E-01  | 7.94       |
|     | 1.85         | 0.00      | 6.61       | 2.508E-01  | 6.846E-01  | 4.989E-02  | 3.60       |
|     | 2.70         | 0.00      | 9.76       | 2.508E-01  | 6.846E-01  | 1.841E-01  | 4.18       |
|     | 3.55         | 0.00      | 12.92      | 2.508E-01  | 6.846E-01  | 3.955E-01  | 5.58       |
| 151 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -11.97     | -2.495E-01 | -6.556E-01 | -4.535E-01 | -14.42     |
|     | 1.0E+00      | 0.00      | -8.81      | -2.495E-01 | -6.556E-01 | -2.416E-01 | -5.59      |
|     | 1.85         | 0.00      | -5.70      | -2.495E-01 | -6.556E-01 | -3.262E-02 | 4.754E-01  |
|     | 2.70         | 0.00      | -3.00      | -2.495E-01 | -6.556E-01 | -1.679E-01 | -3.37      |
|     | 3.55         | 0.00      | -2.953E-01 | -2.495E-01 | -6.556E-01 | -3.804E-01 | -13.01     |
| 152 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 8.361E-01 | 4.27       | 4.25       | 9.946E-01  | 7.28       | 10.40      |
|     | 1.0E+00      | 8.361E-01 | 6.25       | 4.25       | 9.946E-01  | 3.67       | 7.03       |
|     | 1.85         | 8.361E-01 | 8.27       | 4.25       | 9.946E-01  | 1.915E-01  | 5.34       |
|     | 2.70         | 8.361E-01 | 11.14      | 4.25       | 9.946E-01  | 3.90       | 12.65      |
|     | 3.55         | 8.361E-01 | 14.02      | 4.25       | 9.946E-01  | 7.77       | 17.72      |
| 152 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -10.59    | -15.81     | -4.55      | -8.868E-01 | -7.71      | -16.67     |
|     | 1.0E+00      | -10.59    | -12.93     | -4.55      | -8.868E-01 | -3.84      | -5.56      |
|     | 1.85         | -10.59    | -10.11     | -4.55      | -8.868E-01 | -1.117E-01 | -2.350E-01 |
|     | 2.70         | -10.59    | -8.14      | -4.55      | -8.868E-01 | -3.56      | -8.05      |
|     | 3.55         | -10.59    | -6.17      | -4.55      | -8.868E-01 | -7.17      | -17.73     |
| 153 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 0.00         | 0.00      | -6.86      | 6.073E-01  | 8.221E-01  | 2.90       | -4.02      |
|     | 1.94         | 4.52      | -7.838E-01 | 6.073E-01  | 8.221E-01  | 1.79       | 7.12       |
|     | 3.88         | 9.05      | 11.67      | 6.073E-01  | 8.221E-01  | 8.904E-01  | -4.480E-01 |
| 153 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 0.00         | 0.00      | -16.82     | -6.066E-01 | -8.441E-01 | -2.92      | -11.71     |
|     | 1.94         | 1.93      | -2.58      | -6.066E-01 | -8.441E-01 | -1.81      | 2.35       |
|     | 3.88         | 3.86      | 4.50       | -6.066E-01 | -8.441E-01 | -9.063E-01 | -1.71      |
| 156 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 0.00         | 5.160E-01 | -1.72      | 4.93       | 8.845E-05  | 3.36       | -4.477E-01 |
|     | 3.4E-01      | 8.550E-01 | -6.564E-01 | 4.93       | 8.845E-05  | 1.68       | -4.190E-02 |
|     | 6.8E-01      | 1.19      | 4.108E-01  | 4.93       | 8.845E-05  | 3.727E-04  | -2.207E-06 |
| 156 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 0.00         | -2.39     | -5.00      | -5.05      | -9.539E-05 | -3.44      | -1.71      |
|     | 3.4E-01      | -1.79     | -2.50      | -5.05      | -9.539E-05 | -1.72      | -4.600E-01 |
|     | 6.8E-01      | -1.19     | -4.105E-01 | -5.05      | -9.539E-05 | -3.318E-04 | -4.849E-05 |
| 157 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -8.870E-01 | 2.086E-01  | 9.558E-01  | 3.180E-01  | 3.76       |
|     | 9.0E-01      | 0.00      | 1.50       | 2.086E-01  | 9.558E-01  | 1.623E-01  | 3.87       |
|     | 1.65         | 0.00      | 3.89       | 2.086E-01  | 9.558E-01  | 4.390E-02  | 2.72       |
|     | 2.40         | 0.00      | 6.67       | 2.086E-01  | 9.558E-01  | 1.593E-01  | 3.85       |
|     | 3.15         | 0.00      | 9.45       | 2.086E-01  | 9.558E-01  | 3.128E-01  | 3.74       |
| 157 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -9.46      | -2.069E-01 | -9.512E-01 | -3.350E-01 | -8.59      |
|     | 9.0E-01      | 0.00      | -6.68      | -2.069E-01 | -9.512E-01 | -1.805E-01 | -2.88      |
|     | 1.65         | 0.00      | -3.89      | -2.069E-01 | -9.512E-01 | -6.340E-02 | 2.191E-01  |
|     | 2.40         | 0.00      | -1.51      | -2.069E-01 | -9.512E-01 | -1.801E-01 | -2.85      |
|     | 3.15         | 0.00      | 8.784E-01  | -2.069E-01 | -9.512E-01 | -3.348E-01 | -8.55      |
| 158 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 0.00         | 1.19      | 4.081E-01  | 4.92       | 9.685E-05  | 3.631E-04  | -2.278E-06 |
|     | 3.4E-01      | 8.537E-01 | 2.50       | 4.92       | 9.685E-05  | 1.64       | -4.271E-02 |
|     | 6.8E-01      | 5.147E-01 | 5.00       | 4.92       | 9.685E-05  | 3.28       | -4.493E-01 |
| 158 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 0.00         | -1.19     | -4.084E-01 | -4.81      | -8.834E-05 | -3.231E-04 | -4.849E-05 |
|     | 3.4E-01      | -1.79     | 6.588E-01  | -4.81      | -8.834E-05 | -1.68      | -4.592E-01 |
|     | 6.8E-01      | -2.38     | 1.73       | -4.81      | -8.834E-05 | -3.36      | -1.71      |
| 161 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | 2.404E-01  | 2.492E-01  | 6.402E-01  | 3.945E-01  | 5.50       |
|     | 1.0E+00      | 0.00      | 2.94       | 2.492E-01  | 6.402E-01  | 1.836E-01  | 4.14       |
|     | 1.85         | 0.00      | 5.65       | 2.492E-01  | 6.402E-01  | 4.988E-02  | 3.59       |
|     | 2.70         | 0.00      | 8.76       | 2.492E-01  | 6.402E-01  | 2.567E-01  | 7.91       |
|     | 3.55         | 0.00      | 11.91      | 2.492E-01  | 6.402E-01  | 4.663E-01  | 10.02      |
| 161 | ENVOLVIG MIN |           |            |            |            |            |            |

|     |              |           |            |            |            |            |            |
|-----|--------------|-----------|------------|------------|------------|------------|------------|
|     | 1.5E-01      | 0.00      | -12.89     | -2.469E-01 | -6.732E-01 | -3.739E-01 | -12.96     |
|     | 1.0E+00      | 0.00      | -9.74      | -2.469E-01 | -6.732E-01 | -1.649E-01 | -3.35      |
|     | 1.85         | 0.00      | -6.58      | -2.469E-01 | -6.732E-01 | -3.314E-02 | 4.875E-01  |
|     | 2.70         | 0.00      | -3.83      | -2.469E-01 | -6.732E-01 | -2.419E-01 | -5.53      |
|     | 3.55         | 0.00      | -1.12      | -2.469E-01 | -6.732E-01 | -4.534E-01 | -14.32     |
| 162 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 8.455E-01 | 6.11       | 4.25       | 8.562E-01  | 7.25       | 17.61      |
|     | 1.0E+00      | 8.455E-01 | 8.08       | 4.25       | 8.562E-01  | 3.63       | 12.59      |
|     | 1.85         | 8.455E-01 | 10.05      | 4.25       | 8.562E-01  | 1.918E-01  | 5.33       |
|     | 2.70         | 8.455E-01 | 12.87      | 4.25       | 8.562E-01  | 3.42       | 7.01       |
|     | 3.55         | 8.455E-01 | 15.75      | 4.25       | 8.562E-01  | 6.78       | 10.35      |
| 162 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -10.60    | -13.99     | -3.96      | -9.750E-01 | -6.67      | -17.67     |
|     | 1.0E+00      | -10.60    | -11.11     | -3.96      | -9.750E-01 | -3.30      | -8.02      |
|     | 1.85         | -10.60    | -8.24      | -3.96      | -9.750E-01 | -1.127E-01 | -2.292E-01 |
|     | 2.70         | -10.60    | -6.21      | -3.96      | -9.750E-01 | -3.60      | -5.51      |
|     | 3.55         | -10.60    | -4.24      | -3.96      | -9.750E-01 | -7.21      | -16.57     |
| 163 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 0.00         | 9.05      | -4.51      | 5.731E-01  | 8.181E-01  | 8.716E-01  | -4.497E-01 |
|     | 1.94         | 4.52      | 2.57       | 5.731E-01  | 8.181E-01  | 1.74       | 7.12       |
|     | 3.88         | 0.00      | 16.82      | 5.731E-01  | 8.181E-01  | 2.80       | -4.03      |
| 163 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 0.00         | 3.86      | -11.67     | -5.755E-01 | -7.982E-01 | -8.862E-01 | -1.71      |
|     | 1.94         | 1.93      | 7.871E-01  | -5.755E-01 | -7.982E-01 | -1.75      | 2.36       |
|     | 3.88         | 0.00      | 6.86       | -5.755E-01 | -7.982E-01 | -2.81      | -11.70     |
| 165 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -1.55      | 2.689E-01  | 1.47       | 5.209E-01  | 5.92       |
|     | 1.09         | 0.00      | 1.96       | 2.689E-01  | 1.47       | 2.761E-01  | 5.91       |
|     | 2.04         | 0.00      | 5.54       | 2.689E-01  | 1.47       | 1.152E-01  | 3.52       |
|     | 2.98         | 0.00      | 9.62       | 2.689E-01  | 1.47       | 3.205E-01  | 5.02       |
|     | 3.93         | 0.00      | 13.71      | 2.689E-01  | 1.47       | 5.868E-01  | 4.38       |
| 165 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -12.71     | -2.908E-01 | -1.42      | -5.294E-01 | -13.61     |
|     | 1.09         | 0.00      | -8.62      | -2.908E-01 | -1.42      | -2.639E-01 | -3.72      |
|     | 2.04         | 0.00      | -4.61      | -2.908E-01 | -1.42      | -8.223E-02 | 2.20       |
|     | 2.98         | 0.00      | -1.11      | -2.908E-01 | -1.42      | -2.668E-01 | -4.58      |
|     | 3.93         | 0.00      | 2.39       | -2.908E-01 | -1.42      | -5.124E-01 | -15.55     |
| 166 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 10.39     | -7.37      | 3.17       | 5.33       | 5.95       | 2.12       |
|     | 1.09         | 10.39     | -9.890E-01 | 3.17       | 2.89       | 2.98       | 6.41       |
|     | 2.04         | 10.39     | 5.46       | 3.17       | 9.416E-01  | 6.640E-01  | 6.84       |
|     | 2.98         | 10.39     | 13.53      | 3.17       | -7.432E-01 | 3.27       | 5.82       |
|     | 3.93         | 10.39     | 22.04      | 3.17       | -2.42      | 6.19       | 1.08       |
| 166 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | -6.60     | -21.04     | -3.12      | 2.58       | -5.64      | -18.95     |
|     | 1.09         | -6.60     | -12.79     | -3.12      | 9.062E-01  | -2.71      | -3.42      |
|     | 2.04         | -6.60     | -4.78      | -3.12      | -7.671E-01 | -4.446E-01 | 3.93       |
|     | 2.98         | -6.60     | 1.60       | -3.12      | -2.71      | -3.09      | -4.11      |
|     | 3.93         | -6.60     | 7.98       | -3.12      | -5.08      | -6.06      | -20.48     |
| 167 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | 7.721E-01  | 2.194E-01  | 4.781E-01  | 3.574E-01  | 8.74       |
|     | 1.09         | 0.00      | 3.77       | 2.194E-01  | 4.781E-01  | 1.532E-01  | 6.72       |
|     | 2.04         | 0.00      | 6.78       | 2.194E-01  | 4.781E-01  | 7.906E-02  | 3.70       |
|     | 2.98         | 0.00      | 10.26      | 2.194E-01  | 4.781E-01  | 2.575E-01  | 8.96       |
|     | 3.93         | 0.00      | 13.76      | 2.194E-01  | 4.781E-01  | 4.421E-01  | 11.60      |
| 167 | ENVOLVIG MIN |           |            |            |            |            |            |
|     | 1.5E-01      | 0.00      | -14.49     | -2.109E-01 | -4.421E-01 | -3.617E-01 | -17.18     |
|     | 1.09         | 0.00      | -10.98     | -2.109E-01 | -4.421E-01 | -1.655E-01 | -5.28      |
|     | 2.04         | 0.00      | -7.48      | -2.109E-01 | -4.421E-01 | -9.946E-02 | 1.62       |
|     | 2.98         | 0.00      | -4.46      | -2.109E-01 | -4.421E-01 | -2.860E-01 | -6.19      |
|     | 3.93         | 0.00      | -1.46      | -2.109E-01 | -4.421E-01 | -4.786E-01 | -17.38     |
| 168 | ENVOLVIG MAX |           |            |            |            |            |            |
|     | 1.5E-01      | 4.63      | 6.44       | 3.45       | 2.09       | 6.26       | 16.48      |
|     | 1.09         | 4.63      | 8.63       | 3.45       | 2.09       | 3.04       | 9.56       |
|     | 2.04         | 4.63      | 10.82      | 3.45       | 2.09       | 6.135E-01  | 3.79       |



|     |              |       |            |            |            |            |           |
|-----|--------------|-------|------------|------------|------------|------------|-----------|
|     | 2.98         | 4.63  | 13.88      | 3.45       | 2.09       | 3.20       | 12.74     |
|     | 3.93         | 4.63  | 17.07      | 3.45       | 2.09       | 6.12       | 19.55     |
| 168 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | -7.66 | -17.47     | -3.13      | -2.03      | -5.76      | -23.15    |
|     | 1.09         | -7.66 | -14.27     | -3.13      | -2.03      | -2.84      | -8.37     |
|     | 2.04         | -7.66 | -11.08     | -3.13      | -2.03      | -7.172E-01 | 1.929E-01 |
|     | 2.98         | -7.66 | -8.77      | -3.13      | -2.03      | -3.60      | -11.05    |
|     | 3.93         | -7.66 | -6.58      | -3.13      | -2.03      | -6.84      | -25.22    |
| 169 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | 6.951E-01  | 2.118E-01  | 4.410E-01  | 3.630E-01  | 8.61      |
|     | 1.09         | 0.00  | 3.70       | 2.118E-01  | 4.410E-01  | 1.659E-01  | 6.66      |
|     | 2.04         | 0.00  | 6.70       | 2.118E-01  | 4.410E-01  | 9.294E-02  | 3.70      |
|     | 2.98         | 0.00  | 10.19      | 2.118E-01  | 4.410E-01  | 2.738E-01  | 8.86      |
|     | 3.93         | 0.00  | 13.69      | 2.118E-01  | 4.410E-01  | 4.715E-01  | 11.41     |
| 169 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -14.39     | -2.180E-01 | -4.798E-01 | -3.543E-01 | -17.00    |
|     | 1.09         | 0.00  | -10.89     | -2.180E-01 | -4.798E-01 | -1.515E-01 | -5.20     |
|     | 2.04         | 0.00  | -7.38      | -2.180E-01 | -4.798E-01 | -7.268E-02 | 1.63      |
|     | 2.98         | 0.00  | -4.36      | -2.180E-01 | -4.798E-01 | -2.478E-01 | -6.11     |
|     | 3.93         | 0.00  | -1.36      | -2.180E-01 | -4.798E-01 | -4.396E-01 | -17.22    |
| 170 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 4.57  | 6.33       | 3.10       | 2.03       | 5.72       | 16.29     |
|     | 1.09         | 4.57  | 8.52       | 3.10       | 2.03       | 2.82       | 9.48      |
|     | 2.04         | 4.57  | 10.71      | 3.10       | 2.03       | 6.295E-01  | 3.77      |
|     | 2.98         | 4.57  | 13.77      | 3.10       | 2.03       | 3.53       | 12.60     |
|     | 3.93         | 4.57  | 16.97      | 3.10       | 2.03       | 6.72       | 19.28     |
| 170 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | -7.66 | -17.33     | -3.41      | -2.10      | -6.19      | -22.92    |
|     | 1.09         | -7.66 | -14.14     | -3.41      | -2.10      | -3.00      | -8.27     |
|     | 2.04         | -7.66 | -10.95     | -3.41      | -2.10      | -5.234E-01 | 2.125E-01 |
|     | 2.98         | -7.66 | -8.63      | -3.41      | -2.10      | -3.13      | -10.93    |
|     | 3.93         | -7.66 | -6.45      | -3.41      | -2.10      | -6.04      | -25.00    |
| 171 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -1.68      | 2.896E-01  | 1.42       | 5.287E-01  | 5.67      |
|     | 1.09         | 0.00  | 1.82       | 2.896E-01  | 1.42       | 2.641E-01  | 5.78      |
|     | 2.04         | 0.00  | 5.40       | 2.896E-01  | 1.42       | 8.091E-02  | 3.52      |
|     | 2.98         | 0.00  | 9.49       | 2.896E-01  | 1.42       | 2.612E-01  | 4.91      |
|     | 3.93         | 0.00  | 13.58      | 2.896E-01  | 1.42       | 5.025E-01  | 4.16      |
| 171 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -12.59     | -2.641E-01 | -1.48      | -5.130E-01 | -13.37    |
|     | 1.09         | 0.00  | -8.50      | -2.641E-01 | -1.48      | -2.725E-01 | -3.59     |
|     | 2.04         | 0.00  | -4.49      | -2.641E-01 | -1.48      | -1.134E-01 | 2.21      |
|     | 2.98         | 0.00  | -9.872E-01 | -2.641E-01 | -1.48      | -3.178E-01 | -4.45     |
|     | 3.93         | 0.00  | 2.52       | -2.641E-01 | -1.48      | -5.833E-01 | -15.30    |
| 172 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 10.08 | -7.48      | 3.10       | -2.58      | 5.61       | 1.90      |
|     | 1.09         | 10.08 | -1.10      | 3.10       | -9.079E-01 | 2.70       | 6.29      |
|     | 2.04         | 10.08 | 5.34       | 3.10       | 7.654E-01  | 4.246E-01  | 6.83      |
|     | 2.98         | 10.08 | 13.42      | 3.10       | 2.71       | 3.04       | 5.73      |
|     | 3.93         | 10.08 | 22.02      | 3.10       | 5.08       | 5.97       | 9.070E-01 |
| 172 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | -6.14 | -21.06     | -3.13      | -5.33      | -5.88      | -18.78    |
|     | 1.09         | -6.14 | -12.70     | -3.13      | -2.90      | -2.94      | -3.33     |
|     | 2.04         | -6.14 | -4.69      | -3.13      | -9.442E-01 | -6.377E-01 | 3.92      |
|     | 2.98         | -6.14 | 1.69       | -3.13      | 7.411E-01  | -3.22      | -4.00     |
|     | 3.93         | -6.14 | 8.07       | -3.13      | 2.41       | -6.12      | -20.26    |
| 174 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | 3.12       | 3.317E-01  | 8.639E-01  | 5.475E-01  | 13.89     |
|     | 1.0E+00      | 0.00  | 5.83       | 3.317E-01  | 8.639E-01  | 2.692E-01  | 10.08     |
|     | 1.85         | 0.00  | 8.58       | 3.317E-01  | 8.639E-01  | 5.324E-02  | 4.06      |
|     | 2.70         | 0.00  | 11.73      | 3.317E-01  | 8.639E-01  | 3.104E-01  | 5.59      |
|     | 3.55         | 0.00  | 14.89      | 3.317E-01  | 8.639E-01  | 5.958E-01  | 8.86      |
| 174 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 1.5E-01      | 0.00  | -14.17     | -3.455E-01 | -1.42      | -6.076E-01 | -18.62    |
|     | 1.0E+00      | 0.00  | -11.01     | -3.455E-01 | -1.42      | -3.175E-01 | -7.92     |
|     | 1.85         | 0.00  | -7.90      | -3.455E-01 | -1.42      | -8.977E-02 | 2.115E-02 |

|     |              |        |            |            |            |            |            |
|-----|--------------|--------|------------|------------|------------|------------|------------|
|     | 2.70         | 0.00   | -5.20      | -3.455E-01 | -1.42      | -3.352E-01 | -4.58      |
|     | 3.55         | 0.00   | -2.49      | -3.455E-01 | -1.42      | -6.087E-01 | -15.89     |
| 175 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.5E-01      | 4.76   | 8.36       | 2.73       | 1.53       | 4.68       | 16.39      |
|     | 1.0E+00      | 4.76   | 10.33      | 2.73       | 1.53       | 2.38       | 9.50       |
|     | 1.85         | 4.76   | 12.30      | 2.73       | 1.53       | 3.333E-01  | 6.10       |
|     | 2.70         | 4.76   | 15.18      | 2.73       | 1.53       | 2.52       | 17.46      |
|     | 3.55         | 4.76   | 18.05      | 2.73       | 1.53       | 5.30       | 26.50      |
| 175 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.5E-01      | -13.51 | -20.58     | -3.29      | -2.05      | -5.92      | -24.05     |
|     | 1.0E+00      | -13.51 | -17.71     | -3.29      | -2.05      | -3.13      | -8.83      |
|     | 1.85         | -13.51 | -14.83     | -3.29      | -2.05      | -6.107E-01 | -1.22      |
|     | 2.70         | -13.51 | -12.86     | -3.29      | -2.05      | -2.32      | -12.49     |
|     | 3.55         | -13.51 | -10.89     | -3.29      | -2.05      | -4.62      | -25.55     |
| 176 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 0.00         | 0.00   | -6.26      | 5.680E-01  | 6.568E-01  | 2.53       | -3.01      |
|     | 1.94         | 4.52   | -1.833E-01 | 5.680E-01  | 6.568E-01  | 1.44       | 6.98       |
|     | 3.88         | 9.05   | 11.60      | 5.680E-01  | 6.568E-01  | 5.746E-01  | 8.979E-01  |
| 176 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 0.00         | 0.00   | -16.89     | -8.163E-01 | -6.803E-01 | -3.17      | -11.98     |
|     | 1.94         | 1.93   | -3.03      | -8.163E-01 | -6.803E-01 | -1.61      | 2.24       |
|     | 3.88         | 3.86   | 3.81       | -8.163E-01 | -6.803E-01 | -2.566E-01 | -2.91      |
| 179 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 0.00         | 5.86   | 2.508E-01  | 3.71       | 5.682E-04  | 2.53       | 8.983E-01  |
|     | 3.4E-01      | 6.20   | 1.32       | 3.71       | 5.682E-04  | 1.26       | 6.308E-01  |
|     | 6.8E-01      | 6.54   | 2.38       | 3.71       | 5.682E-04  | 1.817E-03  | 7.688E-04  |
| 179 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 0.00         | -7.73  | -6.14      | -3.35      | -4.953E-04 | -2.28      | -2.91      |
|     | 3.4E-01      | -7.13  | -4.26      | -3.35      | -4.953E-04 | -1.14      | -1.13      |
|     | 6.8E-01      | -6.53  | -2.39      | -3.35      | -4.953E-04 | -2.529E-03 | -7.547E-04 |
| 180 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.5E-01      | 0.00   | 5.193E-01  | 3.474E-01  | 1.27       | 5.905E-01  | 5.92       |
|     | 9.0E-01      | 0.00   | 2.91       | 3.474E-01  | 1.27       | 3.331E-01  | 4.97       |
|     | 1.65         | 0.00   | 5.29       | 3.474E-01  | 1.27       | 2.249E-01  | 3.03       |
|     | 2.40         | 0.00   | 8.08       | 3.474E-01  | 1.27       | 3.301E-01  | 4.94       |
|     | 3.15         | 0.00   | 10.86      | 3.474E-01  | 1.27       | 5.804E-01  | 5.87       |
| 180 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.5E-01      | 0.00   | -10.86     | -3.454E-01 | -1.26      | -5.564E-01 | -10.89     |
|     | 9.0E-01      | 0.00   | -8.07      | -3.454E-01 | -1.26      | -3.004E-01 | -4.13      |
|     | 1.65         | 0.00   | -5.29      | -3.454E-01 | -1.26      | -1.937E-01 | -2.591E-01 |
|     | 2.40         | 0.00   | -2.90      | -3.454E-01 | -1.26      | -3.005E-01 | -4.11      |
|     | 3.15         | 0.00   | -5.173E-01 | -3.454E-01 | -1.26      | -5.523E-01 | -10.86     |
| 181 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 0.00         | 6.51   | 2.38       | 3.25       | 4.683E-04  | 1.711E-03  | 7.737E-04  |
|     | 3.4E-01      | 6.17   | 4.25       | 3.25       | 4.683E-04  | 1.23       | 6.280E-01  |
|     | 6.8E-01      | 5.83   | 6.13       | 3.25       | 4.683E-04  | 2.47       | 8.927E-01  |
| 181 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 0.00         | -6.51  | -2.38      | -3.62      | -5.447E-04 | -2.432E-03 | -7.586E-04 |
|     | 3.4E-01      | -7.10  | -1.31      | -3.62      | -5.447E-04 | -1.11      | -1.13      |
|     | 6.8E-01      | -7.70  | -2.425E-01 | -3.62      | -5.447E-04 | -2.22      | -2.90      |
| 184 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.5E-01      | 0.00   | 2.45       | 3.432E-01  | 1.40       | 5.735E-01  | 8.80       |
|     | 1.0E+00      | 0.00   | 5.15       | 3.432E-01  | 1.40       | 2.969E-01  | 5.57       |
|     | 1.85         | 0.00   | 7.86       | 3.432E-01  | 1.40       | 5.440E-02  | 4.04       |
|     | 2.70         | 0.00   | 10.97      | 3.432E-01  | 1.40       | 2.635E-01  | 10.03      |
|     | 3.55         | 0.00   | 14.12      | 3.432E-01  | 1.40       | 5.370E-01  | 13.79      |
| 184 | ENVOLVIG MIN |        |            |            |            |            |            |
|     | 1.5E-01      | 0.00   | -14.84     | -3.262E-01 | -8.497E-01 | -5.811E-01 | -15.82     |
|     | 1.0E+00      | 0.00   | -11.68     | -3.262E-01 | -8.497E-01 | -3.190E-01 | -4.55      |
|     | 1.85         | 0.00   | -8.53      | -3.262E-01 | -8.497E-01 | -9.090E-02 | 3.211E-02  |
|     | 2.70         | 0.00   | -5.78      | -3.262E-01 | -8.497E-01 | -3.144E-01 | -7.87      |
|     | 3.55         | 0.00   | -3.08      | -3.262E-01 | -8.497E-01 | -6.024E-01 | -18.53     |
| 185 | ENVOLVIG MAX |        |            |            |            |            |            |
|     | 1.5E-01      | 4.72   | 10.82      | 3.21       | 2.01       | 5.19       | 26.36      |

|     |              |        |            |            |            |            |           |
|-----|--------------|--------|------------|------------|------------|------------|-----------|
|     | 1.0E+00      | 4.72   | 12.79      | 3.21       | 2.01       | 2.47       | 17.38     |
|     | 1.85         | 4.72   | 14.77      | 3.21       | 2.01       | 3.404E-01  | 6.08      |
|     | 2.70         | 4.72   | 17.64      | 3.21       | 2.01       | 2.32       | 9.45      |
|     | 3.55         | 4.72   | 20.51      | 3.21       | 2.01       | 4.58       | 16.28     |
| 185 | ENVOLVIG MIN |        |            |            |            |            |           |
|     | 1.5E-01      | -13.48 | -17.98     | -2.68      | -1.50      | -4.55      | -25.41    |
|     | 1.0E+00      | -13.48 | -15.10     | -2.68      | -1.50      | -2.29      | -12.41    |
|     | 1.85         | -13.48 | -12.23     | -2.68      | -1.50      | -6.140E-01 | -1.20     |
|     | 2.70         | -13.48 | -10.26     | -2.68      | -1.50      | -3.05      | -8.79     |
|     | 3.55         | -13.48 | -8.29      | -2.68      | -1.50      | -5.77      | -23.94    |
| 186 | ENVOLVIG MAX |        |            |            |            |            |           |
|     | 0.00         | 9.05   | -3.81      | 8.063E-01  | 6.653E-01  | 5.595E-01  | 8.923E-01 |
|     | 1.94         | 4.52   | 3.02       | 8.063E-01  | 6.653E-01  | 1.41       | 6.98      |
|     | 3.88         | 0.00   | 16.89      | 8.063E-01  | 6.653E-01  | 2.49       | -3.02     |
| 186 | ENVOLVIG MIN |        |            |            |            |            |           |
|     | 0.00         | 3.86   | -11.60     | -5.625E-01 | -6.441E-01 | -2.437E-01 | -2.90     |
|     | 1.94         | 1.93   | 1.887E-01  | -5.625E-01 | -6.441E-01 | -1.57      | 2.24      |
|     | 3.88         | 0.00   | 6.26       | -5.625E-01 | -6.441E-01 | -3.12      | -11.98    |
| 188 | ENVOLVIG MAX |        |            |            |            |            |           |
|     | 1.5E-01      | 0.00   | -3.08      | 4.498E-01  | 2.10       | 6.280E-01  | 4.92      |
|     | 1.27         | 0.00   | 1.08       | 4.498E-01  | 2.10       | 1.904E-01  | 6.27      |
|     | 2.39         | 0.00   | 5.26       | 4.498E-01  | 2.10       | 4.411E-01  | 5.41      |
|     | 3.51         | 0.00   | 10.10      | 4.498E-01  | 2.10       | 9.807E-01  | 7.61      |
|     | 4.63         | 0.00   | 14.94      | 4.498E-01  | 2.10       | 1.53       | 5.81      |
| 188 | ENVOLVIG MIN |        |            |            |            |            |           |
|     | 1.5E-01      | 0.00   | -14.43     | -4.997E-01 | -1.86      | -7.423E-01 | -16.42    |
|     | 1.27         | 0.00   | -9.58      | -4.997E-01 | -1.86      | -2.489E-01 | -3.22     |
|     | 2.39         | 0.00   | -4.77      | -4.997E-01 | -1.86      | -4.438E-01 | 2.51      |
|     | 3.51         | 0.00   | -6.148E-01 | -4.997E-01 | -1.86      | -9.276E-01 | -5.66     |
|     | 4.63         | 0.00   | 3.54       | -4.997E-01 | -1.86      | -1.42      | -19.50    |
| 189 | ENVOLVIG MAX |        |            |            |            |            |           |
|     | 1.5E-01      | 13.89  | -9.57      | 1.78       | 8.96       | 4.42       | 6.134E-01 |
|     | 1.27         | 13.89  | -2.01      | 1.78       | 6.65       | 2.59       | 7.78      |
|     | 2.39         | 13.89  | 5.76       | 1.78       | 4.33       | 1.13       | 9.80      |
|     | 3.51         | 13.89  | 15.34      | 1.78       | 2.05       | 9.239E-01  | 6.59      |
|     | 4.63         | 13.89  | 27.05      | 1.78       | 6.397E-02  | 1.53       | -2.16     |
| 189 | ENVOLVIG MIN |        |            |            |            |            |           |
|     | 1.5E-01      | -9.56  | -24.02     | -7.445E-01 | 1.46       | -2.26      | -21.22    |
|     | 1.27         | -9.56  | -13.07     | -7.445E-01 | -5.272E-01 | -1.58      | -1.93     |
|     | 2.39         | -9.56  | -3.70      | -7.445E-01 | -2.51      | -1.28      | 4.86      |
|     | 3.51         | -9.56  | 3.86       | -7.445E-01 | -4.52      | -2.23      | -5.35     |
|     | 4.63         | -9.56  | 11.41      | -7.445E-01 | -6.84      | -3.99      | -27.65    |
| 190 | ENVOLVIG MAX |        |            |            |            |            |           |
|     | 1.5E-01      | 0.00   | -3.21      | 4.987E-01  | 1.85       | 7.403E-01  | 4.64      |
|     | 1.27         | 0.00   | 9.417E-01  | 4.987E-01  | 1.85       | 2.472E-01  | 6.14      |
|     | 2.39         | 0.00   | 5.12       | 4.987E-01  | 1.85       | 4.415E-01  | 5.41      |
|     | 3.51         | 0.00   | 9.96       | 4.987E-01  | 1.85       | 9.263E-01  | 7.46      |
|     | 4.63         | 0.00   | 14.81      | 4.987E-01  | 1.85       | 1.42       | 5.53      |
| 190 | ENVOLVIG MIN |        |            |            |            |            |           |
|     | 1.5E-01      | 0.00   | -14.32     | -4.501E-01 | -2.09      | -6.265E-01 | -16.20    |
|     | 1.27         | 0.00   | -9.47      | -4.501E-01 | -2.09      | -1.877E-01 | -3.12     |
|     | 2.39         | 0.00   | -4.65      | -4.501E-01 | -2.09      | -4.362E-01 | 2.54      |
|     | 3.51         | 0.00   | -4.999E-01 | -4.501E-01 | -2.09      | -9.753E-01 | -5.48     |
|     | 4.63         | 0.00   | 3.65       | -4.501E-01 | -2.09      | -1.53      | -19.17    |
| 191 | ENVOLVIG MAX |        |            |            |            |            |           |
|     | 1.5E-01      | 13.62  | -9.68      | 7.698E-01  | -1.46      | 2.32       | 3.883E-01 |
|     | 1.27         | 13.62  | -2.12      | 7.698E-01  | 5.207E-01  | 1.60       | 7.67      |
|     | 2.39         | 13.62  | 5.65       | 7.698E-01  | 2.50       | 1.27       | 9.80      |
|     | 3.51         | 13.62  | 15.22      | 7.698E-01  | 4.52       | 2.24       | 6.46      |
|     | 4.63         | 13.62  | 27.03      | 7.698E-01  | 6.83       | 4.02       | -2.39     |
| 191 | ENVOLVIG MIN |        |            |            |            |            |           |
|     | 1.5E-01      | -9.22  | -24.03     | -1.79      | -8.95      | -4.45      | -21.02    |
|     | 1.27         | -9.22  | -12.97     | -1.79      | -6.64      | -2.59      | -1.84     |
|     | 2.39         | -9.22  | -3.61      | -1.79      | -4.32      | -1.11      | 4.87      |
|     | 3.51         | -9.22  | 3.95       | -1.79      | -2.04      | -9.373E-01 | -5.20     |
|     | 4.63         | -9.22  | 11.51      | -1.79      | -5.553E-02 | -1.57      | -27.38    |

|     |              |       |            |            |            |            |           |
|-----|--------------|-------|------------|------------|------------|------------|-----------|
| 194 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 2.0E-01      | 9.07  | -12.88     | 2.99       | 10.04      | 2.28       | -5.60     |
|     | 5.0E-01      | 9.07  | -10.86     | 2.99       | 9.42       | 1.92       | -2.04     |
|     | 8.0E-01      | 9.07  | -8.83      | 2.99       | 8.80       | 1.90       | 9.067E-01 |
|     | 1.10         | 9.07  | -6.81      | 2.99       | 8.18       | 2.28       | 3.25      |
|     | 1.40         | 9.07  | -4.79      | 2.99       | 7.56       | 2.99       | 5.00      |
| 194 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 2.0E-01      | -8.65 | -29.32     | -3.99      | 1.12       | -4.82      | -32.63    |
|     | 5.0E-01      | -8.65 | -25.91     | -3.99      | 5.875E-01  | -4.17      | -25.09    |
|     | 8.0E-01      | -8.65 | -22.50     | -3.99      | 5.713E-02  | -3.84      | -18.32    |
|     | 1.10         | -8.65 | -19.08     | -3.99      | -4.733E-01 | -3.92      | -12.32    |
|     | 1.40         | -8.65 | -16.24     | -3.99      | -1.00      | -4.34      | -7.09     |
| 195 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 2.0E-01      | 8.82  | -12.89     | 3.97       | -1.13      | 4.85       | -5.65     |
|     | 5.0E-01      | 8.82  | -10.87     | 3.97       | -5.947E-01 | 4.20       | -2.10     |
|     | 8.0E-01      | 8.82  | -8.85      | 3.97       | -6.427E-02 | 3.87       | 8.585E-01 |
|     | 1.10         | 8.82  | -6.83      | 3.97       | 4.661E-01  | 3.95       | 3.21      |
|     | 1.40         | 8.82  | -4.81      | 3.97       | 9.966E-01  | 4.35       | 4.96      |
| 195 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 2.0E-01      | -8.38 | -29.33     | -2.97      | -10.03     | -2.30      | -32.60    |
|     | 5.0E-01      | -8.38 | -25.92     | -2.97      | -9.41      | -1.96      | -25.07    |
|     | 8.0E-01      | -8.38 | -22.50     | -2.97      | -8.79      | -1.93      | -18.30    |
|     | 1.10         | -8.38 | -19.09     | -2.97      | -8.17      | -2.31      | -12.30    |
|     | 1.40         | -8.38 | -16.24     | -2.97      | -7.55      | -3.01      | -7.07     |
| 196 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 0.00         | 6.85  | -4.88      | 1.78       | 6.14       | 2.99       | 6.72      |
|     | 3.5E-01      | 6.85  | -2.52      | 1.78       | 5.42       | 2.82       | 8.78      |
|     | 7.0E-01      | 6.85  | -1.636E-01 | 1.78       | 4.70       | 2.79       | 9.80      |
|     | 1.05         | 6.85  | 2.20       | 1.78       | 3.97       | 2.93       | 10.03     |
|     | 1.40         | 6.85  | 4.60       | 1.78       | 3.25       | 3.25       | 10.63     |
| 196 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 0.00         | -6.19 | -16.15     | -2.63      | 7.382E-01  | -4.34      | -7.04     |
|     | 3.5E-01      | -6.19 | -13.17     | -2.63      | 1.192E-01  | -3.87      | -2.69     |
|     | 7.0E-01      | -6.19 | -10.18     | -2.63      | -4.999E-01 | -3.54      | 8.322E-01 |
|     | 1.05         | -6.19 | -7.19      | -2.63      | -1.12      | -3.39      | 3.53      |
|     | 1.40         | -6.19 | -4.25      | -2.63      | -1.74      | -3.40      | 5.35      |
| 197 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 0.00         | 6.84  | -4.95      | 2.63       | -7.374E-01 | 4.35       | 6.68      |
|     | 3.5E-01      | 6.84  | -2.59      | 2.63       | -1.184E-01 | 3.87       | 8.75      |
|     | 7.0E-01      | 6.84  | -2.357E-01 | 2.63       | 5.007E-01  | 3.53       | 9.78      |
|     | 1.05         | 6.84  | 2.12       | 2.63       | 1.12       | 3.36       | 10.03     |
|     | 1.40         | 6.84  | 4.53       | 2.63       | 1.74       | 3.36       | 10.63     |
| 197 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 0.00         | -6.15 | -16.09     | -1.78      | -6.14      | -3.01      | -7.01     |
|     | 3.5E-01      | -6.15 | -13.10     | -1.78      | -5.42      | -2.83      | -2.67     |
|     | 7.0E-01      | -6.15 | -10.12     | -1.78      | -4.70      | -2.79      | 8.499E-01 |
|     | 1.05         | -6.15 | -7.13      | -1.78      | -3.97      | -2.92      | 3.54      |
|     | 1.40         | -6.15 | -4.19      | -1.78      | -3.25      | -3.22      | 5.36      |
| 198 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 2.0E-01      | 0.00  | -5.36      | 3.374E-01  | 6.892E-01  | 1.20       | 2.55      |
|     | 1.44         | 0.00  | -7.444E-01 | 3.374E-01  | 6.892E-01  | 8.095E-01  | 6.63      |
|     | 2.69         | 0.00  | 3.87       | 3.374E-01  | 6.892E-01  | 4.906E-01  | 8.15      |
|     | 3.93         | 0.00  | 9.09       | 3.374E-01  | 6.892E-01  | 3.546E-01  | 11.33     |
|     | 5.17         | 0.00  | 14.47      | 3.374E-01  | 6.892E-01  | 4.895E-01  | 9.66      |
| 198 | ENVOLVIG MIN |       |            |            |            |            |           |
|     | 2.0E-01      | 0.00  | -17.01     | -2.132E-01 | -2.58      | -1.03      | -22.21    |
|     | 1.44         | 0.00  | -11.63     | -2.132E-01 | -2.58      | -7.919E-01 | -4.68     |
|     | 2.69         | 0.00  | -6.24      | -2.132E-01 | -2.58      | -6.274E-01 | 2.97      |
|     | 3.93         | 0.00  | -1.46      | -2.132E-01 | -2.58      | -6.458E-01 | -3.48     |
|     | 5.17         | 0.00  | 3.16       | -2.132E-01 | -2.58      | -9.352E-01 | -17.52    |
| 199 | ENVOLVIG MAX |       |            |            |            |            |           |
|     | 2.0E-01      | 0.00  | -5.46      | 2.134E-01  | 2.59       | 1.03       | 2.29      |
|     | 1.44         | 0.00  | -8.448E-01 | 2.134E-01  | 2.59       | 7.884E-01  | 6.48      |
|     | 2.69         | 0.00  | 3.77       | 2.134E-01  | 2.59       | 6.185E-01  | 8.14      |
|     | 3.93         | 0.00  | 8.99       | 2.134E-01  | 2.59       | 6.254E-01  | 11.22     |

|                  |       |            |            |            |            |        |
|------------------|-------|------------|------------|------------|------------|--------|
| 5.17             | 0.00  | 14.37      | 2.134E-01  | 2.59       | 9.129E-01  | 9.45   |
| 199 ENVOLVIG MIN |       |            |            |            |            |        |
| 2.0E-01          | 0.00  | -16.93     | -3.379E-01 | -6.973E-01 | -1.20      | -21.99 |
| 1.44             | 0.00  | -11.54     | -3.379E-01 | -6.973E-01 | -8.094E-01 | -4.55  |
| 2.69             | 0.00  | -6.16      | -3.379E-01 | -6.973E-01 | -4.846E-01 | 2.98   |
| 3.93             | 0.00  | -1.37      | -3.379E-01 | -6.973E-01 | -3.365E-01 | -3.36  |
| 5.17             | 0.00  | 3.25       | -3.379E-01 | -6.973E-01 | -4.691E-01 | -17.28 |
| 200 ENVOLVIG MAX |       |            |            |            |            |        |
| 0.00             | 8.13  | 4.65       | 2.12       | 1.17       | 3.25       | 10.57  |
| 3.5E-01          | 8.13  | 7.64       | 2.12       | 5.496E-01  | 2.95       | 9.78   |
| 7.0E-01          | 8.13  | 10.63      | 2.12       | -6.945E-02 | 2.88       | 8.14   |
| 1.05             | 8.13  | 13.62      | 2.12       | -6.885E-01 | 3.08       | 7.00   |
| 1.40             | 8.13  | 16.61      | 2.12       | -1.31      | 3.52       | 4.83   |
| 200 ENVOLVIG MIN |       |            |            |            |            |        |
| 0.00             | -7.27 | -4.30      | -2.78      | -3.36      | -3.40      | 4.79   |
| 3.5E-01          | -7.27 | -1.94      | -2.78      | -4.08      | -2.88      | 4.62   |
| 7.0E-01          | -7.27 | 4.172E-01  | -2.78      | -4.81      | -2.58      | 1.92   |
| 1.05             | -7.27 | 2.78       | -2.78      | -5.53      | -2.56      | -1.74  |
| 1.40             | -7.27 | 5.14       | -2.78      | -6.25      | -2.76      | -6.23  |
| 201 ENVOLVIG MAX |       |            |            |            |            |        |
| 0.00             | 8.14  | 4.56       | 2.78       | 3.36       | 3.36       | 10.57  |
| 3.5E-01          | 8.14  | 7.55       | 2.78       | 4.09       | 2.85       | 9.78   |
| 7.0E-01          | 8.14  | 10.53      | 2.78       | 4.81       | 2.55       | 8.10   |
| 1.05             | 8.14  | 13.52      | 2.78       | 5.53       | 2.53       | 6.93   |
| 1.40             | 8.14  | 16.51      | 2.78       | 6.25       | 2.75       | 4.73   |
| 201 ENVOLVIG MIN |       |            |            |            |            |        |
| 0.00             | -7.25 | -4.22      | -2.13      | -1.17      | -3.22      | 4.80   |
| 3.5E-01          | -7.25 | -1.86      | -2.13      | -5.527E-01 | -2.93      | 4.63   |
| 7.0E-01          | -7.25 | 5.026E-01  | -2.13      | 6.634E-02  | -2.87      | 1.96   |
| 1.05             | -7.25 | 2.86       | -2.13      | 6.854E-01  | -3.07      | -1.66  |
| 1.40             | -7.25 | 5.22       | -2.13      | 1.30       | -3.51      | -6.12  |
| 202 ENVOLVIG MAX |       |            |            |            |            |        |
| 0.00             | 10.27 | 16.42      | 1.79       | -4.486E-02 | 3.52       | 3.39   |
| 3.1E-01          | 10.27 | 19.69      | 1.79       | -5.863E-01 | 3.49       | 1.44   |
| 6.1E-01          | 10.27 | 23.17      | 1.79       | -1.13      | 3.58       | -1.13  |
| 9.2E-01          | 10.27 | 26.66      | 1.79       | -1.67      | 3.79       | -4.33  |
| 1.22             | 10.27 | 30.14      | 1.79       | -2.21      | 4.10       | -8.16  |
| 202 ENVOLVIG MIN |       |            |            |            |            |        |
| 0.00             | -9.26 | 5.32       | -2.20      | -6.89      | -2.76      | -6.69  |
| 3.1E-01          | -9.26 | 7.38       | -2.20      | -7.53      | -2.61      | -12.10 |
| 6.1E-01          | -9.26 | 9.44       | -2.20      | -8.16      | -2.58      | -18.31 |
| 9.2E-01          | -9.26 | 11.51      | -2.20      | -8.79      | -2.66      | -25.32 |
| 1.22             | -9.26 | 13.57      | -2.20      | -9.42      | -2.84      | -33.13 |
| 203 ENVOLVIG MAX |       |            |            |            |            |        |
| 0.00             | 10.28 | 16.34      | 2.18       | 6.87       | 2.75       | 3.29   |
| 3.1E-01          | 10.28 | 19.68      | 2.18       | 7.50       | 2.61       | 1.32   |
| 6.1E-01          | 10.28 | 23.17      | 2.18       | 8.13       | 2.58       | -1.28  |
| 9.2E-01          | 10.28 | 26.65      | 2.18       | 8.76       | 2.67       | -4.50  |
| 1.22             | 10.28 | 30.14      | 2.18       | 9.40       | 2.86       | -8.35  |
| 203 ENVOLVIG MIN |       |            |            |            |            |        |
| 0.00             | -9.25 | 5.39       | -1.78      | 7.199E-02  | -3.51      | -6.58  |
| 3.1E-01          | -9.25 | 7.46       | -1.78      | 6.134E-01  | -3.49      | -11.96 |
| 6.1E-01          | -9.25 | 9.52       | -1.78      | 1.15       | -3.59      | -18.15 |
| 9.2E-01          | -9.25 | 11.58      | -1.78      | 1.70       | -3.80      | -25.13 |
| 1.22             | -9.25 | 13.65      | -1.78      | 2.24       | -4.11      | -32.91 |
| 205 ENVOLVIG MAX |       |            |            |            |            |        |
| 1.8E-01          | 0.00  | -9.140E-01 | 3.955E-01  | 9.891E-01  | 1.21       | 15.71  |
| 1.43             | 0.00  | 3.73       | 3.955E-01  | 9.891E-01  | 7.225E-01  | 14.58  |
| 2.68             | 0.00  | 8.36       | 3.955E-01  | 9.891E-01  | 4.655E-01  | 9.77   |
| 3.93             | 0.00  | 13.78      | 3.955E-01  | 9.891E-01  | 7.100E-01  | 14.64  |
| 5.18             | 0.00  | 19.19      | 3.955E-01  | 9.891E-01  | 1.19       | 15.83  |
| 205 ENVOLVIG MIN |       |            |            |            |            |        |
| 1.8E-01          | 0.00  | -19.19     | -3.940E-01 | -9.918E-01 | -9.728E-01 | -27.21 |
| 1.43             | 0.00  | -13.78     | -3.940E-01 | -9.918E-01 | -4.824E-01 | -7.24  |
| 2.68             | 0.00  | -8.37      | -3.940E-01 | -9.918E-01 | -2.273E-01 | 5.36   |
| 3.93             | 0.00  | -3.73      | -3.940E-01 | -9.918E-01 | -4.737E-01 | -7.30  |

|     |              |       |            |           |            |            |            |        |
|-----|--------------|-------|------------|-----------|------------|------------|------------|--------|
|     |              | 5.18  | 0.00       | 9.133E-01 | -3.940E-01 | -9.918E-01 | -9.588E-01 | -27.33 |
| 207 | ENVOLVIG MAX |       |            |           |            |            |            |        |
|     | 1.8E-01      | 3.96  | -11.09     | 1.38      | 10.00      | 3.55       |            | -2.00  |
|     | 4.8E-01      | 3.96  | -9.02      | 1.38      | 9.37       | 3.21       |            | 1.08   |
|     | 7.9E-01      | 3.96  | -6.96      | 1.38      | 8.74       | 2.90       |            | 3.53   |
|     | 1.09         | 3.96  | -4.90      | 1.38      | 8.11       | 2.62       |            | 5.35   |
|     | 1.40         | 3.96  | -2.83      | 1.38      | 7.47       | 2.35       |            | 6.54   |
| 207 | ENVOLVIG MIN |       |            |           |            |            |            |        |
|     | 1.8E-01      | -3.80 | -29.88     | -1.45     | 8.459E-01  | -2.93      |            | -39.69 |
|     | 4.8E-01      | -3.80 | -26.40     | -1.45     | 3.044E-01  | -2.56      |            | -31.24 |
|     | 7.9E-01      | -3.80 | -23.79     | -1.45     | -2.371E-01 | -2.23      |            | -23.58 |
|     | 1.09         | -3.80 | -21.17     | -1.45     | -7.786E-01 | -1.93      |            | -16.72 |
|     | 1.40         | -3.80 | -18.56     | -1.45     | -1.32      | -1.65      |            | -10.67 |
| 208 | ENVOLVIG MAX |       |            |           |            |            |            |        |
|     | 1.8E-01      | 3.93  | -11.06     | 1.42      | -8.372E-01 | 2.93       |            | -1.90  |
|     | 4.8E-01      | 3.93  | -9.00      | 1.42      | -2.957E-01 | 2.57       |            | 1.17   |
|     | 7.9E-01      | 3.93  | -6.94      | 1.42      | 2.458E-01  | 2.25       |            | 3.60   |
|     | 1.09         | 3.93  | -4.87      | 1.42      | 7.874E-01  | 1.96       |            | 5.41   |
|     | 1.40         | 3.93  | -2.81      | 1.42      | 1.33       | 1.69       |            | 6.59   |
| 208 | ENVOLVIG MIN |       |            |           |            |            |            |        |
|     | 1.8E-01      | -3.77 | -29.88     | -1.35     | -10.02     | -3.56      |            | -39.79 |
|     | 4.8E-01      | -3.77 | -26.42     | -1.35     | -9.38      | -3.22      |            | -31.32 |
|     | 7.9E-01      | -3.77 | -23.81     | -1.35     | -8.75      | -2.92      |            | -23.65 |
|     | 1.09         | -3.77 | -21.19     | -1.35     | -8.12      | -2.65      |            | -16.79 |
|     | 1.40         | -3.77 | -18.58     | -1.35     | -7.49      | -2.40      |            | -10.72 |
| 209 | ENVOLVIG MAX |       |            |           |            |            |            |        |
|     | 0.00         | 3.87  | -2.78      | 1.28      | 5.74       | 2.35       |            | 8.07   |
|     | 3.5E-01      | 3.87  | -4.169E-01 | 1.28      | 5.02       | 1.96       |            | 9.34   |
|     | 7.0E-01      | 3.87  | 1.94       | 1.28      | 4.30       | 1.91       |            | 9.64   |
|     | 1.05         | 3.87  | 4.30       | 1.28      | 3.58       | 1.88       |            | 8.90   |
|     | 1.40         | 3.87  | 6.66       | 1.28      | 2.85       | 1.89       |            | 9.49   |
| 209 | ENVOLVIG MIN |       |            |           |            |            |            |        |
|     | 0.00         | -3.69 | -18.61     | -1.30     | 1.27       | -1.65      |            | -10.46 |
|     | 3.5E-01      | -3.69 | -15.63     | -1.30     | 6.515E-01  | -1.25      |            | -5.20  |
|     | 7.0E-01      | -3.69 | -12.64     | -1.30     | 3.245E-02  | -1.19      | -8.275E-01 |        |
|     | 1.05         | -3.69 | -9.65      | -1.30     | -5.866E-01 | -1.15      |            | 2.72   |
|     | 1.40         | -3.69 | -6.66      | -1.30     | -1.21      | -1.15      |            | 4.68   |
| 210 | ENVOLVIG MAX |       |            |           |            |            |            |        |
|     | 0.00         | 3.87  | -2.76      | 1.30      | -1.28      | 1.69       |            | 8.12   |
|     | 3.5E-01      | 3.87  | -4.041E-01 | 1.30      | -6.564E-01 | 1.30       |            | 9.38   |
|     | 7.0E-01      | 3.87  | 1.96       | 1.30      | -3.734E-02 | 1.19       |            | 9.66   |
|     | 1.05         | 3.87  | 4.31       | 1.30      | 5.817E-01  | 1.16       |            | 8.91   |
|     | 1.40         | 3.87  | 6.67       | 1.30      | 1.20       | 1.15       |            | 9.49   |
| 210 | ENVOLVIG MIN |       |            |           |            |            |            |        |
|     | 0.00         | -3.69 | -18.63     | -1.27     | -5.74      | -2.40      |            | -10.51 |
|     | 3.5E-01      | -3.69 | -15.64     | -1.27     | -5.02      | -2.02      |            | -5.24  |
|     | 7.0E-01      | -3.69 | -12.65     | -1.27     | -4.30      | -1.91      | -8.518E-01 |        |
|     | 1.05         | -3.69 | -9.66      | -1.27     | -3.58      | -1.89      |            | 2.71   |
|     | 1.40         | -3.69 | -6.67      | -1.27     | -2.86      | -1.89      |            | 4.68   |

### 5.2.8.1.2 Cálculo de Refuerzo.

CONCRETE DESIGN OUTPUT (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |        |        |        |       |       |
|------------|---------------|---------------|---------------------------------|--------|--------|--------|-------|-------|
|            |               |               | TOP                             | COMBO  | BOTTOM | COMBO  | SHEAR | COMBO |
| 2          | 25X30CIM      | 15.000        | 2.000                           | VIGAS1 | 1.302  | VIGAS1 | 0.025 | CU    |
| 2          | 25X30CIM      | 103.750       | 0.601                           | VIGAS1 | 1.081  | VIGAS1 | 0.020 | CU    |

|    |          |         |       |        |       |        |       |        |
|----|----------|---------|-------|--------|-------|--------|-------|--------|
| 2  | 25X30CIM | 192.500 | 0.552 | VIGAS1 | 0.616 | CU     | 0.015 | CU     |
| 2  | 25X30CIM | 281.250 | 0.676 | VIGAS1 | 1.181 | VIGAS1 | 0.020 | CU     |
| 2  | 25X30CIM | 370.000 | 2.000 | VIGAS1 | 1.413 | VIGAS1 | 0.025 | CU     |
| 3  | 25X30V   | 15.000  | 1.990 | VIGAS1 | 1.168 | VIGAS1 | 0.023 | CU     |
| 3  | 25X30V   | 103.750 | 0.661 | VIGAS1 | 1.011 | VIGAS1 | 0.018 | CU     |
| 3  | 25X30V   | 192.500 | 0.487 | VIGAS1 | 0.474 | CU     | 0.014 | CU     |
| 3  | 25X30V   | 281.250 | 0.487 | VIGAS1 | 0.767 | VIGAS1 | 0.018 | CU     |
| 3  | 25X30V   | 370.000 | 1.794 | VIGAS1 | 1.217 | VIGAS4 | 0.023 | CU     |
| 4  | 20X25V   | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.000 | VIGAS2 |
| 4  | 20X25V   | 196.800 | 0.000 | CU     | 1.400 | CU     | 0.000 | VIGAS2 |
| 4  | 20X25V   | 393.601 | 0.000 | CU     | 0.000 | CU     | 0.000 | VIGAS2 |
| 45 | 25X30CIM | 15.000  | 2.000 | VIGAS1 | 1.368 | VIGAS1 | 0.025 | CU     |
| 45 | 25X30CIM | 103.750 | 0.665 | VIGAS1 | 1.156 | VIGAS1 | 0.020 | CU     |
| 45 | 25X30CIM | 192.500 | 0.546 | VIGAS1 | 0.613 | CU     | 0.015 | VIGAS4 |
| 45 | 25X30CIM | 281.250 | 0.585 | VIGAS1 | 1.068 | VIGAS1 | 0.020 | CU     |
| 45 | 25X30CIM | 370.000 | 2.000 | VIGAS1 | 1.276 | VIGAS1 | 0.025 | CU     |
| 46 | 25X30V   | 15.000  | 1.786 | VIGAS1 | 1.206 | VIGAS4 | 0.023 | CU     |
| 46 | 25X30V   | 103.750 | 0.475 | VIGAS1 | 0.757 | VIGAS1 | 0.019 | CU     |
| 46 | 25X30V   | 192.500 | 0.475 | VIGAS1 | 0.480 | CU     | 0.014 | CU     |
| 46 | 25X30V   | 281.250 | 0.634 | VIGAS1 | 1.008 | VIGAS1 | 0.018 | CU     |
| 46 | 25X30V   | 370.000 | 1.943 | VIGAS1 | 1.162 | VIGAS1 | 0.023 | CU     |
| 47 | 20X25V   | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.000 | VIGAS2 |
| 47 | 20X25V   | 197.004 | 0.000 | CU     | 1.400 | CU     | 0.000 | VIGAS2 |
| 47 | 20X25V   | 394.007 | 0.000 | CU     | 0.000 | CU     | 0.000 | VIGAS2 |
| 49 | 25X30CIM | 15.000  | 1.421 | VIGAS1 | 0.761 | VIGAS1 | 0.016 | VIGAS4 |
| 49 | 25X30CIM | 105.625 | 0.387 | VIGAS1 | 0.873 | VIGAS1 | 0.012 | VIGAS4 |
| 49 | 25X30CIM | 196.250 | 0.387 | VIGAS1 | 0.573 | CU     | 0.010 | VIGAS4 |
| 49 | 25X30CIM | 286.875 | 0.387 | VIGAS1 | 0.521 | VIGAS1 | 0.013 | VIGAS4 |
| 49 | 25X30CIM | 377.500 | 1.576 | VIGAS1 | 0.779 | VIGAS1 | 0.017 | VIGAS4 |
| 50 | 25X30V   | 15.000  | 1.202 | VIGAS1 | 0.730 | VIGAS1 | 0.014 | VIGAS4 |
| 50 | 25X30V   | 105.625 | 0.422 | VIGAS1 | 0.726 | VIGAS1 | 0.011 | VIGAS4 |
| 50 | 25X30V   | 196.250 | 0.422 | VIGAS1 | 0.324 | CU     | 0.011 | VIGAS4 |
| 50 | 25X30V   | 286.875 | 0.484 | VIGAS1 | 0.422 | VIGAS1 | 0.013 | VIGAS4 |
| 50 | 25X30V   | 377.500 | 1.720 | VIGAS1 | 0.849 | VIGAS1 | 0.016 | VIGAS4 |
| 51 | 25X30CIM | 15.000  | 2.000 | VIGAS1 | 1.853 | VIGAS1 | 0.024 | CU     |
| 51 | 25X30CIM | 105.625 | 0.816 | VIGAS1 | 1.434 | VIGAS1 | 0.018 | CU     |
| 51 | 25X30CIM | 196.250 | 0.636 | VIGAS1 | 0.636 | VIGAS1 | 0.017 | CU     |
| 51 | 25X30CIM | 286.875 | 0.767 | VIGAS1 | 0.677 | VIGAS1 | 0.022 | CU     |
| 51 | 25X30CIM | 377.500 | 2.000 | VIGAS1 | 1.285 | VIGAS1 | 0.028 | CU     |
| 52 | 25X30V   | 15.000  | 1.669 | VIGAS1 | 1.018 | VIGAS1 | 0.020 | CU     |
| 52 | 25X30V   | 105.625 | 0.524 | VIGAS1 | 0.916 | VIGAS1 | 0.015 | CU     |
| 52 | 25X30V   | 196.250 | 0.448 | VIGAS1 | 0.401 | CU     | 0.013 | CU     |
| 52 | 25X30V   | 286.875 | 0.491 | VIGAS1 | 0.509 | VIGAS1 | 0.017 | CU     |
| 52 | 25X30V   | 377.500 | 1.828 | VIGAS1 | 0.902 | VIGAS1 | 0.022 | CU     |
| 53 | 25X30CIM | 15.000  | 2.000 | VIGAS1 | 1.852 | VIGAS1 | 0.024 | CU     |
| 53 | 25X30CIM | 105.625 | 0.819 | VIGAS1 | 1.432 | VIGAS1 | 0.018 | CU     |
| 53 | 25X30CIM | 196.250 | 0.637 | VIGAS1 | 0.637 | VIGAS1 | 0.017 | CU     |
| 53 | 25X30CIM | 286.875 | 0.770 | VIGAS1 | 0.679 | VIGAS1 | 0.022 | CU     |
| 53 | 25X30CIM | 377.500 | 2.000 | VIGAS1 | 1.287 | VIGAS1 | 0.028 | CU     |
| 54 | 25X30V   | 15.000  | 1.681 | VIGAS1 | 1.030 | VIGAS1 | 0.020 | CU     |
| 54 | 25X30V   | 105.625 | 0.530 | VIGAS1 | 0.924 | VIGAS1 | 0.015 | CU     |
| 54 | 25X30V   | 196.250 | 0.449 | VIGAS1 | 0.404 | CU     | 0.013 | CU     |
| 54 | 25X30V   | 286.875 | 0.491 | VIGAS1 | 0.515 | VIGAS1 | 0.017 | CU     |
| 54 | 25X30V   | 377.500 | 1.832 | VIGAS1 | 0.904 | VIGAS1 | 0.022 | CU     |
| 55 | 25X30CIM | 15.000  | 1.394 | VIGAS1 | 0.735 | VIGAS1 | 0.015 | VIGAS4 |
| 55 | 25X30CIM | 105.625 | 0.392 | VIGAS1 | 0.848 | VIGAS1 | 0.012 | VIGAS4 |
| 55 | 25X30CIM | 196.250 | 0.392 | VIGAS1 | 0.544 | CU     | 0.010 | VIGAS4 |
| 55 | 25X30CIM | 286.875 | 0.392 | VIGAS1 | 0.479 | VIGAS1 | 0.014 | VIGAS4 |
| 55 | 25X30CIM | 377.500 | 1.597 | VIGAS1 | 0.789 | VIGAS1 | 0.017 | VIGAS4 |

|     |          |         |       |        |       |        |       |        |
|-----|----------|---------|-------|--------|-------|--------|-------|--------|
| 56  | 25X30V   | 15.000  | 1.229 | VIGAS1 | 0.652 | VIGAS1 | 0.013 | VIGAS4 |
| 56  | 25X30V   | 105.625 | 0.372 | VIGAS1 | 0.718 | VIGAS1 | 0.011 | VIGAS4 |
| 56  | 25X30V   | 196.250 | 0.372 | VIGAS1 | 0.407 | CU     | 0.010 | VIGAS4 |
| 56  | 25X30V   | 286.875 | 0.372 | VIGAS1 | 0.372 | VIGAS1 | 0.012 | VIGAS4 |
| 56  | 25X30V   | 377.500 | 1.514 | VIGAS1 | 0.749 | VIGAS1 | 0.014 | VIGAS4 |
| 58  | 25X30CIM | 15.000  | 1.948 | VIGAS1 | 1.641 | VIGAS2 | 0.025 | CU     |
| 58  | 25X30CIM | 103.750 | 0.784 | VIGAS2 | 1.003 | VIGAS1 | 0.020 | CU     |
| 58  | 25X30CIM | 192.500 | 0.476 | VIGAS1 | 0.615 | CU     | 0.015 | VIGAS4 |
| 58  | 25X30CIM | 281.250 | 0.749 | VIGAS2 | 0.969 | VIGAS1 | 0.020 | CU     |
| 58  | 25X30CIM | 370.000 | 1.922 | VIGAS1 | 1.595 | VIGAS2 | 0.025 | CU     |
| 59  | 25X30V   | 15.000  | 2.035 | VIGAS1 | 1.374 | VIGAS4 | 0.024 | CU     |
| 59  | 25X30V   | 103.750 | 0.990 | VIGAS2 | 1.024 | VIGAS2 | 0.019 | CU     |
| 59  | 25X30V   | 192.500 | 0.498 | VIGAS1 | 0.621 | VIGAS2 | 0.014 | CU     |
| 59  | 25X30V   | 281.250 | 0.498 | VIGAS1 | 0.661 | VIGAS1 | 0.017 | CU     |
| 59  | 25X30V   | 370.000 | 1.480 | VIGAS1 | 1.211 | VIGAS2 | 0.022 | CU     |
| 60  | 20X25V   | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.000 | VIGAS2 |
| 60  | 20X25V   | 196.800 | 0.000 | CU     | 1.733 | CU     | 0.000 | VIGAS2 |
| 60  | 20X25V   | 393.601 | 0.000 | CU     | 0.000 | CU     | 0.000 | VIGAS2 |
| 101 | 25X30CIM | 15.000  | 1.902 | VIGAS1 | 1.547 | VIGAS2 | 0.025 | CU     |
| 101 | 25X30CIM | 103.750 | 0.725 | VIGAS2 | 0.961 | VIGAS1 | 0.019 | CU     |
| 101 | 25X30CIM | 192.500 | 0.480 | VIGAS1 | 0.600 | CU     | 0.014 | CU     |
| 101 | 25X30CIM | 281.250 | 0.777 | VIGAS2 | 0.974 | VIGAS1 | 0.020 | CU     |
| 101 | 25X30CIM | 370.000 | 1.963 | VIGAS1 | 1.553 | VIGAS2 | 0.025 | CU     |
| 102 | 25X30V   | 15.000  | 1.536 | VIGAS1 | 1.114 | VIGAS2 | 0.023 | CU     |
| 102 | 25X30V   | 103.750 | 0.453 | VIGAS1 | 0.657 | VIGAS1 | 0.018 | CU     |
| 102 | 25X30V   | 192.500 | 0.453 | VIGAS1 | 0.446 | CU     | 0.014 | CU     |
| 102 | 25X30V   | 281.250 | 0.852 | VIGAS2 | 0.862 | VIGAS1 | 0.018 | CU     |
| 102 | 25X30V   | 370.000 | 1.848 | VIGAS1 | 1.349 | VIGAS2 | 0.023 | CU     |
| 103 | 20X25V   | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.000 | VIGAS2 |
| 103 | 20X25V   | 197.004 | 0.000 | CU     | 1.734 | CU     | 0.000 | VIGAS2 |
| 103 | 20X25V   | 394.007 | 0.000 | CU     | 0.000 | CU     | 0.000 | VIGAS2 |
| 105 | 25X30CIM | 15.000  | 1.554 | VIGAS1 | 0.768 | VIGAS1 | 0.016 | VIGAS4 |
| 105 | 25X30CIM | 101.875 | 0.382 | VIGAS1 | 0.450 | VIGAS1 | 0.013 | VIGAS4 |
| 105 | 25X30CIM | 188.750 | 0.382 | VIGAS1 | 0.384 | CU     | 0.010 | VIGAS4 |
| 105 | 25X30CIM | 275.625 | 0.446 | VIGAS1 | 0.683 | VIGAS1 | 0.012 | VIGAS4 |
| 105 | 25X30CIM | 362.500 | 1.550 | VIGAS1 | 0.766 | VIGAS1 | 0.016 | VIGAS4 |
| 106 | 25X30V   | 15.000  | 1.986 | VIGAS1 | 0.979 | VIGAS1 | 0.012 | VIGAS2 |
| 106 | 25X30V   | 101.875 | 0.486 | VIGAS1 | 0.763 | VIGAS1 | 0.012 | VIGAS2 |
| 106 | 25X30V   | 188.750 | 0.486 | VIGAS1 | 1.201 | CU     | 0.012 | VIGAS2 |
| 106 | 25X30V   | 275.625 | 0.486 | VIGAS1 | 1.068 | VIGAS1 | 0.012 | VIGAS2 |
| 106 | 25X30V   | 362.500 | 1.977 | VIGAS1 | 0.974 | VIGAS1 | 0.012 | VIGAS2 |
| 107 | 25X30CIM | 15.000  | 1.471 | VIGAS1 | 0.728 | VIGAS1 | 0.016 | VIGAS4 |
| 107 | 25X30CIM | 111.003 | 0.450 | VIGAS1 | 0.797 | VIGAS1 | 0.012 | VIGAS4 |
| 107 | 25X30CIM | 207.006 | 0.450 | VIGAS1 | 0.593 | CU     | 0.010 | VIGAS4 |
| 107 | 25X30CIM | 303.009 | 0.450 | VIGAS1 | 0.626 | VIGAS1 | 0.014 | VIGAS4 |
| 107 | 25X30CIM | 399.012 | 1.836 | VIGAS1 | 0.906 | VIGAS1 | 0.017 | VIGAS4 |
| 108 | 25X30V   | 15.000  | 1.277 | VIGAS1 | 0.656 | VIGAS1 | 0.015 | VIGAS4 |
| 108 | 25X30V   | 111.003 | 0.519 | VIGAS1 | 0.649 | VIGAS1 | 0.012 | VIGAS4 |
| 108 | 25X30V   | 207.006 | 0.519 | VIGAS1 | 0.519 | VIGAS1 | 0.011 | VIGAS4 |
| 108 | 25X30V   | 303.009 | 0.721 | VIGAS1 | 0.548 | VIGAS1 | 0.014 | VIGAS4 |
| 108 | 25X30V   | 399.012 | 2.083 | VIGAS1 | 1.046 | VIGAS1 | 0.017 | VIGAS4 |
| 109 | 25X30CIM | 15.000  | 2.000 | VIGAS1 | 1.060 | VIGAS1 | 0.018 | VIGAS4 |
| 109 | 25X30CIM | 114.302 | 0.573 | VIGAS1 | 0.851 | VIGAS1 | 0.015 | VIGAS4 |
| 109 | 25X30CIM | 213.604 | 0.540 | VIGAS1 | 0.537 | CU     | 0.011 | VIGAS4 |
| 109 | 25X30CIM | 312.906 | 0.608 | VIGAS1 | 0.847 | VIGAS1 | 0.015 | VIGAS4 |
| 109 | 25X30CIM | 412.208 | 2.000 | VIGAS1 | 1.088 | VIGAS1 | 0.018 | VIGAS4 |
| 110 | 25X30V   | 15.000  | 2.007 | VIGAS1 | 0.989 | VIGAS1 | 0.022 | CU     |
| 110 | 25X30V   | 114.302 | 0.618 | VIGAS1 | 0.731 | VIGAS1 | 0.017 | CU     |



|     |          |         |       |        |       |        |       |        |
|-----|----------|---------|-------|--------|-------|--------|-------|--------|
| 110 | 25X30V   | 213.604 | 0.618 | VIGAS1 | 0.500 | CU     | 0.012 | CU     |
| 110 | 25X30V   | 312.906 | 0.927 | VIGAS1 | 1.181 | VIGAS1 | 0.017 | CU     |
| 110 | 25X30V   | 412.208 | 2.083 | VIGAS1 | 1.265 | VIGAS1 | 0.023 | CU     |
| 111 | 25X30CIM | 15.000  | 2.000 | VIGAS1 | 1.047 | VIGAS1 | 0.018 | VIGAS4 |
| 111 | 25X30CIM | 112.599 | 0.574 | VIGAS1 | 0.868 | VIGAS1 | 0.015 | VIGAS4 |
| 111 | 25X30CIM | 210.197 | 0.542 | VIGAS1 | 0.522 | CU     | 0.011 | VIGAS4 |
| 111 | 25X30CIM | 307.796 | 0.627 | VIGAS1 | 0.845 | VIGAS1 | 0.015 | VIGAS4 |
| 111 | 25X30CIM | 405.394 | 2.000 | VIGAS1 | 1.093 | VIGAS1 | 0.019 | VIGAS4 |
| 112 | 25X30V   | 15.000  | 2.011 | VIGAS1 | 0.991 | VIGAS1 | 0.023 | CU     |
| 112 | 25X30V   | 112.599 | 0.624 | VIGAS1 | 0.736 | VIGAS1 | 0.017 | CU     |
| 112 | 25X30V   | 210.197 | 0.624 | VIGAS1 | 0.476 | CU     | 0.013 | CU     |
| 112 | 25X30V   | 307.796 | 0.959 | VIGAS1 | 1.186 | VIGAS1 | 0.018 | CU     |
| 112 | 25X30V   | 405.394 | 2.083 | VIGAS1 | 1.307 | VIGAS1 | 0.023 | CU     |
| 113 | 25X30CIM | 15.000  | 1.466 | VIGAS1 | 0.725 | VIGAS1 | 0.016 | VIGAS4 |
| 113 | 25X30CIM | 112.599 | 0.441 | VIGAS1 | 0.778 | VIGAS1 | 0.012 | VIGAS4 |
| 113 | 25X30CIM | 210.197 | 0.441 | VIGAS1 | 0.614 | CU     | 0.010 | VIGAS4 |
| 113 | 25X30CIM | 307.796 | 0.441 | VIGAS1 | 0.620 | VIGAS1 | 0.013 | VIGAS4 |
| 113 | 25X30CIM | 405.394 | 1.801 | VIGAS1 | 0.888 | VIGAS1 | 0.017 | VIGAS4 |
| 114 | 25X30V   | 15.000  | 1.263 | VIGAS1 | 0.626 | VIGAS1 | 0.014 | VIGAS4 |
| 114 | 25X30V   | 112.599 | 0.511 | VIGAS1 | 0.638 | VIGAS1 | 0.012 | VIGAS4 |
| 114 | 25X30V   | 210.197 | 0.511 | VIGAS1 | 0.406 | CU     | 0.011 | VIGAS4 |
| 114 | 25X30V   | 307.796 | 0.688 | VIGAS1 | 0.532 | VIGAS1 | 0.014 | VIGAS4 |
| 114 | 25X30V   | 405.394 | 2.083 | VIGAS1 | 1.029 | VIGAS1 | 0.016 | VIGAS4 |
| 115 | 25X30CIM | 15.000  | 1.501 | VIGAS1 | 0.742 | VIGAS1 | 0.016 | VIGAS4 |
| 115 | 25X30CIM | 101.875 | 0.369 | VIGAS1 | 0.468 | VIGAS1 | 0.013 | VIGAS4 |
| 115 | 25X30CIM | 188.750 | 0.369 | VIGAS1 | 0.425 | CU     | 0.010 | VIGAS4 |
| 115 | 25X30CIM | 275.625 | 0.398 | VIGAS1 | 0.700 | VIGAS1 | 0.012 | VIGAS4 |
| 115 | 25X30CIM | 362.500 | 1.485 | VIGAS1 | 0.734 | VIGAS1 | 0.015 | VIGAS4 |
| 116 | 25X30V   | 15.000  | 1.607 | VIGAS1 | 0.794 | VIGAS1 | 0.010 | VIGAS2 |
| 116 | 25X30V   | 101.875 | 0.429 | VIGAS1 | 0.487 | VIGAS1 | 0.010 | VIGAS2 |
| 116 | 25X30V   | 188.750 | 0.429 | VIGAS1 | 0.790 | CU     | 0.010 | VIGAS2 |
| 116 | 25X30V   | 275.625 | 0.429 | VIGAS1 | 1.001 | VIGAS1 | 0.010 | VIGAS2 |
| 116 | 25X30V   | 362.500 | 1.750 | VIGAS1 | 0.864 | VIGAS1 | 0.010 | VIGAS2 |
| 118 | 25X30CIM | 15.000  | 1.912 | VIGAS2 | 2.000 | VIGAS2 | 0.033 | CU     |
| 118 | 25X30CIM | 61.250  | 0.946 | VIGAS2 | 0.881 | VIGAS1 | 0.030 | VIGAS4 |
| 118 | 25X30CIM | 107.500 | 0.386 | VIGAS1 | 0.386 | VIGAS1 | 0.033 | CU     |
| 118 | 25X30CIM | 153.750 | 0.841 | VIGAS2 | 0.571 | VIGAS2 | 0.036 | CU     |
| 118 | 25X30CIM | 200.000 | 1.571 | VIGAS1 | 1.155 | VIGAS2 | 0.038 | CU     |
| 119 | 25X30V   | 15.000  | 1.637 | VIGAS1 | 1.228 | VIGAS2 | 0.035 | CU     |
| 119 | 25X30V   | 61.250  | 0.764 | VIGAS1 | 0.666 | VIGAS2 | 0.033 | CU     |
| 119 | 25X30V   | 107.500 | 0.402 | VIGAS1 | 0.402 | VIGAS1 | 0.031 | CU     |
| 119 | 25X30V   | 153.750 | 0.571 | VIGAS1 | 0.635 | VIGAS1 | 0.029 | VIGAS4 |
| 119 | 25X30V   | 200.000 | 1.240 | VIGAS1 | 1.584 | VIGAS2 | 0.031 | CU     |
| 120 | 20X25V   | 0.000   | 0.378 | VIGAS2 | 0.383 | VIGAS1 | 0.013 | CU     |
| 120 | 20X25V   | 109.902 | 0.348 | CU     | 0.348 | CU     | 0.018 | CU     |
| 120 | 20X25V   | 219.803 | 1.400 | CU     | 0.701 | CU     | 0.024 | CU     |
| 123 | 25X30CIM | 15.000  | 1.078 | VIGAS1 | 0.535 | VIGAS1 | 0.015 | VIGAS4 |
| 123 | 25X30CIM | 100.000 | 0.307 | VIGAS1 | 0.450 | VIGAS1 | 0.012 | VIGAS4 |
| 123 | 25X30CIM | 185.000 | 0.307 | VIGAS1 | 0.488 | CU     | 0.009 | VIGAS4 |
| 123 | 25X30CIM | 270.000 | 0.307 | VIGAS1 | 0.597 | VIGAS1 | 0.012 | VIGAS4 |
| 123 | 25X30CIM | 355.000 | 1.243 | VIGAS1 | 0.616 | VIGAS1 | 0.015 | VIGAS4 |
| 124 | 25X30V   | 15.000  | 1.363 | VIGAS1 | 0.675 | VIGAS1 | 0.021 | CU     |
| 124 | 25X30V   | 100.000 | 0.465 | VIGAS4 | 0.495 | VIGAS1 | 0.017 | CU     |
| 124 | 25X30V   | 185.000 | 0.336 | VIGAS1 | 0.472 | CU     | 0.013 | CU     |
| 124 | 25X30V   | 270.000 | 0.530 | VIGAS4 | 0.793 | VIGAS1 | 0.015 | CU     |
| 124 | 25X30V   | 355.000 | 1.203 | VIGAS1 | 1.114 | VIGAS2 | 0.020 | CU     |
| 125 | 20X25V   | 0.000   | 1.400 | CU     | 0.701 | CU     | 0.006 | VIGAS2 |
| 125 | 20X25V   | 189.133 | 0.348 | CU     | 1.305 | CU     | 0.006 | VIGAS2 |
| 125 | 20X25V   | 378.266 | 0.259 | CU     | 0.129 | CU     | 0.006 | VIGAS2 |

|     |          |         |           |        |           |        |       |        |
|-----|----------|---------|-----------|--------|-----------|--------|-------|--------|
| 128 | 20X25V   | 0.000   | 0.259     | CU     | 0.129     | CU     | 0.008 | VIGAS4 |
| 128 | 20X25V   | 33.226  | 0.065     | CU     | 0.065     | CU     | 0.007 | VIGAS4 |
| 128 | 20X25V   | 66.452  | 1.091E-04 | CU     | 5.455E-05 | CU     | 0.006 | VIGAS4 |
| 129 | 25X30CIM | 15.000  | 1.485     | VIGAS2 | 0.734     | VIGAS2 | 0.019 | CU     |
| 129 | 25X30CIM | 90.000  | 0.421     | VIGAS1 | 0.404     | VIGAS1 | 0.015 | CU     |
| 129 | 25X30CIM | 165.000 | 0.365     | VIGAS2 | 0.416     | VIGAS1 | 0.010 | CU     |
| 129 | 25X30CIM | 240.000 | 0.502     | VIGAS2 | 0.503     | VIGAS2 | 0.015 | CU     |
| 129 | 25X30CIM | 315.000 | 1.423     | VIGAS2 | 0.704     | VIGAS2 | 0.019 | CU     |
| 130 | 20X25V   | 0.000   | 9.633E-05 | CU     | 4.817E-05 | CU     | 0.006 | VIGAS4 |
| 130 | 20X25V   | 33.260  | 0.065     | CU     | 0.065     | CU     | 0.007 | VIGAS4 |
| 130 | 20X25V   | 66.521  | 0.259     | CU     | 0.129     | CU     | 0.008 | VIGAS4 |
| 133 | 25X30CIM | 15.000  | 1.167     | VIGAS1 | 0.579     | VIGAS1 | 0.015 | VIGAS4 |
| 133 | 25X30CIM | 100.000 | 0.288     | VIGAS1 | 0.543     | VIGAS1 | 0.011 | VIGAS4 |
| 133 | 25X30CIM | 185.000 | 0.288     | VIGAS1 | 0.490     | CU     | 0.008 | VIGAS4 |
| 133 | 25X30CIM | 270.000 | 0.288     | VIGAS1 | 0.412     | VIGAS1 | 0.011 | VIGAS4 |
| 133 | 25X30CIM | 355.000 | 0.956     | VIGAS1 | 0.475     | VIGAS1 | 0.014 | VIGAS4 |
| 134 | 25X30V   | 15.000  | 1.452     | VIGAS2 | 0.991     | VIGAS2 | 0.019 | CU     |
| 134 | 25X30V   | 100.000 | 0.413     | VIGAS2 | 0.713     | VIGAS1 | 0.014 | CU     |
| 134 | 25X30V   | 185.000 | 0.293     | VIGAS1 | 0.472     | CU     | 0.012 | CU     |
| 134 | 25X30V   | 270.000 | 0.400     | VIGAS4 | 0.575     | VIGAS2 | 0.016 | CU     |
| 134 | 25X30V   | 355.000 | 1.185     | VIGAS1 | 0.588     | VIGAS1 | 0.020 | CU     |
| 135 | 20X25V   | 0.000   | 0.260     | CU     | 0.129     | CU     | 0.006 | VIGAS2 |
| 135 | 20X25V   | 189.328 | 0.352     | CU     | 1.298     | CU     | 0.006 | VIGAS2 |
| 135 | 20X25V   | 378.656 | 1.400     | CU     | 0.709     | CU     | 0.006 | VIGAS2 |
| 138 | 25X30CIM | 15.000  | 1.978     | VIGAS2 | 1.060     | VIGAS2 | 0.040 | CU     |
| 138 | 25X30CIM | 57.500  | 0.835     | VIGAS2 | 0.501     | VIGAS2 | 0.038 | CU     |
| 138 | 25X30CIM | 100.000 | 0.484     | VIGAS2 | 0.484     | VIGAS2 | 0.035 | CU     |
| 138 | 25X30CIM | 142.500 | 0.915     | VIGAS2 | 1.093     | VIGAS2 | 0.033 | CU     |
| 138 | 25X30CIM | 185.000 | 1.797     | VIGAS2 | 1.927     | VIGAS2 | 0.034 | CU     |
| 139 | 25X30V   | 15.000  | 1.553     | VIGAS2 | 1.450     | VIGAS2 | 0.031 | CU     |
| 139 | 25X30V   | 57.500  | 0.718     | VIGAS2 | 0.740     | VIGAS2 | 0.029 | CU     |
| 139 | 25X30V   | 100.000 | 0.468     | VIGAS2 | 0.468     | VIGAS2 | 0.030 | CU     |
| 139 | 25X30V   | 142.500 | 0.923     | VIGAS2 | 0.654     | VIGAS2 | 0.032 | CU     |
| 139 | 25X30V   | 185.000 | 1.913     | VIGAS2 | 1.215     | VIGAS2 | 0.035 | CU     |
| 140 | 20X25V   | 0.000   | 1.400     | CU     | 0.709     | CU     | 0.025 | CU     |
| 140 | 20X25V   | 102.340 | 0.352     | CU     | 0.352     | CU     | 0.020 | CU     |
| 140 | 20X25V   | 204.679 | 0.290     | VIGAS2 | 0.555     | VIGAS2 | 0.014 | CU     |
| 142 | 25X35CIM | 15.000  | 1.998     | VIGAS1 | 0.987     | VIGAS1 | 0.018 | VIGAS4 |
| 142 | 25X35CIM | 113.125 | 0.566     | VIGAS1 | 0.848     | VIGAS1 | 0.014 | VIGAS4 |
| 142 | 25X35CIM | 211.250 | 0.490     | VIGAS1 | 0.493     | CU     | 0.011 | VIGAS4 |
| 142 | 25X35CIM | 309.375 | 0.509     | VIGAS1 | 0.675     | VIGAS1 | 0.015 | VIGAS4 |
| 142 | 25X35CIM | 407.500 | 1.998     | VIGAS1 | 0.987     | VIGAS1 | 0.018 | VIGAS4 |
| 143 | 25X30V   | 15.000  | 2.083     | VIGAS1 | 1.325     | VIGAS1 | 0.013 | VIGAS2 |
| 143 | 25X30V   | 113.125 | 0.751     | VIGAS1 | 1.170     | VIGAS1 | 0.013 | VIGAS2 |
| 143 | 25X30V   | 211.250 | 0.751     | VIGAS1 | 1.271     | CU     | 0.013 | VIGAS2 |
| 143 | 25X30V   | 309.375 | 0.751     | VIGAS1 | 0.913     | VIGAS1 | 0.013 | VIGAS2 |
| 143 | 25X30V   | 407.500 | 2.331     | VIGAS1 | 1.518     | VIGAS1 | 0.013 | VIGAS2 |
| 144 | 25X30CIM | 15.000  | 2.000     | VIGAS1 | 1.192     | VIGAS1 | 0.019 | VIGAS4 |
| 144 | 25X30CIM | 113.125 | 0.737     | VIGAS1 | 1.067     | VIGAS1 | 0.015 | VIGAS4 |
| 144 | 25X30CIM | 211.250 | 0.613     | VIGAS1 | 0.521     | CU     | 0.012 | VIGAS4 |
| 144 | 25X30CIM | 309.375 | 0.745     | VIGAS1 | 0.911     | VIGAS1 | 0.016 | VIGAS4 |
| 144 | 25X30CIM | 407.500 | 2.000     | VIGAS1 | 1.238     | VIGAS1 | 0.019 | VIGAS4 |
| 145 | 25X30V   | 15.000  | 2.480     | VIGAS1 | 2.083     | VIGAS1 | 0.026 | CU     |
| 145 | 25X30V   | 113.125 | 1.236     | VIGAS1 | 1.550     | VIGAS1 | 0.021 | CU     |
| 145 | 25X30V   | 211.250 | 0.797     | VIGAS1 | 0.797     | VIGAS1 | 0.016 | CU     |
| 145 | 25X30V   | 309.375 | 1.117     | VIGAS1 | 1.287     | VIGAS1 | 0.022 | CU     |
| 145 | 25X30V   | 407.500 | 2.442     | VIGAS1 | 1.851     | VIGAS1 | 0.027 | CU     |

|     |          |         |           |        |           |        |       |        |
|-----|----------|---------|-----------|--------|-----------|--------|-------|--------|
| 146 | 25X30CIM | 15.000  | 2.000     | VIGAS1 | 1.173     | VIGAS1 | 0.019 | VIGAS4 |
| 146 | 25X30CIM | 113.125 | 0.716     | VIGAS1 | 1.047     | VIGAS1 | 0.015 | VIGAS4 |
| 146 | 25X30CIM | 211.250 | 0.607     | VIGAS1 | 0.520     | CU     | 0.012 | VIGAS4 |
| 146 | 25X30CIM | 309.375 | 0.735     | VIGAS1 | 0.898     | VIGAS1 | 0.016 | VIGAS4 |
| 146 | 25X30CIM | 407.500 | 2.000     | VIGAS1 | 1.225     | VIGAS1 | 0.019 | VIGAS4 |
| 147 | 25X30V   | 15.000  | 2.435     | VIGAS1 | 2.083     | VIGAS1 | 0.026 | CU     |
| 147 | 25X30V   | 113.125 | 1.204     | VIGAS1 | 1.523     | VIGAS1 | 0.021 | CU     |
| 147 | 25X30V   | 211.250 | 0.783     | VIGAS1 | 0.783     | VIGAS1 | 0.016 | CU     |
| 147 | 25X30V   | 309.375 | 1.104     | VIGAS1 | 1.271     | VIGAS1 | 0.021 | CU     |
| 147 | 25X30V   | 407.500 | 2.415     | VIGAS1 | 1.810     | VIGAS1 | 0.026 | CU     |
| 148 | 25X35CIM | 15.000  | 1.983     | VIGAS1 | 0.979     | VIGAS1 | 0.018 | VIGAS4 |
| 148 | 25X35CIM | 113.125 | 0.561     | VIGAS1 | 0.829     | VIGAS1 | 0.014 | VIGAS4 |
| 148 | 25X35CIM | 211.250 | 0.487     | VIGAS1 | 0.489     | CU     | 0.011 | VIGAS4 |
| 148 | 25X35CIM | 309.375 | 0.493     | VIGAS1 | 0.661     | VIGAS1 | 0.014 | VIGAS4 |
| 148 | 25X35CIM | 407.500 | 1.964     | VIGAS1 | 0.970     | VIGAS1 | 0.018 | VIGAS4 |
| 149 | 25X30V   | 15.000  | 2.083     | VIGAS1 | 1.307     | VIGAS1 | 0.013 | VIGAS2 |
| 149 | 25X30V   | 113.125 | 0.744     | VIGAS1 | 1.160     | VIGAS1 | 0.013 | VIGAS2 |
| 149 | 25X30V   | 211.250 | 0.744     | VIGAS1 | 1.275     | CU     | 0.013 | VIGAS2 |
| 149 | 25X30V   | 309.375 | 0.744     | VIGAS1 | 0.901     | VIGAS1 | 0.013 | VIGAS2 |
| 149 | 25X30V   | 407.500 | 2.309     | VIGAS1 | 1.504     | VIGAS1 | 0.013 | VIGAS2 |
| 151 | 25X30CIM | 15.000  | 2.000     | VIGAS2 | 1.443     | VIGAS2 | 0.024 | CU     |
| 151 | 25X30CIM | 100.000 | 0.845     | VIGAS2 | 1.195     | VIGAS2 | 0.019 | CU     |
| 151 | 25X30CIM | 185.000 | 0.542     | VIGAS2 | 0.415     | CU     | 0.015 | CU     |
| 151 | 25X30CIM | 270.000 | 0.542     | VIGAS2 | 0.606     | VIGAS2 | 0.020 | CU     |
| 151 | 25X30CIM | 355.000 | 2.000     | VIGAS2 | 0.985     | VIGAS2 | 0.025 | CU     |
| 152 | 25X30V   | 15.000  | 2.083     | VIGAS2 | 1.522     | VIGAS2 | 0.027 | CU     |
| 152 | 25X30V   | 100.000 | 0.644     | VIGAS2 | 1.022     | VIGAS2 | 0.023 | CU     |
| 152 | 25X30V   | 185.000 | 0.641     | VIGAS2 | 0.631     | CU     | 0.018 | CU     |
| 152 | 25X30V   | 270.000 | 1.022     | VIGAS2 | 1.862     | VIGAS2 | 0.020 | CU     |
| 152 | 25X30V   | 355.000 | 2.083     | VIGAS2 | 2.083     | VIGAS2 | 0.025 | CU     |
| 153 | 20X25V   | 0.000   | 1.566     | CU     | 1.020     | CU     | 0.006 | VIGAS2 |
| 153 | 20X25V   | 194.107 | 0.505     | CU     | 1.246     | CU     | 0.006 | VIGAS2 |
| 153 | 20X25V   | 388.214 | 0.293     | CU     | 0.146     | CU     | 0.006 | VIGAS2 |
| 156 | 20X25V   | 0.000   | 0.293     | CU     | 0.146     | CU     | 0.009 | VIGAS4 |
| 156 | 20X25V   | 34.100  | 0.073     | CU     | 0.073     | CU     | 0.008 | VIGAS4 |
| 156 | 20X25V   | 68.200  | 7.339E-06 | CU     | 3.670E-06 | CU     | 0.006 | VIGAS4 |
| 157 | 25X30CIM | 15.000  | 1.308     | VIGAS2 | 0.647     | VIGAS2 | 0.018 | CU     |
| 157 | 25X30CIM | 90.000  | 0.383     | VIGAS2 | 0.582     | VIGAS2 | 0.014 | CU     |
| 157 | 25X30CIM | 165.000 | 0.322     | VIGAS2 | 0.341     | CU     | 0.009 | CU     |
| 157 | 25X30CIM | 240.000 | 0.378     | VIGAS2 | 0.580     | VIGAS2 | 0.014 | CU     |
| 157 | 25X30CIM | 315.000 | 1.300     | VIGAS2 | 0.644     | VIGAS2 | 0.018 | CU     |
| 158 | 20X25V   | 0.000   | 7.348E-06 | CU     | 3.674E-06 | CU     | 0.006 | VIGAS4 |
| 158 | 20X25V   | 34.100  | 0.073     | CU     | 0.073     | CU     | 0.008 | VIGAS4 |
| 158 | 20X25V   | 68.200  | 0.293     | CU     | 0.146     | CU     | 0.009 | VIGAS4 |
| 161 | 25X30CIM | 15.000  | 1.993     | VIGAS2 | 0.981     | VIGAS2 | 0.025 | CU     |
| 161 | 25X30CIM | 100.000 | 0.538     | VIGAS2 | 0.601     | VIGAS2 | 0.020 | CU     |
| 161 | 25X30CIM | 185.000 | 0.538     | VIGAS2 | 0.416     | CU     | 0.015 | CU     |
| 161 | 25X30CIM | 270.000 | 0.836     | VIGAS2 | 1.191     | VIGAS2 | 0.019 | CU     |
| 161 | 25X30CIM | 355.000 | 2.000     | VIGAS2 | 1.435     | VIGAS2 | 0.024 | CU     |
| 162 | 25X30V   | 15.000  | 2.083     | VIGAS2 | 2.083     | VIGAS2 | 0.025 | CU     |
| 162 | 25X30V   | 100.000 | 1.018     | VIGAS2 | 1.853     | VIGAS2 | 0.020 | CU     |
| 162 | 25X30V   | 185.000 | 0.639     | VIGAS2 | 0.630     | CU     | 0.018 | CU     |
| 162 | 25X30V   | 270.000 | 0.639     | VIGAS2 | 1.019     | VIGAS2 | 0.023 | CU     |
| 162 | 25X30V   | 355.000 | 2.083     | VIGAS2 | 1.514     | VIGAS2 | 0.027 | CU     |
| 163 | 20X25V   | 0.000   | 0.293     | CU     | 0.146     | CU     | 0.006 | VIGAS2 |
| 163 | 20X25V   | 194.107 | 0.504     | CU     | 1.247     | CU     | 0.006 | VIGAS2 |
| 163 | 20X25V   | 388.214 | 1.566     | CU     | 1.020     | CU     | 0.006 | VIGAS2 |
| 165 | 25X35CIM | 15.000  | 1.716     | VIGAS1 | 0.849     | VIGAS1 | 0.017 | VIGAS4 |

|     |          |         |           |        |           |        |       |        |
|-----|----------|---------|-----------|--------|-----------|--------|-------|--------|
| 165 | 25X35CIM | 109.375 | 0.483     | VIGAS1 | 0.736     | VIGAS1 | 0.014 | VIGAS4 |
| 165 | 25X35CIM | 203.750 | 0.483     | VIGAS1 | 0.437     | CU     | 0.011 | VIGAS4 |
| 165 | 25X35CIM | 298.125 | 0.565     | VIGAS1 | 0.625     | VIGAS1 | 0.014 | VIGAS4 |
| 165 | 25X35CIM | 392.500 | 1.968     | VIGAS1 | 0.972     | VIGAS1 | 0.018 | VIGAS4 |
| 166 | 25X30V   | 15.000  | 2.120     | VIGAS1 | 1.384     | VIGAS1 | 0.014 | VIGAS2 |
| 166 | 25X30V   | 109.375 | 0.741     | VIGAS1 | 0.930     | VIGAS1 | 0.014 | VIGAS2 |
| 166 | 25X30V   | 203.750 | 0.741     | VIGAS1 | 0.993     | CU     | 0.014 | VIGAS2 |
| 166 | 25X30V   | 298.125 | 0.741     | VIGAS1 | 0.844     | VIGAS1 | 0.014 | VIGAS2 |
| 166 | 25X30V   | 392.500 | 2.299     | VIGAS1 | 1.498     | VIGAS1 | 0.014 | VIGAS2 |
| 167 | 25X30CIM | 15.000  | 2.001     | VIGAS1 | 1.307     | VIGAS1 | 0.026 | CU     |
| 167 | 25X30CIM | 109.375 | 0.779     | VIGAS1 | 1.017     | VIGAS1 | 0.020 | CU     |
| 167 | 25X30CIM | 203.750 | 0.655     | VIGAS1 | 0.556     | CU     | 0.015 | CU     |
| 167 | 25X30CIM | 298.125 | 0.914     | VIGAS1 | 1.365     | VIGAS1 | 0.019 | CU     |
| 167 | 25X30CIM | 392.500 | 2.025     | VIGAS1 | 1.693     | VIGAS1 | 0.025 | CU     |
| 168 | 25X30V   | 15.000  | 2.616     | VIGAS1 | 2.083     | VIGAS1 | 0.028 | CU     |
| 168 | 25X30V   | 109.375 | 1.191     | VIGAS1 | 1.397     | VIGAS1 | 0.023 | CU     |
| 168 | 25X30V   | 203.750 | 0.915     | VIGAS1 | 0.915     | VIGAS1 | 0.018 | CU     |
| 168 | 25X30V   | 298.125 | 1.555     | VIGAS1 | 1.875     | VIGAS1 | 0.023 | CU     |
| 168 | 25X30V   | 392.500 | 2.864     | VIGAS1 | 2.191     | VIGAS3 | 0.028 | CU     |
| 169 | 25X30CIM | 15.000  | 2.000     | VIGAS1 | 1.293     | VIGAS1 | 0.026 | CU     |
| 169 | 25X30CIM | 109.375 | 0.766     | VIGAS1 | 1.008     | VIGAS1 | 0.020 | CU     |
| 169 | 25X30CIM | 203.750 | 0.649     | VIGAS1 | 0.556     | CU     | 0.014 | CU     |
| 169 | 25X30CIM | 298.125 | 0.901     | VIGAS1 | 1.348     | VIGAS1 | 0.019 | CU     |
| 169 | 25X30CIM | 392.500 | 2.006     | VIGAS1 | 1.662     | VIGAS1 | 0.024 | CU     |
| 170 | 25X30V   | 15.000  | 2.589     | VIGAS1 | 2.083     | VIGAS1 | 0.028 | CU     |
| 170 | 25X30V   | 109.375 | 1.176     | VIGAS1 | 1.385     | VIGAS1 | 0.023 | CU     |
| 170 | 25X30V   | 203.750 | 0.907     | VIGAS1 | 0.907     | VIGAS1 | 0.018 | CU     |
| 170 | 25X30V   | 298.125 | 1.537     | VIGAS1 | 1.853     | VIGAS1 | 0.023 | CU     |
| 170 | 25X30V   | 392.500 | 2.837     | VIGAS1 | 2.159     | VIGAS3 | 0.027 | CU     |
| 171 | 25X35CIM | 15.000  | 1.685     | VIGAS1 | 0.834     | VIGAS1 | 0.017 | VIGAS4 |
| 171 | 25X35CIM | 109.375 | 0.475     | VIGAS1 | 0.720     | VIGAS1 | 0.013 | VIGAS4 |
| 171 | 25X35CIM | 203.750 | 0.475     | VIGAS1 | 0.438     | CU     | 0.011 | VIGAS4 |
| 171 | 25X35CIM | 298.125 | 0.549     | VIGAS1 | 0.611     | VIGAS1 | 0.014 | VIGAS4 |
| 171 | 25X35CIM | 392.500 | 1.935     | VIGAS1 | 0.956     | VIGAS1 | 0.018 | VIGAS4 |
| 172 | 25X30V   | 15.000  | 2.101     | VIGAS1 | 1.372     | VIGAS1 | 0.014 | VIGAS2 |
| 172 | 25X30V   | 109.375 | 0.733     | VIGAS1 | 0.913     | VIGAS1 | 0.014 | VIGAS2 |
| 172 | 25X30V   | 203.750 | 0.733     | VIGAS1 | 0.992     | CU     | 0.014 | VIGAS2 |
| 172 | 25X30V   | 298.125 | 0.733     | VIGAS1 | 0.830     | VIGAS1 | 0.014 | VIGAS2 |
| 172 | 25X30V   | 392.500 | 2.274     | VIGAS1 | 1.482     | VIGAS1 | 0.014 | VIGAS2 |
| 174 | 25X30CIM | 15.000  | 2.177     | VIGAS2 | 2.000     | VIGAS2 | 0.026 | CU     |
| 174 | 25X30CIM | 100.000 | 1.203     | VIGAS2 | 1.527     | VIGAS2 | 0.021 | CU     |
| 174 | 25X30CIM | 185.000 | 0.702     | VIGAS2 | 0.702     | VIGAS2 | 0.017 | CU     |
| 174 | 25X30CIM | 270.000 | 0.702     | VIGAS2 | 0.821     | VIGAS2 | 0.022 | CU     |
| 174 | 25X30CIM | 355.000 | 2.000     | VIGAS2 | 1.230     | VIGAS2 | 0.027 | CU     |
| 175 | 25X30V   | 15.000  | 2.723     | VIGAS2 | 2.083     | VIGAS2 | 0.034 | CU     |
| 175 | 25X30V   | 100.000 | 1.132     | VIGAS2 | 1.388     | VIGAS2 | 0.029 | CU     |
| 175 | 25X30V   | 185.000 | 0.958     | VIGAS2 | 0.958     | VIGAS2 | 0.025 | CU     |
| 175 | 25X30V   | 270.000 | 1.677     | VIGAS2 | 2.083     | VIGAS2 | 0.026 | CU     |
| 175 | 25X30V   | 355.000 | 2.904     | VIGAS2 | 3.018     | VIGAS4 | 0.030 | CU     |
| 176 | 20X25V   | 0.000   | 1.604     | CU     | 1.044     | CU     | 0.007 | VIGAS2 |
| 176 | 20X25V   | 194.107 | 0.516     | CU     | 1.222     | CU     | 0.007 | VIGAS2 |
| 176 | 20X25V   | 388.214 | 0.416     | VIGAS1 | 0.207     | VIGAS1 | 0.007 | VIGAS2 |
| 179 | 20X25V   | 0.000   | 0.416     | VIGAS1 | 0.207     | VIGAS1 | 0.017 | CU     |
| 179 | 20X25V   | 34.100  | 0.152     | VIGAS1 | 0.103     | VIGAS1 | 0.014 | CU     |
| 179 | 20X25V   | 68.200  | 9.787E-05 | VIGAS1 | 1.025E-04 | VIGAS1 | 0.011 | CU     |
| 180 | 25X30CIM | 15.000  | 1.666     | VIGAS2 | 0.877     | VIGAS2 | 0.021 | CU     |
| 180 | 25X30CIM | 90.000  | 0.572     | VIGAS2 | 0.750     | VIGAS2 | 0.016 | CU     |
| 180 | 25X30CIM | 165.000 | 0.409     | VIGAS2 | 0.456     | VIGAS1 | 0.012 | CU     |
| 180 | 25X30CIM | 240.000 | 0.568     | VIGAS2 | 0.746     | VIGAS2 | 0.016 | CU     |

|     |          |         |           |        |           |        |       |        |
|-----|----------|---------|-----------|--------|-----------|--------|-------|--------|
| 180 | 25X30CIM | 315.000 | 1.660     | VIGAS2 | 0.870     | VIGAS2 | 0.021 | CU     |
| 181 | 20X25V   | 0.000   | 9.842E-05 | VIGAS1 | 1.033E-04 | VIGAS1 | 0.011 | CU     |
| 181 | 20X25V   | 34.100  | 0.150     | VIGAS1 | 0.102     | VIGAS1 | 0.014 | CU     |
| 181 | 20X25V   | 68.200  | 0.412     | VIGAS1 | 0.205     | VIGAS1 | 0.017 | CU     |
| 184 | 25X30CIM | 15.000  | 2.000     | VIGAS2 | 1.219     | VIGAS2 | 0.027 | CU     |
| 184 | 25X30CIM | 100.000 | 0.699     | VIGAS2 | 0.817     | VIGAS2 | 0.022 | CU     |
| 184 | 25X30CIM | 185.000 | 0.699     | VIGAS2 | 0.699     | VIGAS2 | 0.017 | CU     |
| 184 | 25X30CIM | 270.000 | 1.196     | VIGAS2 | 1.518     | VIGAS2 | 0.021 | CU     |
| 184 | 25X30CIM | 355.000 | 2.166     | VIGAS2 | 2.000     | VIGAS2 | 0.026 | CU     |
| 185 | 25X30V   | 15.000  | 2.886     | VIGAS2 | 3.002     | VIGAS4 | 0.030 | CU     |
| 185 | 25X30V   | 100.000 | 1.665     | VIGAS2 | 2.083     | VIGAS2 | 0.025 | CU     |
| 185 | 25X30V   | 185.000 | 0.953     | VIGAS2 | 0.953     | VIGAS2 | 0.025 | CU     |
| 185 | 25X30V   | 270.000 | 1.126     | VIGAS2 | 1.381     | VIGAS2 | 0.029 | CU     |
| 185 | 25X30V   | 355.000 | 2.711     | VIGAS2 | 2.083     | VIGAS2 | 0.034 | CU     |
| 186 | 20X25V   | 0.000   | 0.412     | VIGAS1 | 0.205     | VIGAS1 | 0.007 | VIGAS2 |
| 186 | 20X25V   | 194.107 | 0.516     | CU     | 1.222     | CU     | 0.007 | VIGAS2 |
| 186 | 20X25V   | 388.214 | 1.604     | CU     | 1.044     | CU     | 0.007 | VIGAS2 |
| 188 | 25X35CIM | 15.000  | 2.081     | VIGAS1 | 1.027     | VIGAS1 | 0.019 | VIGAS4 |
| 188 | 25X35CIM | 126.875 | 0.607     | VIGAS1 | 0.781     | VIGAS1 | 0.015 | VIGAS4 |
| 188 | 25X35CIM | 238.750 | 0.607     | VIGAS1 | 0.674     | CU     | 0.011 | VIGAS4 |
| 188 | 25X35CIM | 350.625 | 0.684     | VIGAS1 | 0.951     | VIGAS1 | 0.015 | VIGAS4 |
| 188 | 25X35CIM | 462.500 | 2.417     | VIGAS1 | 1.222     | VIGAS1 | 0.019 | VIGAS4 |
| 189 | 25X30V   | 15.000  | 2.387     | VIGAS1 | 1.554     | VIGAS1 | 0.015 | VIGAS2 |
| 189 | 25X30V   | 126.875 | 0.803     | CU     | 1.132     | VIGAS1 | 0.015 | VIGAS2 |
| 189 | 25X30V   | 238.750 | 0.803     | CU     | 1.432     | CU     | 0.015 | VIGAS2 |
| 189 | 25X30V   | 350.625 | 0.803     | CU     | 0.803     | CU     | 0.015 | VIGAS2 |
| 189 | 25X30V   | 462.500 | 3.159     | VIGAS1 | 1.624     | CU     | 0.015 | VIGAS2 |
| 190 | 25X35CIM | 15.000  | 2.051     | VIGAS1 | 1.013     | VIGAS1 | 0.019 | VIGAS4 |
| 190 | 25X35CIM | 126.875 | 0.596     | VIGAS1 | 0.766     | VIGAS1 | 0.015 | VIGAS4 |
| 190 | 25X35CIM | 238.750 | 0.596     | VIGAS1 | 0.674     | CU     | 0.011 | VIGAS4 |
| 190 | 25X35CIM | 350.625 | 0.661     | VIGAS1 | 0.932     | VIGAS1 | 0.015 | VIGAS4 |
| 190 | 25X35CIM | 462.500 | 2.417     | VIGAS1 | 1.201     | VIGAS1 | 0.019 | VIGAS4 |
| 191 | 25X30V   | 15.000  | 2.364     | VIGAS1 | 1.539     | VIGAS1 | 0.014 | VIGAS2 |
| 191 | 25X30V   | 126.875 | 0.801     | CU     | 1.117     | VIGAS1 | 0.014 | VIGAS2 |
| 191 | 25X30V   | 238.750 | 0.801     | CU     | 1.433     | CU     | 0.014 | VIGAS2 |
| 191 | 25X30V   | 350.625 | 0.801     | CU     | 0.801     | CU     | 0.014 | VIGAS2 |
| 191 | 25X30V   | 462.500 | 3.125     | VIGAS1 | 1.622     | CU     | 0.014 | VIGAS2 |
| 194 | 25X30V   | 20.000  | 3.774     | VIGAS2 | 2.083     | CU     | 0.084 | CU     |
| 194 | 25X30V   | 49.916  | 2.849     | VIGAS2 | 1.030     | CU     | 0.080 | CU     |
| 194 | 25X30V   | 79.832  | 2.083     | VIGAS1 | 1.030     | CU     | 0.077 | CU     |
| 194 | 25X30V   | 109.749 | 1.748     | VIGAS1 | 1.030     | CU     | 0.073 | CU     |
| 194 | 25X30V   | 139.665 | 0.989     | VIGAS1 | 0.679     | VIGAS1 | 0.069 | CU     |
| 195 | 25X30V   | 20.000  | 3.770     | VIGAS2 | 2.083     | CU     | 0.084 | CU     |
| 195 | 25X30V   | 49.916  | 2.845     | VIGAS2 | 1.030     | CU     | 0.080 | CU     |
| 195 | 25X30V   | 79.832  | 2.083     | VIGAS1 | 1.030     | CU     | 0.076 | CU     |
| 195 | 25X30V   | 109.749 | 1.723     | VIGAS1 | 1.030     | CU     | 0.073 | CU     |
| 195 | 25X30V   | 139.665 | 0.968     | VIGAS1 | 0.655     | VIGAS1 | 0.069 | CU     |
| 196 | 25X30V   | 0.000   | 0.943     | VIGAS1 | 0.917     | VIGAS1 | 0.044 | CU     |
| 196 | 25X30V   | 34.916  | 0.383     | CU     | 1.219     | VIGAS1 | 0.040 | CU     |
| 196 | 25X30V   | 69.831  | 0.383     | CU     | 1.171     | CU     | 0.035 | CU     |
| 196 | 25X30V   | 104.747 | 0.383     | CU     | 1.468     | CU     | 0.031 | CU     |
| 196 | 25X30V   | 139.663 | 0.000     | VIGAS4 | 1.558     | CU     | 0.027 | CU     |
| 197 | 25X30V   | 0.000   | 0.922     | VIGAS1 | 0.893     | VIGAS1 | 0.044 | CU     |
| 197 | 25X30V   | 34.916  | 0.383     | CU     | 1.200     | VIGAS1 | 0.040 | CU     |
| 197 | 25X30V   | 69.831  | 0.383     | CU     | 1.170     | CU     | 0.035 | CU     |
| 197 | 25X30V   | 104.747 | 0.383     | CU     | 1.467     | CU     | 0.031 | CU     |
| 197 | 25X30V   | 139.663 | 0.000     | VIGAS4 | 1.557     | CU     | 0.027 | CU     |
| 198 | 25X35CIM | 20.000  | 2.417     | VIGAS1 | 1.395     | VIGAS1 | 0.020 | VIGAS4 |

|     |          |         |       |        |       |        |       |        |
|-----|----------|---------|-------|--------|-------|--------|-------|--------|
| 198 | 25X35CIM | 144.370 | 0.692 | VIGAS1 | 0.827 | VIGAS1 | 0.016 | VIGAS4 |
| 198 | 25X35CIM | 268.740 | 0.692 | VIGAS1 | 0.996 | CU     | 0.011 | VIGAS4 |
| 198 | 25X35CIM | 393.110 | 0.692 | VIGAS1 | 1.423 | VIGAS1 | 0.014 | VIGAS4 |
| 198 | 25X35CIM | 517.480 | 2.224 | VIGAS1 | 1.127 | VIGAS1 | 0.018 | VIGAS4 |
| 199 | 25X35CIM | 20.000  | 2.417 | VIGAS1 | 1.381 | VIGAS1 | 0.020 | VIGAS4 |
| 199 | 25X35CIM | 144.370 | 0.684 | VIGAS1 | 0.809 | VIGAS1 | 0.016 | VIGAS4 |
| 199 | 25X35CIM | 268.740 | 0.684 | VIGAS1 | 0.996 | CU     | 0.011 | VIGAS4 |
| 199 | 25X35CIM | 393.110 | 0.684 | VIGAS1 | 1.410 | VIGAS1 | 0.014 | VIGAS4 |
| 199 | 25X35CIM | 517.480 | 2.192 | VIGAS1 | 1.100 | VIGAS1 | 0.018 | VIGAS4 |
| 200 | 25X30V   | 0.000   | 0.000 | VIGAS4 | 1.548 | CU     | 0.025 | CU     |
| 200 | 25X30V   | 34.915  | 0.381 | CU     | 1.430 | CU     | 0.030 | CU     |
| 200 | 25X30V   | 69.830  | 0.381 | CU     | 1.106 | CU     | 0.034 | CU     |
| 200 | 25X30V   | 104.745 | 0.381 | CU     | 1.018 | VIGAS1 | 0.039 | CU     |
| 200 | 25X30V   | 139.660 | 0.904 | VIGAS1 | 0.699 | VIGAS1 | 0.043 | CU     |
| 201 | 25X30V   | 0.000   | 0.000 | VIGAS4 | 1.548 | CU     | 0.025 | CU     |
| 201 | 25X30V   | 34.915  | 0.381 | CU     | 1.430 | CU     | 0.030 | CU     |
| 201 | 25X30V   | 69.830  | 0.381 | CU     | 1.107 | CU     | 0.034 | CU     |
| 201 | 25X30V   | 104.745 | 0.381 | CU     | 1.007 | VIGAS1 | 0.039 | CU     |
| 201 | 25X30V   | 139.660 | 0.887 | VIGAS1 | 0.685 | VIGAS1 | 0.043 | CU     |
| 202 | 25X30V   | 0.000   | 0.972 | VIGAS1 | 0.483 | VIGAS1 | 0.066 | CU     |
| 202 | 25X30V   | 30.537  | 1.778 | VIGAS1 | 1.114 | CU     | 0.070 | CU     |
| 202 | 25X30V   | 61.074  | 2.083 | CU     | 1.114 | CU     | 0.074 | CU     |
| 202 | 25X30V   | 91.611  | 2.876 | VIGAS1 | 1.114 | CU     | 0.078 | CU     |
| 202 | 25X30V   | 122.148 | 3.836 | VIGAS1 | 2.083 | CU     | 0.082 | CU     |
| 203 | 25X30V   | 0.000   | 0.956 | VIGAS1 | 0.475 | VIGAS1 | 0.066 | CU     |
| 203 | 25X30V   | 30.537  | 1.757 | VIGAS1 | 1.114 | CU     | 0.070 | CU     |
| 203 | 25X30V   | 61.074  | 2.083 | CU     | 1.114 | CU     | 0.074 | CU     |
| 203 | 25X30V   | 91.611  | 2.853 | VIGAS1 | 1.114 | CU     | 0.078 | CU     |
| 203 | 25X30V   | 122.148 | 3.808 | VIGAS1 | 2.083 | CU     | 0.082 | CU     |
| 205 | 25X35CIM | 17.500  | 2.633 | VIGAS2 | 1.871 | VIGAS2 | 0.022 | VIGAS4 |
| 205 | 25X35CIM | 142.500 | 0.853 | VIGAS2 | 1.842 | VIGAS2 | 0.018 | VIGAS4 |
| 205 | 25X35CIM | 267.500 | 0.853 | VIGAS2 | 1.225 | CU     | 0.013 | VIGAS4 |
| 205 | 25X35CIM | 392.500 | 0.853 | VIGAS2 | 1.850 | VIGAS2 | 0.018 | VIGAS4 |
| 205 | 25X35CIM | 517.500 | 2.645 | VIGAS2 | 1.887 | VIGAS2 | 0.022 | VIGAS4 |
| 207 | 25X30V   | 17.500  | 4.676 | VIGAS2 | 2.225 | VIGAS2 | 0.095 | CU     |
| 207 | 25X30V   | 48.043  | 3.600 | VIGAS2 | 1.124 | CU     | 0.091 | CU     |
| 207 | 25X30V   | 78.585  | 2.667 | VIGAS2 | 1.124 | CU     | 0.087 | CU     |
| 207 | 25X30V   | 109.128 | 2.083 | VIGAS2 | 1.124 | CU     | 0.083 | CU     |
| 207 | 25X30V   | 139.670 | 1.562 | VIGAS2 | 0.916 | VIGAS2 | 0.079 | CU     |
| 208 | 25X30V   | 17.500  | 4.688 | VIGAS2 | 2.231 | VIGAS2 | 0.095 | CU     |
| 208 | 25X30V   | 48.043  | 3.610 | VIGAS2 | 1.124 | CU     | 0.091 | CU     |
| 208 | 25X30V   | 78.585  | 2.676 | VIGAS2 | 1.124 | CU     | 0.088 | CU     |
| 208 | 25X30V   | 109.128 | 2.083 | VIGAS2 | 1.124 | CU     | 0.084 | CU     |
| 208 | 25X30V   | 139.670 | 1.570 | VIGAS2 | 0.923 | VIGAS2 | 0.080 | CU     |
| 209 | 25X30V   | 0.000   | 1.531 | VIGAS2 | 1.165 | VIGAS2 | 0.048 | CU     |
| 209 | 25X30V   | 34.916  | 0.650 | VIGAS2 | 1.364 | VIGAS2 | 0.043 | CU     |
| 209 | 25X30V   | 69.832  | 0.342 | CU     | 1.409 | VIGAS2 | 0.039 | CU     |
| 209 | 25X30V   | 104.749 | 0.342 | CU     | 1.283 | CU     | 0.034 | CU     |
| 209 | 25X30V   | 139.665 | 0.000 | VIGAS4 | 1.387 | CU     | 0.030 | CU     |
| 210 | 25X30V   | 0.000   | 1.539 | VIGAS2 | 1.173 | VIGAS2 | 0.048 | CU     |
| 210 | 25X30V   | 34.916  | 0.655 | VIGAS2 | 1.370 | VIGAS2 | 0.043 | CU     |
| 210 | 25X30V   | 69.832  | 0.342 | CU     | 1.412 | VIGAS2 | 0.039 | CU     |
| 210 | 25X30V   | 104.749 | 0.342 | CU     | 1.283 | CU     | 0.034 | CU     |
| 210 | 25X30V   | 139.665 | 0.000 | VIGAS4 | 1.387 | CU     | 0.030 | CU     |

## 5.2.8.2 Diseño de Columnas.

### 5.2.8.2.1 Análisis Dinámico.

#### CONSTRAINT COORDINATES AND MASSES

CONS ROD1 ===== TYPE = ROD, AXIS DIRECTION = U1

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |           |         |         |         |
|---|----------|----------|-----------|---------|---------|---------|
| GLOBAL  | U1       | U2       | U3        | R1      | R2      | R3      |
| X   | 1.000000 | .000000  | .000000   | .000000 | .000000 | .000000 |
| Y   | .000000  | .000000  | -1.000000 | .000000 | .000000 | .000000 |
| Z   | .000000  | 1.000000 | .000000   | .000000 | .000000 | .000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |         |         |         |         |         |
|--|----------|---------|---------|---------|---------|---------|
|  | U1       | U2      | U3      | R1      | R2      | R3      |
|  | 0.317024 | .000000 | .000000 | .000000 | .000000 | .000000 |

CONS ROD2 ===== TYPE = ROD, AXIS DIRECTION = U1

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |           |         |         |         |
|---|----------|----------|-----------|---------|---------|---------|
| GLOBAL  | U1       | U2       | U3        | R1      | R2      | R3      |
| X   | 1.000000 | .000000  | .000000   | .000000 | .000000 | .000000 |
| Y   | .000000  | .000000  | -1.000000 | .000000 | .000000 | .000000 |
| Z   | .000000  | 1.000000 | .000000   | .000000 | .000000 | .000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |         |         |         |         |         |
|--|----------|---------|---------|---------|---------|---------|
|  | U1       | U2      | U3      | R1      | R2      | R3      |
|  | 0.316782 | .000000 | .000000 | .000000 | .000000 | .000000 |

CONS DIAPH1 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |          |
|--|----------|----------|---------|---------|---------|----------|
|  | U1       | U2       | U3      | R1      | R2      | R3       |
|  | 0.571155 | 0.571155 | .000000 | .000000 | .000000 | 0.343403 |

| CENTER OF MASS |           |           |           |
|----------------|-----------|-----------|-----------|
| GLOBAL         | U1        | U2        | U3        |
| X              | -3.28E-16 | -3.28E-16 | -1.93E-16 |
| Y              | 4.226288  | 4.226288  | 5.054545  |
| Z              | 3.669079  | 3.669079  | 4.001181  |

CONS DIAPH2 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |          |
|--|----------|----------|---------|---------|---------|----------|
|  | U1       | U2       | U3      | R1      | R2      | R3       |
|  | 1.078094 | 1.078094 | .000000 | .000000 | .000000 | 0.631330 |

| CENTER OF MASS |          |          |          |
|----------------|----------|----------|----------|
| GLOBAL         | U1       | U2       | U3       |
| X              | 3.925000 | 3.925000 | 3.925000 |
| Y              | 4.203680 | 4.203680 | 5.054545 |
| Z              | 3.672519 | 3.672519 | 4.001181 |

CONS DIAPH3 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |          |
|--|----------|----------|---------|---------|---------|----------|
|  | U1       | U2       | U3      | R1      | R2      | R3       |
|  | 0.562510 | 0.562510 | .000000 | .000000 | .000000 | 0.290650 |

| CENTER OF MASS |           |           |           |
|----------------|-----------|-----------|-----------|
| GLOBAL         | U1        | U2        | U3        |
| X              | -1.37E-15 | -1.37E-15 | -8.44E-16 |
| Y              | 10.659514 | 10.659514 | 9.863636  |
| Z              | 3.667463  | 3.667463  | 4.006453  |

CONS DIAPH4 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |          |
|--|----------|----------|---------|---------|---------|----------|
|  | U1       | U2       | U3      | R1      | R2      | R3       |
|  | 1.062415 | 1.062415 | .000000 | .000000 | .000000 | 0.537097 |

| CENTER OF MASS |           |           |          |
|----------------|-----------|-----------|----------|
| GLOBAL         | U1        | U2        | U3       |
| X              | 3.925000  | 3.925000  | 3.925000 |
| Y              | 10.678688 | 10.678688 | 9.863636 |
| Z              | 3.672183  | 3.672183  | 4.006453 |

DISPLACEMENT DEGREES OF FREEDOM

- (A) = Active DOF, equilibrium equation
- (-) = Restrained DOF, reaction computed
- (+) = Constrained DOF
- ( ) = Null DOF

| JOINTS |    | UX | UY | UZ | RX | RY | RZ |
|--------|----|----|----|----|----|----|----|
| 1      |    | -  | -  | -  | A  | A  | A  |
| 2      |    | A  | A  | A  | A  | A  | A  |
| 3      |    | -  | -  | -  | A  | A  | A  |
| 4 TO   | 23 | +  | +  | A  | A  | A  | +  |
| 24     |    | -  | -  | -  | A  | A  | A  |
| 25 TO  | 26 | +  | +  | A  | A  | A  | +  |
| 27     |    | -  | -  | -  | A  | A  | A  |
| 28     |    | A  | A  | A  | A  | A  | A  |
| 29     |    | -  | -  | -  | A  | A  | A  |
| 30     |    | A  | A  | A  | A  | A  | A  |
| 31     |    | -  | -  | -  | A  | A  | A  |
| 32 TO  | 51 | +  | +  | A  | A  | A  | +  |
| 52     |    | -  | -  | -  | A  | A  | A  |
| 53 TO  | 54 | +  | +  | A  | A  | A  | +  |
| 55     |    | -  | -  | -  | A  | A  | A  |
| 56     |    | A  | A  | A  | A  | A  | A  |
| 57     |    | -  | -  | -  | A  | A  | A  |
| 58     |    | A  | A  | A  | A  | A  | A  |
| 59     |    | -  | -  | -  | A  | A  | A  |
| 60 TO  | 61 | A  | A  | A  | A  | A  | A  |
| 62     |    | -  | -  | -  | A  | A  | A  |
| 63 TO  | 64 | A  | A  | A  | A  | A  | A  |
| 65 TO  | 66 | +  | A  | A  | A  | A  | A  |
| 67     |    | -  | -  | -  | A  | A  | A  |
| 68 TO  | 69 | A  | A  | A  | A  | A  | A  |
| 70     |    | -  | -  | -  | A  | A  | A  |



|        |     |   |   |   |   |   |   |
|--------|-----|---|---|---|---|---|---|
| 71 TO  | 72  | A | A | A | A | A | A |
| 73     |     | - | - | - | A | A | A |
| 74     |     | A | A | A | A | A | A |
| 75     |     | - | - | - | A | A | A |
| 76     |     | A | A | A | A | A | A |
| 77     |     | - | - | - | A | A | A |
| 78 TO  | 79  | A | A | A | A | A | A |
| 80 TO  | 81  | + | A | A | A | A | A |
| 82     |     | - | - | - | A | A | A |
| 83 TO  | 84  | A | A | A | A | A | A |
| 85     |     | - | - | - | A | A | A |
| 86     |     | A | A | A | A | A | A |
| 87     |     | - | - | - | A | A | A |
| 88     |     | A | A | A | A | A | A |
| 89     |     | - | - | - | A | A | A |
| 90 TO  | 91  | A | A | A | A | A | A |
| 92 TO  | 93  | + | A | A | A | A | A |
| 94     |     | - | - | - | A | A | A |
| 95 TO  | 96  | A | A | A | A | A | A |
| 97     |     | - | - | - | A | A | A |
| 98     |     | A | A | A | A | A | A |
| 99     |     | - | - | - | A | A | A |
| 100    |     | A | A | A | A | A | A |
| 101    |     | - | - | - | A | A | A |
| 102 TO | 108 | A | A | A | A | A | A |
| 109    |     | - | - | - | A | A | A |
| 110    |     | A | A | A | A | A | A |
| 111    |     | - | - | - | A | A | A |
| 112 TO | 115 | A | A | A | A | A | A |

|                   |           |    |    |    |             |    |    |
|-------------------|-----------|----|----|----|-------------|----|----|
| CONSTRAINTS       |           | U1 | U2 | U3 | R1          | R2 | R3 |
| ROD1 TO           | ROD2      | A  |    |    |             |    |    |
| DIAPH1 TO         | DIAPH4    | A  | A  |    |             |    | A  |
| A S S E M B L E D | J O I N T |    |    |    | M A S S E S |    |    |

IN GLOBAL COORDINATES

| JOINT | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| 1     | 0.106076 | 0.106076 | 0.106076 | .000000 | .000000 | .000000 |
| 2     | 0.310943 | 0.310943 | 0.246701 | .000000 | .000000 | .000000 |
| 3     | 0.106076 | 0.106076 | 0.106076 | .000000 | .000000 | .000000 |
| 4     | 0.264236 | 0.264236 | 0.110259 | .000000 | .000000 | .000000 |
| 5     | 0.160723 | 0.160723 | 0.160723 | .000000 | .000000 | .000000 |
| 6     | 0.000257 | 0.000257 | 0.000257 | .000000 | .000000 | .000000 |
| 7     | 0.032348 | 0.032348 | 0.032348 | .000000 | .000000 | .000000 |
| 8     | 0.000231 | 0.000231 | 0.000231 | .000000 | .000000 | .000000 |
| 9     | 0.032321 | 0.032321 | 0.032321 | .000000 | .000000 | .000000 |
| 10    | 0.000208 | 0.000208 | 0.000208 | .000000 | .000000 | .000000 |
| 11    | 0.032296 | 0.032296 | 0.032296 | .000000 | .000000 | .000000 |
| 12    | 0.000118 | 0.000118 | 0.000118 | .000000 | .000000 | .000000 |
| 13    | 0.032272 | 0.032272 | 0.032272 | .000000 | .000000 | .000000 |
| 14    | 0.016145 | 0.016145 | 0.016145 | .000000 | .000000 | .000000 |
| 15    | 0.015248 | 0.015248 | 0.015248 | .000000 | .000000 | .000000 |
| 16    | 0.000114 | 0.000114 | 0.000114 | .000000 | .000000 | .000000 |
| 17    | 0.030480 | 0.030480 | 0.030480 | .000000 | .000000 | .000000 |
| 18    | 0.000201 | 0.000201 | 0.000201 | .000000 | .000000 | .000000 |
| 19    | 0.030504 | 0.030504 | 0.030504 | .000000 | .000000 | .000000 |
| 20    | 0.000226 | 0.000226 | 0.000226 | .000000 | .000000 | .000000 |
| 21    | 0.030531 | 0.030531 | 0.030531 | .000000 | .000000 | .000000 |
| 22    | 0.000252 | 0.000252 | 0.000252 | .000000 | .000000 | .000000 |
| 23    | 0.030559 | 0.030559 | 0.030559 | .000000 | .000000 | .000000 |
| 24    | 0.106076 | 0.106076 | 0.106076 | .000000 | .000000 | .000000 |
| 25    | 0.264328 | 0.264328 | 0.110351 | .000000 | .000000 | .000000 |
| 26    | 0.160067 | 0.160067 | 0.160067 | .000000 | .000000 | .000000 |
| 27    | 0.106076 | 0.106076 | 0.106076 | .000000 | .000000 | .000000 |
| 28    | 0.311088 | 0.311088 | 0.246846 | .000000 | .000000 | .000000 |
| 29    | 0.140731 | 0.140731 | 0.140731 | .000000 | .000000 | .000000 |
| 30    | 0.503386 | 0.503386 | 0.376941 | .000000 | .000000 | .000000 |
| 31    | 0.183301 | 0.183301 | 0.183301 | .000000 | .000000 | .000000 |
| 32    | 0.488300 | 0.488300 | 0.187484 | .000000 | .000000 | .000000 |
| 33    | 0.338405 | 0.338405 | 0.338405 | .000000 | .000000 | .000000 |

|     |          |          |          |         |         |         |
|-----|----------|----------|----------|---------|---------|---------|
| 34  | 0.000257 | 0.000257 | 0.000257 | .000000 | .000000 | .000000 |
| 35  | 0.052921 | 0.052921 | 0.052921 | .000000 | .000000 | .000000 |
| 36  | 0.000231 | 0.000231 | 0.000231 | .000000 | .000000 | .000000 |
| 37  | 0.052894 | 0.052894 | 0.052894 | .000000 | .000000 | .000000 |
| 38  | 0.000208 | 0.000208 | 0.000208 | .000000 | .000000 | .000000 |
| 39  | 0.052868 | 0.052868 | 0.052868 | .000000 | .000000 | .000000 |
| 40  | 0.000118 | 0.000118 | 0.000118 | .000000 | .000000 | .000000 |
| 41  | 0.059152 | 0.059152 | 0.059152 | .000000 | .000000 | .000000 |
| 42  | 0.032739 | 0.032739 | 0.032739 | .000000 | .000000 | .000000 |
| 43  | 0.031276 | 0.031276 | 0.031276 | .000000 | .000000 | .000000 |
| 44  | 0.000114 | 0.000114 | 0.000114 | .000000 | .000000 | .000000 |
| 45  | 0.056222 | 0.056222 | 0.056222 | .000000 | .000000 | .000000 |
| 46  | 0.000201 | 0.000201 | 0.000201 | .000000 | .000000 | .000000 |
| 47  | 0.049933 | 0.049933 | 0.049933 | .000000 | .000000 | .000000 |
| 48  | 0.000226 | 0.000226 | 0.000226 | .000000 | .000000 | .000000 |
| 49  | 0.049959 | 0.049959 | 0.049959 | .000000 | .000000 | .000000 |
| 50  | 0.000252 | 0.000252 | 0.000252 | .000000 | .000000 | .000000 |
| 51  | 0.049987 | 0.049987 | 0.049987 | .000000 | .000000 | .000000 |
| 52  | 0.183262 | 0.183262 | 0.183262 | .000000 | .000000 | .000000 |
| 53  | 0.488353 | 0.488353 | 0.187536 | .000000 | .000000 | .000000 |
| 54  | 0.335893 | 0.335893 | 0.335893 | .000000 | .000000 | .000000 |
| 55  | 0.140731 | 0.140731 | 0.140731 | .000000 | .000000 | .000000 |
| 56  | 0.502173 | 0.502173 | 0.375728 | .000000 | .000000 | .000000 |
| 57  | 0.089093 | 0.089093 | 0.089093 | .000000 | .000000 | .000000 |
| 58  | 0.216304 | 0.216304 | 0.181634 | .000000 | .000000 | .000000 |
| 59  | 0.171662 | 0.171662 | 0.171662 | .000000 | .000000 | .000000 |
| 60  | 0.452724 | 0.452724 | 0.291609 | .000000 | .000000 | .000000 |
| 61  | 0.189739 | 0.189739 | 0.189739 | .000000 | .000000 | .000000 |
| 62  | 0.176966 | 0.176966 | 0.176966 | .000000 | .000000 | .000000 |
| 63  | 0.324072 | 0.324072 | 0.152759 | .000000 | .000000 | .000000 |
| 64  | 0.309538 | 0.309538 | 0.309538 | .000000 | .000000 | .000000 |
| 65  | 0.043164 | 0.043164 | 0.043164 | .000000 | .000000 | .000000 |
| 66  | 0.042912 | 0.042912 | 0.042912 | .000000 | .000000 | .000000 |
| 67  | 0.176340 | 0.176340 | 0.176340 | .000000 | .000000 | .000000 |
| 68  | 0.323430 | 0.323430 | 0.152118 | .000000 | .000000 | .000000 |
| 69  | 0.307057 | 0.307057 | 0.307057 | .000000 | .000000 | .000000 |
| 70  | 0.170871 | 0.170871 | 0.170871 | .000000 | .000000 | .000000 |
| 71  | 0.449765 | 0.449765 | 0.290689 | .000000 | .000000 | .000000 |
| 72  | 0.185971 | 0.185971 | 0.185971 | .000000 | .000000 | .000000 |
| 73  | 0.087716 | 0.087716 | 0.087716 | .000000 | .000000 | .000000 |
| 74  | 0.209129 | 0.209129 | 0.176498 | .000000 | .000000 | .000000 |
| 75  | 0.157562 | 0.157562 | 0.157562 | .000000 | .000000 | .000000 |
| 76  | 0.543447 | 0.543447 | 0.411903 | .000000 | .000000 | .000000 |
| 77  | 0.175157 | 0.175157 | 0.175157 | .000000 | .000000 | .000000 |
| 78  | 0.328047 | 0.328047 | 0.150616 | .000000 | .000000 | .000000 |
| 79  | 0.319463 | 0.319463 | 0.319463 | .000000 | .000000 | .000000 |
| 80  | 0.046662 | 0.046662 | 0.046662 | .000000 | .000000 | .000000 |
| 81  | 0.046672 | 0.046672 | 0.046672 | .000000 | .000000 | .000000 |
| 82  | 0.175157 | 0.175157 | 0.175157 | .000000 | .000000 | .000000 |
| 83  | 0.328047 | 0.328047 | 0.150616 | .000000 | .000000 | .000000 |
| 84  | 0.319461 | 0.319461 | 0.319461 | .000000 | .000000 | .000000 |
| 85  | 0.157562 | 0.157562 | 0.157562 | .000000 | .000000 | .000000 |
| 86  | 0.543436 | 0.543436 | 0.411893 | .000000 | .000000 | .000000 |
| 87  | 0.163988 | 0.163988 | 0.163988 | .000000 | .000000 | .000000 |
| 88  | 0.528382 | 0.528382 | 0.387661 | .000000 | .000000 | .000000 |
| 89  | 0.136371 | 0.136371 | 0.136371 | .000000 | .000000 | .000000 |
| 90  | 0.302517 | 0.302517 | 0.111830 | .000000 | .000000 | .000000 |
| 91  | 0.284730 | 0.284730 | 0.284730 | .000000 | .000000 | .000000 |
| 92  | 0.227197 | 0.227197 | 0.227197 | .000000 | .000000 | .000000 |
| 93  | 0.227197 | 0.227197 | 0.227197 | .000000 | .000000 | .000000 |
| 94  | 0.136371 | 0.136371 | 0.136371 | .000000 | .000000 | .000000 |
| 95  | 0.302517 | 0.302517 | 0.111830 | .000000 | .000000 | .000000 |
| 96  | 0.284730 | 0.284730 | 0.284730 | .000000 | .000000 | .000000 |
| 97  | 0.163988 | 0.163988 | 0.163988 | .000000 | .000000 | .000000 |
| 98  | 0.528382 | 0.528382 | 0.387661 | .000000 | .000000 | .000000 |
| 99  | 0.157425 | 0.157425 | 0.157425 | .000000 | .000000 | .000000 |
| 100 | 1.013682 | 1.013682 | 0.622111 | .000000 | .000000 | .000000 |
| 101 | 0.157425 | 0.157425 | 0.157425 | .000000 | .000000 | .000000 |
| 102 | 1.013682 | 1.013682 | 0.622111 | .000000 | .000000 | .000000 |
| 103 | 0.231996 | 0.231996 | 0.231996 | .000000 | .000000 | .000000 |
| 104 | 0.231996 | 0.231996 | 0.231996 | .000000 | .000000 | .000000 |

|     |          |          |          |         |         |         |
|-----|----------|----------|----------|---------|---------|---------|
| 105 | 0.192014 | 0.192014 | 0.192014 | .000000 | .000000 | .000000 |
| 106 | 0.192014 | 0.192014 | 0.192014 | .000000 | .000000 | .000000 |
| 107 | 0.137391 | 0.137391 | 0.137391 | .000000 | .000000 | .000000 |
| 108 | 0.137391 | 0.137391 | 0.137391 | .000000 | .000000 | .000000 |
| 109 | 0.151692 | 0.151692 | 0.151692 | .000000 | .000000 | .000000 |
| 110 | 0.319394 | 0.319394 | 0.123608 | .000000 | .000000 | .000000 |
| 111 | 0.151692 | 0.151692 | 0.151692 | .000000 | .000000 | .000000 |
| 112 | 0.319394 | 0.319394 | 0.123608 | .000000 | .000000 | .000000 |
| 113 | 0.028184 | 0.028184 | 0.028184 | .000000 | .000000 | .000000 |
| 114 | 0.028184 | 0.028184 | 0.028184 | .000000 | .000000 | .000000 |
| 115 | 0.050014 | 0.050014 | 0.050014 | .000000 | .000000 | .000000 |

T O T A L A S S E M B L E D J O I N T M A S S E S

IN GLOBAL COORDINATES

|       |           |           |           |         |         |         |
|-------|-----------|-----------|-----------|---------|---------|---------|
|       | UX        | UY        | UZ        | RX      | RY      | RZ      |
| TOTAL | 20.841158 | 20.841158 | 16.364605 | .000000 | .000000 | .000000 |

T O T A L A C C E L E R A T E D M A S S A N D L O C A T I O N

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

|       |           |           |           |
|-------|-----------|-----------|-----------|
|       | UX        | UY        | UZ        |
| MASS  | 17.011792 | 17.011792 | 12.535238 |
| X-LOC | 11.503681 | 11.503681 | 11.365616 |
| Y-LOC | 7.469091  | 7.469091  | 7.468258  |
| Z-LOC | 3.440074  | 3.440074  | 3.543665  |

M O D A L P E R I O D S A N D F R E Q U E N C I E S

| MODE | PERIOD<br>(TIME) | FREQUENCY<br>(CYC/TIME) | FREQUENCY<br>(RAD/TIME) | EIGENVALUE<br>(RAD/TIME)**2 |
|------|------------------|-------------------------|-------------------------|-----------------------------|
| 1    | 0.395562         | 2.528047                | 15.884186               | 252.307369                  |
| 2    | 0.389093         | 2.570081                | 16.148294               | 260.767387                  |
| 3    | 0.369583         | 2.705753                | 17.000748               | 289.025433                  |
| 4    | 0.356539         | 2.804743                | 17.622720               | 310.560256                  |
| 5    | 0.350725         | 2.851236                | 17.914842               | 320.941565                  |
| 6    | 0.350586         | 2.852364                | 17.921930               | 321.195567                  |
| 7    | 0.302939         | 3.300998                | 20.740780               | 430.179967                  |
| 8    | 0.300920         | 3.323143                | 20.879920               | 435.971079                  |
| 9    | 0.272360         | 3.671605                | 23.069377               | 532.196175                  |
| 10   | 0.272216         | 3.673548                | 23.081583               | 532.759458                  |
| 11   | 0.270412         | 3.698057                | 23.235579               | 539.892123                  |
| 12   | 0.240165         | 4.163808                | 26.161974               | 684.448893                  |

M O D A L P A R T I C I P A T I O N F A C T O R S

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

| MODE | PERIOD   | UX        | UY        | UZ        |
|------|----------|-----------|-----------|-----------|
| 1    | 0.395562 | 0.055084  | -2.474966 | -0.000604 |
| 2    | 0.389093 | -0.908168 | -0.070529 | 0.016757  |
| 3    | 0.369583 | 0.003848  | -0.918720 | 1.05E-05  |
| 4    | 0.356539 | -3.371144 | -0.209234 | 0.020929  |
| 5    | 0.350725 | 0.246697  | 0.089295  | 0.058004  |
| 6    | 0.350586 | 0.430089  | -1.540568 | 0.000889  |
| 7    | 0.302939 | 0.787315  | -1.461764 | -0.021433 |
| 8    | 0.300920 | 0.587048  | 1.950212  | -0.016188 |
| 9    | 0.272360 | 0.813796  | -0.479604 | -0.000669 |
| 10   | 0.272216 | 0.808131  | 0.512415  | -0.001431 |
| 11   | 0.270412 | 0.085713  | 0.120111  | -0.000234 |
| 12   | 0.240165 | 1.252713  | 0.124050  | -0.041152 |

M O D A L P A R T I C I P A T I N G M A S S R A T I O S

| MODE | PERIOD   | INDIVIDUAL MODE (PERCENT) |         |        | CUMULATIVE SUM (PERCENT) |         |        |
|------|----------|---------------------------|---------|--------|--------------------------|---------|--------|
|      |          | UX                        | UY      | UZ     | UX                       | UY      | UZ     |
| 1    | 0.395562 | 0.0178                    | 36.0071 | 0.0000 | 0.0178                   | 36.0071 | 0.0000 |
| 2    | 0.389093 | 4.8482                    | 0.0292  | 0.0022 | 4.8661                   | 36.0364 | 0.0022 |
| 3    | 0.369583 | 0.0001                    | 4.9615  | 0.0000 | 4.8661                   | 40.9979 | 0.0022 |
| 4    | 0.356539 | 66.8043                   | 0.2573  | 0.0035 | 71.6704                  | 41.2552 | 0.0057 |
| 5    | 0.350725 | 0.3577                    | 0.0469  | 0.0268 | 72.0282                  | 41.3021 | 0.0326 |
| 6    | 0.350586 | 1.0873                    | 13.9512 | 0.0000 | 73.1155                  | 55.2533 | 0.0326 |
| 7    | 0.302939 | 3.6437                    | 12.5604 | 0.0037 | 76.7593                  | 67.8138 | 0.0362 |
| 8    | 0.300920 | 2.0258                    | 22.3570 | 0.0021 | 78.7851                  | 90.1708 | 0.0383 |
| 9    | 0.272360 | 3.8930                    | 1.3521  | 0.0000 | 82.6780                  | 91.5229 | 0.0383 |
| 10   | 0.272216 | 3.8390                    | 1.5435  | 0.0000 | 86.5170                  | 93.0663 | 0.0384 |
| 11   | 0.270412 | 0.0432                    | 0.0848  | 0.0000 | 86.5602                  | 93.1511 | 0.0384 |
| 12   | 0.240165 | 9.2247                    | 0.0905  | 0.0135 | 95.7849                  | 93.2416 | 0.0519 |

MODAL LOAD PARTICIPATION RATIOS

| LOAD, ACC, OR NLLINK/DEF<br>(TYPE) | STATIC<br>(NAME) | STATIC<br>(PERCENT) | DYNAMIC<br>(PERCENT)     | EFFECTIVE<br>PERIOD |
|------------------------------------|------------------|---------------------|--------------------------|---------------------|
| LOAD                               | MUERTA           | 4.2229              | -> 0.0176<- (*) SEE NOTE | 0.103298            |
| LOAD                               | VIVA             | 2.3226              | -> 0.0368<- (*) SEE NOTE | 0.088947            |
| ACC                                | UX               | 98.7445             | 95.7849                  | 0.346230            |
| ACC                                | UY               | 97.6134             | 93.2416                  | 0.358411            |
| ACC                                | UZ               | 2.2171              | 0.0519                   | 0.121468            |

(\*) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

RESPONSE SPECTRUM ACCELERATIONS

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SISMOX -----

| MODE | PERIOD   | DAMP-RATIO | U1        | U2      | U3      |
|------|----------|------------|-----------|---------|---------|
| 1    | 0.395562 | 0.050000   | 10.664775 | .000000 | .000000 |
| 2    | 0.389093 | 0.050000   | 10.664775 | .000000 | .000000 |
| 3    | 0.369583 | 0.050000   | 10.664775 | .000000 | .000000 |
| 4    | 0.356539 | 0.050000   | 10.664775 | .000000 | .000000 |
| 5    | 0.350725 | 0.050000   | 10.664775 | .000000 | .000000 |
| 6    | 0.350586 | 0.050000   | 10.664775 | .000000 | .000000 |
| 7    | 0.302939 | 0.050000   | 10.664775 | .000000 | .000000 |
| 8    | 0.300920 | 0.050000   | 10.664775 | .000000 | .000000 |
| 9    | 0.272360 | 0.050000   | 10.664775 | .000000 | .000000 |
| 10   | 0.272216 | 0.050000   | 10.664775 | .000000 | .000000 |
| 11   | 0.270412 | 0.050000   | 10.664775 | .000000 | .000000 |
| 12   | 0.240165 | 0.050000   | 10.664775 | .000000 | .000000 |

SPEC SISMOY -----

| MODE | PERIOD   | DAMP-RATIO | U1      | U2        | U3      |
|------|----------|------------|---------|-----------|---------|
| 1    | 0.395562 | 0.050000   | .000000 | 10.664775 | .000000 |
| 2    | 0.389093 | 0.050000   | .000000 | 10.664775 | .000000 |
| 3    | 0.369583 | 0.050000   | .000000 | 10.664775 | .000000 |
| 4    | 0.356539 | 0.050000   | .000000 | 10.664775 | .000000 |
| 5    | 0.350725 | 0.050000   | .000000 | 10.664775 | .000000 |
| 6    | 0.350586 | 0.050000   | .000000 | 10.664775 | .000000 |
| 7    | 0.302939 | 0.050000   | .000000 | 10.664775 | .000000 |
| 8    | 0.300920 | 0.050000   | .000000 | 10.664775 | .000000 |
| 9    | 0.272360 | 0.050000   | .000000 | 10.664775 | .000000 |
| 10   | 0.272216 | 0.050000   | .000000 | 10.664775 | .000000 |
| 11   | 0.270412 | 0.050000   | .000000 | 10.664775 | .000000 |
| 12   | 0.240165 | 0.050000   | .000000 | 10.664775 | .000000 |

RESPONSE SPECTRUM MODAL AMPLITUDES  
IN RESPONSE-SPECTRUM LOCAL COORDINATES



R E S P O N S E   S P E C T R U M   B A S E   R E A C T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC   SISMOX   -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U1:

| MODE | F1         | F2         | F3        | M1         | M2         | M3          |
|------|------------|------------|-----------|------------|------------|-------------|
| 1    | 0.032359   | -1.453932  | -0.000355 | 5.084039   | 0.131485   | -26.799564  |
| 2    | 8.795970   | 0.683103   | -0.162296 | -3.584613  | 38.532976  | -52.433771  |
| 3    | 0.000158   | -0.037707  | 4.30E-07  | 0.155770   | 0.000552   | -0.289290   |
| 4    | 121.201004 | 7.522478   | -0.752466 | -31.721961 | 457.993793 | -760.513822 |
| 5    | 0.649052   | 0.234933   | 0.152607  | 0.333486   | -1.138148  | 0.018305    |
| 6    | 1.972737   | -7.066290  | 0.004077  | 24.425088  | 7.068947   | -154.763483 |
| 7    | 6.610718   | -12.273759 | -0.179961 | 42.433471  | 25.510343  | -72.731961  |
| 8    | 3.675346   | 12.209748  | -0.101346 | -44.341062 | 14.182583  | -4.220715   |
| 9    | 7.062902   | -4.162464  | -0.005803 | 12.282211  | 22.229828  | -48.186242  |
| 10   | 6.964902   | 4.416266   | -0.012332 | -13.033490 | 22.055591  | -43.190001  |
| 11   | 0.078350   | 0.109794   | -0.000214 | -0.571673  | 0.248451   | -12.226328  |
| 12   | 16.736135  | 1.657298   | -0.549781 | -9.540587  | 57.696921  | -83.495395  |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC       | F1       | F2       | F3        | M1         | M2       | M3 |
|------------|----------|----------|-----------|------------|----------|----|
| 137.774347 | 2.894884 | 1.044011 | 15.212925 | 516.582455 | 1013.962 |    |

SPEC   SISMOY   -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U2:

| MODE | F1         | F2        | F3        | M1          | M2         | M3         |
|------|------------|-----------|-----------|-------------|------------|------------|
| 1    | -1.453932  | 65.326609 | 0.015932  | -228.430854 | -5.907751  | 1204.131   |
| 2    | 0.683103   | 0.053050  | -0.012604 | -0.278384   | 2.992507   | -4.072056  |
| 3    | -0.037707  | 9.001570  | -0.000103 | -37.186402  | -0.131817  | 69.061029  |
| 4    | 7.522478   | 0.466891  | -0.046703 | -1.968860   | 28.425906  | -47.202155 |
| 5    | 0.234933   | 0.085037  | 0.055238  | 0.120710    | -0.411967  | 0.006626   |
| 6    | -7.066290  | 25.311252 | -0.014603 | -87.489982  | -25.320771 | 554.358460 |
| 7    | -12.273759 | 22.788016 | 0.334125  | -78.783903  | -47.363658 | 135.037449 |
| 8    | 12.209748  | 40.561607 | -0.336677 | -147.303996 | 47.115498  | -14.021500 |
| 9    | -4.162464  | 2.453115  | 0.003420  | -7.238422   | -13.100970 | 28.398174  |
| 10   | 4.416266   | 2.800242  | -0.007820 | -8.264203   | 13.984887  | -27.385677 |
| 11   | 0.109794   | 0.153857  | -0.000300 | -0.801097   | 0.348160   | -17.133017 |
| 12   | 1.657298   | 0.164114  | -0.054442 | -0.944758   | 5.713446   | -8.268144  |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC     | F1         | F2       | F3         | M1        | M2       | M3 |
|----------|------------|----------|------------|-----------|----------|----|
| 2.894884 | 119.309357 | 0.069443 | 422.948475 | 10.610422 | 1562.830 |    |

### 5.2.8.2.2 Control de derivas

J O I N T   D I S P L A C E M E N T S

| JOINT | LOAD   | U1     | U2     | U3        | R1        | R2        | R3        |
|-------|--------|--------|--------|-----------|-----------|-----------|-----------|
| 1     | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.794E-03 | 2.688E-03 | 2.435E-04 |
| 1     | SISMOY | 0.0000 | 0.0000 | 0.0000    | 3.514E-03 | 1.113E-03 | 9.035E-05 |
| 2     | SISMOX | 1.2637 | 1.5548 | 5.927E-03 | 3.172E-03 | 2.473E-03 | 2.216E-03 |
| 2     | SISMOY | 0.5300 | 1.9292 | 5.084E-03 | 4.002E-03 | 1.033E-03 | 8.393E-04 |
| 3     | SISMOX | 0.0000 | 0.0000 | 0.0000    | 3.226E-03 | 5.188E-03 | 3.134E-04 |
| 3     | SISMOY | 0.0000 | 0.0000 | 0.0000    | 4.061E-03 | 2.049E-03 | 1.466E-04 |

|    |        |        |        |           |           |           |           |
|----|--------|--------|--------|-----------|-----------|-----------|-----------|
| 4  | SISMOX | 2.3938 | 1.5569 | 4.250E-03 | 2.010E-03 | 3.444E-03 | 2.798E-03 |
| 4  | SISMOY | 0.9471 | 1.9312 | 5.907E-03 | 2.516E-03 | 1.360E-03 | 1.172E-03 |
| 5  | SISMOX | 2.3938 | 1.5569 | 4.253E-03 | 1.150E-03 | 1.743E-03 | 2.798E-03 |
| 5  | SISMOY | 0.9471 | 1.9312 | 5.917E-03 | 1.440E-03 | 6.916E-04 | 1.172E-03 |
| 6  | SISMOX | 2.5207 | 1.5569 | 4.339E-03 | 2.024E-04 | 1.500E-04 | 2.798E-03 |
| 6  | SISMOY | 1.0061 | 1.9312 | 6.086E-03 | 2.534E-04 | 5.925E-05 | 1.172E-03 |
| 7  | SISMOX | 2.5207 | 1.5569 | 4.294E-03 | 6.409E-05 | 1.356E-03 | 2.798E-03 |
| 7  | SISMOY | 1.0061 | 1.9312 | 5.990E-03 | 7.638E-05 | 5.356E-04 | 1.172E-03 |
| 8  | SISMOX | 2.6498 | 1.5569 | 4.374E-03 | 1.387E-05 | 4.430E-06 | 2.798E-03 |
| 8  | SISMOY | 1.0656 | 1.9312 | 6.136E-03 | 1.770E-05 | 1.742E-06 | 1.172E-03 |
| 9  | SISMOX | 2.6498 | 1.5569 | 4.362E-03 | 2.844E-05 | 7.400E-05 | 2.798E-03 |
| 9  | SISMOY | 1.0656 | 1.9312 | 6.116E-03 | 3.563E-05 | 2.927E-05 | 1.172E-03 |
| 10 | SISMOX | 2.7808 | 1.5569 | 4.403E-03 | 0.0000    | 0.0000    | 2.798E-03 |
| 10 | SISMOY | 1.1253 | 1.9312 | 6.189E-03 | 0.0000    | 0.0000    | 1.172E-03 |
| 11 | SISMOX | 2.7808 | 1.5569 | 4.400E-03 | 3.849E-06 | 2.745E-06 | 2.798E-03 |
| 11 | SISMOY | 1.1253 | 1.9312 | 6.185E-03 | 4.536E-06 | 1.082E-06 | 1.172E-03 |
| 12 | SISMOX | 2.9135 | 1.5569 | 4.419E-03 | 0.0000    | 0.0000    | 2.798E-03 |
| 12 | SISMOY | 1.1852 | 1.9312 | 6.214E-03 | 0.0000    | 0.0000    | 1.172E-03 |
| 13 | SISMOX | 2.9135 | 1.5569 | 4.419E-03 | 0.0000    | 0.0000    | 2.798E-03 |
| 13 | SISMOY | 1.1852 | 1.9312 | 6.214E-03 | 0.0000    | 0.0000    | 1.172E-03 |
| 14 | SISMOX | 3.0476 | 1.5569 | 4.430E-03 | 0.0000    | 1.092E-06 | 2.798E-03 |
| 14 | SISMOY | 1.2454 | 1.9312 | 6.234E-03 | 0.0000    | 0.0000    | 1.172E-03 |
| 15 | SISMOX | 2.9812 | 1.5169 | 4.216E-03 | 0.0000    | 0.0000    | 2.535E-03 |
| 15 | SISMOY | 1.2078 | 1.9308 | 6.119E-03 | 0.0000    | 0.0000    | 1.068E-03 |
| 16 | SISMOX | 2.8629 | 1.5169 | 4.204E-03 | 0.0000    | 0.0000    | 2.535E-03 |
| 16 | SISMOY | 1.1559 | 1.9308 | 6.115E-03 | 0.0000    | 0.0000    | 1.068E-03 |
| 17 | SISMOX | 2.8629 | 1.5169 | 4.204E-03 | 0.0000    | 0.0000    | 2.535E-03 |
| 17 | SISMOY | 1.1559 | 1.9308 | 6.116E-03 | 0.0000    | 0.0000    | 1.068E-03 |
| 18 | SISMOX | 2.7453 | 1.5169 | 4.193E-03 | 0.0000    | 0.0000    | 2.535E-03 |
| 18 | SISMOY | 1.1041 | 1.9308 | 6.096E-03 | 0.0000    | 0.0000    | 1.068E-03 |
| 19 | SISMOX | 2.7453 | 1.5169 | 4.189E-03 | 4.092E-06 | 3.638E-06 | 2.535E-03 |
| 19 | SISMOY | 1.1041 | 1.9308 | 6.090E-03 | 5.040E-06 | 1.430E-06 | 1.068E-03 |
| 20 | SISMOX | 2.6286 | 1.5169 | 4.175E-03 | 1.517E-05 | 6.442E-06 | 2.535E-03 |
| 20 | SISMOY | 1.0524 | 1.9308 | 6.063E-03 | 1.970E-05 | 2.541E-06 | 1.068E-03 |
| 21 | SISMOX | 2.6286 | 1.5169 | 4.170E-03 | 2.772E-05 | 8.519E-05 | 2.535E-03 |
| 21 | SISMOY | 1.0524 | 1.9308 | 6.052E-03 | 3.553E-05 | 3.373E-05 | 1.068E-03 |
| 22 | SISMOX | 2.5129 | 1.5169 | 4.155E-03 | 2.074E-04 | 1.744E-04 | 2.535E-03 |
| 22 | SISMOY | 1.0009 | 1.9308 | 6.037E-03 | 2.661E-04 | 6.900E-05 | 1.068E-03 |
| 23 | SISMOX | 2.5129 | 1.5169 | 4.117E-03 | 5.367E-05 | 1.371E-03 | 2.535E-03 |
| 23 | SISMOY | 1.0009 | 1.9308 | 5.943E-03 | 6.581E-05 | 5.423E-04 | 1.068E-03 |
| 24 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 3.145E-03 | 5.188E-03 | 2.834E-04 |
| 24 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 4.048E-03 | 2.052E-03 | 1.306E-04 |
| 25 | SISMOX | 2.3983 | 1.5169 | 4.085E-03 | 1.978E-03 | 3.478E-03 | 2.535E-03 |
| 25 | SISMOY | 0.9497 | 1.9308 | 5.889E-03 | 2.537E-03 | 1.376E-03 | 1.068E-03 |
| 26 | SISMOX | 2.3983 | 1.5169 | 4.090E-03 | 1.132E-03 | 1.758E-03 | 2.535E-03 |
| 26 | SISMOY | 0.9497 | 1.9308 | 5.902E-03 | 1.451E-03 | 6.975E-04 | 1.068E-03 |
| 27 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.730E-03 | 2.594E-03 | 2.197E-04 |
| 27 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 3.513E-03 | 1.192E-03 | 8.701E-05 |

|    |        |        |        |           |           |           |           |
|----|--------|--------|--------|-----------|-----------|-----------|-----------|
| 28 | SISMOX | 1.2115 | 1.5150 | 6.002E-03 | 3.094E-03 | 2.379E-03 | 2.003E-03 |
| 28 | SISMOY | 0.5708 | 1.9288 | 5.015E-03 | 3.990E-03 | 1.110E-03 | 8.074E-04 |
| 29 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.337E-03 | 1.541E-03 | 1.329E-04 |
| 29 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 4.169E-03 | 6.462E-04 | 6.810E-05 |
| 30 | SISMOX | 1.2636 | 1.2785 | 3.724E-03 | 2.576E-03 | 1.467E-03 | 2.423E-03 |
| 30 | SISMOY | 0.5317 | 2.2619 | 6.258E-03 | 4.531E-03 | 6.239E-04 | 1.049E-03 |
| 31 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.189E-03 | 2.691E-03 | 2.681E-04 |
| 31 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 3.953E-03 | 1.074E-03 | 1.180E-04 |
| 32 | SISMOX | 2.3995 | 1.2824 | 3.435E-03 | 1.394E-03 | 2.008E-03 | 4.021E-03 |
| 32 | SISMOY | 0.9494 | 2.2662 | 6.029E-03 | 2.678E-03 | 8.069E-04 | 1.696E-03 |
| 33 | SISMOX | 2.3995 | 1.2824 | 3.442E-03 | 7.972E-04 | 1.001E-03 | 4.021E-03 |
| 33 | SISMOY | 0.9494 | 2.2662 | 6.052E-03 | 1.532E-03 | 4.044E-04 | 1.696E-03 |
| 34 | SISMOX | 2.5758 | 1.2824 | 3.519E-03 | 1.412E-04 | 8.516E-05 | 4.021E-03 |
| 34 | SISMOY | 1.0206 | 2.2662 | 6.291E-03 | 2.701E-04 | 3.423E-05 | 1.696E-03 |
| 35 | SISMOX | 2.5758 | 1.2824 | 3.482E-03 | 3.821E-05 | 7.895E-04 | 4.021E-03 |
| 35 | SISMOY | 1.0206 | 2.2662 | 6.164E-03 | 7.365E-05 | 3.181E-04 | 1.696E-03 |
| 36 | SISMOX | 2.7574 | 1.2824 | 3.567E-03 | 9.796E-06 | 4.406E-06 | 4.021E-03 |
| 36 | SISMOY | 1.0945 | 2.2662 | 6.395E-03 | 1.945E-05 | 1.716E-06 | 1.696E-03 |
| 37 | SISMOX | 2.7574 | 1.2824 | 3.551E-03 | 1.935E-05 | 3.591E-05 | 4.021E-03 |
| 37 | SISMOY | 1.0945 | 2.2662 | 6.358E-03 | 3.692E-05 | 1.460E-05 | 1.696E-03 |
| 38 | SISMOX | 2.9431 | 1.2824 | 3.606E-03 | 0.0000    | 2.176E-06 | 4.021E-03 |
| 38 | SISMOY | 1.1706 | 2.2662 | 6.489E-03 | 0.0000    | 0.0000    | 1.696E-03 |
| 39 | SISMOX | 2.9431 | 1.2824 | 3.602E-03 | 2.535E-06 | 6.735E-06 | 4.021E-03 |
| 39 | SISMOY | 1.1706 | 2.2662 | 6.478E-03 | 4.393E-06 | 2.649E-06 | 1.696E-03 |
| 40 | SISMOX | 3.1324 | 1.2824 | 3.628E-03 | 0.0000    | 4.306E-06 | 4.021E-03 |
| 40 | SISMOY | 1.2486 | 2.2662 | 6.539E-03 | 0.0000    | 1.708E-06 | 1.696E-03 |
| 41 | SISMOX | 3.1324 | 1.2824 | 3.627E-03 | 3.894E-06 | 7.335E-06 | 4.021E-03 |
| 41 | SISMOY | 1.2486 | 2.2662 | 6.540E-03 | 1.564E-06 | 2.903E-06 | 1.696E-03 |
| 42 | SISMOX | 3.3246 | 1.2824 | 3.652E-03 | 2.592E-06 | 2.539E-05 | 4.021E-03 |
| 42 | SISMOY | 1.3281 | 2.2662 | 6.584E-03 | 1.719E-06 | 1.010E-05 | 1.696E-03 |
| 43 | SISMOX | 3.2388 | 1.2825 | 3.622E-03 | 2.884E-06 | 2.165E-05 | 3.685E-03 |
| 43 | SISMOY | 1.2957 | 2.1955 | 6.228E-03 | 1.630E-06 | 8.593E-06 | 1.701E-03 |
| 44 | SISMOX | 3.0679 | 1.2825 | 3.607E-03 | 0.0000    | 3.862E-06 | 3.685E-03 |
| 44 | SISMOY | 1.2229 | 2.1955 | 6.194E-03 | 0.0000    | 1.529E-06 | 1.701E-03 |
| 45 | SISMOX | 3.0679 | 1.2825 | 3.607E-03 | 3.937E-06 | 6.692E-06 | 3.685E-03 |
| 45 | SISMOY | 1.2229 | 2.1955 | 6.193E-03 | 1.600E-06 | 2.645E-06 | 1.701E-03 |
| 46 | SISMOX | 2.8987 | 1.2825 | 3.591E-03 | 0.0000    | 1.905E-06 | 3.685E-03 |
| 46 | SISMOY | 1.1517 | 2.1955 | 6.164E-03 | 0.0000    | 0.0000    | 1.701E-03 |
| 47 | SISMOX | 2.8987 | 1.2825 | 3.588E-03 | 2.748E-06 | 6.690E-06 | 3.685E-03 |
| 47 | SISMOY | 1.1517 | 2.1955 | 6.156E-03 | 4.945E-06 | 2.610E-06 | 1.701E-03 |
| 48 | SISMOX | 2.7314 | 1.2825 | 3.562E-03 | 1.102E-05 | 5.333E-06 | 3.685E-03 |
| 48 | SISMOY | 1.0826 | 2.1955 | 6.118E-03 | 2.070E-05 | 2.080E-06 | 1.701E-03 |
| 49 | SISMOX | 2.7314 | 1.2825 | 3.551E-03 | 1.941E-05 | 4.242E-05 | 3.685E-03 |
| 49 | SISMOY | 1.0826 | 2.1955 | 6.101E-03 | 3.520E-05 | 1.717E-05 | 1.701E-03 |
| 50 | SISMOX | 2.5664 | 1.2825 | 3.518E-03 | 1.489E-04 | 9.895E-05 | 3.685E-03 |
| 50 | SISMOY | 1.0159 | 2.1955 | 6.080E-03 | 2.749E-04 | 3.968E-05 | 1.701E-03 |
| 51 | SISMOX | 2.5664 | 1.2825 | 3.481E-03 | 3.198E-05 | 7.940E-04 | 3.685E-03 |



|    |        |        |        |           |           |           |           |
|----|--------|--------|--------|-----------|-----------|-----------|-----------|
| 51 | SISMOY | 1.0159 | 2.1955 | 5.975E-03 | 6.059E-05 | 3.188E-04 | 1.701E-03 |
| 52 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.204E-03 | 2.704E-03 | 2.432E-04 |
| 52 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 3.826E-03 | 1.078E-03 | 1.175E-04 |
| 53 | SISMOX | 2.4042 | 1.2825 | 3.435E-03 | 1.412E-03 | 2.017E-03 | 3.685E-03 |
| 53 | SISMOY | 0.9521 | 2.1955 | 5.920E-03 | 2.613E-03 | 8.082E-04 | 1.701E-03 |
| 54 | SISMOX | 2.4042 | 1.2825 | 3.442E-03 | 8.078E-04 | 1.004E-03 | 3.685E-03 |
| 54 | SISMOY | 0.9521 | 2.1955 | 5.932E-03 | 1.495E-03 | 4.038E-04 | 1.701E-03 |
| 55 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.335E-03 | 1.484E-03 | 1.212E-04 |
| 55 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 4.038E-03 | 6.932E-04 | 7.437E-05 |
| 56 | SISMOX | 1.2117 | 1.2787 | 3.735E-03 | 2.574E-03 | 1.405E-03 | 2.212E-03 |
| 56 | SISMOY | 0.5725 | 2.1916 | 6.074E-03 | 4.388E-03 | 6.723E-04 | 1.103E-03 |
| 57 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.453E-03 | 2.465E-03 | 4.179E-04 |
| 57 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 2.546E-03 | 1.028E-03 | 1.674E-04 |
| 58 | SISMOX | 1.2656 | 0.9091 | 7.641E-03 | 1.123E-03 | 2.707E-03 | 4.174E-03 |
| 58 | SISMOY | 0.5347 | 1.5920 | 0.0138    | 2.093E-03 | 1.140E-03 | 1.707E-03 |
| 59 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 7.348E-04 | 2.605E-03 | 7.504E-05 |
| 59 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 1.481E-03 | 9.929E-04 | 4.272E-05 |
| 60 | SISMOX | 1.9832 | 0.9117 | 3.021E-03 | 1.180E-03 | 3.473E-03 | 2.898E-03 |
| 60 | SISMOY | 0.8398 | 1.5957 | 5.540E-03 | 1.910E-03 | 1.336E-03 | 1.563E-03 |
| 61 | SISMOX | 2.1551 | 0.9971 | 2.916E-03 | 2.580E-04 | 5.072E-03 | 4.496E-03 |
| 61 | SISMOY | 0.9031 | 1.7293 | 5.495E-03 | 4.972E-04 | 1.979E-03 | 1.977E-03 |
| 62 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.600E-03 | 4.262E-03 | 1.873E-04 |
| 62 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 1.837E-03 | 1.569E-03 | 1.167E-04 |
| 63 | SISMOX | 2.9978 | 0.9098 | 6.712E-03 | 1.842E-03 | 6.838E-03 | 2.417E-03 |
| 63 | SISMOY | 1.2285 | 1.5908 | 7.768E-03 | 2.984E-03 | 2.761E-03 | 1.959E-03 |
| 64 | SISMOX | 5.2328 | 1.0090 | 7.566E-03 | 2.289E-04 | 8.787E-03 | 9.164E-03 |
| 64 | SISMOY | 2.1113 | 1.7455 | 9.025E-03 | 3.709E-04 | 3.496E-03 | 4.517E-03 |
| 65 | SISMOX | 5.9712 | 1.0126 | 0.0231    | 2.559E-04 | 9.009E-03 | 0.0102    |
| 65 | SISMOY | 2.4381 | 1.7512 | 0.0346    | 4.051E-04 | 3.589E-03 | 4.953E-03 |
| 66 | SISMOX | 5.8973 | 0.8077 | 0.0180    | 1.925E-04 | 9.022E-03 | 0.0100    |
| 66 | SISMOY | 2.4066 | 1.6446 | 0.0316    | 3.653E-04 | 3.584E-03 | 4.967E-03 |
| 67 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.431E-03 | 4.161E-03 | 1.873E-04 |
| 67 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 1.734E-03 | 1.524E-03 | 1.132E-04 |
| 68 | SISMOX | 2.9593 | 0.7377 | 5.668E-03 | 1.573E-03 | 6.683E-03 | 2.411E-03 |
| 68 | SISMOY | 1.2093 | 1.5069 | 7.318E-03 | 2.855E-03 | 2.696E-03 | 1.929E-03 |
| 69 | SISMOX | 5.1611 | 0.8049 | 6.341E-03 | 1.727E-04 | 8.788E-03 | 8.957E-03 |
| 69 | SISMOY | 2.0786 | 1.6393 | 8.548E-03 | 3.327E-04 | 3.486E-03 | 4.519E-03 |
| 70 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 5.531E-04 | 2.558E-03 | 7.322E-05 |
| 70 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 1.344E-03 | 1.002E-03 | 4.163E-05 |
| 71 | SISMOX | 1.9279 | 0.7387 | 3.188E-03 | 8.672E-04 | 3.392E-03 | 2.906E-03 |
| 71 | SISMOY | 0.8397 | 1.5114 | 6.497E-03 | 1.722E-03 | 1.342E-03 | 1.573E-03 |
| 72 | SISMOX | 2.0862 | 0.7958 | 3.130E-03 | 2.018E-04 | 4.993E-03 | 4.360E-03 |
| 72 | SISMOY | 0.8999 | 1.6240 | 6.468E-03 | 4.414E-04 | 1.948E-03 | 1.961E-03 |
| 73 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.143E-03 | 2.364E-03 | 3.906E-04 |
| 73 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 2.311E-03 | 1.104E-03 | 1.586E-04 |
| 74 | SISMOX | 1.2143 | 0.7367 | 7.556E-03 | 9.036E-04 | 2.631E-03 | 4.106E-03 |
| 74 | SISMOY | 0.5756 | 1.5078 | 0.0145    | 1.925E-03 | 1.216E-03 | 1.711E-03 |

|    |        |        |        |           |           |           |           |
|----|--------|--------|--------|-----------|-----------|-----------|-----------|
| 75 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.633E-03 | 1.984E-03 | 1.030E-04 |
| 75 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 4.583E-03 | 8.522E-04 | 2.307E-04 |
| 76 | SISMOX | 1.9866 | 0.7977 | 3.721E-03 | 1.104E-03 | 3.135E-03 | 1.347E-03 |
| 76 | SISMOY | 0.8436 | 2.1247 | 9.421E-03 | 2.993E-03 | 1.334E-03 | 2.798E-03 |
| 77 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 8.885E-04 | 3.741E-03 | 6.838E-05 |
| 77 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 1.772E-03 | 1.463E-03 | 1.349E-04 |
| 78 | SISMOX | 3.0071 | 0.8014 | 3.897E-03 | 2.675E-03 | 5.522E-03 | 1.287E-03 |
| 78 | SISMOY | 1.2332 | 2.1300 | 9.347E-03 | 6.620E-03 | 2.245E-03 | 2.692E-03 |
| 79 | SISMOX | 4.9930 | 1.6259 | 4.020E-03 | 7.909E-04 | 0.0121    | 0.0101    |
| 79 | SISMOY | 2.0266 | 3.7945 | 9.701E-03 | 8.943E-04 | 4.765E-03 | 4.677E-03 |
| 80 | SISMOX | 5.9712 | 1.6408 | 0.0571    | 8.533E-04 | 0.0127    | 0.0119    |
| 80 | SISMOY | 2.4381 | 3.8132 | 0.0712    | 9.897E-04 | 4.991E-03 | 5.363E-03 |
| 81 | SISMOX | 5.8973 | 1.5450 | 0.0493    | 7.320E-04 | 0.0125    | 0.0116    |
| 81 | SISMOY | 2.4066 | 3.8253 | 0.0733    | 1.023E-03 | 4.903E-03 | 5.327E-03 |
| 82 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 8.698E-04 | 3.699E-03 | 6.510E-05 |
| 82 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 1.759E-03 | 1.440E-03 | 1.340E-04 |
| 83 | SISMOX | 2.9690 | 0.7699 | 3.738E-03 | 2.519E-03 | 5.468E-03 | 1.264E-03 |
| 83 | SISMOY | 1.2142 | 2.1260 | 9.363E-03 | 6.635E-03 | 2.217E-03 | 2.680E-03 |
| 84 | SISMOX | 4.9373 | 1.5320 | 3.854E-03 | 6.766E-04 | 0.0119    | 9.796E-03 |
| 84 | SISMOY | 2.0000 | 3.8059 | 9.711E-03 | 9.260E-04 | 4.682E-03 | 4.653E-03 |
| 85 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.565E-03 | 1.925E-03 | 1.011E-04 |
| 85 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 4.571E-03 | 8.505E-04 | 2.300E-04 |
| 86 | SISMOX | 1.9312 | 0.7665 | 3.524E-03 | 1.068E-03 | 3.065E-03 | 1.325E-03 |
| 86 | SISMOY | 0.8438 | 2.1206 | 9.427E-03 | 2.978E-03 | 1.329E-03 | 2.783E-03 |
| 87 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.204E-03 | 2.022E-03 | 1.482E-04 |
| 87 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 6.079E-03 | 8.599E-04 | 2.479E-04 |
| 88 | SISMOX | 1.9934 | 1.1162 | 5.078E-03 | 1.672E-03 | 3.279E-03 | 1.664E-03 |
| 88 | SISMOY | 0.8496 | 2.9689 | 0.0137    | 4.558E-03 | 1.283E-03 | 2.746E-03 |
| 89 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.257E-03 | 5.326E-03 | 2.696E-04 |
| 89 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 2.408E-03 | 1.946E-03 | 2.182E-04 |
| 90 | SISMOX | 3.0156 | 1.1210 | 0.0140    | 3.760E-03 | 8.279E-03 | 2.505E-03 |
| 90 | SISMOY | 1.2371 | 2.9791 | 0.0148    | 9.738E-03 | 3.427E-03 | 3.022E-03 |
| 91 | SISMOX | 5.0832 | 2.2289 | 0.0144    | 1.544E-03 | 0.0107    | 9.651E-03 |
| 91 | SISMOY | 2.0758 | 5.6105 | 0.0158    | 2.696E-03 | 3.909E-03 | 4.512E-03 |
| 92 | SISMOX | 5.9712 | 2.2624 | 0.1254    | 1.837E-03 | 0.0111    | 0.0110    |
| 92 | SISMOY | 2.4381 | 5.6755 | 0.2173    | 3.280E-03 | 4.063E-03 | 4.954E-03 |
| 93 | SISMOX | 5.8973 | 2.1778 | 0.1221    | 1.786E-03 | 0.0110    | 0.0106    |
| 93 | SISMOY | 2.4066 | 5.6677 | 0.2174    | 3.284E-03 | 4.019E-03 | 4.947E-03 |
| 94 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 1.222E-03 | 5.262E-03 | 2.530E-04 |
| 94 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 2.403E-03 | 1.911E-03 | 2.238E-04 |
| 95 | SISMOX | 2.9777 | 1.0767 | 0.0138    | 3.615E-03 | 8.183E-03 | 2.303E-03 |
| 95 | SISMOY | 1.2182 | 2.9744 | 0.0147    | 9.723E-03 | 3.381E-03 | 3.061E-03 |
| 96 | SISMOX | 5.0258 | 2.1453 | 0.0142    | 1.502E-03 | 0.0105    | 9.340E-03 |
| 96 | SISMOY | 2.0477 | 5.6027 | 0.0157    | 2.700E-03 | 3.868E-03 | 4.515E-03 |
| 97 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 2.115E-03 | 1.968E-03 | 1.382E-04 |
| 97 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 6.068E-03 | 8.596E-04 | 2.462E-04 |
| 98 | SISMOX | 1.9375 | 1.0721 | 4.875E-03 | 1.603E-03 | 3.206E-03 | 1.550E-03 |
| 98 | SISMOY | 0.8501 | 2.9642 | 0.0137    | 4.553E-03 | 1.279E-03 | 2.747E-03 |

|     |        |        |        |           |           |           |           |
|-----|--------|--------|--------|-----------|-----------|-----------|-----------|
| 99  | SISMOX | 0.0000 | 0.0000 | 0.0000    | 0.0000    | 3.514E-03 | 2.683E-04 |
| 99  | SISMOY | 0.0000 | 0.0000 | 0.0000    | 0.0000    | 1.527E-03 | 1.186E-03 |
| 100 | SISMOX | 2.0071 | 1.1896 | 1.416E-03 | 5.144E-03 | 4.678E-03 | 7.583E-04 |
| 100 | SISMOY | 0.8605 | 4.0004 | 3.926E-03 | 0.0181    | 2.967E-03 | 3.489E-03 |
| 101 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 0.0000    | 3.411E-03 | 2.821E-04 |
| 101 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 0.0000    | 1.530E-03 | 1.176E-03 |
| 102 | SISMOX | 1.9502 | 1.1242 | 1.344E-03 | 4.844E-03 | 4.544E-03 | 8.184E-04 |
| 102 | SISMOY | 0.8613 | 4.0080 | 3.935E-03 | 0.0181    | 2.965E-03 | 3.466E-03 |
| 103 | SISMOX | 2.0214 | 1.0580 | 0.3687    | 3.239E-03 | 1.495E-03 | 1.965E-03 |
| 103 | SISMOY | 0.9155 | 4.3319 | 0.3941    | 0.0135    | 6.706E-03 | 4.432E-03 |
| 104 | SISMOX | 1.9665 | 0.9876 | 0.3596    | 3.044E-03 | 1.411E-03 | 2.085E-03 |
| 104 | SISMOY | 0.9125 | 4.3385 | 0.3929    | 0.0135    | 6.711E-03 | 4.401E-03 |
| 105 | SISMOX | 2.1148 | 0.7158 | 0.2312    | 3.601E-03 | 1.345E-03 | 3.318E-03 |
| 105 | SISMOY | 1.0311 | 4.4043 | 0.7170    | 0.0107    | 7.933E-03 | 3.996E-03 |
| 106 | SISMOX | 2.0720 | 0.6597 | 0.2266    | 3.562E-03 | 1.232E-03 | 3.311E-03 |
| 106 | SISMOY | 1.0153 | 4.4067 | 0.7163    | 0.0107    | 7.939E-03 | 4.032E-03 |
| 107 | SISMOX | 2.2672 | 0.3531 | 0.1399    | 3.252E-03 | 1.483E-03 | 3.178E-03 |
| 107 | SISMOY | 1.0758 | 4.2252 | 0.6805    | 9.613E-03 | 6.397E-03 | 3.173E-03 |
| 108 | SISMOX | 2.2429 | 0.3381 | 0.1298    | 3.324E-03 | 1.580E-03 | 3.038E-03 |
| 108 | SISMOY | 1.0493 | 4.2247 | 0.6811    | 9.591E-03 | 6.385E-03 | 3.249E-03 |
| 109 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 7.862E-04 | 4.759E-03 | 6.091E-04 |
| 109 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 6.451E-03 | 1.904E-03 | 5.943E-04 |
| 110 | SISMOX | 2.3703 | 0.1439 | 3.677E-03 | 1.118E-03 | 6.724E-03 | 2.198E-03 |
| 110 | SISMOY | 0.9547 | 4.0587 | 4.932E-03 | 0.0100    | 3.791E-03 | 2.247E-03 |
| 111 | SISMOX | 0.0000 | 0.0000 | 0.0000    | 9.345E-04 | 4.755E-03 | 5.803E-04 |
| 111 | SISMOY | 0.0000 | 0.0000 | 0.0000    | 6.443E-03 | 1.848E-03 | 5.883E-04 |
| 112 | SISMOX | 2.3596 | 0.1643 | 3.747E-03 | 1.313E-03 | 6.744E-03 | 2.046E-03 |
| 112 | SISMOY | 0.9292 | 4.0582 | 4.895E-03 | 0.0100    | 3.711E-03 | 2.241E-03 |
| 113 | SISMOX | 2.4208 | 0.1032 | 0.2734    | 5.768E-04 | 6.625E-03 | 1.516E-03 |
| 113 | SISMOY | 0.6009 | 4.0114 | 0.4454    | 6.710E-04 | 2.128E-03 | 3.735E-03 |
| 114 | SISMOX | 2.4174 | 0.1110 | 0.2643    | 5.504E-04 | 6.640E-03 | 1.395E-03 |
| 114 | SISMOY | 0.5826 | 4.0113 | 0.4471    | 6.679E-04 | 2.052E-03 | 3.685E-03 |
| 115 | SISMOX | 2.4410 | 0.1072 | 0.3594    | 1.082E-04 | 6.598E-03 | 1.709E-04 |
| 115 | SISMOY | 0.0318 | 4.0071 | 4.113E-03 | 4.283E-03 | 1.192E-04 | 4.535E-03 |

### 5.2.8.2.3 Fuerzas.

| LOAD COMBINATION MULTIPLIERS |      |        |        |              |                           |
|------------------------------|------|--------|--------|--------------|---------------------------|
| COMBO                        | TYPE | CASE   | FACTOR | TYPE         | TITLE                     |
| CU                           | ADD  |        |        |              | COMBI                     |
|                              |      | MUERTA | 1.4000 | STATIC(DEAD) |                           |
|                              |      | VIVA   | 1.7000 | STATIC(LIVE) |                           |
| COLUMNAL                     | ADD  |        |        |              | Combinación para Columnas |
|                              |      | CU     | 0.7500 | COMBO        |                           |
|                              |      | SISMOX | 1.2000 | COMBO        |                           |

|          |     |        |        |              |                           |
|----------|-----|--------|--------|--------------|---------------------------|
|          |     | SISMOY | 0.3600 | COMBO        |                           |
| COLUMNA2 | ADD |        |        |              | Combinación para Columnas |
|          |     | CU     | 0.7500 | COMBO        |                           |
|          |     | SISMOX | 0.3600 | COMBO        |                           |
|          |     | SISMOY | 1.2000 | COMBO        |                           |
| COLUMNA3 | ADD |        |        |              | Combinación para Columnas |
|          |     | MUERTA | 0.9000 | STATIC(DEAD) |                           |
|          |     | SISMOX | 1.2000 | COMBO        |                           |
|          |     | SISMOY | 0.3600 | COMBO        |                           |
| COLUMNA4 | ADD |        |        |              | Combinación para Columnas |
|          |     | MUERTA | 0.9000 | STATIC(DEAD) |                           |
|          |     | SISMOX | 0.3600 | COMBO        |                           |
|          |     | SISMOY | 1.2000 | COMBO        |                           |

FRAME ELEMENT FORCES

| FRAME | LOAD        | LOC | P      | V2     | V3     | T          | M2         | M3         |
|-------|-------------|-----|--------|--------|--------|------------|------------|------------|
| 1     | CU          |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -32.74 | -2.28  | -3.10  | -9.416E-02 | -4.73      | -3.76      |
|       | 1.58        |     | -28.51 | -2.28  | -3.10  | -9.416E-02 | -3.179E-01 | -5.189E-01 |
|       | 3.00        |     | -24.28 | -2.28  | -3.10  | -9.416E-02 | 4.09       | 2.72       |
| 1     | COLUMN1 MAX |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -16.50 | 3.93   | 6.94   | 1.24       | 10.10      | 5.01       |
|       | 1.58        |     | -13.33 | 3.93   | 6.94   | 1.24       | 2.075E-01  | -1.705E-01 |
|       | 3.00        |     | -10.15 | 3.93   | 6.94   | 1.24       | 15.83      | 10.26      |
| 1     | COLUMN1 MIN |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -32.61 | -7.34  | -11.59 | -1.38      | -17.20     | -10.65     |
|       | 1.58        |     | -29.44 | -7.34  | -11.59 | -1.38      | -6.843E-01 | -6.078E-01 |
|       | 3.00        |     | -26.26 | -7.34  | -11.59 | -1.38      | -9.69      | -6.18      |
| 1     | COLUMN2 MAX |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -17.14 | 1.92   | 7.95   | 7.281E-01  | 11.60      | 2.23       |
|       | 1.58        |     | -13.96 | 1.92   | 7.95   | 7.281E-01  | 2.733E-01  | -2.535E-01 |
|       | 3.00        |     | -10.79 | 1.92   | 7.95   | 7.281E-01  | 17.19      | 7.33       |
| 1     | COLUMN2 MIN |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -31.97 | -5.33  | -12.59 | -8.694E-01 | -18.69     | -7.87      |
|       | 1.58        |     | -28.80 | -5.33  | -12.59 | -8.694E-01 | -7.501E-01 | -5.248E-01 |
|       | 3.00        |     | -25.63 | -5.33  | -12.59 | -8.694E-01 | -11.05     | -3.24      |
| 1     | COLUMN3 MAX |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -9.52  | 4.33   | 7.44   | 1.25       | 10.64      | 5.49       |
|       | 1.58        |     | -6.80  | 4.33   | 7.44   | 1.25       | 3.688E-02  | -2.747E-01 |
|       | 3.00        |     | -4.08  | 4.33   | 7.44   | 1.25       | 14.95      | 9.58       |
| 1     | COLUMN3 MIN |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -25.63 | -6.93  | -11.09 | -1.37      | -16.66     | -10.17     |
|       | 1.58        |     | -22.91 | -6.93  | -11.09 | -1.37      | -8.549E-01 | -7.121E-01 |
|       | 3.00        |     | -20.19 | -6.93  | -11.09 | -1.37      | -10.57     | -6.86      |
| 1     | COLUMN4 MAX |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -10.16 | 2.33   | 8.45   | 7.414E-01  | 12.14      | 2.71       |
|       | 1.58        |     | -7.44  | 2.33   | 8.45   | 7.414E-01  | 1.027E-01  | -3.578E-01 |
|       | 3.00        |     | -4.72  | 2.33   | 8.45   | 7.414E-01  | 16.32      | 6.64       |
| 1     | COLUMN4 MIN |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -24.99 | -4.93  | -12.10 | -8.560E-01 | -18.16     | -7.39      |
|       | 1.58        |     | -22.27 | -4.93  | -12.10 | -8.560E-01 | -9.207E-01 | -6.290E-01 |
|       | 3.00        |     | -19.55 | -4.93  | -12.10 | -8.560E-01 | -11.93     | -3.93      |
| 5     | CU          |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -46.90 | -1.71  | 2.83   | -8.880E-02 | 4.53       | -2.81      |
|       | 1.58        |     | -42.67 | -1.71  | 2.83   | -8.880E-02 | 5.076E-01  | -3.738E-01 |
|       | 3.00        |     | -38.44 | -1.71  | 2.83   | -8.880E-02 | -3.52      | 2.07       |
| 5     | COLUMN1 MAX |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -28.67 | 11.50  | 13.17  | 1.60       | 17.72      | 14.45      |
|       | 1.58        |     | -25.49 | 11.50  | 13.17  | 1.60       | 1.81       | 1.38       |
|       | 3.00        |     | -22.32 | 11.50  | 13.17  | 1.60       | 14.54      | 21.43      |
| 5     | COLUMN1 MIN |     |        |        |        |            |            |            |
|       | 1.5E-01     |     | -41.68 | -14.07 | -8.93  | -1.73      | -10.92     | -18.67     |
|       | 1.58        |     | -38.51 | -14.07 | -8.93  | -1.73      | -1.05      | -1.94      |

|    |             |        |        |        |           |            |            |
|----|-------------|--------|--------|--------|-----------|------------|------------|
|    | 3.00        | -35.34 | -14.07 | -8.93  | -1.73     | -19.82     | -18.33     |
| 5  | COLUMN2 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -27.41 | 6.67   | 14.43  | 9.895E-01 | 19.32      | 8.20       |
|    | 1.58        | -24.24 | 6.67   | 14.43  | 9.895E-01 | 2.01       | 7.509E-01  |
|    | 3.00        | -21.07 | 6.67   | 14.43  | 9.895E-01 | 16.53      | 13.92      |
| 5  | COLUMN2 MIN |        |        |        |           |            |            |
|    | 1.5E-01     | -42.94 | -9.24  | -10.19 | -1.12     | -12.52     | -12.42     |
|    | 1.58        | -39.77 | -9.24  | -10.19 | -1.12     | -1.24      | -1.31      |
|    | 3.00        | -36.59 | -9.24  | -10.19 | -1.12     | -21.81     | -10.82     |
| 5  | COLUMN3 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -16.78 | 11.79  | 12.72  | 1.61      | 17.17      | 14.80      |
|    | 1.58        | -14.06 | 11.79  | 12.72  | 1.61      | 1.91       | 1.32       |
|    | 3.00        | -11.34 | 11.79  | 12.72  | 1.61      | 15.29      | 20.95      |
| 5  | COLUMN3 MIN |        |        |        |           |            |            |
|    | 1.5E-01     | -29.80 | -13.78 | -9.39  | -1.72     | -11.47     | -18.32     |
|    | 1.58        | -27.08 | -13.78 | -9.39  | -1.72     | -9.522E-01 | -2.00      |
|    | 3.00        | -24.36 | -13.78 | -9.39  | -1.72     | -19.08     | -18.81     |
| 5  | COLUMN4 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -15.53 | 6.97   | 13.98  | 1.00      | 18.77      | 8.55       |
|    | 1.58        | -12.81 | 6.97   | 13.98  | 1.00      | 2.10       | 6.864E-01  |
|    | 3.00        | -10.09 | 6.97   | 13.98  | 1.00      | 17.28      | 13.44      |
| 5  | COLUMN4 MIN |        |        |        |           |            |            |
|    | 1.5E-01     | -31.05 | -8.95  | -10.65 | -1.11     | -13.07     | -12.07     |
|    | 1.58        | -28.33 | -8.95  | -10.65 | -1.11     | -1.15      | -1.38      |
|    | 3.00        | -25.61 | -8.95  | -10.65 | -1.11     | -21.07     | -11.30     |
| 6  | CU          |        |        |        |           |            |            |
|    | 1.5E-01     | -12.55 | -2.23  | 1.50   | 0.00      | 1.02       | -1.36      |
|    | 4.8E-01     | -12.11 | -2.23  | 1.50   | 0.00      | 5.220E-01  | -6.164E-01 |
|    | 8.2E-01     | -11.67 | -2.23  | 1.50   | 0.00      | 2.186E-02  | 1.290E-01  |
| 6  | COLUMN1 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -9.40  | 10.57  | 9.07   | 0.00      | 6.07       | 6.55       |
|    | 4.8E-01     | -9.07  | 10.57  | 9.07   | 0.00      | 3.04       | 3.02       |
|    | 8.2E-01     | -8.74  | 10.57  | 9.07   | 0.00      | 2.069E-02  | 7.396E-01  |
| 6  | COLUMN1 MIN |        |        |        |           |            |            |
|    | 1.5E-01     | -9.43  | -13.92 | -6.83  | 0.00      | -4.54      | -8.59      |
|    | 4.8E-01     | -9.10  | -13.92 | -6.83  | 0.00      | -2.26      | -3.94      |
|    | 8.2E-01     | -8.77  | -13.92 | -6.83  | 0.00      | 1.210E-02  | -5.461E-01 |
| 6  | COLUMN2 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -9.39  | 5.93   | 10.09  | 0.00      | 6.75       | 3.68       |
|    | 4.8E-01     | -9.06  | 5.93   | 10.09  | 0.00      | 3.38       | 1.70       |
|    | 8.2E-01     | -8.73  | 5.93   | 10.09  | 0.00      | 2.128E-02  | 4.990E-01  |
| 6  | COLUMN2 MIN |        |        |        |           |            |            |
|    | 1.5E-01     | -9.44  | -9.27  | -7.84  | 0.00      | -5.22      | -5.72      |
|    | 4.8E-01     | -9.11  | -9.27  | -7.84  | 0.00      | -2.60      | -2.63      |
|    | 8.2E-01     | -8.78  | -9.27  | -7.84  | 0.00      | 1.152E-02  | -3.054E-01 |
| 6  | COLUMN3 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -5.73  | 11.15  | 8.59   | 0.00      | 5.74       | 6.89       |
|    | 4.8E-01     | -5.44  | 11.15  | 8.59   | 0.00      | 2.87       | 3.17       |
|    | 8.2E-01     | -5.16  | 11.15  | 8.59   | 0.00      | 1.227E-02  | 6.996E-01  |
| 6  | COLUMN3 MIN |        |        |        |           |            |            |
|    | 1.5E-01     | -5.76  | -13.34 | -7.31  | 0.00      | -4.87      | -8.25      |
|    | 4.8E-01     | -5.47  | -13.34 | -7.31  | 0.00      | -2.43      | -3.79      |
|    | 8.2E-01     | -5.19  | -13.34 | -7.31  | 0.00      | 3.682E-03  | -5.860E-01 |
| 6  | COLUMN4 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -5.72  | 6.50   | 9.61   | 0.00      | 6.42       | 4.02       |
|    | 4.8E-01     | -5.44  | 6.50   | 9.61   | 0.00      | 3.21       | 1.85       |
|    | 8.2E-01     | -5.15  | 6.50   | 9.61   | 0.00      | 1.285E-02  | 4.590E-01  |
| 6  | COLUMN4 MIN |        |        |        |           |            |            |
|    | 1.5E-01     | -5.76  | -8.70  | -8.33  | 0.00      | -5.55      | -5.38      |
|    | 4.8E-01     | -5.48  | -8.70  | -8.33  | 0.00      | -2.77      | -2.47      |
|    | 8.2E-01     | -5.20  | -8.70  | -8.33  | 0.00      | 3.096E-03  | -3.454E-01 |
| 43 | CU          |        |        |        |           |            |            |
|    | 1.5E-01     | -46.91 | -1.73  | -2.91  | 7.592E-02 | -4.62      | -2.81      |
|    | 1.58        | -42.68 | -1.73  | -2.91  | 7.592E-02 | -4.735E-01 | -3.477E-01 |
|    | 3.00        | -38.45 | -1.73  | -2.91  | 7.592E-02 | 3.67       | 2.11       |
| 43 | COLUMN1 MAX |        |        |        |           |            |            |
|    | 1.5E-01     | -28.86 | 11.48  | 8.62   | 1.57      | 10.55      | 14.47      |
|    | 1.58        | -25.68 | 11.48  | 8.62   | 1.57      | 1.02       | 1.37       |
|    | 3.00        | -22.51 | 11.48  | 8.62   | 1.57      | 19.53      | 21.41      |

|    |             |        |        |        |            |            |            |
|----|-------------|--------|--------|--------|------------|------------|------------|
| 43 | COLUMN1 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -41.51 | -14.07 | -12.99 | -1.45      | -17.48     | -18.68     |
|    | 1.58        | -38.33 | -14.07 | -12.99 | -1.45      | -1.73      | -1.89      |
|    | 3.00        | -35.16 | -14.07 | -12.99 | -1.45      | -14.02     | -18.24     |
| 43 | COLUMN2 MAX |        |        |        |            |            |            |
|    | 1.5E-01     | -27.49 | 6.66   | 10.04  | 1.02       | 12.37      | 8.21       |
|    | 1.58        | -24.32 | 6.66   | 10.04  | 1.02       | 1.23       | 7.517E-01  |
|    | 3.00        | -21.14 | 6.66   | 10.04  | 1.02       | 21.76      | 13.93      |
| 43 | COLUMN2 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -42.87 | -9.25  | -14.41 | -9.054E-01 | -19.30     | -12.43     |
|    | 1.58        | -39.70 | -9.25  | -14.41 | -9.054E-01 | -1.94      | -1.27      |
|    | 3.00        | -36.52 | -9.25  | -14.41 | -9.054E-01 | -16.25     | -10.76     |
| 43 | COLUMN3 MAX |        |        |        |            |            |            |
|    | 1.5E-01     | -17.00 | 11.77  | 9.09   | 1.56       | 11.11      | 14.82      |
|    | 1.58        | -14.28 | 11.77  | 9.09   | 1.56       | 9.222E-01  | 1.30       |
|    | 3.00        | -11.56 | 11.77  | 9.09   | 1.56       | 18.77      | 20.93      |
| 43 | COLUMN3 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -29.66 | -13.77 | -12.52 | -1.46      | -16.92     | -18.33     |
|    | 1.58        | -26.94 | -13.77 | -12.52 | -1.46      | -1.84      | -1.96      |
|    | 3.00        | -24.22 | -13.77 | -12.52 | -1.46      | -14.78     | -18.73     |
| 43 | COLUMN4 MAX |        |        |        |            |            |            |
|    | 1.5E-01     | -15.64 | 6.95   | 10.50  | 1.01       | 12.93      | 8.56       |
|    | 1.58        | -12.92 | 6.95   | 10.50  | 1.01       | 1.13       | 6.834E-01  |
|    | 3.00        | -10.20 | 6.95   | 10.50  | 1.01       | 20.99      | 13.44      |
| 43 | COLUMN4 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -31.02 | -8.95  | -13.94 | -9.152E-01 | -18.74     | -12.08     |
|    | 1.58        | -28.30 | -8.95  | -13.94 | -9.152E-01 | -2.04      | -1.34      |
|    | 3.00        | -25.58 | -8.95  | -13.94 | -9.152E-01 | -17.01     | -11.24     |
| 44 | CU          |        |        |        |            |            |            |
|    | 1.5E-01     | -12.59 | -2.20  | -1.42  | 0.00       | -9.986E-01 | -1.36      |
|    | 4.9E-01     | -12.13 | -2.20  | -1.42  | 0.00       | -5.091E-01 | -6.070E-01 |
|    | 8.4E-01     | -11.68 | -2.20  | -1.42  | 0.00       | -1.957E-02 | 1.506E-01  |
| 44 | COLUMN1 MAX |        |        |        |            |            |            |
|    | 1.5E-01     | -9.42  | 10.12  | 6.41   | 0.00       | 4.39       | 6.46       |
|    | 4.9E-01     | -9.08  | 10.12  | 6.41   | 0.00       | 2.19       | 2.98       |
|    | 8.4E-01     | -8.74  | 10.12  | 6.41   | 0.00       | -1.019E-02 | 7.494E-01  |
| 44 | COLUMN1 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -9.46  | -13.42 | -8.55  | 0.00       | -5.89      | -8.50      |
|    | 4.9E-01     | -9.12  | -13.42 | -8.55  | 0.00       | -2.95      | -3.89      |
|    | 8.4E-01     | -8.78  | -13.42 | -8.55  | 0.00       | -1.916E-02 | -5.236E-01 |
| 44 | COLUMN2 MAX |        |        |        |            |            |            |
|    | 1.5E-01     | -9.41  | 5.66   | 7.48   | 0.00       | 5.12       | 3.63       |
|    | 4.9E-01     | -9.07  | 5.66   | 7.48   | 0.00       | 2.55       | 1.68       |
|    | 8.4E-01     | -8.73  | 5.66   | 7.48   | 0.00       | -9.517E-03 | 5.195E-01  |
| 44 | COLUMN2 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -9.47  | -8.97  | -9.62  | 0.00       | -6.62      | -5.67      |
|    | 4.9E-01     | -9.13  | -8.97  | -9.62  | 0.00       | -3.32      | -2.59      |
|    | 8.4E-01     | -8.78  | -8.97  | -9.62  | 0.00       | -1.983E-02 | -2.936E-01 |
| 44 | COLUMN3 MAX |        |        |        |            |            |            |
|    | 1.5E-01     | -5.74  | 10.68  | 6.87   | 0.00       | 4.72       | 6.80       |
|    | 4.9E-01     | -5.45  | 10.68  | 6.87   | 0.00       | 2.35       | 3.13       |
|    | 8.4E-01     | -5.16  | 10.68  | 6.87   | 0.00       | -2.638E-03 | 7.072E-01  |
| 44 | COLUMN3 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -5.78  | -12.87 | -8.09  | 0.00       | -5.56      | -8.16      |
|    | 4.9E-01     | -5.49  | -12.87 | -8.09  | 0.00       | -2.78      | -3.74      |
|    | 8.4E-01     | -5.20  | -12.87 | -8.09  | 0.00       | -1.161E-02 | -5.659E-01 |
| 44 | COLUMN4 MAX |        |        |        |            |            |            |
|    | 1.5E-01     | -5.74  | 6.22   | 7.94   | 0.00       | 5.45       | 3.97       |
|    | 4.9E-01     | -5.45  | 6.22   | 7.94   | 0.00       | 2.72       | 1.83       |
|    | 8.4E-01     | -5.15  | 6.22   | 7.94   | 0.00       | -1.967E-03 | 4.772E-01  |
| 44 | COLUMN4 MIN |        |        |        |            |            |            |
|    | 1.5E-01     | -5.79  | -8.41  | -9.15  | 0.00       | -6.30      | -5.33      |
|    | 4.9E-01     | -5.50  | -8.41  | -9.15  | 0.00       | -3.15      | -2.44      |
|    | 8.4E-01     | -5.21  | -8.41  | -9.15  | 0.00       | -1.228E-02 | -3.359E-01 |
| 48 | CU          |        |        |        |            |            |            |
|    | 1.5E-01     | -33.23 | -2.44  | 3.07   | 8.426E-02  | 4.63       | -3.76      |
|    | 1.58        | -29.00 | -2.44  | 3.07   | 8.426E-02  | 2.529E-01  | -2.839E-01 |
|    | 3.00        | -24.77 | -2.44  | 3.07   | 8.426E-02  | -4.13      | 3.19       |

|    |             |        |            |        |            |            |            |
|----|-------------|--------|------------|--------|------------|------------|------------|
| 48 | COLUMN1 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -16.81 | 3.61       | 11.38  | 1.25       | 16.84      | 4.73       |
|    | 1.58        | -13.64 | 3.61       | 11.38  | 1.25       | 6.208E-01  | 2.141E-03  |
|    | 3.00        | -10.46 | 3.61       | 11.38  | 1.25       | 9.41       | 10.33      |
| 48 | COLUMN1 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -33.04 | -7.26      | -6.77  | -1.13      | -9.89      | -10.36     |
|    | 1.58        | -29.86 | -7.26      | -6.77  | -1.13      | -2.415E-01 | -4.280E-01 |
|    | 3.00        | -26.69 | -7.26      | -6.77  | -1.13      | -15.60     | -5.55      |
| 48 | COLUMN2 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -17.56 | 1.90       | 12.54  | 8.111E-01  | 18.55      | 2.38       |
|    | 1.58        | -14.38 | 1.90       | 12.54  | 8.111E-01  | 6.886E-01  | -7.793E-02 |
|    | 3.00        | -11.21 | 1.90       | 12.54  | 8.111E-01  | 10.99      | 7.83       |
| 48 | COLUMN2 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -32.29 | -5.56      | -7.93  | -6.847E-01 | -11.60     | -8.01      |
|    | 1.58        | -29.12 | -5.56      | -7.93  | -6.847E-01 | -3.093E-01 | -3.479E-01 |
|    | 3.00        | -25.94 | -5.56      | -7.93  | -6.847E-01 | -17.18     | -3.04      |
| 48 | COLUMN3 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -9.78  | 4.03       | 10.89  | 1.24       | 16.32      | 5.21       |
|    | 1.58        | -7.06  | 4.03       | 10.89  | 1.24       | 7.990E-01  | -1.275E-01 |
|    | 3.00        | -4.34  | 4.03       | 10.89  | 1.24       | 10.29      | 9.60       |
| 48 | COLUMN3 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -26.00 | -6.84      | -7.27  | -1.14      | -10.42     | -9.89      |
|    | 1.58        | -23.28 | -6.84      | -7.27  | -1.14      | -6.334E-02 | -5.576E-01 |
|    | 3.00        | -20.56 | -6.84      | -7.27  | -1.14      | -14.72     | -6.28      |
| 48 | COLUMN4 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -10.52 | 2.33       | 12.04  | 7.989E-01  | 18.03      | 2.86       |
|    | 1.58        | -7.80  | 2.33       | 12.04  | 7.989E-01  | 8.668E-01  | -2.075E-01 |
|    | 3.00        | -5.08  | 2.33       | 12.04  | 7.989E-01  | 11.87      | 7.09       |
| 48 | COLUMN4 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -25.26 | -5.13      | -8.42  | -6.969E-01 | -12.13     | -7.54      |
|    | 1.58        | -22.54 | -5.13      | -8.42  | -6.969E-01 | -1.311E-01 | -4.775E-01 |
|    | 3.00        | -19.82 | -5.13      | -8.42  | -6.969E-01 | -16.29     | -3.78      |
| 57 | CU          |        |            |        |            |            |            |
|    | 1.5E-01     | -63.76 | -9.402E-01 | -2.22  | -1.682E-02 | -4.39      | 9.726E-02  |
|    | 1.58        | -59.53 | -9.402E-01 | -2.22  | -1.682E-02 | -1.22      | 1.44       |
|    | 3.00        | -55.29 | -9.402E-01 | -2.22  | -1.682E-02 | 1.94       | 2.78       |
| 57 | COLUMN1 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -41.76 | 9.12       | 6.86   | 1.53       | 9.16       | 14.00      |
|    | 1.58        | -38.59 | 9.12       | 6.86   | 1.53       | -6.158E-01 | 1.16       |
|    | 3.00        | -35.42 | 9.12       | 6.86   | 1.53       | 13.31      | 16.15      |
| 57 | COLUMN1 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -53.87 | -10.53     | -10.20 | -1.56      | -15.74     | -13.86     |
|    | 1.58        | -50.70 | -10.53     | -10.20 | -1.56      | -1.22      | 9.965E-01  |
|    | 3.00        | -47.53 | -10.53     | -10.20 | -1.56      | -10.40     | -11.98     |
| 57 | COLUMN2 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -39.85 | 5.58       | 9.86   | 9.862E-01  | 13.50      | 8.99       |
|    | 1.58        | -36.67 | 5.58       | 9.86   | 9.862E-01  | -5.459E-01 | 1.13       |
|    | 3.00        | -33.50 | 5.58       | 9.86   | 9.862E-01  | 17.50      | 11.07      |
| 57 | COLUMN2 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -55.79 | -6.99      | -13.19 | -1.01      | -20.08     | -8.84      |
|    | 1.58        | -52.62 | -6.99      | -13.19 | -1.01      | -1.29      | 1.03       |
|    | 3.00        | -49.44 | -6.99      | -13.19 | -1.01      | -14.59     | -6.90      |
| 57 | COLUMN3 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -28.69 | 9.20       | 7.28   | 1.54       | 9.70       | 13.97      |
|    | 1.58        | -25.97 | 9.20       | 7.28   | 1.54       | -6.701E-01 | 1.02       |
|    | 3.00        | -23.25 | 9.20       | 7.28   | 1.54       | 12.67      | 15.89      |
| 57 | COLUMN3 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -40.80 | -10.45     | -9.78  | -1.56      | -15.21     | -13.89     |
|    | 1.58        | -38.08 | -10.45     | -9.78  | -1.56      | -1.27      | 8.533E-01  |
|    | 3.00        | -35.36 | -10.45     | -9.78  | -1.56      | -11.05     | -12.24     |
| 57 | COLUMN4 MAX |        |            |        |            |            |            |
|    | 1.5E-01     | -26.77 | 5.65       | 10.27  | 9.895E-01  | 14.03      | 8.95       |
|    | 1.58        | -24.05 | 5.65       | 10.27  | 9.895E-01  | -6.002E-01 | 9.849E-01  |
|    | 3.00        | -21.33 | 5.65       | 10.27  | 9.895E-01  | 16.86      | 10.81      |
| 57 | COLUMN4 MIN |        |            |        |            |            |            |
|    | 1.5E-01     | -42.72 | -6.91      | -12.77 | -1.01      | -19.54     | -8.87      |
|    | 1.58        | -40.00 | -6.91      | -12.77 | -1.01      | -1.34      | 8.842E-01  |
|    | 3.00        | -37.28 | -6.91      | -12.77 | -1.01      | -15.24     | -7.16      |
| 61 | CU          |        |            |        |            |            |            |

|    |             |        |            |           |            |            |            |
|----|-------------|--------|------------|-----------|------------|------------|------------|
|    | 1.5E-01     | -81.21 | -6.874E-01 | 1.60      | -6.424E-03 | 2.88       | -1.16      |
|    | 1.58        | -76.98 | -6.874E-01 | 1.60      | -6.424E-03 | 6.080E-01  | -1.842E-01 |
|    | 3.00        | -72.75 | -6.874E-01 | 1.60      | -6.424E-03 | -1.67      | 7.954E-01  |
| 61 | COLUMN1 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -55.24 | 19.98      | 13.21     | 2.51       | 18.26      | 27.68      |
|    | 1.58        | -52.07 | 19.98      | 13.21     | 2.51       | 1.47       | 5.169E-01  |
|    | 3.00        | -48.89 | 19.98      | 13.21     | 2.51       | 16.88      | 30.46      |
| 61 | COLUMN1 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -66.58 | -21.01     | -10.81    | -2.52      | -13.94     | -29.43     |
|    | 1.58        | -63.40 | -21.01     | -10.81    | -2.52      | -5.617E-01 | -7.932E-01 |
|    | 3.00        | -60.23 | -21.01     | -10.81    | -2.52      | -19.38     | -29.26     |
| 61 | COLUMN2 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -53.28 | 12.21      | 17.08     | 1.61       | 23.50      | 16.85      |
|    | 1.58        | -50.10 | 12.21      | 17.08     | 1.61       | 1.75       | 2.721E-01  |
|    | 3.00        | -46.93 | 12.21      | 17.08     | 1.61       | 22.68      | 19.13      |
| 61 | COLUMN2 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -68.54 | -13.24     | -14.69    | -1.62      | -19.18     | -18.60     |
|    | 1.58        | -65.36 | -13.24     | -14.69    | -1.62      | -8.397E-01 | -5.484E-01 |
|    | 3.00        | -62.19 | -13.24     | -14.69    | -1.62      | -25.18     | -17.94     |
| 61 | COLUMN3 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -32.57 | 20.14      | 12.92     | 2.52       | 17.90      | 27.86      |
|    | 1.58        | -29.85 | 20.14      | 12.92     | 2.52       | 1.52       | 4.637E-01  |
|    | 3.00        | -27.13 | 20.14      | 12.92     | 2.52       | 17.32      | 30.18      |
| 61 | COLUMN3 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -43.91 | -20.86     | -11.09    | -2.52      | -14.29     | -29.26     |
|    | 1.58        | -41.19 | -20.86     | -11.09    | -2.52      | -5.174E-01 | -8.464E-01 |
|    | 3.00        | -38.47 | -20.86     | -11.09    | -2.52      | -18.93     | -29.54     |
| 61 | COLUMN4 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -30.61 | 12.37      | 16.80     | 1.61       | 23.15      | 17.02      |
|    | 1.58        | -27.89 | 12.37      | 16.80     | 1.61       | 1.80       | 2.189E-01  |
|    | 3.00        | -25.17 | 12.37      | 16.80     | 1.61       | 23.13      | 18.86      |
| 61 | COLUMN4 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -45.87 | -13.08     | -14.97    | -1.61      | -19.54     | -18.43     |
|    | 1.58        | -43.15 | -13.08     | -14.97    | -1.61      | -7.954E-01 | -6.017E-01 |
|    | 3.00        | -40.43 | -13.08     | -14.97    | -1.61      | -24.73     | -18.22     |
| 62 | CU          |        |            |           |            |            |            |
|    | 1.5E-01     | -20.50 | -1.84      | 9.970E-01 | 0.00       | 7.093E-01  | -1.02      |
|    | 4.8E-01     | -20.06 | -1.84      | 9.970E-01 | 0.00       | 3.761E-01  | -4.033E-01 |
|    | 8.2E-01     | -19.62 | -1.84      | 9.970E-01 | 0.00       | 4.290E-02  | 2.127E-01  |
| 62 | COLUMN1 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -15.35 | 5.85       | 7.06      | 0.00       | 4.75       | 3.67       |
|    | 4.8E-01     | -15.02 | 5.85       | 7.06      | 0.00       | 2.39       | 1.71       |
|    | 8.2E-01     | -14.69 | 5.85       | 7.06      | 0.00       | 3.587E-02  | 5.693E-01  |
| 62 | COLUMN1 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -15.40 | -8.61      | -5.57     | 0.00       | -3.69      | -5.20      |
|    | 4.8E-01     | -15.07 | -8.61      | -5.57     | 0.00       | -1.82      | -2.32      |
|    | 8.2E-01     | -14.74 | -8.61      | -5.57     | 0.00       | 2.848E-02  | -2.502E-01 |
| 62 | COLUMN2 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -15.33 | 3.14       | 9.65      | 0.00       | 6.47       | 2.01       |
|    | 4.8E-01     | -15.00 | 3.14       | 9.65      | 0.00       | 3.25       | 9.623E-01  |
|    | 8.2E-01     | -14.66 | 3.14       | 9.65      | 0.00       | 3.733E-02  | 4.142E-01  |
| 62 | COLUMN2 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -15.42 | -5.90      | -8.15     | 0.00       | -5.41      | -3.54      |
|    | 4.8E-01     | -15.09 | -5.90      | -8.15     | 0.00       | -2.69      | -1.57      |
|    | 8.2E-01     | -14.76 | -5.90      | -8.15     | 0.00       | 2.702E-02  | -9.507E-02 |
| 62 | COLUMN3 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -8.59  | 6.26       | 6.72      | 0.00       | 4.50       | 3.92       |
|    | 4.8E-01     | -8.31  | 6.26       | 6.72      | 0.00       | 2.26       | 1.83       |
|    | 8.2E-01     | -8.02  | 6.26       | 6.72      | 0.00       | 1.918E-02  | 5.421E-01  |
| 62 | COLUMN3 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -8.65  | -8.20      | -5.91     | 0.00       | -3.93      | -4.95      |
|    | 4.8E-01     | -8.36  | -8.20      | -5.91     | 0.00       | -1.96      | -2.21      |
|    | 8.2E-01     | -8.08  | -8.20      | -5.91     | 0.00       | 1.179E-02  | -2.774E-01 |
| 62 | COLUMN4 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -8.57  | 3.55       | 9.30      | 0.00       | 6.23       | 2.26       |
|    | 4.8E-01     | -8.29  | 3.55       | 9.30      | 0.00       | 3.12       | 1.07       |
|    | 8.2E-01     | -8.00  | 3.55       | 9.30      | 0.00       | 2.064E-02  | 3.870E-01  |
| 62 | COLUMN4 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -8.67  | -5.49      | -8.50     | 0.00       | -5.66      | -3.29      |
|    | 4.8E-01     | -8.38  | -5.49      | -8.50     | 0.00       | -2.82      | -1.46      |



|                 |         |        |            |        |           |            |            |
|-----------------|---------|--------|------------|--------|-----------|------------|------------|
|                 | 8.2E-01 | -8.10  | -5.49      | -8.50  | 0.00      | 1.033E-02  | -1.223E-01 |
| 99 CU           |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -81.60 | -6.822E-01 | -2.07  | 1.117E-02 | -3.44      | -1.18      |
|                 | 1.58    | -77.37 | -6.822E-01 | -2.07  | 1.117E-02 | -4.962E-01 | -2.111E-01 |
|                 | 3.00    | -73.14 | -6.822E-01 | -2.07  | 1.117E-02 | 2.45       | 7.610E-01  |
| 99 COLUMN1 MAX  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -55.57 | 20.00      | 10.26  | 2.34      | 13.25      | 27.69      |
|                 | 1.58    | -52.40 | 20.00      | 10.26  | 2.34      | 6.225E-01  | 5.002E-01  |
|                 | 3.00    | -49.22 | 20.00      | 10.26  | 2.34      | 19.65      | 30.46      |
| 99 COLUMN1 MIN  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -66.84 | -21.03     | -13.36 | -2.33     | -18.41     | -29.47     |
|                 | 1.58    | -63.66 | -21.03     | -13.36 | -2.33     | -1.37      | -8.169E-01 |
|                 | 3.00    | -60.49 | -21.03     | -13.36 | -2.33     | -15.98     | -29.32     |
| 99 COLUMN2 MAX  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -53.69 | 12.23      | 13.87  | 1.57      | 18.15      | 16.87      |
|                 | 1.58    | -50.52 | 12.23      | 13.87  | 1.57      | 8.685E-01  | 2.556E-01  |
|                 | 3.00    | -47.34 | 12.23      | 13.87  | 1.57      | 25.05      | 19.14      |
| 99 COLUMN2 MIN  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -68.72 | -13.26     | -16.97 | -1.55     | -23.31     | -18.64     |
|                 | 1.58    | -65.54 | -13.26     | -16.97 | -1.55     | -1.61      | -5.723E-01 |
|                 | 3.00    | -62.37 | -13.26     | -16.97 | -1.55     | -21.37     | -18.00     |
| 99 COLUMN3 MAX  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -32.93 | 20.16      | 10.60  | 2.34      | 13.67      | 27.87      |
|                 | 1.58    | -30.21 | 20.16      | 10.60  | 2.34      | 5.556E-01  | 4.500E-01  |
|                 | 3.00    | -27.49 | 20.16      | 10.60  | 2.34      | 19.10      | 30.19      |
| 99 COLUMN3 MIN  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -44.20 | -20.87     | -13.01 | -2.33     | -17.99     | -29.29     |
|                 | 1.58    | -41.48 | -20.87     | -13.01 | -2.33     | -1.43      | -8.671E-01 |
|                 | 3.00    | -38.76 | -20.87     | -13.01 | -2.33     | -16.54     | -29.59     |
| 99 COLUMN4 MAX  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -31.05 | 12.39      | 14.21  | 1.56      | 18.57      | 17.04      |
|                 | 1.58    | -28.33 | 12.39      | 14.21  | 1.56      | 8.016E-01  | 2.054E-01  |
|                 | 3.00    | -25.61 | 12.39      | 14.21  | 1.56      | 24.49      | 18.87      |
| 99 COLUMN4 MIN  |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -46.08 | -13.10     | -16.62 | -1.55     | -22.89     | -18.47     |
|                 | 1.58    | -43.36 | -13.10     | -16.62 | -1.55     | -1.68      | -6.225E-01 |
|                 | 3.00    | -40.64 | -13.10     | -16.62 | -1.55     | -21.93     | -18.27     |
| 100 CU          |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -20.53 | -1.49      | -1.21  | 0.00      | -8.673E-01 | -9.223E-01 |
|                 | 4.9E-01 | -20.08 | -1.49      | -1.21  | 0.00      | -4.529E-01 | -4.108E-01 |
|                 | 8.4E-01 | -19.62 | -1.49      | -1.21  | 0.00      | -3.842E-02 | 1.007E-01  |
| 100 COLUMN1 MAX |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -15.37 | 5.79       | 5.09   | 0.00      | 3.47       | 3.66       |
|                 | 4.9E-01 | -15.03 | 5.79       | 5.09   | 0.00      | 1.72       | 1.67       |
|                 | 8.4E-01 | -14.69 | 5.79       | 5.09   | 0.00      | -2.491E-02 | 4.817E-01  |
| 100 COLUMN1 MIN |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -15.42 | -8.03      | -6.90  | 0.00      | -4.77      | -5.05      |
|                 | 4.9E-01 | -15.08 | -8.03      | -6.90  | 0.00      | -2.40      | -2.29      |
|                 | 8.4E-01 | -14.74 | -8.03      | -6.90  | 0.00      | -3.271E-02 | -3.307E-01 |
| 100 COLUMN2 MAX |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -15.37 | 3.20       | 7.39   | 0.00      | 5.05       | 2.03       |
|                 | 4.9E-01 | -15.03 | 3.20       | 7.39   | 0.00      | 2.51       | 9.308E-01  |
|                 | 8.4E-01 | -14.69 | 3.20       | 7.39   | 0.00      | -2.348E-02 | 3.318E-01  |
| 100 COLUMN2 MIN |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -15.42 | -5.43      | -9.20  | 0.00      | -6.35      | -3.41      |
|                 | 4.9E-01 | -15.08 | -5.43      | -9.20  | 0.00      | -3.19      | -1.55      |
|                 | 8.4E-01 | -14.74 | -5.43      | -9.20  | 0.00      | -3.414E-02 | -1.808E-01 |
| 100 COLUMN3 MAX |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -8.62  | 6.16       | 5.48   | 0.00      | 3.75       | 3.90       |
|                 | 4.9E-01 | -8.32  | 6.16       | 5.48   | 0.00      | 1.87       | 1.78       |
|                 | 8.4E-01 | -8.03  | 6.16       | 5.48   | 0.00      | -9.930E-03 | 4.666E-01  |
| 100 COLUMN3 MIN |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -8.66  | -7.66      | -6.52  | 0.00      | -4.49      | -4.81      |
|                 | 4.9E-01 | -8.37  | -7.66      | -6.52  | 0.00      | -2.25      | -2.18      |
|                 | 8.4E-01 | -8.08  | -7.66      | -6.52  | 0.00      | -1.772E-02 | -3.459E-01 |
| 100 COLUMN4 MAX |         |        |            |        |           |            |            |
|                 | 1.5E-01 | -8.61  | 3.57       | 7.77   | 0.00      | 5.33       | 2.27       |
|                 | 4.9E-01 | -8.32  | 3.57       | 7.77   | 0.00      | 2.65       | 1.04       |
|                 | 8.4E-01 | -8.03  | 3.57       | 7.77   | 0.00      | -8.495E-03 | 3.166E-01  |

|     |             |        |            |           |            |            |            |
|-----|-------------|--------|------------|-----------|------------|------------|------------|
| 100 | COLUMN4 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -8.67  | -5.07      | -8.81     | 0.00       | -6.07      | -3.18      |
|     | 4.9E-01     | -8.37  | -5.07      | -8.81     | 0.00       | -3.04      | -1.44      |
|     | 8.4E-01     | -8.08  | -5.07      | -8.81     | 0.00       | -1.916E-02 | -1.959E-01 |
| 104 | CU          |        |            |           |            |            |            |
|     | 1.5E-01     | -52.13 | 8.592E-02  | 2.93      | 1.278E-02  | 4.63       | 6.434E-01  |
|     | 1.58        | -47.90 | 8.592E-02  | 2.93      | 1.278E-02  | 4.580E-01  | 5.210E-01  |
|     | 3.00        | -43.67 | 8.592E-02  | 2.93      | 1.278E-02  | -3.71      | 3.985E-01  |
| 104 | COLUMN1 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -33.09 | 9.61       | 10.64     | 1.45       | 15.80      | 14.01      |
|     | 1.58        | -29.92 | 9.61       | 10.64     | 1.45       | 6.398E-01  | 4.730E-01  |
|     | 3.00        | -26.75 | 9.61       | 10.64     | 1.45       | 8.96       | 13.97      |
| 104 | COLUMN1 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -45.11 | -9.48      | -6.25     | -1.43      | -8.86      | -13.04     |
|     | 1.58        | -41.93 | -9.48      | -6.25     | -1.43      | 4.719E-02  | 3.085E-01  |
|     | 3.00        | -38.76 | -9.48      | -6.25     | -1.43      | -14.53     | -13.37     |
| 104 | COLUMN2 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -31.32 | 6.52       | 13.42     | 1.00       | 19.82      | 9.64       |
|     | 1.58        | -28.15 | 6.52       | 13.42     | 1.00       | 7.037E-01  | 4.419E-01  |
|     | 3.00        | -24.98 | 6.52       | 13.42     | 1.00       | 12.85      | 9.53       |
| 104 | COLUMN2 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -46.88 | -6.39      | -9.03     | -9.819E-01 | -12.88     | -8.68      |
|     | 1.58        | -43.70 | -6.39      | -9.03     | -9.819E-01 | -1.674E-02 | 3.396E-01  |
|     | 3.00        | -40.53 | -6.39      | -9.03     | -9.819E-01 | -18.42     | -8.94      |
| 104 | COLUMN3 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -21.27 | 9.57       | 10.15     | 1.44       | 15.24      | 13.92      |
|     | 1.58        | -18.55 | 9.57       | 10.15     | 1.44       | 7.784E-01  | 4.284E-01  |
|     | 3.00        | -15.83 | 9.57       | 10.15     | 1.44       | 9.80       | 13.97      |
| 104 | COLUMN3 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -33.28 | -9.51      | -6.75     | -1.43      | -9.42      | -13.13     |
|     | 1.58        | -30.56 | -9.51      | -6.75     | -1.43      | 1.857E-01  | 2.638E-01  |
|     | 3.00        | -27.84 | -9.51      | -6.75     | -1.43      | -13.69     | -13.37     |
| 104 | COLUMN4 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -19.50 | 6.49       | 12.93     | 9.983E-01  | 19.26      | 9.55       |
|     | 1.58        | -16.78 | 6.49       | 12.93     | 9.983E-01  | 8.423E-01  | 3.973E-01  |
|     | 3.00        | -14.06 | 6.49       | 12.93     | 9.983E-01  | 13.69      | 9.54       |
| 104 | COLUMN4 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -35.05 | -6.42      | -9.52     | -9.847E-01 | -13.44     | -8.77      |
|     | 1.58        | -32.33 | -6.42      | -9.52     | -9.847E-01 | 1.218E-01  | 2.950E-01  |
|     | 3.00        | -29.61 | -6.42      | -9.52     | -9.847E-01 | -17.58     | -8.94      |
| 117 | CU          |        |            |           |            |            |            |
|     | 1.5E-01     | -37.24 | 4.48       | 1.728E-01 | -2.078E-01 | -3.366E-01 | 4.72       |
|     | 1.58        | -33.00 | 4.48       | 1.728E-01 | -2.078E-01 | -5.828E-01 | -1.67      |
|     | 3.00        | -28.77 | 4.48       | 1.728E-01 | -2.078E-01 | -8.290E-01 | -8.06      |
| 117 | COLUMN1 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -15.19 | 9.01       | 8.56      | 2.36       | 11.36      | 11.81      |
|     | 1.58        | -12.01 | 9.01       | 8.56      | 2.36       | -3.681E-02 | -9.725E-01 |
|     | 3.00        | -8.84  | 9.01       | 8.56      | 2.36       | 11.79      | 1.79       |
| 117 | COLUMN1 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -40.67 | -2.29      | -8.30     | -2.67      | -11.86     | -4.73      |
|     | 1.58        | -37.50 | -2.29      | -8.30     | -2.67      | -8.374E-01 | -1.54      |
|     | 3.00        | -34.32 | -2.29      | -8.30     | -2.67      | -13.03     | -13.88     |
| 117 | COLUMN2 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -10.51 | 7.01       | 11.32     | 1.43       | 15.22      | 8.88       |
|     | 1.58        | -7.33  | 7.01       | 11.32     | 1.43       | 3.458E-02  | -1.07      |
|     | 3.00        | -4.16  | 7.01       | 11.32     | 1.43       | 15.79      | -9.899E-01 |
| 117 | COLUMN2 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -45.35 | -2.869E-01 | -11.06    | -1.74      | -15.72     | -1.81      |
|     | 1.58        | -42.17 | -2.869E-01 | -11.06    | -1.74      | -9.088E-01 | -1.43      |
|     | 3.00        | -39.00 | -2.869E-01 | -11.06    | -1.74      | -17.03     | -11.10     |
| 117 | COLUMN3 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -9.92  | 8.38       | 8.52      | 2.38       | 11.39      | 11.21      |
|     | 1.58        | -7.20  | 8.38       | 8.52      | 2.38       | 5.213E-02  | -6.613E-01 |
|     | 3.00        | -4.48  | 8.38       | 8.52      | 2.38       | 11.93      | 3.01       |
| 117 | COLUMN3 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -35.41 | -2.92      | -8.34     | -2.64      | -11.83     | -5.33      |
|     | 1.58        | -32.69 | -2.92      | -8.34     | -2.64      | -7.485E-01 | -1.22      |
|     | 3.00        | -29.97 | -2.92      | -8.34     | -2.64      | -12.88     | -12.67     |

|     |             |           |            |        |            |            |            |
|-----|-------------|-----------|------------|--------|------------|------------|------------|
| 117 | COLUMN4 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -5.25     | 6.37       | 11.28  | 1.46       | 15.25      | 8.29       |
|     | 1.58        | -2.53     | 6.37       | 11.28  | 1.46       | 1.235E-01  | -7.628E-01 |
|     | 3.00        | 1.936E-01 | 6.37       | 11.28  | 1.46       | 15.93      | 2.284E-01  |
| 117 | COLUMN4 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -40.09    | -9.234E-01 | -11.10 | -1.72      | -15.69     | -2.41      |
|     | 1.58        | -37.37    | -9.234E-01 | -11.10 | -1.72      | -8.199E-01 | -1.12      |
|     | 3.00        | -34.65    | -9.234E-01 | -11.10 | -1.72      | -16.89     | -9.88      |
| 121 | CU          |           |            |        |            |            |            |
|     | 1.8E-01     | -79.38    | -9.949E-01 | -1.95  | -7.712E-02 | -2.96      | -2.855E-01 |
|     | 1.59        | -75.18    | -9.949E-01 | -1.95  | -7.712E-02 | -2.076E-01 | 1.12       |
|     | 3.00        | -70.99    | -9.949E-01 | -1.95  | -7.712E-02 | 2.55       | 2.53       |
| 121 | COLUMN1 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -54.47    | 12.39      | 9.23   | 1.90       | 13.31      | 19.08      |
|     | 1.59        | -51.32    | 12.39      | 9.23   | 1.90       | 2.977E-01  | 1.59       |
|     | 3.00        | -48.18    | 12.39      | 9.23   | 1.90       | 16.59      | 19.70      |
| 121 | COLUMN1 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -64.59    | -13.88     | -12.15 | -2.01      | -17.75     | -19.51     |
|     | 1.59        | -61.45    | -13.88     | -12.15 | -2.01      | -6.091E-01 | 9.066E-02  |
|     | 3.00        | -58.30    | -13.88     | -12.15 | -2.01      | -12.77     | -15.92     |
| 121 | COLUMN2 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -52.56    | 8.16       | 12.58  | 1.35       | 18.00      | 12.81      |
|     | 1.59        | -49.42    | 8.16       | 12.58  | 1.35       | 2.634E-01  | 1.30       |
|     | 3.00        | -46.27    | 8.16       | 12.58  | 1.35       | 21.34      | 14.04      |
| 121 | COLUMN2 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -66.50    | -9.66      | -15.50 | -1.47      | -22.45     | -13.24     |
|     | 1.59        | -63.35    | -9.66      | -15.50 | -1.47      | -5.748E-01 | 3.769E-01  |
|     | 3.00        | -60.21    | -9.66      | -15.50 | -1.47      | -17.52     | -10.25     |
| 121 | COLUMN3 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -36.59    | 12.48      | 9.59   | 1.90       | 13.69      | 19.10      |
|     | 1.59        | -33.90    | 12.48      | 9.59   | 1.90       | 1.747E-01  | 1.47       |
|     | 3.00        | -31.20    | 12.48      | 9.59   | 1.90       | 15.96      | 19.45      |
| 121 | COLUMN3 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -46.72    | -13.78     | -11.80 | -2.01      | -17.36     | -19.49     |
|     | 1.59        | -44.02    | -13.78     | -11.80 | -2.01      | -7.321E-01 | -2.541E-02 |
|     | 3.00        | -41.33    | -13.78     | -11.80 | -2.01      | -13.40     | -16.17     |
| 121 | COLUMN4 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -34.69    | 8.26       | 12.93  | 1.36       | 18.39      | 12.83      |
|     | 1.59        | -31.99    | 8.26       | 12.93  | 1.36       | 1.404E-01  | 1.19       |
|     | 3.00        | -29.30    | 8.26       | 12.93  | 1.36       | 20.71      | 13.79      |
| 121 | COLUMN4 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -48.63    | -9.56      | -15.14 | -1.46      | -22.06     | -13.22     |
|     | 1.59        | -45.93    | -9.56      | -15.14 | -1.46      | -6.978E-01 | 2.608E-01  |
|     | 3.00        | -43.23    | -9.56      | -15.14 | -1.46      | -18.15     | -10.50     |
| 122 | CU          |           |            |        |            |            |            |
|     | 1.5E-01     | -24.34    | -7.673E-01 | -1.51  | -4.594E-01 | -4.650E-01 | -2.356E-01 |
|     | 3.0E-01     | -24.14    | -7.673E-01 | -1.51  | -4.594E-01 | -2.325E-01 | -1.178E-01 |
|     | 4.6E-01     | -23.94    | -7.673E-01 | -1.51  | -4.594E-01 | 0.00       | 0.00       |
| 122 | COLUMN1 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -17.73    | 2.82       | 9.89   | 1.20       | 3.04       | 8.669E-01  |
|     | 3.0E-01     | -17.57    | 2.82       | 9.89   | 1.20       | 1.52       | 4.335E-01  |
|     | 4.6E-01     | -17.42    | 2.82       | 9.89   | 1.20       | 0.00       | 0.00       |
| 122 | COLUMN1 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -18.79    | -3.97      | -12.16 | -1.89      | -3.73      | -1.22      |
|     | 3.0E-01     | -18.64    | -3.97      | -12.16 | -1.89      | -1.87      | -6.101E-01 |
|     | 4.6E-01     | -18.48    | -3.97      | -12.16 | -1.89      | 0.00       | 0.00       |
| 122 | COLUMN2 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -17.94    | 1.47       | 11.83  | 6.126E-01  | 3.63       | 4.520E-01  |
|     | 3.0E-01     | -17.79    | 1.47       | 11.83  | 6.126E-01  | 1.82       | 2.260E-01  |
|     | 4.6E-01     | -17.64    | 1.47       | 11.83  | 6.126E-01  | 0.00       | 0.00       |
| 122 | COLUMN2 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -18.57    | -2.62      | -14.10 | -1.30      | -4.33      | -8.053E-01 |
|     | 3.0E-01     | -18.42    | -2.62      | -14.10 | -1.30      | -2.16      | -4.026E-01 |
|     | 4.6E-01     | -18.27    | -2.62      | -14.10 | -1.30      | 0.00       | 0.00       |
| 122 | COLUMN3 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -10.11    | 2.92       | 10.26  | 1.27       | 3.15       | 8.952E-01  |
|     | 3.0E-01     | -9.98     | 2.92       | 10.26  | 1.27       | 1.57       | 4.476E-01  |
|     | 4.6E-01     | -9.85     | 2.92       | 10.26  | 1.27       | 0.00       | 0.00       |

|     |             |        |            |            |           |            |            |
|-----|-------------|--------|------------|------------|-----------|------------|------------|
| 122 | COLUMN3 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -11.17 | -3.88      | -11.79     | -1.82     | -3.62      | -1.19      |
|     | 3.0E-01     | -11.04 | -3.88      | -11.79     | -1.82     | -1.81      | -5.960E-01 |
|     | 4.6E-01     | -10.91 | -3.88      | -11.79     | -1.82     | 0.00       | 0.00       |
| 122 | COLUMN4 MAX |        |            |            |           |            |            |
|     | 1.5E-01     | -10.33 | 1.56       | 12.20      | 6.825E-01 | 3.75       | 4.802E-01  |
|     | 3.0E-01     | -10.20 | 1.56       | 12.20      | 6.825E-01 | 1.87       | 2.401E-01  |
|     | 4.6E-01     | -10.07 | 1.56       | 12.20      | 6.825E-01 | 0.00       | 0.00       |
| 122 | COLUMN4 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -10.96 | -2.53      | -13.73     | -1.23     | -4.21      | -7.770E-01 |
|     | 3.0E-01     | -10.83 | -2.53      | -13.73     | -1.23     | -2.11      | -3.885E-01 |
|     | 4.6E-01     | -10.70 | -2.53      | -13.73     | -1.23     | 0.00       | 0.00       |
| 126 | CU          |        |            |            |           |            |            |
|     | 1.5E-01     | -52.82 | 4.174E-02  | 2.57       | 7.385E-02 | 3.08       | 1.232E-01  |
|     | 1.58        | -48.59 | 4.174E-02  | 2.57       | 7.385E-02 | -5.835E-01 | 6.373E-02  |
|     | 3.00        | -44.36 | 4.174E-02  | 2.57       | 7.385E-02 | -4.25      | 4.247E-03  |
| 126 | COLUMN1 MAX |        |            |            |           |            |            |
|     | 1.5E-01     | -29.84 | 15.76      | 9.46       | 1.71      | 13.43      | 24.98      |
|     | 1.58        | -26.67 | 15.76      | 9.46       | 1.71      | 1.049E-01  | 2.57       |
|     | 3.00        | -23.49 | 15.76      | 9.46       | 1.71      | 7.17       | 19.96      |
| 126 | COLUMN1 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -49.39 | -15.70     | -5.60      | -1.60     | -8.80      | -24.80     |
|     | 1.58        | -46.21 | -15.70     | -5.60      | -1.60     | -9.802E-01 | -2.47      |
|     | 3.00        | -43.04 | -15.70     | -5.60      | -1.60     | -13.55     | -19.95     |
| 126 | COLUMN2 MAX |        |            |            |           |            |            |
|     | 1.5E-01     | -29.04 | 10.45      | 12.61      | 1.55      | 18.51      | 16.58      |
|     | 1.58        | -25.87 | 10.45      | 12.61      | 1.55      | 6.194E-01  | 1.74       |
|     | 3.00        | -22.69 | 10.45      | 12.61      | 1.55      | 11.06      | 13.21      |
| 126 | COLUMN2 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -50.19 | -10.39     | -8.75      | -1.44     | -13.88     | -16.40     |
|     | 1.58        | -47.01 | -10.39     | -8.75      | -1.44     | -1.49      | -1.65      |
|     | 3.00        | -43.84 | -10.39     | -8.75      | -1.44     | -17.44     | -13.21     |
| 126 | COLUMN3 MAX |        |            |            |           |            |            |
|     | 1.5E-01     | -17.33 | 15.77      | 8.95       | 1.70      | 12.96      | 24.95      |
|     | 1.58        | -14.61 | 15.77      | 8.95       | 1.70      | 3.726E-01  | 2.53       |
|     | 3.00        | -11.89 | 15.77      | 8.95       | 1.70      | 8.17       | 19.92      |
| 126 | COLUMN3 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -36.87 | -15.70     | -6.12      | -1.62     | -9.27      | -24.82     |
|     | 1.58        | -34.15 | -15.70     | -6.12      | -1.62     | -7.125E-01 | -2.50      |
|     | 3.00        | -31.43 | -15.70     | -6.12      | -1.62     | -12.55     | -19.99     |
| 126 | COLUMN4 MAX |        |            |            |           |            |            |
|     | 1.5E-01     | -16.53 | 10.45      | 12.10      | 1.54      | 18.05      | 16.56      |
|     | 1.58        | -13.81 | 10.45      | 12.10      | 1.54      | 8.871E-01  | 1.71       |
|     | 3.00        | -11.09 | 10.45      | 12.10      | 1.54      | 12.06      | 13.18      |
| 126 | COLUMN4 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -37.67 | -10.38     | -9.26      | -1.45     | -14.35     | -16.43     |
|     | 1.58        | -34.95 | -10.38     | -9.26      | -1.45     | -1.23      | -1.68      |
|     | 3.00        | -32.23 | -10.38     | -9.26      | -1.45     | -16.43     | -13.24     |
| 127 | CU          |        |            |            |           |            |            |
|     | 1.5E-01     | -17.26 | -1.519E-01 | 1.40       | 3.595E-02 | 1.53       | -1.661E-01 |
|     | 7.0E-01     | -16.54 | -1.519E-01 | 1.40       | 3.595E-02 | 7.630E-01  | -8.307E-02 |
|     | 1.24        | -15.82 | -1.519E-01 | 1.40       | 3.595E-02 | 0.00       | 0.00       |
| 127 | COLUMN1 MAX |        |            |            |           |            |            |
|     | 1.5E-01     | -11.32 | 14.40      | 3.07       | 2.43      | 3.36       | 15.75      |
|     | 7.0E-01     | -10.78 | 14.40      | 3.07       | 2.43      | 1.68       | 7.87       |
|     | 1.24        | -10.24 | 14.40      | 3.07       | 2.43      | 0.00       | 0.00       |
| 127 | COLUMN1 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -14.57 | -14.63     | -9.776E-01 | -2.38     | -1.07      | -16.00     |
|     | 7.0E-01     | -14.03 | -14.63     | -9.776E-01 | -2.38     | -5.345E-01 | -8.00      |
|     | 1.24        | -13.49 | -14.63     | -9.776E-01 | -2.38     | 0.00       | 0.00       |
| 127 | COLUMN2 MAX |        |            |            |           |            |            |
|     | 1.5E-01     | -11.05 | 8.91       | 3.51       | 1.58      | 3.84       | 9.75       |
|     | 7.0E-01     | -10.51 | 8.91       | 3.51       | 1.58      | 1.92       | 4.87       |
|     | 1.24        | -9.97  | 8.91       | 3.51       | 1.58      | 0.00       | 0.00       |
| 127 | COLUMN2 MIN |        |            |            |           |            |            |
|     | 1.5E-01     | -14.84 | -9.14      | -1.42      | -1.53     | -1.55      | -10.00     |
|     | 7.0E-01     | -14.30 | -9.14      | -1.42      | -1.53     | -7.745E-01 | -5.00      |
|     | 1.24        | -13.76 | -9.14      | -1.42      | -1.53     | 0.00       | 0.00       |

|     |             |        |            |           |            |            |            |
|-----|-------------|--------|------------|-----------|------------|------------|------------|
| 127 | COLUMN3 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -6.08  | 14.46      | 2.67      | 2.42       | 2.92       | 15.81      |
|     | 7.0E-01     | -5.61  | 14.46      | 2.67      | 2.42       | 1.46       | 7.91       |
|     | 1.24        | -5.15  | 14.46      | 2.67      | 2.42       | 0.00       | 0.00       |
| 127 | COLUMN3 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -9.34  | -14.57     | -1.38     | -2.38      | -1.51      | -15.93     |
|     | 7.0E-01     | -8.87  | -14.57     | -1.38     | -2.38      | -7.528E-01 | -7.97      |
|     | 1.24        | -8.41  | -14.57     | -1.38     | -2.38      | 0.00       | 0.00       |
| 127 | COLUMN4 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -5.81  | 8.97       | 3.11      | 1.58       | 3.40       | 9.81       |
|     | 7.0E-01     | -5.35  | 8.97       | 3.11      | 1.58       | 1.70       | 4.91       |
|     | 1.24        | -4.88  | 8.97       | 3.11      | 1.58       | 0.00       | 0.00       |
| 127 | COLUMN4 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -9.61  | -9.08      | -1.82     | -1.54      | -1.99      | -9.93      |
|     | 7.0E-01     | -9.14  | -9.08      | -1.82     | -1.54      | -9.927E-01 | -4.97      |
|     | 1.24        | -8.68  | -9.08      | -1.82     | -1.54      | 0.00       | 0.00       |
| 131 | CU          |        |            |           |            |            |            |
|     | 1.5E-01     | -52.79 | 7.852E-02  | -2.63     | -5.581E-02 | -3.19      | 1.879E-01  |
|     | 1.58        | -48.56 | 7.852E-02  | -2.63     | -5.581E-02 | 5.655E-01  | 7.597E-02  |
|     | 3.00        | -44.33 | 7.852E-02  | -2.63     | -5.581E-02 | 4.32       | -3.593E-02 |
| 131 | COLUMN1 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -31.10 | 15.77      | 4.30      | 1.61       | 6.83       | 24.97      |
|     | 1.58        | -27.92 | 15.77      | 4.30      | 1.61       | 8.987E-01  | 2.52       |
|     | 3.00        | -24.75 | 15.77      | 4.30      | 1.61       | 11.92      | 19.94      |
| 131 | COLUMN1 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -48.09 | -15.66     | -8.25     | -1.69      | -11.61     | -24.69     |
|     | 1.58        | -44.92 | -15.66     | -8.25     | -1.69      | -5.046E-02 | -2.40      |
|     | 3.00        | -41.75 | -15.66     | -8.25     | -1.69      | -5.44      | -19.99     |
| 131 | COLUMN2 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -29.85 | 10.42      | 7.85      | 1.44       | 12.54      | 16.54      |
|     | 1.58        | -26.67 | 10.42      | 7.85      | 1.44       | 1.44       | 1.72       |
|     | 3.00        | -23.50 | 10.42      | 7.85      | 1.44       | 16.32      | 13.13      |
| 131 | COLUMN2 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -49.34 | -10.31     | -11.80    | -1.52      | -17.32     | -16.25     |
|     | 1.58        | -46.17 | -10.31     | -11.80    | -1.52      | -5.929E-01 | -1.61      |
|     | 3.00        | -43.00 | -10.31     | -11.80    | -1.52      | -9.84      | -13.18     |
| 131 | COLUMN3 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -18.59 | 15.77      | 4.82      | 1.62       | 7.30       | 24.94      |
|     | 1.58        | -15.87 | 15.77      | 4.82      | 1.62       | 6.354E-01  | 2.48       |
|     | 3.00        | -13.15 | 15.77      | 4.82      | 1.62       | 10.92      | 19.91      |
| 131 | COLUMN3 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -35.59 | -15.66     | -7.74     | -1.68      | -11.14     | -24.72     |
|     | 1.58        | -32.87 | -15.66     | -7.74     | -1.68      | -3.137E-01 | -2.44      |
|     | 3.00        | -30.15 | -15.66     | -7.74     | -1.68      | -6.44      | -20.03     |
| 131 | COLUMN4 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -17.34 | 10.42      | 8.37      | 1.45       | 13.01      | 16.50      |
|     | 1.58        | -14.62 | 10.42      | 8.37      | 1.45       | 1.18       | 1.69       |
|     | 3.00        | -11.90 | 10.42      | 8.37      | 1.45       | 15.32      | 13.10      |
| 131 | COLUMN4 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -36.84 | -10.31     | -11.29    | -1.51      | -16.85     | -16.29     |
|     | 1.58        | -34.12 | -10.31     | -11.29    | -1.51      | -8.561E-01 | -1.64      |
|     | 3.00        | -31.40 | -10.31     | -11.29    | -1.51      | -10.84     | -13.22     |
| 132 | CU          |        |            |           |            |            |            |
|     | 1.5E-01     | -17.24 | -1.587E-01 | -1.37     | -6.017E-02 | -1.49      | -1.730E-01 |
|     | 7.0E-01     | -16.52 | -1.587E-01 | -1.37     | -6.017E-02 | -7.467E-01 | -8.650E-02 |
|     | 1.24        | -15.80 | -1.587E-01 | -1.37     | -6.017E-02 | 0.00       | 0.00       |
| 132 | COLUMN1 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -11.56 | 14.35      | 9.566E-01 | 2.30       | 1.04       | 15.64      |
|     | 7.0E-01     | -11.02 | 14.35      | 9.566E-01 | 2.30       | 5.214E-01  | 7.82       |
|     | 1.24        | -10.48 | 14.35      | 9.566E-01 | 2.30       | 0.00       | 0.00       |
| 132 | COLUMN1 MIN |        |            |           |            |            |            |
|     | 1.5E-01     | -14.30 | -14.58     | -3.01     | -2.39      | -3.28      | -15.90     |
|     | 7.0E-01     | -13.77 | -14.58     | -3.01     | -2.39      | -1.64      | -7.95      |
|     | 1.24        | -13.23 | -14.58     | -3.01     | -2.39      | 0.00       | 0.00       |
| 132 | COLUMN2 MAX |        |            |           |            |            |            |
|     | 1.5E-01     | -11.14 | 8.89       | 1.48      | 1.50       | 1.61       | 9.69       |
|     | 7.0E-01     | -10.60 | 8.89       | 1.48      | 1.50       | 8.067E-01  | 4.84       |
|     | 1.24        | -10.06 | 8.89       | 1.48      | 1.50       | 0.00       | 0.00       |

|     |             |        |            |        |           |            |            |
|-----|-------------|--------|------------|--------|-----------|------------|------------|
| 132 | COLUMN2 MIN |        |            |        |           |            |            |
|     | 1.5E-01     | -14.72 | -9.12      | -3.53  | -1.59     | -3.85      | -9.95      |
|     | 7.0E-01     | -14.19 | -9.12      | -3.53  | -1.59     | -1.93      | -4.97      |
|     | 1.24        | -13.65 | -9.12      | -3.53  | -1.59     | 0.00       | 0.00       |
| 132 | COLUMN3 MAX |        |            |        |           |            |            |
|     | 1.5E-01     | -6.33  | 14.41      | 1.35   | 2.31      | 1.48       | 15.70      |
|     | 7.0E-01     | -5.86  | 14.41      | 1.35   | 2.31      | 7.383E-01  | 7.85       |
|     | 1.24        | -5.40  | 14.41      | 1.35   | 2.31      | 0.00       | 0.00       |
| 132 | COLUMN3 MIN |        |            |        |           |            |            |
|     | 1.5E-01     | -9.07  | -14.52     | -2.61  | -2.38     | -2.85      | -15.83     |
|     | 7.0E-01     | -8.61  | -14.52     | -2.61  | -2.38     | -1.42      | -7.92      |
|     | 1.24        | -8.15  | -14.52     | -2.61  | -2.38     | 0.00       | 0.00       |
| 132 | COLUMN4 MAX |        |            |        |           |            |            |
|     | 1.5E-01     | -5.91  | 8.95       | 1.88   | 1.50      | 2.05       | 9.75       |
|     | 7.0E-01     | -5.44  | 8.95       | 1.88   | 1.50      | 1.02       | 4.88       |
|     | 1.24        | -4.98  | 8.95       | 1.88   | 1.50      | 0.00       | 0.00       |
| 132 | COLUMN4 MIN |        |            |        |           |            |            |
|     | 1.5E-01     | -9.49  | -9.06      | -3.14  | -1.58     | -3.42      | -9.88      |
|     | 7.0E-01     | -9.03  | -9.06      | -3.14  | -1.58     | -1.71      | -4.94      |
|     | 1.24        | -8.57  | -9.06      | -3.14  | -1.58     | 0.00       | 0.00       |
| 136 | CU          |        |            |        |           |            |            |
|     | 1.8E-01     | -79.61 | -1.07      | 1.93   | 9.655E-02 | 2.93       | -3.253E-01 |
|     | 1.59        | -75.42 | -1.07      | 1.93   | 9.655E-02 | 2.067E-01  | 1.18       |
|     | 3.00        | -71.22 | -1.07      | 1.93   | 9.655E-02 | -2.52      | 2.68       |
| 136 | COLUMN1 MAX |        |            |        |           |            |            |
|     | 1.8E-01     | -54.16 | 11.93      | 11.01  | 2.04      | 16.02      | 18.44      |
|     | 1.59        | -51.01 | 11.93      | 11.01  | 2.04      | 4.960E-01  | 1.61       |
|     | 3.00        | -47.87 | 11.93      | 11.01  | 2.04      | 11.30      | 19.27      |
| 136 | COLUMN1 MIN |        |            |        |           |            |            |
|     | 1.8E-01     | -65.26 | -13.52     | -8.11  | -1.89     | -11.62     | -18.93     |
|     | 1.59        | -62.12 | -13.52     | -8.11  | -1.89     | -1.860E-01 | 1.631E-01  |
|     | 3.00        | -58.97 | -13.52     | -8.11  | -1.89     | -15.08     | -15.25     |
| 136 | COLUMN2 MAX |        |            |        |           |            |            |
|     | 1.8E-01     | -51.65 | 7.95       | 14.81  | 1.49      | 21.40      | 12.55      |
|     | 1.59        | -48.51 | 7.95       | 14.81  | 1.49      | 5.027E-01  | 1.34       |
|     | 3.00        | -45.36 | 7.95       | 14.81  | 1.49      | 16.65      | 13.94      |
| 136 | COLUMN2 MIN |        |            |        |           |            |            |
|     | 1.8E-01     | -67.76 | -9.55      | -11.91 | -1.35     | -17.00     | -13.03     |
|     | 1.59        | -64.62 | -9.55      | -11.91 | -1.35     | -1.927E-01 | 4.323E-01  |
|     | 3.00        | -61.47 | -9.55      | -11.91 | -1.35     | -20.44     | -9.91      |
| 136 | COLUMN3 MAX |        |            |        |           |            |            |
|     | 1.8E-01     | -36.25 | 12.03      | 10.64  | 2.03      | 15.63      | 18.47      |
|     | 1.59        | -33.56 | 12.03      | 10.64  | 2.03      | 6.273E-01  | 1.49       |
|     | 3.00        | -30.86 | 12.03      | 10.64  | 2.03      | 11.96      | 19.01      |
| 136 | COLUMN3 MIN |        |            |        |           |            |            |
|     | 1.8E-01     | -47.36 | -13.42     | -8.48  | -1.90     | -12.01     | -18.91     |
|     | 1.59        | -44.66 | -13.42     | -8.48  | -1.90     | -5.469E-02 | 4.193E-02  |
|     | 3.00        | -41.97 | -13.42     | -8.48  | -1.90     | -14.43     | -15.51     |
| 136 | COLUMN4 MAX |        |            |        |           |            |            |
|     | 1.8E-01     | -33.75 | 8.05       | 14.44  | 1.48      | 21.01      | 12.57      |
|     | 1.59        | -31.05 | 8.05       | 14.44  | 1.48      | 6.340E-01  | 1.22       |
|     | 3.00        | -28.36 | 8.05       | 14.44  | 1.48      | 17.31      | 13.67      |
| 136 | COLUMN4 MIN |        |            |        |           |            |            |
|     | 1.8E-01     | -49.86 | -9.45      | -12.28 | -1.36     | -17.39     | -13.01     |
|     | 1.59        | -47.16 | -9.45      | -12.28 | -1.36     | -6.136E-02 | 3.111E-01  |
|     | 3.00        | -44.47 | -9.45      | -12.28 | -1.36     | -19.78     | -10.18     |
| 137 | CU          |        |            |        |           |            |            |
|     | 1.5E-01     | -24.59 | -7.740E-01 | 1.30   | 4.077E-01 | 3.710E-01  | -2.207E-01 |
|     | 2.9E-01     | -24.40 | -7.740E-01 | 1.30   | 4.077E-01 | 1.855E-01  | -1.104E-01 |
|     | 4.4E-01     | -24.22 | -7.740E-01 | 1.30   | 4.077E-01 | 0.00       | 0.00       |
| 137 | COLUMN1 MAX |        |            |        |           |            |            |
|     | 1.5E-01     | -18.08 | 2.66       | 9.98   | 1.78      | 2.85       | 7.573E-01  |
|     | 2.9E-01     | -17.94 | 2.66       | 9.98   | 1.78      | 1.42       | 3.786E-01  |
|     | 4.4E-01     | -17.79 | 2.66       | 9.98   | 1.78      | 0.00       | 0.00       |
| 137 | COLUMN1 MIN |        |            |        |           |            |            |
|     | 1.5E-01     | -18.81 | -3.82      | -8.03  | -1.17     | -2.29      | -1.09      |
|     | 2.9E-01     | -18.67 | -3.82      | -8.03  | -1.17     | -1.14      | -5.442E-01 |
|     | 4.4E-01     | -18.53 | -3.82      | -8.03  | -1.17     | 0.00       | 0.00       |

|     |             |            |            |            |            |            |            |
|-----|-------------|------------|------------|------------|------------|------------|------------|
| 137 | COLUMN2 MAX |            |            |            |            |            |            |
|     | 1.5E-01     | -18.22     | 1.39       | 12.88      | 1.22       | 3.67       | 3.967E-01  |
|     | 2.9E-01     | -18.08     | 1.39       | 12.88      | 1.22       | 1.84       | 1.984E-01  |
|     | 4.4E-01     | -17.94     | 1.39       | 12.88      | 1.22       | 0.00       | 0.00       |
| 137 | COLUMN2 MIN |            |            |            |            |            |            |
|     | 1.5E-01     | -18.67     | -2.55      | -10.93     | -6.091E-01 | -3.12      | -7.278E-01 |
|     | 2.9E-01     | -18.52     | -2.55      | -10.93     | -6.091E-01 | -1.56      | -3.639E-01 |
|     | 4.4E-01     | -18.38     | -2.55      | -10.93     | -6.091E-01 | 0.00       | 0.00       |
| 137 | COLUMN3 MAX |            |            |            |            |            |            |
|     | 1.5E-01     | -10.40     | 2.75       | 9.66       | 1.71       | 2.76       | 7.844E-01  |
|     | 2.9E-01     | -10.27     | 2.75       | 9.66       | 1.71       | 1.38       | 3.922E-01  |
|     | 4.4E-01     | -10.15     | 2.75       | 9.66       | 1.71       | 0.00       | 0.00       |
| 137 | COLUMN3 MIN |            |            |            |            |            |            |
|     | 1.5E-01     | -11.13     | -3.72      | -8.35      | -1.23      | -2.38      | -1.06      |
|     | 2.9E-01     | -11.01     | -3.72      | -8.35      | -1.23      | -1.19      | -5.306E-01 |
|     | 4.4E-01     | -10.89     | -3.72      | -8.35      | -1.23      | 0.00       | 0.00       |
| 137 | COLUMN4 MAX |            |            |            |            |            |            |
|     | 1.5E-01     | -10.54     | 1.49       | 12.56      | 1.16       | 3.58       | 4.238E-01  |
|     | 2.9E-01     | -10.42     | 1.49       | 12.56      | 1.16       | 1.79       | 2.119E-01  |
|     | 4.4E-01     | -10.30     | 1.49       | 12.56      | 1.16       | 0.00       | 0.00       |
| 137 | COLUMN4 MIN |            |            |            |            |            |            |
|     | 1.5E-01     | -10.98     | -2.46      | -11.25     | -6.745E-01 | -3.21      | -7.007E-01 |
|     | 2.9E-01     | -10.86     | -2.46      | -11.25     | -6.745E-01 | -1.60      | -3.503E-01 |
|     | 4.4E-01     | -10.74     | -2.46      | -11.25     | -6.745E-01 | 0.00       | 0.00       |
| 141 | CU          |            |            |            |            |            |            |
|     | 1.5E-01     | -33.01     | 3.73       | -2.048E-01 | 2.199E-01  | 7.033E-02  | 4.39       |
|     | 1.58        | -28.78     | 3.73       | -2.048E-01 | 2.199E-01  | 3.621E-01  | -9.257E-01 |
|     | 3.00        | -24.55     | 3.73       | -2.048E-01 | 2.199E-01  | 6.539E-01  | -6.24      |
| 141 | COLUMN1 MAX |            |            |            |            |            |            |
|     | 1.5E-01     | -11.89     | 8.24       | 7.22       | 2.66       | 10.26      | 11.29      |
|     | 1.58        | -8.72      | 8.24       | 7.22       | 2.66       | 5.775E-01  | -4.090E-01 |
|     | 3.00        | -5.55      | 8.24       | 7.22       | 2.66       | 11.30      | 2.83       |
| 141 | COLUMN1 MIN |            |            |            |            |            |            |
|     | 1.5E-01     | -37.62     | -2.64      | -7.53      | -2.33      | -10.15     | -4.71      |
|     | 1.58        | -34.45     | -2.64      | -7.53      | -2.33      | -3.432E-02 | -9.795E-01 |
|     | 3.00        | -31.28     | -2.64      | -7.53      | -2.33      | -10.32     | -12.20     |
| 141 | COLUMN2 MAX |            |            |            |            |            |            |
|     | 1.5E-01     | -6.65      | 6.55       | 10.51      | 1.75       | 14.86      | 8.80       |
|     | 1.58        | -3.48      | 6.55       | 10.51      | 1.75       | 6.634E-01  | -5.125E-01 |
|     | 3.00        | -3.028E-01 | 6.55       | 10.51      | 1.75       | 16.08      | 5.205E-01  |
| 141 | COLUMN2 MIN |            |            |            |            |            |            |
|     | 1.5E-01     | -42.87     | -9.594E-01 | -10.82     | -1.42      | -14.75     | -2.22      |
|     | 1.58        | -39.70     | -9.594E-01 | -10.82     | -1.42      | -1.202E-01 | -8.761E-01 |
|     | 3.00        | -36.52     | -9.594E-01 | -10.82     | -1.42      | -15.09     | -9.88      |
| 141 | COLUMN3 MAX |            |            |            |            |            |            |
|     | 1.5E-01     | -7.28      | 7.68       | 7.27       | 2.63       | 10.26      | 10.73      |
|     | 1.58        | -4.56      | 7.68       | 7.27       | 2.63       | 5.040E-01  | -1.787E-01 |
|     | 3.00        | -1.84      | 7.68       | 7.27       | 2.63       | 11.16      | 3.86       |
| 141 | COLUMN3 MIN |            |            |            |            |            |            |
|     | 1.5E-01     | -33.01     | -3.20      | -7.48      | -2.35      | -10.15     | -5.27      |
|     | 1.58        | -30.29     | -3.20      | -7.48      | -2.35      | -1.079E-01 | -7.492E-01 |
|     | 3.00        | -27.56     | -3.20      | -7.48      | -2.35      | -10.47     | -11.17     |
| 141 | COLUMN4 MAX |            |            |            |            |            |            |
|     | 1.5E-01     | -2.03      | 6.00       | 10.56      | 1.73       | 14.86      | 8.24       |
|     | 1.58        | 6.895E-01  | 6.00       | 10.56      | 1.73       | 5.899E-01  | -2.822E-01 |
|     | 3.00        | 3.41       | 6.00       | 10.56      | 1.73       | 15.93      | 1.54       |
| 141 | COLUMN4 MIN |            |            |            |            |            |            |
|     | 1.5E-01     | -38.25     | -1.52      | -10.76     | -1.45      | -14.75     | -2.78      |
|     | 1.58        | -35.53     | -1.52      | -10.76     | -1.45      | -1.937E-01 | -6.458E-01 |
|     | 3.00        | -32.81     | -1.52      | -10.76     | -1.45      | -15.24     | -8.86      |
| 150 | CU          |            |            |            |            |            |            |
|     | 1.8E-01     | -82.24     | 1.71       | -3.18      | 3.297E-02  | -3.98      | 2.15       |
|     | 1.59        | -78.05     | 1.71       | -3.18      | 3.297E-02  | 5.116E-01  | -2.602E-01 |
|     | 3.00        | -73.85     | 1.71       | -3.18      | 3.297E-02  | 5.00       | -2.67      |
| 150 | COLUMN1 MAX |            |            |            |            |            |            |
|     | 1.8E-01     | -54.60     | 16.18      | 4.86       | 1.23       | 6.34       | 23.66      |
|     | 1.59        | -51.46     | 16.18      | 4.86       | 1.23       | 1.31       | 8.292E-01  |
|     | 3.00        | -48.31     | 16.18      | 4.86       | 1.23       | 14.90      | 18.04      |

|     |             |        |            |        |            |            |            |
|-----|-------------|--------|------------|--------|------------|------------|------------|
| 150 | COLUMN1 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -68.76 | -13.62     | -9.63  | -1.18      | -12.32     | -20.44     |
|     | 1.59        | -65.61 | -13.62     | -9.63  | -1.18      | -5.405E-01 | -1.22      |
|     | 3.00        | -62.47 | -13.62     | -9.63  | -1.18      | -7.40      | -22.04     |
| 150 | COLUMN2 MAX |        |            |        |            |            |            |
|     | 1.8E-01     | -50.29 | 10.84      | 9.27   | 1.78       | 11.91      | 15.75      |
|     | 1.59        | -47.15 | 10.84      | 9.27   | 1.78       | 1.96       | 4.600E-01  |
|     | 3.00        | -44.00 | 10.84      | 9.27   | 1.78       | 21.78      | 10.86      |
| 150 | COLUMN2 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -73.07 | -8.28      | -14.04 | -1.73      | -17.89     | -12.53     |
|     | 1.59        | -69.92 | -8.28      | -14.04 | -1.73      | -1.19      | -8.502E-01 |
|     | 3.00        | -66.78 | -8.28      | -14.04 | -1.73      | -14.27     | -14.86     |
| 150 | COLUMN3 MAX |        |            |        |            |            |            |
|     | 1.8E-01     | -39.12 | 15.96      | 5.86   | 1.22       | 6.98       | 23.39      |
|     | 1.59        | -36.42 | 15.96      | 5.86   | 1.22       | 5.289E-01  | 8.692E-01  |
|     | 3.00        | -33.72 | 15.96      | 5.86   | 1.22       | 12.71      | 18.38      |
| 150 | COLUMN3 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -53.27 | -13.83     | -8.63  | -1.19      | -11.68     | -20.70     |
|     | 1.59        | -50.57 | -13.83     | -8.63  | -1.19      | -1.32      | -1.18      |
|     | 3.00        | -47.88 | -13.83     | -8.63  | -1.19      | -9.59      | -21.70     |
| 150 | COLUMN4 MAX |        |            |        |            |            |            |
|     | 1.8E-01     | -34.80 | 10.62      | 10.27  | 1.77       | 12.55      | 15.49      |
|     | 1.59        | -32.11 | 10.62      | 10.27  | 1.77       | 1.18       | 5.000E-01  |
|     | 3.00        | -29.41 | 10.62      | 10.27  | 1.77       | 19.59      | 11.20      |
| 150 | COLUMN4 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -57.58 | -8.49      | -13.04 | -1.74      | -17.25     | -12.79     |
|     | 1.59        | -54.89 | -8.49      | -13.04 | -1.74      | -1.97      | -8.102E-01 |
|     | 3.00        | -52.19 | -8.49      | -13.04 | -1.74      | -16.47     | -14.51     |
| 154 | CU          |        |            |        |            |            |            |
|     | 1.5E-01     | -56.02 | 5.750E-01  | 3.01   | -3.111E-02 | 2.19       | 7.248E-01  |
|     | 1.58        | -51.79 | 5.750E-01  | 3.01   | -3.111E-02 | -2.10      | -9.461E-02 |
|     | 3.00        | -47.56 | 5.750E-01  | 3.01   | -3.111E-02 | -6.39      | -9.140E-01 |
| 154 | COLUMN1 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -34.77 | 19.69      | 7.75   | 1.16       | 12.13      | 29.70      |
|     | 1.58        | -31.60 | 19.69      | 7.75   | 1.16       | 1.26       | 1.66       |
|     | 3.00        | -28.42 | 19.69      | 7.75   | 1.16       | 5.543E-01  | 25.06      |
| 154 | COLUMN1 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -49.26 | -18.83     | -3.23  | -1.21      | -8.85      | -28.61     |
|     | 1.58        | -46.08 | -18.83     | -3.23  | -1.21      | -4.42      | -1.80      |
|     | 3.00        | -42.91 | -18.83     | -3.23  | -1.21      | -10.15     | -26.43     |
| 154 | COLUMN2 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -30.65 | 12.74      | 12.04  | 1.72       | 20.13      | 19.20      |
|     | 1.58        | -27.47 | 12.74      | 12.04  | 1.72       | 3.03       | 1.06       |
|     | 3.00        | -24.30 | 12.74      | 12.04  | 1.72       | 4.67       | 15.75      |
| 154 | COLUMN2 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -53.38 | -11.88     | -7.53  | -1.77      | -16.85     | -18.11     |
|     | 1.58        | -50.21 | -11.88     | -7.53  | -1.77      | -6.19      | -1.20      |
|     | 3.00        | -47.03 | -11.88     | -7.53  | -1.77      | -14.26     | -17.12     |
| 154 | COLUMN3 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -20.79 | 19.62      | 6.80   | 1.16       | 11.55      | 29.60      |
|     | 1.58        | -18.07 | 19.62      | 6.80   | 1.16       | 2.03       | 1.66       |
|     | 3.00        | -15.35 | 19.62      | 6.80   | 1.16       | 2.68       | 25.16      |
| 154 | COLUMN3 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -35.27 | -18.90     | -4.18  | -1.21      | -9.43      | -28.71     |
|     | 1.58        | -32.55 | -18.90     | -4.18  | -1.21      | -3.65      | -1.80      |
|     | 3.00        | -29.83 | -18.90     | -4.18  | -1.21      | -8.02      | -26.32     |
| 154 | COLUMN4 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -16.66 | 12.67      | 11.09  | 1.72       | 19.55      | 19.10      |
|     | 1.58        | -13.94 | 12.67      | 11.09  | 1.72       | 3.80       | 1.06       |
|     | 3.00        | -11.22 | 12.67      | 11.09  | 1.72       | 6.80       | 15.85      |
| 154 | COLUMN4 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -39.40 | -11.95     | -8.48  | -1.77      | -17.43     | -18.21     |
|     | 1.58        | -36.68 | -11.95     | -8.48  | -1.77      | -5.42      | -1.20      |
|     | 3.00        | -33.96 | -11.95     | -8.48  | -1.77      | -12.14     | -17.02     |
| 155 | CU          |        |            |        |            |            |            |
|     | 1.5E-01     | -20.46 | -1.160E-01 | -5.09  | 5.554E-02  | -5.22      | -1.189E-01 |
|     | 6.6E-01     | -19.79 | -1.160E-01 | -5.09  | 5.554E-02  | -2.61      | -5.944E-02 |
|     | 1.18        | -19.11 | -1.160E-01 | -5.09  | 5.554E-02  | 0.00       | 0.00       |



|     |             |        |           |        |           |            |            |
|-----|-------------|--------|-----------|--------|-----------|------------|------------|
| 155 | COLUMN1 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -15.03 | 16.67     | 5.38   | 3.34      | 5.51       | 17.09      |
|     | 6.6E-01     | -14.53 | 16.67     | 5.38   | 3.34      | 2.76       | 8.54       |
|     | 1.18        | -14.02 | 16.67     | 5.38   | 3.34      | 0.00       | 0.00       |
| 155 | COLUMN1 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -15.66 | -16.84    | -13.01 | -3.26     | -13.34     | -17.26     |
|     | 6.6E-01     | -15.15 | -16.84    | -13.01 | -3.26     | -6.67      | -8.63      |
|     | 1.18        | -14.65 | -16.84    | -13.01 | -3.26     | 0.00       | 0.00       |
| 155 | COLUMN2 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -14.84 | 10.35     | 8.12   | 2.10      | 8.32       | 10.61      |
|     | 6.6E-01     | -14.33 | 10.35     | 8.12   | 2.10      | 4.16       | 5.31       |
|     | 1.18        | -13.82 | 10.35     | 8.12   | 2.10      | 0.00       | 0.00       |
| 155 | COLUMN2 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -15.86 | -10.53    | -15.75 | -2.02     | -16.15     | -10.79     |
|     | 6.6E-01     | -15.35 | -10.53    | -15.75 | -2.02     | -8.08      | -5.39      |
|     | 1.18        | -14.84 | -10.53    | -15.75 | -2.02     | 0.00       | 0.00       |
| 155 | COLUMN3 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -8.63  | 16.71     | 7.00   | 3.33      | 7.17       | 17.13      |
|     | 6.6E-01     | -8.20  | 16.71     | 7.00   | 3.33      | 3.59       | 8.57       |
|     | 1.18        | -7.76  | 16.71     | 7.00   | 3.33      | 0.00       | 0.00       |
| 155 | COLUMN3 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -9.26  | -16.79    | -11.39 | -3.27     | -11.67     | -17.21     |
|     | 6.6E-01     | -8.82  | -16.79    | -11.39 | -3.27     | -5.84      | -8.61      |
|     | 1.18        | -8.39  | -16.79    | -11.39 | -3.27     | 0.00       | 0.00       |
| 155 | COLUMN4 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -8.43  | 10.40     | 9.74   | 2.09      | 9.99       | 10.66      |
|     | 6.6E-01     | -8.00  | 10.40     | 9.74   | 2.09      | 4.99       | 5.33       |
|     | 1.18        | -7.56  | 10.40     | 9.74   | 2.09      | 0.00       | 0.00       |
| 155 | COLUMN4 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -9.45  | -10.48    | -14.13 | -2.03     | -14.49     | -10.74     |
|     | 6.6E-01     | -9.02  | -10.48    | -14.13 | -2.03     | -7.24      | -5.37      |
|     | 1.18        | -8.58  | -10.48    | -14.13 | -2.03     | 0.00       | 0.00       |
| 159 | CU          |        |           |        |           |            |            |
|     | 1.5E-01     | -56.04 | 6.142E-01 | -3.03  | 4.638E-02 | -2.22      | 7.795E-01  |
|     | 1.58        | -51.81 | 6.142E-01 | -3.03  | 4.638E-02 | 2.10       | -9.582E-02 |
|     | 3.00        | -47.58 | 6.142E-01 | -3.03  | 4.638E-02 | 6.42       | -9.711E-01 |
| 159 | COLUMN1 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -34.96 | 19.43     | 3.10   | 1.21      | 8.58       | 29.31      |
|     | 1.58        | -31.78 | 19.43     | 3.10   | 1.21      | 4.27       | 1.64       |
|     | 3.00        | -28.61 | 19.43     | 3.10   | 1.21      | 10.02      | 24.60      |
| 159 | COLUMN1 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -49.11 | -18.51    | -7.65  | -1.14     | -11.92     | -28.15     |
|     | 1.58        | -45.94 | -18.51    | -7.65  | -1.14     | -1.13      | -1.78      |
|     | 3.00        | -42.76 | -18.51    | -7.65  | -1.14     | -3.861E-01 | -26.06     |
| 159 | COLUMN2 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -30.70 | 12.57     | 7.43   | 1.77      | 16.71      | 18.95      |
|     | 1.58        | -27.53 | 12.57     | 7.43   | 1.77      | 6.16       | 1.05       |
|     | 3.00        | -24.35 | 12.57     | 7.43   | 1.77      | 14.16      | 15.43      |
| 159 | COLUMN2 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -53.37 | -11.65    | -11.98 | -1.70     | -20.05     | -17.78     |
|     | 1.58        | -50.19 | -11.65    | -11.98 | -1.70     | -3.02      | -1.19      |
|     | 3.00        | -47.02 | -11.65    | -11.98 | -1.70     | -4.53      | -16.88     |
| 159 | COLUMN3 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -20.97 | 19.35     | 4.05   | 1.21      | 9.17       | 29.21      |
|     | 1.58        | -18.25 | 19.35     | 4.05   | 1.21      | 3.50       | 1.64       |
|     | 3.00        | -15.53 | 19.35     | 4.05   | 1.21      | 7.89       | 24.71      |
| 159 | COLUMN3 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -35.12 | -18.58    | -6.70  | -1.14     | -11.33     | -28.25     |
|     | 1.58        | -32.40 | -18.58    | -6.70  | -1.14     | -1.90      | -1.78      |
|     | 3.00        | -29.68 | -18.58    | -6.70  | -1.14     | -2.51      | -25.95     |
| 159 | COLUMN4 MAX |        |           |        |           |            |            |
|     | 1.5E-01     | -16.71 | 12.50     | 8.39   | 1.77      | 17.30      | 18.85      |
|     | 1.58        | -13.99 | 12.50     | 8.39   | 1.77      | 5.39       | 1.05       |
|     | 3.00        | -11.27 | 12.50     | 8.39   | 1.77      | 12.03      | 15.54      |
| 159 | COLUMN4 MIN |        |           |        |           |            |            |
|     | 1.5E-01     | -39.38 | -11.73    | -11.03 | -1.70     | -19.46     | -17.89     |
|     | 1.58        | -36.66 | -11.73    | -11.03 | -1.70     | -3.79      | -1.19      |
|     | 3.00        | -33.94 | -11.73    | -11.03 | -1.70     | -6.66      | -16.78     |
| 160 | CU          |        |           |        |           |            |            |

|     |             |        |            |        |            |            |            |
|-----|-------------|--------|------------|--------|------------|------------|------------|
|     | 1.5E-01     | -20.47 | -1.082E-01 | 5.09   | -5.018E-02 | 5.22       | -1.110E-01 |
|     | 6.6E-01     | -19.79 | -1.082E-01 | 5.09   | -5.018E-02 | 2.61       | -5.548E-02 |
|     | 1.18        | -19.11 | -1.082E-01 | 5.09   | -5.018E-02 | 0.00       | 0.00       |
| 160 | COLUMN1 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -15.05 | 16.48      | 12.46  | 3.16       | 12.77      | 16.89      |
|     | 6.6E-01     | -14.54 | 16.48      | 12.46  | 3.16       | 6.38       | 8.45       |
|     | 1.18        | -14.03 | 16.48      | 12.46  | 3.16       | 0.00       | 0.00       |
| 160 | COLUMN1 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -15.65 | -16.64     | -4.82  | -3.24      | -4.94      | -17.06     |
|     | 6.6E-01     | -15.14 | -16.64     | -4.82  | -3.24      | -2.47      | -8.53      |
|     | 1.18        | -14.64 | -16.64     | -4.82  | -3.24      | 0.00       | 0.00       |
| 160 | COLUMN2 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -14.85 | 10.25      | 15.74  | 1.98       | 16.13      | 10.51      |
|     | 6.6E-01     | -14.34 | 10.25      | 15.74  | 1.98       | 8.07       | 5.25       |
|     | 1.18        | -13.84 | 10.25      | 15.74  | 1.98       | 0.00       | 0.00       |
| 160 | COLUMN2 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -15.85 | -10.41     | -8.10  | -2.06      | -8.31      | -10.68     |
|     | 6.6E-01     | -15.34 | -10.41     | -8.10  | -2.06      | -4.15      | -5.34      |
|     | 1.18        | -14.83 | -10.41     | -8.10  | -2.06      | 0.00       | 0.00       |
| 160 | COLUMN3 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -8.64  | 16.52      | 10.83  | 3.17       | 11.11      | 16.94      |
|     | 6.6E-01     | -8.21  | 16.52      | 10.83  | 3.17       | 5.55       | 8.47       |
|     | 1.18        | -7.77  | 16.52      | 10.83  | 3.17       | 0.00       | 0.00       |
| 160 | COLUMN3 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -9.25  | -16.59     | -6.44  | -3.23      | -6.61      | -17.01     |
|     | 6.6E-01     | -8.81  | -16.59     | -6.44  | -3.23      | -3.30      | -8.51      |
|     | 1.18        | -8.38  | -16.59     | -6.44  | -3.23      | 0.00       | 0.00       |
| 160 | COLUMN4 MAX |        |            |        |            |            |            |
|     | 1.5E-01     | -8.44  | 10.30      | 14.11  | 1.99       | 14.47      | 10.56      |
|     | 6.6E-01     | -8.01  | 10.30      | 14.11  | 1.99       | 7.23       | 5.28       |
|     | 1.18        | -7.58  | 10.30      | 14.11  | 1.99       | 0.00       | 0.00       |
| 160 | COLUMN4 MIN |        |            |        |            |            |            |
|     | 1.5E-01     | -9.44  | -10.37     | -9.73  | -2.05      | -9.97      | -10.63     |
|     | 6.6E-01     | -9.01  | -10.37     | -9.73  | -2.05      | -4.98      | -5.31      |
|     | 1.18        | -8.57  | -10.37     | -9.73  | -2.05      | 0.00       | 0.00       |
| 164 | CU          |        |            |        |            |            |            |
|     | 1.8E-01     | -82.25 | 1.67       | 3.16   | -1.755E-02 | 3.96       | 2.08       |
|     | 1.59        | -78.06 | 1.67       | 3.16   | -1.755E-02 | -5.083E-01 | -2.737E-01 |
|     | 3.00        | -73.86 | 1.67       | 3.16   | -1.755E-02 | -4.98      | -2.63      |
| 164 | COLUMN1 MAX |        |            |        |            |            |            |
|     | 1.8E-01     | -54.82 | 15.76      | 9.45   | 1.17       | 12.09      | 23.05      |
|     | 1.59        | -51.68 | 15.76      | 9.45   | 1.17       | 5.067E-01  | 8.087E-01  |
|     | 3.00        | -48.53 | 15.76      | 9.45   | 1.17       | 7.14       | 17.52      |
| 164 | COLUMN1 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -68.56 | -13.26     | -4.70  | -1.20      | -6.15      | -19.93     |
|     | 1.59        | -65.41 | -13.26     | -4.70  | -1.20      | -1.27      | -1.22      |
|     | 3.00        | -62.26 | -13.26     | -4.70  | -1.20      | -14.61     | -21.46     |
| 164 | COLUMN2 MAX |        |            |        |            |            |            |
|     | 1.8E-01     | -50.36 | 10.70      | 13.98  | 1.73       | 17.81      | 15.55      |
|     | 1.59        | -47.21 | 10.70      | 13.98  | 1.73       | 1.18       | 4.442E-01  |
|     | 3.00        | -44.07 | 10.70      | 13.98  | 1.73       | 14.22      | 10.74      |
| 164 | COLUMN2 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -73.02 | -8.20      | -9.23  | -1.75      | -11.87     | -12.43     |
|     | 1.59        | -69.88 | -8.20      | -9.23  | -1.75      | -1.95      | -8.548E-01 |
|     | 3.00        | -66.73 | -8.20      | -9.23  | -1.75      | -21.68     | -14.69     |
| 164 | COLUMN3 MAX |        |            |        |            |            |            |
|     | 1.8E-01     | -39.34 | 15.55      | 8.45   | 1.18       | 11.46      | 22.79      |
|     | 1.59        | -36.64 | 15.55      | 8.45   | 1.18       | 1.29       | 8.499E-01  |
|     | 3.00        | -33.94 | 15.55      | 8.45   | 1.18       | 9.33       | 17.86      |
| 164 | COLUMN3 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -53.07 | -13.47     | -5.70  | -1.19      | -6.78      | -20.19     |
|     | 1.59        | -50.37 | -13.47     | -5.70  | -1.19      | -4.901E-01 | -1.18      |
|     | 3.00        | -47.68 | -13.47     | -5.70  | -1.19      | -12.42     | -21.12     |
| 164 | COLUMN4 MAX |        |            |        |            |            |            |
|     | 1.8E-01     | -34.87 | 10.49      | 12.98  | 1.73       | 17.18      | 15.29      |
|     | 1.59        | -32.17 | 10.49      | 12.98  | 1.73       | 1.96       | 4.854E-01  |
|     | 3.00        | -29.48 | 10.49      | 12.98  | 1.73       | 16.41      | 11.08      |
| 164 | COLUMN4 MIN |        |            |        |            |            |            |
|     | 1.8E-01     | -57.53 | -8.41      | -10.23 | -1.75      | -12.50     | -12.69     |
|     | 1.59        | -54.84 | -8.41      | -10.23 | -1.75      | -1.17      | -8.136E-01 |

|     |             |           |            |        |            |            |            |
|-----|-------------|-----------|------------|--------|------------|------------|------------|
|     | 3.00        | -52.14    | -8.41      | -10.23 | -1.75      | -19.49     | -14.35     |
| 173 | CU          |           |            |        |            |            |            |
|     | 1.8E-01     | -84.44    | -2.170E-01 | -3.12  | -1.846E-01 | -4.17      | 2.940E-02  |
|     | 1.59        | -80.25    | -2.170E-01 | -3.12  | -1.846E-01 | 2.361E-01  | 3.359E-01  |
|     | 3.00        | -76.06    | -2.170E-01 | -3.12  | -1.846E-01 | 4.64       | 6.423E-01  |
| 173 | COLUMN1 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -53.40    | 14.56      | 7.68   | 1.22       | 10.10      | 21.89      |
|     | 1.59        | -50.25    | 14.56      | 7.68   | 1.22       | 1.12       | 1.37       |
|     | 3.00        | -47.11    | 14.56      | 7.68   | 1.22       | 18.55      | 20.22      |
| 173 | COLUMN1 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -73.27    | -14.89     | -12.36 | -1.50      | -16.35     | -21.84     |
|     | 1.59        | -70.12    | -14.89     | -12.36 | -1.50      | -7.680E-01 | -8.706E-01 |
|     | 3.00        | -66.97    | -14.89     | -12.36 | -1.50      | -11.59     | -19.26     |
| 173 | COLUMN2 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -46.88    | 9.52       | 13.85  | 1.66       | 18.18      | 14.28      |
|     | 1.59        | -43.73    | 9.52       | 13.85  | 1.66       | 1.77       | 9.385E-01  |
|     | 3.00        | -40.58    | 9.52       | 13.85  | 1.66       | 27.90      | 13.57      |
| 173 | COLUMN2 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -79.79    | -9.84      | -18.52 | -1.94      | -24.44     | -14.24     |
|     | 1.59        | -76.64    | -9.84      | -18.52 | -1.94      | -1.41      | -4.347E-01 |
|     | 3.00        | -73.50    | -9.84      | -18.52 | -1.94      | -20.94     | -12.61     |
| 173 | COLUMN3 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -37.54    | 14.62      | 8.66   | 1.24       | 10.74      | 21.90      |
|     | 1.59        | -34.84    | 14.62      | 8.66   | 1.24       | 3.704E-01  | 1.31       |
|     | 3.00        | -32.15    | 14.62      | 8.66   | 1.24       | 16.41      | 20.09      |
| 173 | COLUMN3 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -57.40    | -14.84     | -11.37 | -1.49      | -15.72     | -21.83     |
|     | 1.59        | -54.71    | -14.84     | -11.37 | -1.49      | -1.52      | -9.313E-01 |
|     | 3.00        | -52.01    | -14.84     | -11.37 | -1.49      | -13.73     | -19.39     |
| 173 | COLUMN4 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -31.01    | 9.57       | 14.83  | 1.68       | 18.82      | 14.30      |
|     | 1.59        | -28.32    | 9.57       | 14.83  | 1.68       | 1.02       | 8.778E-01  |
|     | 3.00        | -25.62    | 9.57       | 14.83  | 1.68       | 25.76      | 13.44      |
| 173 | COLUMN4 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -63.93    | -9.79      | -17.54 | -1.92      | -23.80     | -14.23     |
|     | 1.59        | -61.23    | -9.79      | -17.54 | -1.92      | -2.17      | -4.954E-01 |
|     | 3.00        | -58.54    | -9.79      | -17.54 | -1.92      | -23.08     | -12.75     |
| 177 | CU          |           |            |        |            |            |            |
|     | 1.5E-01     | -45.08    | 3.13       | 2.65   | 5.988E-02  | 1.61       | 4.73       |
|     | 1.58        | -40.85    | 3.13       | 2.65   | 5.988E-02  | -2.17      | 2.739E-01  |
|     | 3.00        | -36.62    | 3.13       | 2.65   | 5.988E-02  | -5.94      | -4.19      |
| 177 | COLUMN1 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -13.85    | 13.31      | 9.35   | 1.88       | 15.58      | 22.05      |
|     | 1.58        | -10.67    | 13.31      | 9.35   | 1.88       | 2.45       | 3.13       |
|     | 3.00        | -7.50     | 13.31      | 9.35   | 1.88       | 2.39       | 9.64       |
| 177 | COLUMN1 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -53.78    | -8.62      | -5.38  | -1.79      | -13.17     | -14.95     |
|     | 1.58        | -50.61    | -8.62      | -5.38  | -1.79      | -5.70      | -2.72      |
|     | 3.00        | -47.43    | -8.62      | -5.38  | -1.79      | -11.30     | -15.91     |
| 177 | COLUMN2 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -13.29    | 9.58       | 14.94  | 2.12       | 26.48      | 15.86      |
|     | 1.58        | -10.11    | 9.58       | 14.94  | 2.12       | 5.28       | 2.24       |
|     | 3.00        | -6.94     | 9.58       | 14.94  | 2.12       | 7.28       | 5.20       |
| 177 | COLUMN2 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -54.34    | -4.89      | -10.97 | -2.03      | -24.07     | -8.76      |
|     | 1.58        | -51.17    | -4.89      | -10.97 | -2.03      | -8.53      | -1.83      |
|     | 3.00        | -47.99    | -4.89      | -10.97 | -2.03      | -16.19     | -11.48     |
| 177 | COLUMN3 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -2.47     | 12.81      | 8.41   | 1.87       | 15.04      | 21.46      |
|     | 1.58        | 2.486E-01 | 12.81      | 8.41   | 1.87       | 3.25       | 3.25       |
|     | 3.00        | 2.97      | 12.81      | 8.41   | 1.87       | 4.53       | 10.46      |
| 177 | COLUMN3 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -42.40    | -9.11      | -6.32  | -1.79      | -13.70     | -15.54     |
|     | 1.58        | -39.68    | -9.11      | -6.32  | -1.79      | -4.90      | -2.60      |
|     | 3.00        | -36.96    | -9.11      | -6.32  | -1.79      | -9.16      | -15.09     |
| 177 | COLUMN4 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -1.91     | 9.09       | 14.00  | 2.11       | 25.95      | 15.27      |
|     | 1.58        | 8.093E-01 | 9.09       | 14.00  | 2.11       | 6.08       | 2.36       |
|     | 3.00        | 3.53      | 9.09       | 14.00  | 2.11       | 9.42       | 6.03       |

|     |             |            |           |        |            |        |           |
|-----|-------------|------------|-----------|--------|------------|--------|-----------|
| 177 | COLUMN4 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -42.96     | -5.39     | -11.90 | -2.03      | -24.61 | -9.35     |
|     | 1.58        | -40.24     | -5.39     | -11.90 | -2.03      | -7.73  | -1.71     |
|     | 3.00        | -37.52     | -5.39     | -11.90 | -2.03      | -14.06 | -10.65    |
| 178 | CU          |            |           |        |            |        |           |
|     | 1.5E-01     | -20.40     | 4.947E-01 | -5.11  | 5.292E-02  | -5.24  | 5.071E-01 |
|     | 6.6E-01     | -19.72     | 4.947E-01 | -5.11  | 5.292E-02  | -2.62  | 2.536E-01 |
|     | 1.18        | -19.05     | 4.947E-01 | -5.11  | 5.292E-02  | 0.00   | 0.00      |
| 178 | COLUMN1 MAX |            |           |        |            |        |           |
|     | 1.5E-01     | -14.24     | 14.13     | 9.00   | 2.69       | 9.23   | 14.49     |
|     | 6.6E-01     | -13.73     | 14.13     | 9.00   | 2.69       | 4.61   | 7.24      |
|     | 1.18        | -13.23     | 14.13     | 9.00   | 2.69       | 0.00   | 0.00      |
| 178 | COLUMN1 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -16.36     | -13.39    | -16.66 | -2.61      | -17.08 | -13.73    |
|     | 6.6E-01     | -15.85     | -13.39    | -16.66 | -2.61      | -8.54  | -6.86     |
|     | 1.18        | -15.34     | -13.39    | -16.66 | -2.61      | 0.00   | 0.00      |
| 178 | COLUMN2 MAX |            |           |        |            |        |           |
|     | 1.5E-01     | -13.73     | 8.98      | 15.19  | 1.66       | 15.57  | 9.20      |
|     | 6.6E-01     | -13.23     | 8.98      | 15.19  | 1.66       | 7.79   | 4.60      |
|     | 1.18        | -12.72     | 8.98      | 15.19  | 1.66       | 0.00   | 0.00      |
| 178 | COLUMN2 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -16.86     | -8.24     | -22.85 | -1.58      | -23.43 | -8.44     |
|     | 6.6E-01     | -16.36     | -8.24     | -22.85 | -1.58      | -11.71 | -4.22     |
|     | 1.18        | -15.85     | -8.24     | -22.85 | -1.58      | 0.00   | 0.00      |
| 178 | COLUMN3 MAX |            |           |        |            |        |           |
|     | 1.5E-01     | -7.84      | 14.00     | 10.62  | 2.69       | 10.89  | 14.35     |
|     | 6.6E-01     | -7.41      | 14.00     | 10.62  | 2.69       | 5.45   | 7.18      |
|     | 1.18        | -6.97      | 14.00     | 10.62  | 2.69       | 0.00   | 0.00      |
| 178 | COLUMN3 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -9.96      | -13.53    | -15.04 | -2.61      | -15.42 | -13.87    |
|     | 6.6E-01     | -9.52      | -13.53    | -15.04 | -2.61      | -7.71  | -6.93     |
|     | 1.18        | -9.09      | -13.53    | -15.04 | -2.61      | 0.00   | 0.00      |
| 178 | COLUMN4 MAX |            |           |        |            |        |           |
|     | 1.5E-01     | -7.33      | 8.84      | 16.82  | 1.66       | 17.24  | 9.07      |
|     | 6.6E-01     | -6.90      | 8.84      | 16.82  | 1.66       | 8.62   | 4.53      |
|     | 1.18        | -6.46      | 8.84      | 16.82  | 1.66       | 0.00   | 0.00      |
| 178 | COLUMN4 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -10.47     | -8.37     | -21.23 | -1.58      | -21.76 | -8.58     |
|     | 6.6E-01     | -10.03     | -8.37     | -21.23 | -1.58      | -10.88 | -4.29     |
|     | 1.18        | -9.60      | -8.37     | -21.23 | -1.58      | 0.00   | 0.00      |
| 182 | CU          |            |           |        |            |        |           |
|     | 1.5E-01     | -45.10     | 3.16      | -2.64  | -4.741E-02 | -1.60  | 4.77      |
|     | 1.58        | -40.87     | 3.16      | -2.64  | -4.741E-02 | 2.17   | 2.763E-01 |
|     | 3.00        | -36.64     | 3.16      | -2.64  | -4.741E-02 | 5.93   | -4.22     |
| 182 | COLUMN1 MAX |            |           |        |            |        |           |
|     | 1.5E-01     | -14.14     | 13.16     | 5.20   | 1.69       | 12.82  | 21.81     |
|     | 1.58        | -10.97     | 13.16     | 5.20   | 1.69       | 5.60   | 3.09      |
|     | 3.00        | -7.79      | 13.16     | 5.20   | 1.69       | 11.14  | 9.38      |
| 182 | COLUMN1 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -53.51     | -8.43     | -9.17  | -1.76      | -15.22 | -14.65    |
|     | 1.58        | -50.33     | -8.43     | -9.17  | -1.76      | -2.35  | -2.67     |
|     | 3.00        | -47.16     | -8.43     | -9.17  | -1.76      | -2.24  | -15.71    |
| 182 | COLUMN2 MAX |            |           |        |            |        |           |
|     | 1.5E-01     | -13.47     | 9.49      | 10.90  | 2.02       | 23.95  | 15.71     |
|     | 1.58        | -10.30     | 9.49      | 10.90  | 2.02       | 8.50   | 2.22      |
|     | 3.00        | -7.13      | 9.49      | 10.90  | 2.02       | 16.13  | 5.03      |
| 182 | COLUMN2 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -54.17     | -4.76     | -14.87 | -2.09      | -26.34 | -8.55     |
|     | 1.58        | -51.00     | -4.76     | -14.87 | -2.09      | -5.25  | -1.81     |
|     | 3.00        | -47.83     | -4.76     | -14.87 | -2.09      | -7.23  | -11.36    |
| 182 | COLUMN3 MAX |            |           |        |            |        |           |
|     | 1.5E-01     | -2.76      | 12.66     | 6.14   | 1.70       | 13.36  | 21.21     |
|     | 1.58        | -4.246E-02 | 12.66     | 6.14   | 1.70       | 4.80   | 3.21      |
|     | 3.00        | 2.68       | 12.66     | 6.14   | 1.70       | 9.00   | 10.21     |
| 182 | COLUMN3 MIN |            |           |        |            |        |           |
|     | 1.5E-01     | -42.13     | -8.93     | -8.23  | -1.76      | -14.68 | -15.24    |
|     | 1.58        | -39.41     | -8.93     | -8.23  | -1.76      | -3.15  | -2.56     |
|     | 3.00        | -36.69     | -8.93     | -8.23  | -1.76      | -4.38  | -14.88    |

|     |             |           |            |        |            |            |            |
|-----|-------------|-----------|------------|--------|------------|------------|------------|
| 182 | COLUMN4 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -2.10     | 8.99       | 11.84  | 2.03       | 24.49      | 15.12      |
|     | 1.58        | 6.234E-01 | 8.99       | 11.84  | 2.03       | 7.70       | 2.34       |
|     | 3.00        | 3.34      | 8.99       | 11.84  | 2.03       | 13.99      | 5.86       |
| 182 | COLUMN4 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -42.79    | -5.26      | -13.93 | -2.09      | -25.81     | -9.15      |
|     | 1.58        | -40.07    | -5.26      | -13.93 | -2.09      | -6.05      | -1.69      |
|     | 3.00        | -37.35    | -5.26      | -13.93 | -2.09      | -9.37      | -10.53     |
| 183 | CU          |           |            |        |            |            |            |
|     | 1.5E-01     | -20.40    | 4.968E-01  | 5.11   | -4.750E-02 | 5.24       | 5.093E-01  |
|     | 6.6E-01     | -19.72    | 4.968E-01  | 5.11   | -4.750E-02 | 2.62       | 2.547E-01  |
|     | 1.18        | -19.05    | 4.968E-01  | 5.11   | -4.750E-02 | 0.00       | 0.00       |
| 183 | COLUMN1 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -14.26    | 13.97      | 16.41  | 2.56       | 16.82      | 14.33      |
|     | 6.6E-01     | -13.75    | 13.97      | 16.41  | 2.56       | 8.41       | 7.16       |
|     | 1.18        | -13.25    | 13.97      | 16.41  | 2.56       | 0.00       | 0.00       |
| 183 | COLUMN1 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -16.34    | -13.23     | -8.75  | -2.63      | -8.97      | -13.56     |
|     | 6.6E-01     | -15.83    | -13.23     | -8.75  | -2.63      | -4.48      | -6.78      |
|     | 1.18        | -15.32    | -13.23     | -8.75  | -2.63      | 0.00       | 0.00       |
| 183 | COLUMN2 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -13.74    | 8.89       | 22.77  | 1.56       | 23.35      | 9.11       |
|     | 6.6E-01     | -13.23    | 8.89       | 22.77  | 1.56       | 11.67      | 4.56       |
|     | 1.18        | -12.73    | 8.89       | 22.77  | 1.56       | 0.00       | 0.00       |
| 183 | COLUMN2 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -16.86    | -8.14      | -15.11 | -1.63      | -15.49     | -8.35      |
|     | 6.6E-01     | -16.35    | -8.14      | -15.11 | -1.63      | -7.75      | -4.17      |
|     | 1.18        | -15.84    | -8.14      | -15.11 | -1.63      | 0.00       | 0.00       |
| 183 | COLUMN3 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -7.86     | 13.84      | 14.79  | 2.56       | 15.16      | 14.19      |
|     | 6.6E-01     | -7.43     | 13.84      | 14.79  | 2.56       | 7.58       | 7.09       |
|     | 1.18        | -6.99     | 13.84      | 14.79  | 2.56       | 0.00       | 0.00       |
| 183 | COLUMN3 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -9.94     | -13.36     | -10.37 | -2.63      | -10.63     | -13.70     |
|     | 6.6E-01     | -9.50     | -13.36     | -10.37 | -2.63      | -5.32      | -6.85      |
|     | 1.18        | -9.07     | -13.36     | -10.37 | -2.63      | 0.00       | 0.00       |
| 183 | COLUMN4 MAX |           |            |        |            |            |            |
|     | 1.5E-01     | -7.34     | 8.75       | 21.15  | 1.56       | 21.68      | 8.97       |
|     | 6.6E-01     | -6.91     | 8.75       | 21.15  | 1.56       | 10.84      | 4.49       |
|     | 1.18        | -6.47     | 8.75       | 21.15  | 1.56       | 0.00       | 0.00       |
| 183 | COLUMN4 MIN |           |            |        |            |            |            |
|     | 1.5E-01     | -10.46    | -8.28      | -16.74 | -1.63      | -17.16     | -8.49      |
|     | 6.6E-01     | -10.02    | -8.28      | -16.74 | -1.63      | -8.58      | -4.24      |
|     | 1.18        | -9.59     | -8.28      | -16.74 | -1.63      | 0.00       | 0.00       |
| 187 | CU          |           |            |        |            |            |            |
|     | 1.8E-01     | -84.44    | -2.588E-01 | 3.13   | 1.932E-01  | 4.18       | -2.836E-02 |
|     | 1.59        | -80.25    | -2.588E-01 | 3.13   | 1.932E-01  | -2.362E-01 | 3.372E-01  |
|     | 3.00        | -76.05    | -2.588E-01 | 3.13   | 1.932E-01  | -4.65      | 7.027E-01  |
| 187 | COLUMN1 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -53.62    | 14.13      | 12.14  | 1.45       | 16.07      | 21.26      |
|     | 1.59        | -50.48    | 14.13      | 12.14  | 1.45       | 7.466E-01  | 1.36       |
|     | 3.00        | -47.33    | 14.13      | 12.14  | 1.45       | 11.25      | 19.71      |
| 187 | COLUMN1 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -73.04    | -14.52     | -7.45  | -1.16      | -9.80      | -21.31     |
|     | 1.59        | -69.89    | -14.52     | -7.45  | -1.16      | -1.10      | -8.521E-01 |
|     | 3.00        | -66.75    | -14.52     | -7.45  | -1.16      | -18.23     | -18.65     |
| 187 | COLUMN2 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -46.96    | 9.38       | 18.44  | 1.93       | 24.33      | 14.08      |
|     | 1.59        | -43.81    | 9.38       | 18.44  | 1.93       | 1.40       | 9.326E-01  |
|     | 3.00        | -40.67    | 9.38       | 18.44  | 1.93       | 20.79      | 13.47      |
| 187 | COLUMN2 MIN |           |            |        |            |            |            |
|     | 1.8E-01     | -79.70    | -9.77      | -13.75 | -1.64      | -18.06     | -14.12     |
|     | 1.59        | -76.56    | -9.77      | -13.75 | -1.64      | -1.76      | -4.268E-01 |
|     | 3.00        | -73.41    | -9.77      | -13.75 | -1.64      | -27.77     | -12.42     |
| 187 | COLUMN3 MAX |           |            |        |            |            |            |
|     | 1.8E-01     | -37.76    | 14.18      | 11.16  | 1.43       | 15.43      | 21.28      |
|     | 1.59        | -35.07    | 14.18      | 11.16  | 1.43       | 1.50       | 1.30       |
|     | 3.00        | -32.37    | 14.18      | 11.16  | 1.43       | 13.39      | 19.56      |

|     |             |        |        |        |            |            |            |
|-----|-------------|--------|--------|--------|------------|------------|------------|
| 187 | COLUMN3 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -57.18 | -14.46 | -8.43  | -1.17      | -10.44     | -21.29     |
|     | 1.59        | -54.48 | -14.46 | -8.43  | -1.17      | -3.492E-01 | -9.129E-01 |
|     | 3.00        | -51.78 | -14.46 | -8.43  | -1.17      | -16.09     | -18.79     |
| 187 | COLUMN4 MAX |        |        |        |            |            |            |
|     | 1.8E-01     | -31.10 | 9.43   | 17.46  | 1.91       | 23.69      | 14.10      |
|     | 1.59        | -28.40 | 9.43   | 17.46  | 1.91       | 2.15       | 8.718E-01  |
|     | 3.00        | -25.71 | 9.43   | 17.46  | 1.91       | 22.93      | 13.33      |
| 187 | COLUMN4 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -63.84 | -9.71  | -14.74 | -1.65      | -18.70     | -14.10     |
|     | 1.59        | -61.15 | -9.71  | -14.74 | -1.65      | -1.00      | -4.876E-01 |
|     | 3.00        | -58.45 | -9.71  | -14.74 | -1.65      | -25.63     | -12.56     |
| 192 | CU          |        |        |        |            |            |            |
|     | 1.8E-01     | -73.27 | -2.96  | 1.46   | 3.813E-02  | -5.06      | -1.33      |
|     | 1.59        | -67.41 | -2.96  | 1.46   | 3.813E-02  | -7.12      | 2.85       |
|     | 3.00        | -61.56 | -2.96  | 1.46   | 3.813E-02  | -9.18      | 7.02       |
| 192 | COLUMN1 MAX |        |        |        |            |            |            |
|     | 1.8E-01     | -51.04 | 14.48  | 16.33  | 1.63       | 34.35      | 24.36      |
|     | 1.59        | -46.65 | 14.48  | 16.33  | 1.63       | 11.40      | 4.77       |
|     | 3.00        | -42.25 | 14.48  | 16.33  | 1.63       | -1.41      | 27.36      |
| 192 | COLUMN1 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -58.87 | -18.91 | -14.15 | -1.57      | -41.94     | -26.35     |
|     | 1.59        | -54.47 | -18.91 | -14.15 | -1.57      | -22.08     | -5.001E-01 |
|     | 3.00        | -50.08 | -18.91 | -14.15 | -1.57      | -12.36     | -16.82     |
| 192 | COLUMN2 MAX |        |        |        |            |            |            |
|     | 1.8E-01     | -48.39 | 8.15   | 27.48  | 3.26       | 64.55      | 14.38      |
|     | 1.59        | -43.99 | 8.15   | 27.48  | 3.26       | 25.78      | 5.44       |
|     | 3.00        | -39.60 | 8.15   | 27.48  | 3.26       | -4.275E-01 | 20.07      |
| 192 | COLUMN2 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -61.52 | -12.58 | -25.30 | -3.20      | -72.15     | -16.37     |
|     | 1.59        | -57.13 | -12.58 | -25.30 | -3.20      | -36.46     | -1.17      |
|     | 3.00        | -52.73 | -12.58 | -25.30 | -3.20      | -13.34     | -9.53      |
| 192 | COLUMN3 MAX |        |        |        |            |            |            |
|     | 1.8E-01     | -40.13 | 14.87  | 16.23  | 1.65       | 34.82      | 24.52      |
|     | 1.59        | -36.36 | 14.87  | 16.23  | 1.65       | 12.02      | 4.37       |
|     | 3.00        | -32.60 | 14.87  | 16.23  | 1.65       | -6.388E-01 | 26.40      |
| 192 | COLUMN3 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -47.96 | -18.51 | -14.25 | -1.55      | -41.47     | -26.19     |
|     | 1.59        | -44.19 | -18.51 | -14.25 | -1.55      | -21.46     | -8.992E-01 |
|     | 3.00        | -40.43 | -18.51 | -14.25 | -1.55      | -11.59     | -17.78     |
| 192 | COLUMN4 MAX |        |        |        |            |            |            |
|     | 1.8E-01     | -37.48 | 8.54   | 27.38  | 3.28       | 65.02      | 14.54      |
|     | 1.59        | -33.71 | 8.54   | 27.38  | 3.28       | 26.40      | 5.04       |
|     | 3.00        | -29.95 | 8.54   | 27.38  | 3.28       | 3.431E-01  | 19.11      |
| 192 | COLUMN4 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -50.61 | -12.19 | -25.40 | -3.18      | -71.67     | -16.21     |
|     | 1.59        | -46.84 | -12.19 | -25.40 | -3.18      | -35.84     | -1.57      |
|     | 3.00        | -43.08 | -12.19 | -25.40 | -3.18      | -12.57     | -10.49     |
| 193 | CU          |        |        |        |            |            |            |
|     | 1.8E-01     | -73.26 | -2.99  | -1.46  | -4.507E-02 | 5.06       | -1.39      |
|     | 1.59        | -67.41 | -2.99  | -1.46  | -4.507E-02 | 7.11       | 2.84       |
|     | 3.00        | -61.55 | -2.99  | -1.46  | -4.507E-02 | 9.17       | 7.07       |
| 193 | COLUMN1 MAX |        |        |        |            |            |            |
|     | 1.8E-01     | -51.14 | 14.04  | 13.79  | 1.61       | 40.97      | 23.69      |
|     | 1.59        | -46.75 | 14.04  | 13.79  | 1.61       | 21.62      | 4.71       |
|     | 3.00        | -42.35 | 14.04  | 13.79  | 1.61       | 12.28      | 26.86      |
| 193 | COLUMN1 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -58.76 | -18.53 | -15.97 | -1.68      | -33.38     | -25.77     |
|     | 1.59        | -54.37 | -18.53 | -15.97 | -1.68      | -10.94     | -4.516E-01 |
|     | 3.00        | -49.97 | -18.53 | -15.97 | -1.68      | 1.48       | -16.26     |
| 193 | COLUMN2 MAX |        |        |        |            |            |            |
|     | 1.8E-01     | -48.40 | 8.03   | 25.23  | 3.20       | 71.96      | 14.18      |
|     | 1.59        | -44.01 | 8.03   | 25.23  | 3.20       | 36.36      | 5.42       |
|     | 3.00        | -39.62 | 8.03   | 25.23  | 3.20       | 13.32      | 19.99      |
| 193 | COLUMN2 MIN |        |        |        |            |            |            |
|     | 1.8E-01     | -61.50 | -12.52 | -27.42 | -3.26      | -64.38     | -16.26     |
|     | 1.59        | -57.10 | -12.52 | -27.42 | -3.26      | -25.69     | -1.16      |
|     | 3.00        | -52.71 | -12.52 | -27.42 | -3.26      | 4.360E-01  | -9.39      |

|     |             |        |            |            |            |            |            |
|-----|-------------|--------|------------|------------|------------|------------|------------|
| 193 | COLUMN3 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -40.23 | 14.44      | 13.89      | 1.59       | 40.49      | 23.86      |
|     | 1.59        | -36.47 | 14.44      | 13.89      | 1.59       | 20.99      | 4.32       |
|     | 3.00        | -32.70 | 14.44      | 13.89      | 1.59       | 11.51      | 25.90      |
| 193 | COLUMN3 MIN |        |            |            |            |            |            |
|     | 1.8E-01     | -47.85 | -18.13     | -15.87     | -1.70      | -33.86     | -25.61     |
|     | 1.59        | -44.08 | -18.13     | -15.87     | -1.70      | -11.57     | -8.501E-01 |
|     | 3.00        | -40.32 | -18.13     | -15.87     | -1.70      | 7.141E-01  | -17.22     |
| 193 | COLUMN4 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -37.49 | 8.42       | 25.34      | 3.18       | 71.49      | 14.34      |
|     | 1.59        | -33.73 | 8.42       | 25.34      | 3.18       | 35.74      | 5.02       |
|     | 3.00        | -29.96 | 8.42       | 25.34      | 3.18       | 12.55      | 19.03      |
| 193 | COLUMN4 MIN |        |            |            |            |            |            |
|     | 1.8E-01     | -50.59 | -12.12     | -27.31     | -3.28      | -64.85     | -16.09     |
|     | 1.59        | -46.82 | -12.12     | -27.31     | -3.28      | -26.31     | -1.56      |
|     | 3.00        | -43.06 | -12.12     | -27.31     | -3.28      | -3.341E-01 | -10.35     |
| 204 | CU          |        |            |            |            |            |            |
|     | 1.8E-01     | -73.46 | -1.518E-01 | -6.364E-01 | 5.072E-01  | -5.61      | 6.27       |
|     | 1.60        | -68.94 | -1.518E-01 | -6.364E-01 | 5.072E-01  | -4.71      | 6.49       |
|     | 3.02        | -64.42 | -1.518E-01 | -6.364E-01 | 5.072E-01  | -3.80      | 6.70       |
| 204 | COLUMN1 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -49.14 | 8.35       | 8.83       | 1.99       | 9.72       | 18.12      |
|     | 1.60        | -45.75 | 8.35       | 8.83       | 1.99       | -2.18      | 7.34       |
|     | 3.02        | -42.36 | 8.35       | 8.83       | 1.99       | 9.73       | 15.83      |
| 204 | COLUMN1 MIN |        |            |            |            |            |            |
|     | 1.8E-01     | -61.05 | -8.57      | -9.78      | -1.23      | -18.14     | -8.72      |
|     | 1.60        | -57.67 | -8.57      | -9.78      | -1.23      | -4.88      | 2.39       |
|     | 3.02        | -54.28 | -8.57      | -9.78      | -1.23      | -15.43     | -5.78      |
| 204 | COLUMN2 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -48.12 | 7.38       | 18.52      | 2.03       | 25.84      | 14.63      |
|     | 1.60        | -44.73 | 7.38       | 18.52      | 2.03       | -2.755E-01 | 7.74       |
|     | 3.02        | -41.34 | 7.38       | 18.52      | 2.03       | 21.19      | 16.85      |
| 204 | COLUMN2 MIN |        |            |            |            |            |            |
|     | 1.8E-01     | -62.07 | -7.60      | -19.47     | -1.27      | -34.26     | -5.23      |
|     | 1.60        | -58.68 | -7.60      | -19.47     | -1.27      | -6.78      | 1.98       |
|     | 3.02        | -55.29 | -7.60      | -19.47     | -1.27      | -26.89     | -6.79      |
| 204 | COLUMN3 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -38.01 | 8.28       | 8.92       | 1.94       | 10.32      | 17.41      |
|     | 1.60        | -35.10 | 8.28       | 8.92       | 1.94       | -1.71      | 6.71       |
|     | 3.02        | -32.20 | 8.28       | 8.92       | 1.94       | 10.07      | 15.30      |
| 204 | COLUMN3 MIN |        |            |            |            |            |            |
|     | 1.8E-01     | -49.93 | -8.64      | -9.69      | -1.28      | -17.55     | -9.43      |
|     | 1.60        | -47.02 | -8.64      | -9.69      | -1.28      | -4.41      | 1.77       |
|     | 3.02        | -44.12 | -8.64      | -9.69      | -1.28      | -15.09     | -6.31      |
| 204 | COLUMN4 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -37.00 | 7.31       | 18.61      | 1.98       | 26.44      | 13.93      |
|     | 1.60        | -34.09 | 7.31       | 18.61      | 1.98       | 1.922E-01  | 7.12       |
|     | 3.02        | -31.19 | 7.31       | 18.61      | 1.98       | 21.53      | 16.31      |
| 204 | COLUMN4 MIN |        |            |            |            |            |            |
|     | 1.8E-01     | -50.94 | -7.66      | -19.38     | -1.32      | -33.67     | -5.94      |
|     | 1.60        | -48.04 | -7.66      | -19.38     | -1.32      | -6.32      | 1.36       |
|     | 3.02        | -45.13 | -7.66      | -19.38     | -1.32      | -26.55     | -7.33      |
| 206 | CU          |        |            |            |            |            |            |
|     | 1.8E-01     | -73.45 | -1.658E-01 | 6.441E-01  | -5.000E-01 | 5.62       | 6.25       |
|     | 1.60        | -68.93 | -1.658E-01 | 6.441E-01  | -5.000E-01 | 4.70       | 6.48       |
|     | 3.02        | -64.42 | -1.658E-01 | 6.441E-01  | -5.000E-01 | 3.79       | 6.72       |
| 206 | COLUMN1 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -49.06 | 8.18       | 9.34       | 1.14       | 17.49      | 17.89      |
|     | 1.60        | -45.67 | 8.18       | 9.34       | 1.14       | 4.90       | 7.35       |
|     | 3.02        | -42.29 | 8.18       | 9.34       | 1.14       | 14.82      | 15.59      |
| 206 | COLUMN1 MIN |        |            |            |            |            |            |
|     | 1.8E-01     | -61.12 | -8.42      | -8.38      | -1.89      | -9.06      | -8.52      |
|     | 1.60        | -57.73 | -8.42      | -8.38      | -1.89      | 2.16       | 2.37       |
|     | 3.02        | -54.34 | -8.42      | -8.38      | -1.89      | -9.14      | -5.52      |
| 206 | COLUMN2 MAX |        |            |            |            |            |            |
|     | 1.8E-01     | -48.13 | 7.32       | 19.37      | 1.24       | 34.10      | 14.53      |
|     | 1.60        | -44.75 | 7.32       | 19.37      | 1.24       | 6.78       | 7.73       |
|     | 3.02        | -41.36 | 7.32       | 19.37      | 1.24       | 26.74      | 16.80      |

|     |             |        |       |        |       |            |       |  |
|-----|-------------|--------|-------|--------|-------|------------|-------|--|
| 206 | COLUMN2 MIN |        |       |        |       |            |       |  |
|     | 1.8E-01     | -62.04 | -7.57 | -18.40 | -1.99 | -25.67     | -5.16 |  |
|     | 1.60        | -58.66 | -7.57 | -18.40 | -1.99 | 2.710E-01  | 1.99  |  |
|     | 3.02        | -55.27 | -7.57 | -18.40 | -1.99 | -21.06     | -6.73 |  |
| 206 | COLUMN3 MAX |        |       |        |       |            |       |  |
|     | 1.8E-01     | -37.94 | 8.12  | 9.25   | 1.19  | 16.89      | 17.18 |  |
|     | 1.60        | -35.03 | 8.12  | 9.25   | 1.19  | 4.43       | 6.73  |  |
|     | 3.02        | -32.13 | 8.12  | 9.25   | 1.19  | 14.48      | 15.06 |  |
| 206 | COLUMN3 MIN |        |       |        |       |            |       |  |
|     | 1.8E-01     | -49.99 | -8.49 | -8.47  | -1.84 | -9.65      | -9.23 |  |
|     | 1.60        | -47.08 | -8.49 | -8.47  | -1.84 | 1.69       | 1.75  |  |
|     | 3.02        | -44.18 | -8.49 | -8.47  | -1.84 | -9.48      | -6.05 |  |
| 206 | COLUMN4 MAX |        |       |        |       |            |       |  |
|     | 1.8E-01     | -37.01 | 7.26  | 19.28  | 1.29  | 33.51      | 13.82 |  |
|     | 1.60        | -34.10 | 7.26  | 19.28  | 1.29  | 6.32       | 7.11  |  |
|     | 3.02        | -31.20 | 7.26  | 19.28  | 1.29  | 26.40      | 16.27 |  |
| 206 | COLUMN4 MIN |        |       |        |       |            |       |  |
|     | 1.8E-01     | -50.92 | -7.63 | -18.49 | -1.94 | -26.27     | -5.87 |  |
|     | 1.60        | -48.01 | -7.63 | -18.49 | -1.94 | -1.964E-01 | 1.37  |  |
|     | 3.02        | -45.11 | -7.63 | -18.49 | -1.94 | -21.40     | -7.26 |  |

### 5.2.8.2.1 Calculo de Refuerzo.

CONCRETE DESIGN OUTPUT (ACI 318-95)

BIAXIAL P-M INTERACTION AND SHEAR DESIGN OF COLUMN-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |         |         |         |         |         |
|------------|---------------|---------------|---------------------------------|---------|---------|---------|---------|---------|
|            |               |               | LONGITUDINAL                    | COMBO   | SHEAR22 | COMBO   | SHEAR33 | COMBO   |
| 1          | 30X30C        | 15.000        | 9.000                           | COLUMN4 | 0.012   | CU      | 0.014   | COLUMN2 |
| 1          | 30X30C        | 157.500       | 9.000                           | COLUMN4 | 0.011   | COLUMN1 | 0.014   | COLUMN2 |
| 1          | 30X30C        | 300.000       | 9.000                           | COLUMN4 | 0.011   | COLUMN1 | 0.014   | COLUMN2 |
| 5          | 30X30C        | 15.000        | 9.000                           | COLUMN4 | 0.013   | CU      | 0.016   | COLUMN2 |
| 5          | 30X30C        | 157.500       | 9.000                           | COLUMN4 | 0.013   | CU      | 0.016   | COLUMN2 |
| 5          | 30X30C        | 300.000       | 9.000                           | COLUMN4 | 0.012   | CU      | 0.016   | COLUMN2 |
| 6          | 20X20C        | 15.000        | 4.000                           | COLUMN4 | 0.022   | CU      | 0.022   | CU      |
| 6          | 20X20C        | 48.417        | 4.000                           | COLUMN4 | 0.022   | CU      | 0.022   | CU      |
| 6          | 20X20C        | 81.833        | 4.000                           | COLUMN4 | 0.022   | CU      | 0.022   | CU      |
| 43         | 30X30C        | 15.000        | 9.000                           | COLUMN4 | 0.013   | CU      | 0.016   | COLUMN2 |
| 43         | 30X30C        | 157.500       | 9.000                           | COLUMN4 | 0.013   | CU      | 0.016   | COLUMN2 |
| 43         | 30X30C        | 300.000       | 9.000                           | COLUMN4 | 0.012   | CU      | 0.016   | COLUMN2 |
| 44         | 20X20C        | 15.000        | 4.000                           | COLUMN4 | 0.022   | CU      | 0.022   | CU      |
| 44         | 20X20C        | 49.383        | 4.000                           | COLUMN4 | 0.021   | CU      | 0.021   | CU      |
| 44         | 20X20C        | 83.766        | 4.000                           | COLUMN4 | 0.021   | CU      | 0.021   | CU      |
| 48         | 30X30C        | 15.000        | 9.000                           | COLUMN4 | 0.012   | CU      | 0.014   | COLUMN2 |
| 48         | 30X30C        | 157.500       | 9.000                           | COLUMN4 | 0.011   | COLUMN1 | 0.014   | COLUMN2 |
| 48         | 30X30C        | 300.000       | 9.000                           | COLUMN4 | 0.011   | COLUMN1 | 0.014   | COLUMN2 |
| 57         | 30X30C        | 15.000        | 9.000                           | COLUMN4 | 0.015   | CU      | 0.015   | CU      |
| 57         | 30X30C        | 157.500       | 9.000                           | COLUMN4 | 0.015   | CU      | 0.015   | COLUMN2 |
| 57         | 30X30C        | 300.000       | 9.000                           | COLUMN4 | 0.014   | CU      | 0.015   | COLUMN2 |
| 61         | 30X30C        | 15.000        | 9.000                           | COLUMN4 | 0.017   | CU      | 0.019   | COLUMN2 |
| 61         | 30X30C        | 157.500       | 9.000                           | COLUMN4 | 0.016   | CU      | 0.019   | COLUMN2 |
| 61         | 30X30C        | 300.000       | 9.000                           | COLUMN4 | 0.016   | CU      | 0.019   | COLUMN2 |
| 62         | 20X20C        | 15.000        | 4.000                           | COLUMN4 | 0.026   | CU      | 0.026   | CU      |
| 62         | 20X20C        | 48.417        | 4.000                           | COLUMN4 | 0.026   | CU      | 0.026   | CU      |
| 62         | 20X20C        | 81.833        | 4.000                           | COLUMN4 | 0.026   | CU      | 0.026   | CU      |



|     |        |         |               |              |    |              |    |
|-----|--------|---------|---------------|--------------|----|--------------|----|
| 99  | 30X30C | 15.000  | 9.000COLUMN4  | 0.017        | CU | 0.019COLUMN2 |    |
| 99  | 30X30C | 157.500 | 9.000COLUMN4  | 0.016        | CU | 0.019COLUMN2 |    |
| 99  | 30X30C | 300.000 | 9.000COLUMN4  | 0.016        | CU | 0.019COLUMN2 |    |
| 100 | 20X20C | 15.000  | 4.000COLUMN4  | 0.025        | CU | 0.025        | CU |
| 100 | 20X20C | 49.383  | 4.000COLUMN4  | 0.025        | CU | 0.025        | CU |
| 100 | 20X20C | 83.766  | 4.000COLUMN4  | 0.025        | CU | 0.025        | CU |
| 104 | 30X30C | 15.000  | 9.000COLUMN4  | 0.014        | CU | 0.015COLUMN2 |    |
| 104 | 30X30C | 157.500 | 9.000COLUMN4  | 0.013        | CU | 0.015COLUMN2 |    |
| 104 | 30X30C | 300.000 | 9.000COLUMN4  | 0.013        | CU | 0.015COLUMN2 |    |
| 117 | 30X30C | 15.000  | 9.000COLUMN4  | 0.013COLUMN2 |    | 0.013COLUMN2 |    |
| 117 | 30X30C | 157.500 | 9.000COLUMN4  | 0.013COLUMN2 |    | 0.013COLUMN2 |    |
| 117 | 30X30C | 300.000 | 9.000COLUMN4  | 0.012COLUMN2 |    | 0.013COLUMN2 |    |
| 121 | 30X30C | 17.500  | 9.000COLUMN4  | 0.017        | CU | 0.018COLUMN2 |    |
| 121 | 30X30C | 158.750 | 9.000COLUMN4  | 0.016        | CU | 0.018COLUMN2 |    |
| 121 | 30X30C | 300.000 | 9.000COLUMN4  | 0.016        | CU | 0.018COLUMN2 |    |
| 122 | 20X20C | 15.000  | 4.000COLUMN4  | 0.061        | CU | 0.061        | CU |
| 122 | 20X20C | 30.350  | 4.000COLUMN4  | 0.061        | CU | 0.061        | CU |
| 122 | 20X20C | 45.699  | 4.000COLUMN4  | 0.061        | CU | 0.061        | CU |
| 126 | 30X30C | 15.000  | 9.000COLUMN4  | 0.014        | CU | 0.014COLUMN2 |    |
| 126 | 30X30C | 157.500 | 9.000COLUMN4  | 0.013        | CU | 0.014COLUMN2 |    |
| 126 | 30X30C | 300.000 | 9.000COLUMN4  | 0.013        | CU | 0.014COLUMN2 |    |
| 127 | 20X20C | 15.000  | 7.251COLUMN1  | 0.014        | CU | 0.014        | CU |
| 127 | 20X20C | 69.672  | 4.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 127 | 20X20C | 124.344 | 4.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 131 | 30X30C | 15.000  | 9.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 131 | 30X30C | 157.500 | 9.000COLUMN4  | 0.013        | CU | 0.013        | CU |
| 131 | 30X30C | 300.000 | 9.000COLUMN4  | 0.013        | CU | 0.013COLUMN2 |    |
| 132 | 20X20C | 15.000  | 7.165COLUMN1  | 0.014        | CU | 0.014        | CU |
| 132 | 20X20C | 69.509  | 4.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 132 | 20X20C | 124.018 | 4.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 136 | 30X30C | 17.500  | 9.000COLUMN4  | 0.017        | CU | 0.017COLUMN2 |    |
| 136 | 30X30C | 158.750 | 9.000COLUMN4  | 0.016        | CU | 0.017COLUMN2 |    |
| 136 | 30X30C | 300.000 | 9.000COLUMN4  | 0.016        | CU | 0.017COLUMN2 |    |
| 137 | 20X20C | 15.000  | 4.000COLUMN4  | 0.066        | CU | 0.066        | CU |
| 137 | 20X20C | 29.257  | 4.000COLUMN4  | 0.066        | CU | 0.066        | CU |
| 137 | 20X20C | 43.515  | 4.000COLUMN4  | 0.066        | CU | 0.066        | CU |
| 141 | 30X30C | 15.000  | 9.000COLUMN4  | 0.013COLUMN2 |    | 0.013COLUMN2 |    |
| 141 | 30X30C | 157.500 | 9.000COLUMN4  | 0.013COLUMN2 |    | 0.013COLUMN2 |    |
| 141 | 30X30C | 300.000 | 9.000COLUMN4  | 0.012COLUMN2 |    | 0.012COLUMN2 |    |
| 150 | 30X30C | 17.500  | 9.000COLUMN4  | 0.017        | CU | 0.017        | CU |
| 150 | 30X30C | 158.750 | 9.000COLUMN4  | 0.016        | CU | 0.016        | CU |
| 150 | 30X30C | 300.000 | 9.000COLUMN4  | 0.016        | CU | 0.016        | CU |
| 154 | 30X30C | 15.000  | 9.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 154 | 30X30C | 157.500 | 9.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 154 | 30X30C | 300.000 | 9.000COLUMN4  | 0.013        | CU | 0.014COLUMN2 |    |
| 155 | 20X20C | 15.000  | 11.176COLUMN1 | 0.033        | CU | 0.033        | CU |
| 155 | 20X20C | 66.258  | 4.000COLUMN4  | 0.032        | CU | 0.032        | CU |
| 155 | 20X20C | 117.515 | 4.000COLUMN4  | 0.032        | CU | 0.032        | CU |
| 159 | 30X30C | 15.000  | 9.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 159 | 30X30C | 157.500 | 9.000COLUMN4  | 0.014        | CU | 0.014        | CU |
| 159 | 30X30C | 300.000 | 9.000COLUMN4  | 0.013        | CU | 0.014COLUMN2 |    |
| 160 | 20X20C | 15.000  | 10.735COLUMN1 | 0.030        | CU | 0.030        | CU |
| 160 | 20X20C | 66.258  | 4.000COLUMN4  | 0.030        | CU | 0.030        | CU |

|     |        |         |                |               |    |               |    |
|-----|--------|---------|----------------|---------------|----|---------------|----|
| 160 | 20X20C | 117.515 | 4.000COLUMNA4  | 0.030         | CU | 0.030         | CU |
| 164 | 30X30C | 17.500  | 9.000COLUMNA4  | 0.017         | CU | 0.017         | CU |
| 164 | 30X30C | 158.750 | 9.000COLUMNA4  | 0.016         | CU | 0.016         | CU |
| 164 | 30X30C | 300.000 | 9.000COLUMNA4  | 0.016         | CU | 0.016         | CU |
| 173 | 30X30C | 17.500  | 9.000COLUMNA4  | 0.017         | CU | 0.021COLUMNA2 |    |
| 173 | 30X30C | 158.750 | 9.000COLUMNA4  | 0.017         | CU | 0.021COLUMNA2 |    |
| 173 | 30X30C | 300.000 | 9.000COLUMNA4  | 0.016         | CU | 0.021COLUMNA2 |    |
| 177 | 30X30C | 15.000  | 9.000COLUMNA4  | 0.014COLUMNA2 |    | 0.017COLUMNA2 |    |
| 177 | 30X30C | 157.500 | 9.000COLUMNA4  | 0.014COLUMNA2 |    | 0.017COLUMNA2 |    |
| 177 | 30X30C | 300.000 | 9.000COLUMNA4  | 0.013COLUMNA2 |    | 0.017COLUMNA2 |    |
| 178 | 20X20C | 15.000  | 12.820COLUMNA2 | 0.036         | CU | 0.041COLUMNA2 |    |
| 178 | 20X20C | 66.258  | 4.738COLUMNA2  | 0.036         | CU | 0.041COLUMNA2 |    |
| 178 | 20X20C | 117.515 | 4.000COLUMNA4  | 0.036         | CU | 0.041COLUMNA2 |    |
| 182 | 30X30C | 15.000  | 9.000COLUMNA4  | 0.014COLUMNA2 |    | 0.017COLUMNA2 |    |
| 182 | 30X30C | 157.500 | 9.000COLUMNA4  | 0.014COLUMNA2 |    | 0.017COLUMNA2 |    |
| 182 | 30X30C | 300.000 | 9.000COLUMNA4  | 0.013COLUMNA2 |    | 0.017COLUMNA2 |    |
| 183 | 20X20C | 15.000  | 12.691COLUMNA2 | 0.036         | CU | 0.040COLUMNA2 |    |
| 183 | 20X20C | 66.258  | 4.701COLUMNA2  | 0.036         | CU | 0.040COLUMNA2 |    |
| 183 | 20X20C | 117.515 | 4.000COLUMNA4  | 0.036         | CU | 0.040COLUMNA2 |    |
| 187 | 30X30C | 17.500  | 9.000COLUMNA4  | 0.017         | CU | 0.021COLUMNA2 |    |
| 187 | 30X30C | 158.750 | 9.000COLUMNA4  | 0.017         | CU | 0.021COLUMNA2 |    |
| 187 | 30X30C | 300.000 | 9.000COLUMNA4  | 0.016         | CU | 0.021COLUMNA2 |    |
| 192 | DIAM40 | 17.500  | 14.502COLUMNA4 | 0.016         | CU | 0.022COLUMNA2 |    |
| 192 | DIAM40 | 158.750 | 12.566COLUMNA4 | 0.016         | CU | 0.022COLUMNA2 |    |
| 192 | DIAM40 | 300.000 | 12.566COLUMNA4 | 0.015         | CU | 0.022COLUMNA2 |    |
| 193 | DIAM40 | 17.500  | 14.451COLUMNA4 | 0.016         | CU | 0.022COLUMNA2 |    |
| 193 | DIAM40 | 158.750 | 12.566COLUMNA4 | 0.016         | CU | 0.022COLUMNA2 |    |
| 193 | DIAM40 | 300.000 | 12.566COLUMNA4 | 0.015         | CU | 0.022COLUMNA2 |    |
| 204 | DIAM35 | 17.500  | 9.621COLUMNA4  | 0.014         | CU | 0.018COLUMNA2 |    |
| 204 | DIAM35 | 159.849 | 9.621COLUMNA4  | 0.014         | CU | 0.018COLUMNA2 |    |
| 204 | DIAM35 | 302.198 | 9.621COLUMNA4  | 0.013         | CU | 0.018COLUMNA2 |    |
| 206 | DIAM35 | 17.500  | 9.621COLUMNA4  | 0.014         | CU | 0.018COLUMNA2 |    |
| 206 | DIAM35 | 159.849 | 9.621COLUMNA4  | 0.014         | CU | 0.018COLUMNA2 |    |
| 206 | DIAM35 | 302.198 | 9.621COLUMNA4  | 0.013         | CU | 0.018COLUMNA2 |    |

## 5.2.9. Diseño de Cimentación.

### 5.2.9.1 Envoltente Cimentación.

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L O A D C O M B I N A T I O N M U L T I P L I E R S

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE                       |
|----------|------|--------|--------|-------|-----------------------------|
| ENVOLVIG | ENVE | CU     | 1.0000 | COMBO | Envoltente para Vigas       |
|          |      | VIGAS1 | 1.0000 | COMBO |                             |
|          |      | VIGAS2 | 1.0000 | COMBO |                             |
|          |      | VIGAS3 | 1.0000 | COMBO |                             |
|          |      | VIGAS4 | 1.0000 | COMBO |                             |
| ENVOLCIM | ENVE |        |        |       | Envoltente para Cimentación |

CIMENTAX 1.0000 COMBO  
 CIMENTAY 1.0000 COMBO

J O I N T R E A C T I O N S

| JOINT | LOAD         | F1       | F2       | F3       | M1     | M2     | M3     |
|-------|--------------|----------|----------|----------|--------|--------|--------|
| 1     | ENVOLVIG MAX | 6.3007   | 10.9518  | 53.2289  | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLVIG MIN | -3.2544  | -6.8195  | 15.2369  | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MAX | 18.0940  | 30.0629  | 82.6635  | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MIN | -14.8652 | -25.7208 | -10.2241 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLVIG MAX | 12.2042  | 8.6894   | 64.8399  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLVIG MIN | -9.9692  | -12.4912 | 20.5013  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MAX | 40.7580  | 31.4643  | 91.9972  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MIN | -38.3975 | -35.4601 | -2.0745  | 0.0000 | 0.0000 | 0.0000 |
| 24    | ENVOLVIG MAX | 12.2005  | 12.4842  | 64.8951  | 0.0000 | 0.0000 | 0.0000 |
| 24    | ENVOLVIG MIN | -9.9391  | -8.5671  | 20.7191  | 0.0000 | 0.0000 | 0.0000 |
| 24    | ENVOLCIM MAX | 40.7110  | 35.5175  | 91.8356  | 0.0000 | 0.0000 | 0.0000 |
| 24    | ENVOLCIM MIN | -38.3227 | -31.4030 | -1.8208  | 0.0000 | 0.0000 | 0.0000 |
| 27    | ENVOLVIG MAX | 6.2129   | 6.8073   | 53.5716  | 0.0000 | 0.0000 | 0.0000 |
| 27    | ENVOLVIG MIN | -2.9466  | -10.9116 | 15.3829  | 0.0000 | 0.0000 | 0.0000 |
| 27    | ENVOLCIM MAX | 17.1651  | 25.8461  | 83.4260  | 0.0000 | 0.0000 | 0.0000 |
| 27    | ENVOLCIM MIN | -13.7108 | -30.1601 | -10.4865 | 0.0000 | 0.0000 | 0.0000 |
| 29    | ENVOLVIG MAX | 8.8515   | 11.3201  | 93.9772  | 0.0000 | 0.0000 | 0.0000 |
| 29    | ENVOLVIG MIN | -7.5280  | -8.4219  | 40.1230  | 0.0000 | 0.0000 | 0.0000 |
| 29    | ENVOLCIM MAX | 29.9581  | 34.9224  | 114.6583 | 0.0000 | 0.0000 | 0.0000 |
| 29    | ENVOLCIM MIN | -28.6141 | -31.8378 | 17.1724  | 0.0000 | 0.0000 | 0.0000 |
| 31    | ENVOLVIG MAX | 17.7497  | 12.4352  | 122.5299 | 0.0000 | 0.0000 | 0.0000 |
| 31    | ENVOLVIG MIN | -16.8749 | -14.5244 | 51.7085  | 0.0000 | 0.0000 | 0.0000 |
| 31    | ENVOLCIM MAX | 62.8729  | 44.8085  | 131.7918 | 0.0000 | 0.0000 | 0.0000 |
| 31    | ENVOLCIM MIN | -61.9228 | -47.0209 | 37.7969  | 0.0000 | 0.0000 | 0.0000 |
| 52    | ENVOLVIG MAX | 17.7640  | 14.4801  | 122.8029 | 0.0000 | 0.0000 | 0.0000 |
| 52    | ENVOLVIG MIN | -16.8970 | -11.7424 | 52.1305  | 0.0000 | 0.0000 | 0.0000 |
| 52    | ENVOLCIM MAX | 62.9281  | 45.8031  | 131.1881 | 0.0000 | 0.0000 | 0.0000 |
| 52    | ENVOLCIM MIN | -61.9857 | -42.9184 | 38.8173  | 0.0000 | 0.0000 | 0.0000 |
| 55    | ENVOLVIG MAX | 7.8484   | 7.7138   | 82.5637  | 0.0000 | 0.0000 | 0.0000 |
| 55    | ENVOLVIG MIN | -7.9527  | -11.5918 | 33.1576  | 0.0000 | 0.0000 | 0.0000 |
| 55    | ENVOLCIM MAX | 27.8492  | 30.2992  | 104.9841 | 0.0000 | 0.0000 | 0.0000 |
| 55    | ENVOLCIM MIN | -27.9703 | -34.3897 | 10.5420  | 0.0000 | 0.0000 | 0.0000 |
| 57    | ENVOLVIG MAX | 1.5745   | 9.2640   | 65.4602  | 0.0000 | 0.0000 | 0.0000 |
| 57    | ENVOLVIG MIN | -7.5159  | -9.4517  | 2.3244   | 0.0000 | 0.0000 | 0.0000 |
| 57    | ENVOLCIM MAX | 12.0343  | 31.8922  | 133.5352 | 0.0000 | 0.0000 | 0.0000 |
| 57    | ENVOLCIM MIN | -18.2260 | -32.0976 | -63.1408 | 0.0000 | 0.0000 | 0.0000 |
| 59    | ENVOLVIG MAX | 12.3488  | 13.2192  | 119.5669 | 0.0000 | 0.0000 | 0.0000 |
| 59    | ENVOLVIG MIN | -11.1066 | -10.6408 | 53.7329  | 0.0000 | 0.0000 | 0.0000 |
| 59    | ENVOLCIM MAX | 42.1288  | 41.6330  | 132.0398 | 0.0000 | 0.0000 | 0.0000 |
| 59    | ENVOLCIM MIN | -40.8637 | -38.8927 | 35.1368  | 0.0000 | 0.0000 | 0.0000 |
| 62    | ENVOLVIG MAX | 13.2770  | 7.4918   | 91.4032  | 0.0000 | 0.0000 | 0.0000 |
| 62    | ENVOLVIG MIN | -13.3294 | -10.8472 | 40.6598  | 0.0000 | 0.0000 | 0.0000 |
| 62    | ENVOLCIM MAX | 47.5091  | 29.4267  | 100.2227 | 0.0000 | 0.0000 | 0.0000 |
| 62    | ENVOLCIM MIN | -47.5577 | -33.0192 | 27.6439  | 0.0000 | 0.0000 | 0.0000 |
| 67    | ENVOLVIG MAX | 13.2275  | 10.1676  | 91.2871  | 0.0000 | 0.0000 | 0.0000 |
| 67    | ENVOLVIG MIN | -13.3309 | -6.7230  | 41.9544  | 0.0000 | 0.0000 | 0.0000 |
| 67    | ENVOLCIM MAX | 47.4520  | 31.2642  | 95.5115  | 0.0000 | 0.0000 | 0.0000 |
| 67    | ENVOLCIM MIN | -47.5525 | -27.5833 | 32.1933  | 0.0000 | 0.0000 | 0.0000 |
| 70    | ENVOLVIG MAX | 12.1679  | 10.0931  | 119.7920 | 0.0000 | 0.0000 | 0.0000 |
| 70    | ENVOLVIG MIN | -10.8495 | -12.6307 | 52.0457  | 0.0000 | 0.0000 | 0.0000 |

|     |              |          |          |          |           |        |        |
|-----|--------------|----------|----------|----------|-----------|--------|--------|
| 70  | ENVOLCIM MAX | 41.2918  | 37.6378  | 139.3835 | 0.0000    | 0.0000 | 0.0000 |
| 70  | ENVOLCIM MIN | -39.9494 | -40.3449 | 28.1158  | 0.0000    | 0.0000 | 0.0000 |
| 73  | ENVOLVIG MAX | 1.7153   | 9.0257   | 63.0457  | 0.0000    | 0.0000 | 0.0000 |
| 73  | ENVOLVIG MIN | -6.5809  | -8.8021  | -1.9776  | 0.0000    | 0.0000 | 0.0000 |
| 73  | ENVOLCIM MAX | 10.9566  | 31.3276  | 135.3184 | 0.0000    | 0.0000 | 0.0000 |
| 73  | ENVOLCIM MIN | -16.0446 | -31.0794 | -71.9280 | 0.0000    | 0.0000 | 0.0000 |
| 75  | ENVOLVIG MAX | 11.3452  | 12.1760  | 114.8836 | 0.0000    | 0.0000 | 0.0000 |
| 75  | ENVOLVIG MIN | -13.6886 | -8.4380  | 51.7497  | 0.0000    | 0.0000 | 0.0000 |
| 75  | ENVOLCIM MAX | 43.3389  | 37.6295  | 136.5086 | 0.0000    | 0.0000 | 0.0000 |
| 75  | ENVOLCIM MIN | -45.7639 | -33.3765 | 24.9818  | 0.0000    | 0.0000 | 0.0000 |
| 77  | ENVOLVIG MAX | 15.7209  | 6.8703   | 95.8108  | 0.0000    | 0.0000 | 0.0000 |
| 77  | ENVOLVIG MIN | -16.5134 | -10.4282 | 42.0001  | 0.0000    | 0.0000 | 0.0000 |
| 77  | ENVOLCIM MAX | 57.4485  | 28.1858  | 107.1179 | 0.0000    | 0.0000 | 0.0000 |
| 77  | ENVOLCIM MIN | -58.2664 | -32.2324 | 26.6494  | 0.0000    | 0.0000 | 0.0000 |
| 82  | ENVOLVIG MAX | 15.4483  | 10.3857  | 95.8323  | 0.0000    | 0.0000 | 0.0000 |
| 82  | ENVOLVIG MIN | -16.2957 | -6.7954  | 42.0477  | 0.0000    | 0.0000 | 0.0000 |
| 82  | ENVOLCIM MAX | 56.5442  | 32.1089  | 107.1895 | 0.0000    | 0.0000 | 0.0000 |
| 82  | ENVOLCIM MIN | -57.4184 | -28.0291 | 26.6082  | 0.0000    | 0.0000 | 0.0000 |
| 85  | ENVOLVIG MAX | 11.0466  | 8.4076   | 114.8440 | 0.0000    | 0.0000 | 0.0000 |
| 85  | ENVOLVIG MIN | -13.3337 | -12.1208 | 51.8079  | 0.0000    | 0.0000 | 0.0000 |
| 85  | ENVOLCIM MAX | 42.0382  | 33.4002  | 136.4672 | 0.0000    | 0.0000 | 0.0000 |
| 85  | ENVOLCIM MIN | -44.4053 | -37.6280 | 24.9670  | 0.0000    | 0.0000 | 0.0000 |
| 87  | ENVOLVIG MAX | 12.3515  | 15.7275  | 119.5097 | 0.0000    | 0.0000 | 0.0000 |
| 87  | ENVOLVIG MIN | -12.0649 | -12.0600 | 48.0818  | 0.0000    | 0.0000 | 0.0000 |
| 87  | ENVOLCIM MAX | 43.5297  | 50.5529  | 163.6295 | 0.0000    | 0.0000 | 0.0000 |
| 87  | ENVOLCIM MIN | -43.2179 | -46.3839 | 4.4180   | 0.0000    | 0.0000 | 0.0000 |
| 89  | ENVOLVIG MAX | 7.4400   | 9.8573   | 79.8675  | 0.0000    | 0.0000 | 0.0000 |
| 89  | ENVOLVIG MIN | -11.6522 | -12.9001 | 15.1430  | 0.0000    | 0.0000 | 0.0000 |
| 89  | ENVOLCIM MAX | 31.1358  | 38.4947  | 133.7375 | 0.0000    | 0.0000 | 0.0000 |
| 89  | ENVOLCIM MIN | -35.5578 | -42.0303 | -32.1278 | 0.0000    | 0.0000 | 0.0000 |
| 94  | ENVOLVIG MAX | 7.2745   | 12.8390  | 79.5919  | 0.0000    | 0.0000 | 0.0000 |
| 94  | ENVOLVIG MIN | -11.5237 | -9.8087  | 15.4585  | 0.0000    | 0.0000 | 0.0000 |
| 94  | ENVOLCIM MAX | 30.5902  | 41.9808  | 132.7500 | 0.0000    | 0.0000 | 0.0000 |
| 94  | ENVOLCIM MIN | -35.0501 | -38.4580 | -31.0994 | 0.0000    | 0.0000 | 0.0000 |
| 97  | ENVOLVIG MAX | 12.0323  | 11.9778  | 119.5171 | 0.0000    | 0.0000 | 0.0000 |
| 97  | ENVOLVIG MIN | -11.6843 | -15.6606 | 48.2057  | 0.0000    | 0.0000 | 0.0000 |
| 97  | ENVOLCIM MAX | 42.1161  | 46.2837  | 163.5028 | 0.0000    | 0.0000 | 0.0000 |
| 97  | ENVOLCIM MIN | -41.7414 | -50.4682 | 4.5553   | 0.0000    | 0.0000 | 0.0000 |
| 99  | ENVOLVIG MAX | 16.0914  | 21.3123  | 105.6206 | 65.6022   | 0.0000 | 0.0000 |
| 99  | ENVOLVIG MIN | -12.1150 | -23.2345 | 56.7685  | -58.3299  | 0.0000 | 0.0000 |
| 99  | ENVOLCIM MAX | 52.4198  | 80.7346  | 104.5157 | 235.2130  | 0.0000 | 0.0000 |
| 99  | ENVOLCIM MIN | -48.2908 | -82.6732 | 45.1796  | -227.7667 | 0.0000 | 0.0000 |
| 101 | ENVOLVIG MAX | 15.7773  | 23.1833  | 105.6111 | 58.1234   | 0.0000 | 0.0000 |
| 101 | ENVOLVIG MIN | -11.7475 | -21.2582 | 56.7942  | -65.4279  | 0.0000 | 0.0000 |
| 101 | ENVOLCIM MAX | 51.0196  | 82.8531  | 104.5891 | 228.1578  | 0.0000 | 0.0000 |
| 101 | ENVOLCIM MIN | -46.8359 | -80.9114 | 45.0925  | -235.6372 | 0.0000 | 0.0000 |
| 109 | ENVOLVIG MAX | 7.2552   | 16.3935  | 103.1386 | 0.0000    | 0.0000 | 0.0000 |
| 109 | ENVOLVIG MIN | -6.9051  | -15.6359 | 48.8240  | 0.0000    | 0.0000 | 0.0000 |
| 109 | ENVOLCIM MAX | 23.2995  | 61.0937  | 121.1246 | 0.0000    | 0.0000 | 0.0000 |
| 109 | ENVOLCIM MIN | -22.9909 | -60.3015 | 24.9348  | 0.0000    | 0.0000 | 0.0000 |
| 111 | ENVOLVIG MAX | 7.1320   | 15.5402  | 103.1191 | 0.0000    | 0.0000 | 0.0000 |
| 111 | ENVOLVIG MIN | -6.7590  | -16.3081 | 48.8414  | 0.0000    | 0.0000 | 0.0000 |
| 111 | ENVOLCIM MAX | 22.7709  | 60.3961  | 120.7988 | 0.0000    | 0.0000 | 0.0000 |
| 111 | ENVOLCIM MIN | -22.4389 | -61.1989 | 25.2328  | 0.0000    | 0.0000 | 0.0000 |

### 5.2.9.2 Refuerzo Cimentación.

ESTRUCTURAS Y PROGRAMAS

MODULO 4 NSR - 98

DISEÑO ESTRUCTURAL GENERAL. AREA VI. PROGRAMA 1a

DISEÑO DE ZAPATAS AISLADAS CUADRADAS

Nombre del Archivo Utilizado : <OF1> Directorio: C:\MODULO4\ZAPATAS\

#### INFORMACION GENERAL

-----

| Dato | Concepto                                    |      |
|------|---|------|
| 1    | Resistencia del Concreto F'c <kg/cm2> =     | 210  |
| 2    | Limite Fluencia Acero Princip Fy <kg/cm2> = | 4200 |
| 3    | Recubrimiento d' <cm> =                     | 7    |
| 4    | Capacidad Admisible Suelo <kg/cm2> =        | 1.2  |
| 5    | No. de Zapatas Cuadradas Diseñadas =        | 20   |

#### INFORMACION DE LAS ZAPATAS

-----

| Zap | Nombre | H col<br><cm> | B col<br><cm> | Carga P<br><t> | Carga Pu<br><t> |
|-----|--------|---------------|---------------|----------------|-----------------|
| 1   | C1     | 30            | 30            | 8.09           | 6.49            |
| 2   | F1     | 30            | 30            | 8.06           | 6.49            |
| 3   | C2     | 30            | 30            | 12.05          | 12.25           |
| 4   | F2     | 30            | 30            | 12.00          | 12.28           |
| 5   | A3     | 30            | 30            | 11.25          | 5.96            |
| 6   | B3     | 30            | 30            | 12.09          | 11.96           |
| 7   | D3     | 30            | 30            | 9.73           | 9.14            |
| 8   | E3     | 30            | 30            | 9.47           | 9.13            |
| 9   | G3     | 30            | 30            | 12.70          | 11.98           |
| 10  | H3     | 30            | 30            | 11.34          | 5.73            |
| 11  | B4     | 30            | 30            | 13.27          | 11.49           |
| 12  | D4     | 30            | 30            | 10.68          | 9.58            |

|       |    |    |       |       |
|-------|----|----|-------|-------|
| 13 E4 | 30 | 30 | 10.67 | 9.58  |
| 14 G4 | 30 | 30 | 13.25 | 11.48 |
| 15 B5 | 30 | 30 | 15.90 | 11.95 |
| 16 D5 | 30 | 30 | 12.18 | 7.62  |
| 17 E5 | 30 | 30 | 12.12 | 7.60  |
| 18 G5 | 30 | 30 | 15.91 | 11.95 |
| 19 D7 | 40 | 40 | 11.13 | 10.64 |
| 20 E7 | 40 | 40 | 11.10 | 10.64 |

R E S U L T A D O S

-----

| Referencia | Nudo | Longitud   | Lados <cm> | Espesor Min | ARMADURA (Sep: cm) |            |
|------------|------|------------|------------|-------------|--------------------|------------|
| Apoyo      | #    | Paralelo H | Paralelo B | <cm>        | Paralelo H         | Paralelo B |
| C1         |      | 82         | 82         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| F1         |      | 82         | 82         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| C2         |      | 100        | 100        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| F2         |      | 100        | 100        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| A3         |      | 97         | 97         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| B3         |      | 100        | 100        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| D3         |      | 90         | 90         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| E3         |      | 89         | 89         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| G3         |      | 103        | 103        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| H3         |      | 97         | 97         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| B4         |      | 105        | 105        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| D4         |      | 94         | 94         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| E4         |      | 94         | 94         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| G4         |      | 105        | 105        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| B5         |      | 115        | 115        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| D5         |      | 101        | 101        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| E5         |      | 100        | 100        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| G5         |      | 115        | 115        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| D7         |      | 96         | 96         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| E7         |      | 96         | 96         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |

## Diseño Zapatas Excéntricas

ESTRUCTURAS Y PROGRAMAS

M O D U L O 4 NSR - 98

D I S E Ñ O E S T R U C T U R A L G E N E R A L. AREA VI. PROGRAMA 1b

ZAPATAS EXCENRICAS O MEDIANERAS

Nombre del Archivo Utilizado : <OF2> Directorio: C:\MODULO4\ZAPATAS\

### INFORMACION GENERAL

| Dato | Concepto                         |            |      |
|------|----------------------------------|------------|------|
| 1    | Resistencia del Concreto F'c     | <kg/cm2> = | 210  |
| 2    | Límite Fluencia Acero Princip Fy | <kg/cm2> = | 4200 |
| 3    | Recubrimiento al Centroide d'    | <cm> =     | 7    |
| 4    | Número de Ramas del Estribo      | =          | 2    |
| 5    | # del Diametro del Estribo       | =          | 3    |
| 6    | Límite Fluencia Acero Estrib Fy  | <kg/cm2> = | 4200 |
| 7    | Capacidad Admisible Suelo Qa     | <kg/cm2> = | 1.2  |
| 8    | No. de Zapatas Diseñadas         | =          | 4    |

### INFORMACION DE LA GEOMETRIA DE LAS ZAPATAS

| Zap Ref | Sep Col (m) | B ColExt (m) | H ColExt (m) | Ancho Adop Zap Ext(m) | Distanc (m) Borde - Eje | Viga Trabe (m) |        |
|---------|-------------|--------------|--------------|-----------------------|-------------------------|----------------|--------|
|         |             |              |              |                       |                         | B Inic         | H Inic |
| A1      | 3.85        | .3           | .3           | .8                    | .15                     | .25            | .3     |
| H1      | 3.85        | .3           | .3           | .8                    | .15                     | .25            | .3     |
| A2      | 3.85        | .3           | .3           | .8                    | .15                     | .25            | .3     |
| H2      | 3.85        | .3           | .3           | .8                    | .15                     | .25            | .3     |

### INFORMACION DE LAS SOLICITACIONES DE LAS ZAPATAS

| Zap Ref | Pserv (t) Zapat EXT | Pult (t) Zapat EXT | Pserv (t) Zapat INT | Pult (t) Zapat INT |
|---------|---------------------|--------------------|---------------------|--------------------|
|         |                     |                    |                     |                    |

| A1 | 7.19  | 5.17 | 8.09  | 6.49  |
|----|-------|------|-------|-------|
| H1 | 7.26  | 5.2  | 8.05  | 6.49  |
| A2 | 10.28 | 9.4  | 12.05 | 12.25 |
| H2 | 9.35  | 8.26 | 12    | 12.28 |

#### RESULTADOS DEL DISEÑO

| Zap<br>Ref | Zapata  |         |              | EXTERIOR      |               | Zapata INT  |
|------------|---------|---------|--------------|---------------|---------------|-------------|
|            | Largo L | Ancho B | Espes T (cm) | As Paralelo L | As Paralelo B | Lado L (cm) |
| A1         | 80      | 80      | 36           | 1 # 4 a 65    | 1 # 3 a 25    | 80          |
| H1         | 81      | 80      | 36           | 1 # 4 a 63    | 1 # 3 a 25    | 79          |
| A2         | 115     | 80      | 39           | 1 # 4 a 31    | 1 # 3 a 25    | 97          |
| H2         | 104     | 80      | 38           | 1 # 4 a 37    | 1 # 3 a 25    | 97          |

#### VIGA TRABE O DE ENLACE

| Zap<br>Ref | B Mjn<br>(cm) | H Mjn<br>(cm) | Mu M x<br>(t-m) | As M ximo Extr |          | Vu M x<br>(t) | Separac Flejes   |        |
|------------|---------------|---------------|-----------------|----------------|----------|---------------|------------------|--------|
|            |               |               |                 | SUP(cm2)       | INF(cm2) |               | Extremo          | EXT    |
| A1         | 25.0          | 30.0          | 1.26            | 1.92           | 0.00     | 7.09          | 1FL# 3 de 2 rams | c/11.5 |
| H1         | 25.0          | 30.0          | 1.27            | 1.92           | 0.00     | 7.13          | 1FL# 3 de 2 rams | c/11.5 |
| A2         | 25.0          | 30.0          | 2.25            | 2.74           | 0.00     | 12.64         | 1FL# 3 de 2 rams | c/ 5.8 |
| H2         | 25.0          | 30.0          | 1.98            | 2.39           | 0.00     | 11.14         | 1FL# 3 de 2 rams | c/ 5.8 |

### 5.3. DISEÑO ESTRUCTURAL DE CAFETERIA

NORMA NSR-98



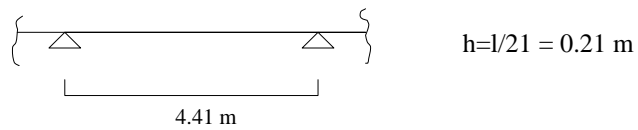
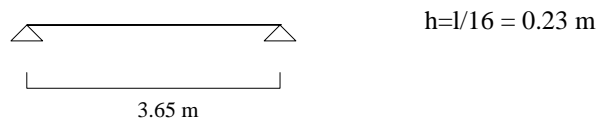
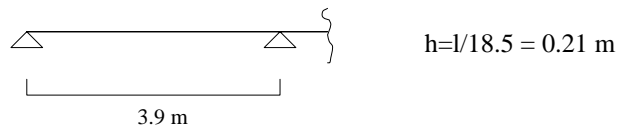
**5.3.1. Materiales:** Generales.

**5.3.2. Predimensionamiento y secciones definitivas.**

Sistema de Pórtico.

**5.3.2.1. Vigas aéreas.**

**5.3.2.1.1 Evaluación de peraltes:** Tabla C.9-1(b)



Nota: Se selecciona la tabla C.9-1(b) debido a que las vigas no soportan muros ni particiones frágiles.

Peralte seleccionado = 25 cm

### 5.3.2.1.2 Ancho de Alma:

$$b_w \geq 0.25 \text{ mt} \quad \text{C.21.3.1(d)}$$

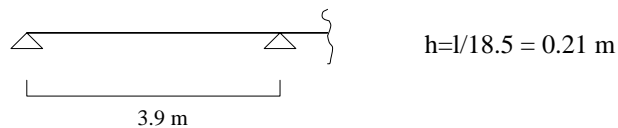
Ancho seleccionado = 0.25 mt

Para vigas que presentan torsión escogemos un ancho de 30 cm.

### 5.3.2.2 Vigas de Cubierta.

Este tipo de elementos no son incluidos en la respuesta de la estructura ante cargas provenientes de movimientos telúricos, por tal motivo estos elementos son analizados solo para la distribución de cargas estáticas.

#### 5.3.2.2.1 Evaluación de peralte: Tabla C.9-1(b)



Peralte seleccionado = 25 cm

#### 5.3.2.2.2 Ancho de Alma. Ancho seleccionado = 0.20 mt

**5.3.2.2.3 Análisis en la estructura.** Con el fin de lograr que estas vigas no entren en consideración en la respuesta sísmica de la estructura, hay la necesidad de liberar los elementos de cubierta ante las posibilidades de transmisión de momentos provenientes de cargas sísmicas, esto se ha logrado en el programa SAP2000, liberando los extremos de los elementos que entran en contacto con la estructura sismo resistente, para el caso solo han

sido liberados los momentos que alteran la estabilidad en el propio plano de dichos pórticos.

### 5.3.2.3 Columnas.

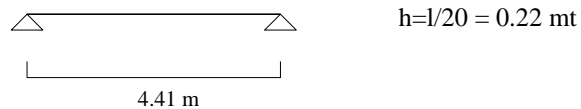
Como la estructura es sencilla no vale la pena hacer un predimensionamiento analítico de las columnas.

Rectangulares 30 x 30 cm            C.21.4.1(b)

Circulares  $\phi$  35 cm                C.21.4.1(b)

### 5.3.2.4 Vigas de cimentación.

5.3.2.4.1 Evaluación de peralte: (como viga de amarre)    C.15.13.3



Peralte seleccionado 30 cm

5.3.2.4.2 Ancho del Alma. (como viga de amarre).

La selección de la viga de amarre debe ser capaz de soportar una fuerza de compresión o tensión de 0.25 veces la carga vertical total del elemento que tenga la mayor carga entre los que interconecta, por tanto.

$$P = 0.25 F_{vmax} \quad A.3.6.4.2$$

Por tratarse de una viga de cimentación podemos escoger un ancho de 25 cm

$$A_g \approx 0.3 \cdot 0.25 = 0.075 \text{ m}^2$$

$$P_{\max} = 0.1 f_c A_g \quad \text{C.21.3.1(a)}$$

$$F_{v\max} = \frac{0.1 f_c A_g}{0.25} = \frac{0.1 \cdot 21 \cdot 0.075}{0.25} = 0.63 \text{ MNw} = 630 \text{ KNw}$$

### 5.3.2.5 Recubrimientos: Generales.

### 5.3.3 Evaluación de Carga Permanente.

#### 5.3.3.1 Carga Muerta: (B.3)

- ◆ Peso propio de los elementos estructurales
  - Longitud de vigas de sección 25 \* 25 = 69.55 m  
Longitud de vigas de sección 30 \* 25 = 25.44 m  
Longitud de vigas de sección 20 \* 25 = 34.25 m

$$\begin{aligned} \text{Total peso propio de vigas} &= (69.55 \cdot 0.25^2 + 25.44 \cdot 0.3 \cdot 0.25 + 34.25 \cdot 0.2 \cdot 0.25) \cdot 24 \\ &= 191 \text{ KNw} \end{aligned}$$

- Longitud de columnas de sección 30 \* 30 = 2.45 \* 18 = 44.1 m  
Longitud de columnas de  $\phi$  35 cm = 2.45 \* 5 = 12.25 m

Total peso propio de columnas referido a la losa de cubierta en la evaluación de la carga permanente para efectos sísmicos.

$$= 0.233(0.3^2 \cdot 44.1 + \pi/4 \cdot 0.35^2 \cdot 12.25) \cdot 24 = 29 \text{ KNw}$$

- ◆ Mampostería:

|                  |   |        |
|------------------|---|--------|
| Altura de muro   | : | 2.45 m |
| Espesor del muro | : | 0.12 m |

Peso unitario de ladrillo

$$\text{Farol} \quad : \quad 13 \text{ KNw/m}^3$$

$$\text{Peso unitario de repello} \quad : \quad 21 \text{ KNw/m}^3$$

$$\text{Carga de repello (4 cm)} \quad : \quad 0.84 \text{ KNw/m}^2$$

$$\text{Carga de mampostería} \quad : \quad 1.56 \text{ KNw/m}^2$$

$$\text{Carga total por longitud} \quad = \quad 5.88 \text{ KNw/m}$$

$$\text{Total peso de Mampostería} \quad = \quad 5.88 * 69 = 406 \text{ KNw}$$

Total peso propio de mampostería referido a la losa de cubierta en la evaluación de la carga permanente para efectos sísmicos.

$$0.233 * 406 = 94 \text{ KNw}$$

◆ Cubierta:

$$\text{Carga de teja AC} \quad = \quad 0.18 \text{ KNw/m}^2$$

$$\text{Carga de la estructura} \quad = \quad 0.10 \text{ KNw/m}^2$$

$$\text{Carga adicional} \quad = \quad \underline{0.10 \text{ KNw/m}^2}$$

$$\text{Total carga de cubierta} \quad = \quad 0.38 \text{ KNw/m}^2$$

$$\text{Area de cubierta(planta)} \quad = \quad 264.7 \text{ m}^2$$

$$\text{Inclinación de la cubierta} \quad = \quad 15^\circ$$

$$\text{Area de Cubierta inclinada} \quad = \quad 264.7/\cos 15^\circ = 274 \text{ m}^2$$

$$\text{Peso de cubierta} = 274 * 0.38 = 104 \text{ KNw}$$

◆ Cielo Raso:

$$\text{Madera} = 0.15 \text{ KNw/m}^2$$

$$\text{Peso de cielo raso} = 0.15 * 264.7 = 40 \text{ KNw}$$

◆ Muro Culata:

$$\text{Altura de muro} : 1.5 \text{ m}$$

$$\text{Espesor del muro} : 0.12 \text{ m}$$

Peso unitario de ladrillo

$$\text{Farol} : 13 \text{ KNw/m}^3$$

$$\text{Peso unitario de repello} : 21 \text{ KNw/m}^3$$

$$\text{Carga de repello (4 cm)} : 0.84 \text{ KNw/m}^2$$

$$\text{Carga de mampostería} : 1.56 \text{ KNw/m}^2$$

Carga de Cinta de amarre

$$\text{Secc. } 0.12 * 0.15 \text{ mt} : 0.432 \text{ KNw/m}$$

$$\text{Carga total sin viga de culata} = 2.4 \text{ KNw/m}^2$$

$$\text{Carga total por longitud} = 4.03 \text{ KNw/m}$$

$$\text{Total peso de Culata} = 4.03 * 41.74 = 168 \text{ KNw}$$

◆ Total Carga Muerta = 626 KNw

### 5.3.3.2 Carga Viva. (B.4)

◆ Para cubierta con pendiente mayor al 20 % = 0.35 KNw/m<sup>2</sup>

$$\text{Total Carga Viva} = 0.35 * 264.7 = 93 \text{ KNw}$$

### 5.3.3.3 Carga Permanente en la estructura. (Wp)

100 % : Carga Muerta

10 % : Carga Viva

$$\text{Total Carga Permanente} = 626 + 0.1 * 93 = 635 \text{ KNw}$$

$$\text{Total Carga Permanente} = 635 \text{ KNw}$$

### 5.3.3.4 Transferencia de cargas a pórticos.

#### 5.3.3.4.1 Cargas sobre N + 2.75.

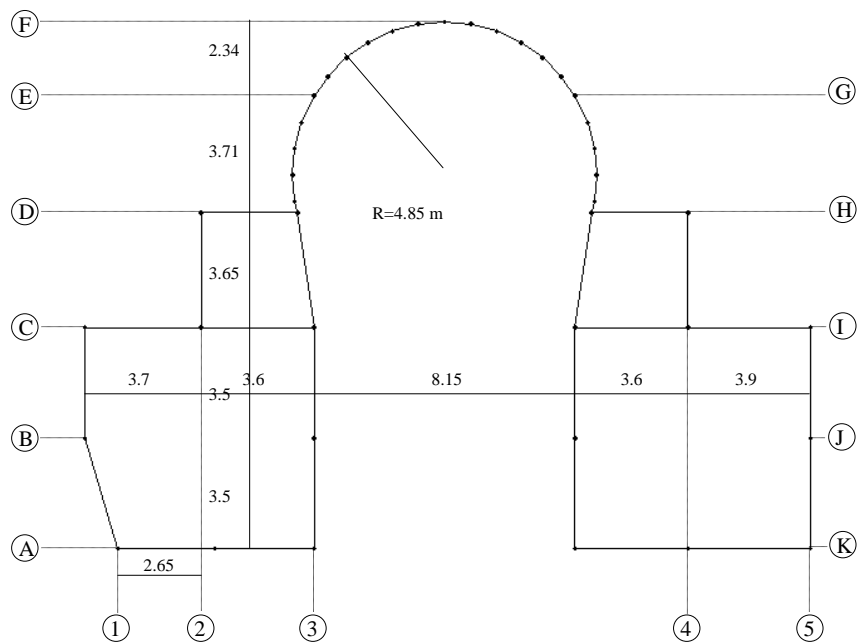
Cargas Distribuidas por metro cuadrado

$$\text{Carga Muerta} : 144/264.7 = 0.54 \text{ KNw/m}^2 *$$

$$\text{Carga Viva} : 0.35 \text{ KNw/m}^2$$

(\*) La carga no incluye el peso propio de vigas, columnas, mampostería (primer piso) ni muro culata, por estar analizados directamente sobre los pórticos.

### 5.3.3.4.2 Disposición de los Ejes.



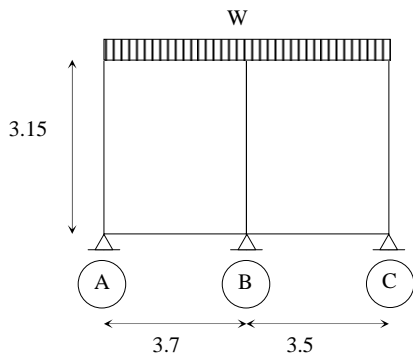
### 5.3.3.4.3. Cargas en Pórticos:

Las cargas que se han analizado son las siguientes:

- Muerta y Viva para la condición de vigas que dan arriostramiento, por tanto, se considera una referencia de 1.5 m para vigas canal C.13.3.2.2
- Carga de muro culata sobre vigas canal, incluyendo el efecto torsor.

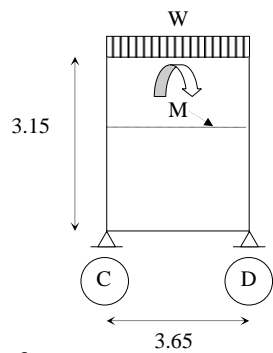


### Pórtico 1



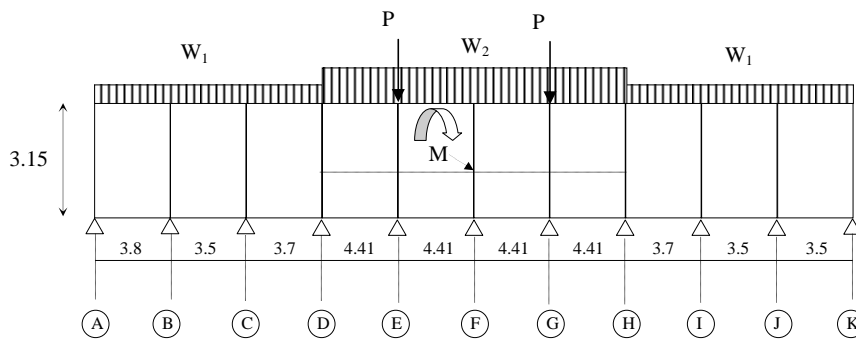
| CARGA  | W (KNw/m) |
|--------|-----------|
| Muerta | 0.81      |
| Viva   | 0.53      |

### Pórtico 2



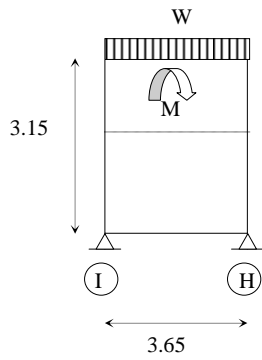
| CARGA  | W (KNw/m) | M (KNw-m/m) |
|--------|-----------|-------------|
| Muerta | 4.84      | -1.61       |
| Viva   | 0.53      | -           |

### Pórtico 3



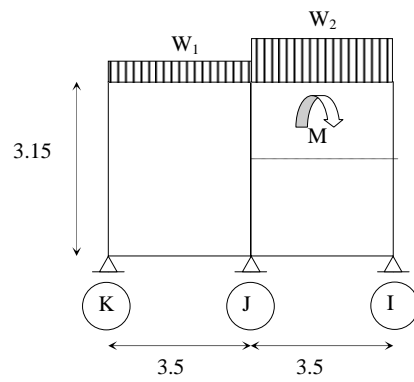
| CARGA  | W <sub>1</sub> (KNw/m) | W <sub>2</sub> (KNw/m) | M (KNw-m/m) | P (KNw) |
|--------|------------------------|------------------------|-------------|---------|
| Muerta | 1.62                   | 4.84                   | 1.61        | 8.63    |
| Viva   | 1.05                   | 0.53                   | -           | 5.60    |

Pórtico 4



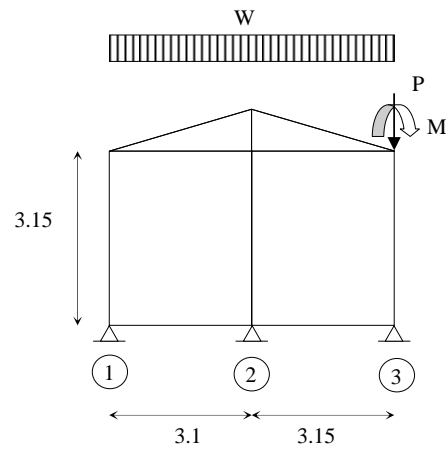
| CARGA  | $W_1$<br>(KNw/m) | M<br>(KNw-m/m) |
|--------|------------------|----------------|
| Muerta | 4.84             | 1.61           |
| Viva   | 0.53             | -              |

Pórtico 5



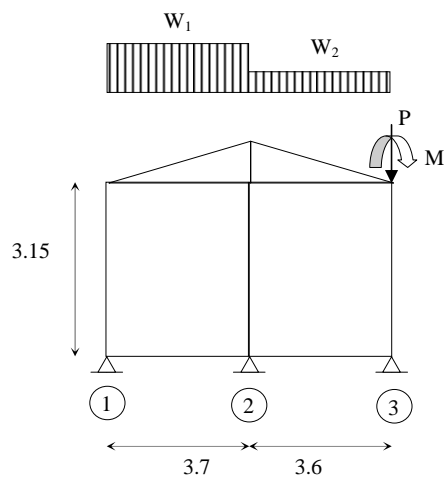
| CARGA  | $W_1$ (KNw/m) | $W_2$ (KNw/m) | M (KNw-m/m) |
|--------|---------------|---------------|-------------|
| Muerta | 0.81          | 4.84          | 1.61        |
| Viva   | 0.53          | 0.53          | -           |

### Pórticos A

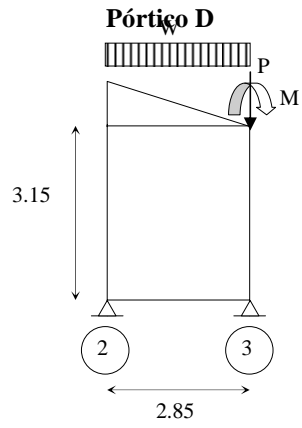


| CARGA  | W (KNw/m) | P (KNw) | M (KNw-m) |
|--------|-----------|---------|-----------|
| Muerta | 1.54      | 6.39    | 1.92      |
| Viva   | 1.00      | 4.15    | 1.25      |

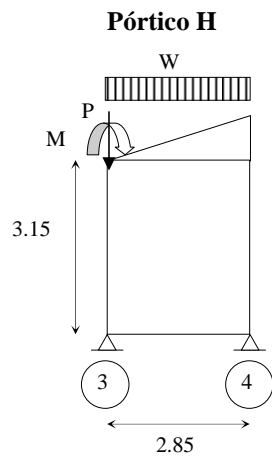
### Pórtico C



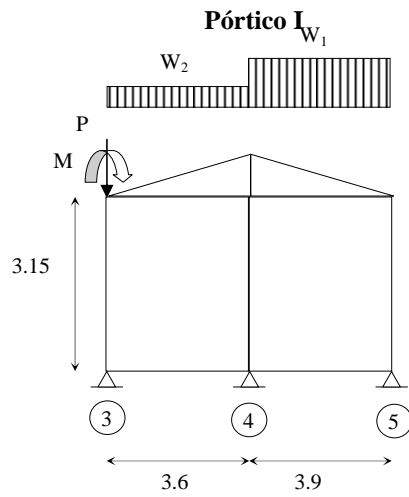
| CARGA  | W <sub>1</sub> (KNw/m) | W <sub>2</sub> (KNw/m) | P (KNw) | M (KNw-m) |
|--------|------------------------|------------------------|---------|-----------|
| Muerta | 5.92                   | 3.90                   | 15.85   | 4.76      |
| Viva   | 1.23                   | 2.53                   | 10.29   | 3.09      |



| CARGA  | W (KNw/m) | P (KNw) | M (KNw-m) |
|--------|-----------|---------|-----------|
| Muerta | 4.34      | 6.41    | 1.92      |
| Viva   | 0.20      | 4.18    | 1.25      |

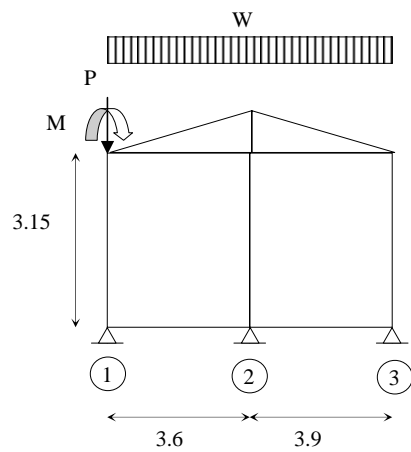


| CARGA  | W (KNw/m) | P (KNw) | M (KNw-m) |
|--------|-----------|---------|-----------|
| Muerta | 4.34      | 6.41    | -1.92     |
| Viva   | 0.20      | 4.18    | -1.25     |



| CARGA  | $W_1$ (KNw/m) | $W_2$ (KNw/m) | P (KNw) | M (KNw-m) |
|--------|---------------|---------------|---------|-----------|
| Muerta | 5.92          | 3.90          | 15.85   | 4.76      |
| Viva   | 1.23          | 2.53          | 10.29   | 3.09      |

**Pórticos K**



| CARGA  | W (KNw/m) | P (KNw) | M (KNw-m) |
|--------|-----------|---------|-----------|
| Muerta | 1.54      | 6.39    | 1.92      |
| Viva   | 1.00      | 4.15    | 1.25      |

Las cargas sobre los pórticos están evaluadas sin peso propio. El peso propio de todos los elementos estructurales es evaluado directamente sobre el programa de diseño estructural SAP2000, además el programa evalúa las masas aferentes para cada nudo con dichos elementos, por esta razón la carga permanente incluida en el análisis es reducida en la masa de estos elementos.

### **5.3.4 Fuerzas Sísmicas.**

#### **5.3.4.1 Método de análisis para evaluación de carga sísmica.**

Se utiliza el Análisis Dinámico Elástico y se realiza una comparación con el método de Fuerza Horizontal Equivalente, utilizando diafragma flexible, además, para poder simular las condiciones reales de la estructura hay al necesidad de representar mediante restricciones axiales al desplazamiento, la existencia de las cerchas que para el caso de esta estructura han sido analizadas hiperestáticas, Esta modelación aparte de lo antes establecido tiene la ventaja de eliminar algunos modos innecesarios y también reduce el costo operacional.

#### **5.3.4.2 Zona de Amenaza Sísmica: Alta ( $A_a = 0.3$ )**

#### **5.3.4.3 Efectos Locales.**

Perfil del suelo tipo : S3  
Coeficiente de Sitio : 1.5

#### **5.3.4.4 Coeficiente de Importancia.**

Estructura de ocupación especial : (Grupo II)  
Coeficiente de Importancia : 1.1

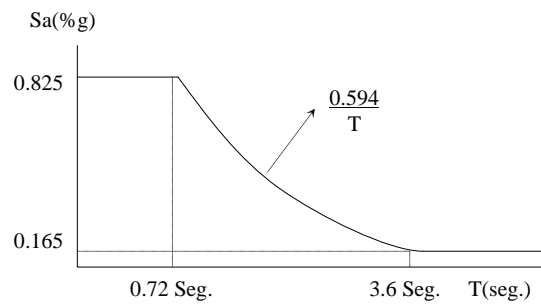
### 5.3.4.5 Espectro de Diseño.

$$S_{a_{\max}} = 2.5 A_a I = 0.825 \% g$$

$$S_{a_{\min}} = A_a I/2 = 0.165 \% g$$

$$T_c = 0.48 S = 0.72 \text{ Seg.}$$

$$T_L = 2.4 S = 3.6 \text{ Seg.}$$



### 5.3.4.6 Período Fundamental Aproximado ( $T_a$ )

$$T_a = 0.08 * 2.75^{3/4} = 0.17 \text{ Seg.}$$

### 5.3.4.7 Cortante Sísmico en la Base ( $V_s$ )

$$V_s = S_a W_p$$

$$V_s = 0.825 * 635 = 524 \text{ KNw}$$

### 5.3.4.8 Análisis Dinámico Elástico.

#### 5.3.4.8.1 Modelo Matemático a emplear.

Modelo Tridimensional con diafragma flexible.

Se tiene en cuenta los siguientes puntos:

- Efectos directos en la dirección bajo estudio.
- Torsión Natural.
- Efectos direccionales (Tomando 30% de incidencia en la dirección perpendicular a la de estudio).

#### 5.3.4.8.2 Masa de la Edificación.

Por tratarse de una estructura de un solo piso tenemos una carga permanente aplicada en el nivel superior.

$$W_p = 635 \text{ KNw}$$

$$\text{Masa concentrada} = 635/9.81 = 64.73 \text{ KNw Seg}^2/\text{m}$$

Por el hecho de que a la estructura se le haya considerado un diafragma flexible entonces la masa concentrada será repartida por área aferente, donde las mismas son:

| <b>COLUMNA</b> | <b>AREA (m2)</b> | <b>MASA AFERENTE (Kgm)</b> |
|----------------|------------------|----------------------------|
| <b>A1</b>      | 6.87             | 1.69                       |
| <b>A2</b>      | 11.86            | 2.92                       |
| <b>A3</b>      | 20.43            | 5.02                       |
| <b>C1</b>      | 6.87             | 1.69                       |
| <b>C2</b>      | 14.9             | 3.66                       |
| <b>C3</b>      | 31.53            | 7.75                       |
| <b>D2</b>      | 3.04             | 0.75                       |
| <b>D3</b>      | 18.75            | 4.61                       |
| <b>E3</b>      | 9.9              | 2.43                       |
| <b>F3</b>      | 11.76            | 2.89                       |
| <b>G3</b>      | 9.9              | 2.43                       |
| <b>H3</b>      | 18.75            | 4.61                       |
| <b>H4</b>      | 3.04             | 0.75                       |
| <b>I3</b>      | 31.93            | 7.85                       |
| <b>I4</b>      | 16.17            | 3.97                       |
| <b>I5</b>      | 6.83             | 1.68                       |
| <b>K3</b>      | 20.83            | 5.12                       |
| <b>K4</b>      | 13.13            | 3.23                       |
| <b>K5</b>      | 6.83             | 1.68                       |

#### 5.3.4.8.3 Representación de los Movimientos Sísmicos.

Procedimiento espectral (NSR-98)



### **5.3.4.9 Metodología de Análisis.**

#### **5.3.4.9.1 Modos de Vibración.**

El número de modos empleados es de 6 tal que por lo menos 90 % de la masa participe en el cálculo de la respuesta sísmica, esto equivale a que participen mas de 58257 Kgm.. Después de el análisis, con los modos de vibración se obtiene un 93 . 09% de participación en el sentido X y de 91 . 52% en el sentido Y.

#### **5.3.4.9.2 Respuesta Espectral Modal.**

La respuesta máxima espectral se obtiene utilizando las ordenadas del espectro de diseño para el período de cada modo de vibración.

#### **5.3.4.9.3 Respuesta Total.**

Todas las respuestas del análisis se combinan de acuerdo a las características de todos los modos de vibración. Los métodos empleados son:

- Combinación Cuadrática Completa (CQC): Con una razón de amortiguamiento del 5%.

Para el caso este es el método más apropiado por las características de la estructura.

- Raíz Cuadrada de la Suma de los Cuadrados (SRSS)

#### **5.3.4.9.4 Comparación con Fuerza Horizontal Equivalente.**

Por ser una estructura irregular  $V_t \geq V_s$  A.5.4.5(a)

515.63 KNw < 524 KNw  $\Rightarrow$  No Cumple.

Como resultado del análisis dinámico tenemos que el cortante basal modal ( $V_t$ ) es inferior al cortante sísmico en la base ( $V_s$ ) entonces hay la necesidad de modificar los factores de amplificación para carga sísmica en  $524/515.63 = 1.016$

#### 5.3.4.9.5 Evaluación de las Derivas.

Se verifica las derivas para cada modo de vibración que no exceda 0.01 hpi.

Se ha encontrado que el máximo desplazamiento en sentido X se presenta sobre la columna I3 y el máximo desplazamiento en sentido Y se encuentra sobre la columna H4.

| Dirección | Deriva<br>(cm) | 0.01hpi<br>(cm) | Observación |
|-----------|----------------|-----------------|-------------|
| X         | 1.852          | 3.15            | Cumple      |
| Y         | 1.898          | 3.15            |             |

#### 5.3.4.9.6 Fuerzas de Diseño de los Elementos.

Las fuerzas combinadas de los modos en el análisis dinámico son reducidas por el coeficiente de disipación de energía.

### 5.3.5. Combinaciones de las Diferentes Solicitaciones. Generales.

#### 5.3.5.1 Coeficiente de Capacidad de Disipación de Energía (R).

$$R = R_o \phi_a \phi_p$$

$$R_o = 7 \quad \text{Tabla A.3-3}$$

$$\phi_a = 1$$

$$\phi_p = 0.9 ; \text{ Tipo 5P Tabla A.3-6}$$

$$R = 6.3$$

Debido a que es necesario preservar el concepto de columna fuerte y viga débil, se ha considerado un coeficiente de capacidad de disipación de energía de 5.25 para columnas.

### 5.3.6 Evaluación del Índice de Estabilidad (Qi).

$$Q_i = \frac{P_i \Delta_{cm}}{V_i h_{pi}} \quad \text{A.6-3}$$

#### Índice de Estabilidad (Sentido X)

| Piso | P (KNw) |    | Vx<br>(KNw) | hp<br>(m) | Δ<br>(m) | Qi   | Observación      |
|------|---------|----|-------------|-----------|----------|------|------------------|
|      | Pm      | Pv |             |           |          |      |                  |
| 1    | 626     | 93 | 524         | 3.15      | 0.0185   | 0.01 | Piso arriostrado |

#### Índice de Estabilidad (Sentido Y)

| Piso | P (KNw) |    | Vy<br>(KNw) | Hp<br>(m) | Δ<br>(m) | Qi   | Observación      |
|------|---------|----|-------------|-----------|----------|------|------------------|
|      | Pm      | Pv |             |           |          |      |                  |
| 1    | 626     | 93 | 525.54      | 3.15      | 0.019    | 0.01 | Piso arriostrado |

### 5.3.7. Efectos Locales ( Pandeo Local)

$$\frac{Klu}{r} \leq 34 - 12 \frac{M_1}{M_2} \quad \text{C.10-8}$$

| Nivel | Columna | Klu/r | M1<br>(KNw-m) | M2<br>(KNw-m) | 34-12M1/M2 | Observación   |
|-------|---------|-------|---------------|---------------|------------|---|
| 1     | A1      | 35    | -0.31         | 0.61          | 40.10      | No es necesario<br>considerar los<br>efectos locales<br>de esbeltez |
|       | A2      |       | -0.16         | 0.87          | 36.21      |   |
|       | A3      |       | -0.86         | 4.08          | 36.53      |   |
|       | K3      |       | -0.82         | 4             | 36.46      |   |
|       | K4      |       | -0.19         | 1.04          | 36.19      |   |
|       | K5      |       | -0.19         | 1.82          | 35.25      |   |
|       | B1      |       | -0.98         | 2.26          | 39.20      |   |
|       | B3      |       | -0.04         | 0.45          | 35.07      |   |
|       | J3      |       | -0.19         | 1.02          | 36.24      |   |
|       | J5      |       | -0.29         | 2.71          | 35.28      |   |
|       | C1      |       | -2.48         | 8.78          | 37.39      |   |
|       | C2      |       | -2.19         | 8.65          | 37.04      |   |
|       | C3      |       | -3.95         | 9.43          | 39.03      |   |
|       | I3      |       | -0.49         | 4.78          | 35.23      |   |
|       | I4      | -2.53 | 10.25         | 36.96         |            |   |
|       | I5      | -1.24 | 3.99          | 37.73         |            |   |
|       | D2      | -0.75 | 2.88          | 37.13         |            |   |
|       | D3      | -1.06 | 3.84          | 37.31         |            |   |
|       | H3      | -0.89 | 3.7           | 36.89         |            |   |
|       | H4      | -0.78 | 3.6           | 36.60         |            |   |
| E3    | -0.3    | 0.62  | 39.81         |               |            |   |
| G3    | -0.27   | 0.71  | 38.56         |               |            |   |
| F3    | -0.05   | 0.24  | 36.50         |               |            |   |

Nota: Los efectos locales han sido evaluados para todas las combinaciones de carga y se presentan en la tabla los resultados más críticos

### 5.3.8. Diseño de Elementos Estructurales.

#### 5.3.8.1 Diseño de Vigas.

##### 5.3.8.1.1 Envoltentes de Diseño.

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CAFETERIA (LICEO U DE NAR)

#### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE                 |
|----------|------|--------|--------|-------|-----------------------|
| ENVOLVEN | ADD  |        |        |       | Envolvente para Vigas |
|          |      | CU     | 1.0000 | COMBO |                       |
|          |      | VIGAS1 | 1.0000 | COMBO |                       |
|          |      | VIGAS2 | 1.0000 | COMBO |                       |
|          |      | VIGAS3 | 1.0000 | COMBO |                       |
|          |      | VIGAS4 | 1.0000 | COMBO |                       |

#### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2    | V3         | T          | M2         | M3         |
|-------|--------------|-----|------|-------|------------|------------|------------|------------|
| 1     | ENVOLVEN MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 12.40 | 1.30       | 1.53       | 1.56       | 16.04      |
|       | 7.4E-01      |     | 0.00 | 12.40 | 1.30       | 1.53       | 8.244E-01  | 8.75       |
|       | 1.33         |     | 0.00 | 12.40 | 1.30       | 1.53       | 1.218E-01  | 1.47       |
|       | 1.91         |     | 0.00 | 12.40 | 1.30       | 1.53       | 4.921E-01  | 3.89       |
|       | 2.50         |     | 0.00 | 12.40 | 1.30       | 1.53       | 9.935E-01  | 9.29       |
| 1     | ENVOLVEN MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -9.19 | -9.045E-01 | -3.11      | -1.23      | -12.32     |
|       | 7.4E-01      |     | 0.00 | -9.19 | -9.045E-01 | -3.11      | -7.252E-01 | -6.91      |
|       | 1.33         |     | 0.00 | -9.19 | -9.045E-01 | -3.11      | -2.540E-01 | -1.51      |
|       | 1.91         |     | 0.00 | -9.19 | -9.045E-01 | -3.11      | -8.558E-01 | -5.82      |
|       | 2.50         |     | 0.00 | -9.19 | -9.045E-01 | -3.11      | -1.59      | -13.10     |
| 2     | ENVOLVEN MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 6.42  | 2.932E-01  | 1.46       | 7.677E-01  | 9.59       |
|       | 9.8E-01      |     | 0.00 | 6.42  | 2.932E-01  | 1.46       | 5.330E-01  | 4.30       |
|       | 1.80         |     | 0.00 | 6.42  | 2.932E-01  | 1.46       | 3.151E-01  | 1.30       |
|       | 2.63         |     | 0.00 | 6.42  | 2.932E-01  | 1.46       | 2.304E-01  | 5.59       |
|       | 3.45         |     | 0.00 | 6.42  | 2.932E-01  | 1.46       | 2.100E-01  | 9.88       |
| 2     | ENVOLVEN MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -5.20 | -7.572E-02 | -6.719E-01 | -3.193E-01 | -7.28      |
|       | 9.8E-01      |     | 0.00 | -5.20 | -7.572E-02 | -6.719E-01 | -2.640E-01 | -2.99      |
|       | 1.80         |     | 0.00 | -5.20 | -7.572E-02 | -6.719E-01 | -2.254E-01 | -9.974E-01 |
|       | 2.63         |     | 0.00 | -5.20 | -7.572E-02 | -6.719E-01 | -3.202E-01 | -6.29      |
|       | 3.45         |     | 0.00 | -5.20 | -7.572E-02 | -6.719E-01 | -4.791E-01 | -11.58     |
| 3     | ENVOLVEN MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 8.51  | 2.493E-01  | 1.29       | 6.496E-01  | 15.30      |
|       | 9.8E-01      |     | 0.00 | 8.51  | 2.493E-01  | 1.29       | 4.510E-01  | 8.28       |
|       | 1.80         |     | 0.00 | 8.51  | 2.493E-01  | 1.29       | 3.152E-01  | 1.27       |
|       | 2.63         |     | 0.00 | 8.51  | 2.493E-01  | 1.29       | 4.202E-01  | 7.17       |
|       | 3.45         |     | 0.00 | 8.51  | 2.493E-01  | 1.29       | 5.846E-01  | 14.88      |
| 3     | ENVOLVEN MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -9.34 | -4.620E-01 | -2.35      | -1.08      | -15.94     |
|       | 9.8E-01      |     | 0.00 | -9.34 | -4.620E-01 | -2.35      | -7.053E-01 | -8.24      |
|       | 1.80         |     | 0.00 | -9.34 | -4.620E-01 | -2.35      | -3.939E-01 | -5.355E-01 |
|       | 2.63         |     | 0.00 | -9.34 | -4.620E-01 | -2.35      | -3.234E-01 | -5.76      |
|       | 3.45         |     | 0.00 | -9.34 | -4.620E-01 | -2.35      | -3.123E-01 | -12.77     |

|   |              |      |       |            |            |            |            |
|---|--------------|------|-------|------------|------------|------------|------------|
| 4 | ENVOLVEN MAX |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | 7.45  | 6.149E-01  | 3.17       | 9.760E-01  | 12.10      |
|   | 1.05         | 0.00 | 7.45  | 6.149E-01  | 3.17       | 4.656E-01  | 5.39       |
|   | 1.95         | 0.00 | 7.45  | 6.149E-01  | 3.17       | 4.020E-01  | 5.292E-01  |
|   | 2.85         | 0.00 | 7.45  | 6.149E-01  | 3.17       | 1.16       | 7.69       |
|   | 3.75         | 0.00 | 7.45  | 6.149E-01  | 3.17       | 1.94       | 14.86      |
| 4 | ENVOLVEN MIN |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | -7.96 | -8.848E-01 | -2.10      | -1.33      | -13.81     |
|   | 1.05         | 0.00 | -7.96 | -8.848E-01 | -2.10      | -5.813E-01 | -6.64      |
|   | 1.95         | 0.00 | -7.96 | -8.848E-01 | -2.10      | -2.747E-01 | -1.32      |
|   | 2.85         | 0.00 | -7.96 | -8.848E-01 | -2.10      | -7.890E-01 | -8.02      |
|   | 3.75         | 0.00 | -7.96 | -8.848E-01 | -2.10      | -1.33      | -14.72     |
| 5 | ENVOLVEN MAX |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | 6.02  | 4.111E-01  | 1.81       | 8.753E-01  | 9.99       |
|   | 9.9E-01      | 0.00 | 6.02  | 4.111E-01  | 1.81       | 5.345E-01  | 5.03       |
|   | 1.83         | 0.00 | 6.02  | 4.111E-01  | 1.81       | 4.093E-01  | 7.467E-01  |
|   | 2.67         | 0.00 | 6.02  | 4.111E-01  | 1.81       | 6.740E-01  | 3.14       |
|   | 3.50         | 0.00 | 6.02  | 4.111E-01  | 1.81       | 9.520E-01  | 7.41       |
| 5 | ENVOLVEN MIN |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | -5.13 | -5.327E-01 | -1.70      | -9.908E-01 | -9.89      |
|   | 9.9E-01      | 0.00 | -5.13 | -5.327E-01 | -1.70      | -5.481E-01 | -5.68      |
|   | 1.83         | 0.00 | -5.13 | -5.327E-01 | -1.70      | -3.209E-01 | -2.14      |
|   | 2.67         | 0.00 | -5.13 | -5.327E-01 | -1.70      | -4.836E-01 | -5.29      |
|   | 3.50         | 0.00 | -5.13 | -5.327E-01 | -1.70      | -6.597E-01 | -10.30     |
| 6 | ENVOLVEN MAX |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | 13.30 | 4.577E-01  | 2.02       | 5.128E-01  | 22.10      |
|   | 9.5E-01      | 0.00 | 13.30 | 4.577E-01  | 2.02       | 2.836E-01  | 11.47      |
|   | 1.75         | 0.00 | 13.30 | 4.577E-01  | 2.02       | 5.922E-01  | 8.307E-01  |
|   | 2.55         | 0.00 | 13.30 | 4.577E-01  | 2.02       | 1.09       | 5.28       |
|   | 3.35         | 0.00 | 13.30 | 4.577E-01  | 2.02       | 1.60       | 12.80      |
| 6 | ENVOLVEN MIN |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | -9.40 | -6.354E-01 | -1.40      | -6.677E-01 | -17.27     |
|   | 9.5E-01      | 0.00 | -9.40 | -6.354E-01 | -1.40      | -2.963E-01 | -9.75      |
|   | 1.75         | 0.00 | -9.40 | -6.354E-01 | -1.40      | -4.628E-01 | -2.24      |
|   | 2.55         | 0.00 | -9.40 | -6.354E-01 | -1.40      | -8.226E-01 | -9.81      |
|   | 3.35         | 0.00 | -9.40 | -6.354E-01 | -1.40      | -1.19      | -20.44     |
| 7 | ENVOLVEN MAX |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | 13.69 | 4.471E-01  | 1.85       | 6.764E-01  | 22.84      |
|   | 9.5E-01      | 0.00 | 13.69 | 4.471E-01  | 1.85       | 3.876E-01  | 11.89      |
|   | 1.75         | 0.00 | 13.69 | 4.471E-01  | 1.85       | 5.480E-01  | 9.448E-01  |
|   | 2.55         | 0.00 | 13.69 | 4.471E-01  | 1.85       | 8.005E-01  | 5.43       |
|   | 3.35         | 0.00 | 13.69 | 4.471E-01  | 1.85       | 1.08       | 13.18      |
| 7 | ENVOLVEN MIN |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | -9.68 | -5.065E-01 | -1.57      | -9.428E-01 | -17.80     |
|   | 9.5E-01      | 0.00 | -9.68 | -5.065E-01 | -1.57      | -6.065E-01 | -10.06     |
|   | 1.75         | 0.00 | -9.68 | -5.065E-01 | -1.57      | -7.194E-01 | -2.31      |
|   | 2.55         | 0.00 | -9.68 | -5.065E-01 | -1.57      | -9.244E-01 | -10.01     |
|   | 3.35         | 0.00 | -9.68 | -5.065E-01 | -1.57      | -1.15      | -20.96     |
| 8 | ENVOLVEN MAX |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | 4.48  | 4.323E-01  | 1.09       | 1.12       | 8.50       |
|   | 9.5E-01      | 0.00 | 4.48  | 4.323E-01  | 1.09       | 7.911E-01  | 4.92       |
|   | 1.75         | 0.00 | 4.48  | 4.323E-01  | 1.09       | 5.659E-01  | 1.33       |
|   | 2.55         | 0.00 | 4.48  | 4.323E-01  | 1.09       | 7.353E-01  | 4.12       |
|   | 3.35         | 0.00 | 4.48  | 4.323E-01  | 1.09       | 9.685E-01  | 8.53       |
| 8 | ENVOLVEN MIN |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | -5.52 | -5.484E-01 | -2.26      | -1.57      | -9.12      |
|   | 9.5E-01      | 0.00 | -5.52 | -5.484E-01 | -2.26      | -1.15      | -4.71      |
|   | 1.75         | 0.00 | -5.52 | -5.484E-01 | -2.26      | -8.293E-01 | -2.957E-01 |
|   | 2.55         | 0.00 | -5.52 | -5.484E-01 | -2.26      | -9.059E-01 | -2.25      |
|   | 3.35         | 0.00 | -5.52 | -5.484E-01 | -2.26      | -1.05      | -5.84      |
| 9 | ENVOLVEN MAX |      |       |            |            |            |            |
|   | 1.5E-01      | 0.00 | 8.74  | 7.134E-01  | -2.086E-01 | 8.190E-01  | 13.77      |
|   | 9.5E-01      | 0.00 | 8.74  | 7.134E-01  | -2.086E-01 | 5.091E-01  | 6.79       |
|   | 1.75         | 0.00 | 8.74  | 7.134E-01  | -2.086E-01 | 3.410E-01  | 1.01       |
|   | 2.55         | 0.00 | 8.74  | 7.134E-01  | -2.086E-01 | 8.203E-01  | 4.94       |

|    |              |      |        |            |            |            |            |
|----|--------------|------|--------|------------|------------|------------|------------|
|    | 3.35         | 0.00 | 8.74   | 7.134E-01  | -2.086E-01 | 1.43       | 9.25       |
| 9  | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -5.40  | -7.659E-01 | -1.22      | -1.04      | -8.02      |
|    | 9.5E-01      | 0.00 | -5.40  | -7.659E-01 | -1.22      | -6.873E-01 | -3.71      |
|    | 1.75         | 0.00 | -5.40  | -7.659E-01 | -1.22      | -4.773E-01 | -6.022E-01 |
|    | 2.55         | 0.00 | -5.40  | -7.659E-01 | -1.22      | -9.146E-01 | -7.21      |
|    | 3.35         | 0.00 | -5.40  | -7.659E-01 | -1.22      | -1.48      | -14.19     |
| 10 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 12.10  | 5.162E-01  | -2.408E-01 | 1.25       | 19.18      |
|    | 9.5E-01      | 0.00 | 12.10  | 5.162E-01  | -2.408E-01 | 8.388E-01  | 9.50       |
|    | 1.75         | 0.00 | 12.10  | 5.162E-01  | -2.408E-01 | 4.267E-01  | 6.763E-01  |
|    | 2.55         | 0.00 | 12.10  | 5.162E-01  | -2.408E-01 | 2.560E-02  | 5.80       |
|    | 3.35         | 0.00 | 12.10  | 5.162E-01  | -2.408E-01 | 2.147E-01  | 10.95      |
| 10 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -6.45  | -5.323E-01 | -1.01      | -1.49      | -9.69      |
|    | 9.5E-01      | 0.00 | -6.45  | -5.323E-01 | -1.01      | -1.07      | -4.53      |
|    | 1.75         | 0.00 | -6.45  | -5.323E-01 | -1.01      | -6.439E-01 | -2.301E-01 |
|    | 2.55         | 0.00 | -6.45  | -5.323E-01 | -1.01      | -2.299E-01 | -9.87      |
|    | 3.35         | 0.00 | -6.45  | -5.323E-01 | -1.01      | -4.062E-01 | -19.55     |
| 11 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 12.32  | 4.431E-01  | 1.32       | 1.32       | 19.51      |
|    | 9.5E-01      | 0.00 | 12.32  | 4.431E-01  | 1.32       | 9.679E-01  | 9.66       |
|    | 1.75         | 0.00 | 12.32  | 4.431E-01  | 1.32       | 6.219E-01  | 7.059E-01  |
|    | 2.55         | 0.00 | 12.32  | 4.431E-01  | 1.32       | 3.002E-01  | 5.98       |
|    | 3.35         | 0.00 | 12.32  | 4.431E-01  | 1.32       | 2.438E-01  | 11.30      |
| 11 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -6.64  | -3.683E-01 | -7.894E-01 | -1.10      | -9.97      |
|    | 9.5E-01      | 0.00 | -6.64  | -3.683E-01 | -7.894E-01 | -8.095E-01 | -4.66      |
|    | 1.75         | 0.00 | -6.64  | -3.683E-01 | -7.894E-01 | -5.233E-01 | -2.528E-01 |
|    | 2.55         | 0.00 | -6.64  | -3.683E-01 | -7.894E-01 | -2.614E-01 | -10.07     |
|    | 3.35         | 0.00 | -6.64  | -3.683E-01 | -7.894E-01 | -2.649E-01 | -19.93     |
| 12 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 6.39   | 5.984E-01  | 2.04       | 1.07       | 7.85       |
|    | 9.5E-01      | 0.00 | 6.39   | 5.984E-01  | 2.04       | 9.118E-01  | 2.74       |
|    | 1.75         | 0.00 | 6.39   | 5.984E-01  | 2.04       | 8.201E-01  | -1.04      |
|    | 2.55         | 0.00 | 6.39   | 5.984E-01  | 2.04       | 1.12       | 1.41       |
|    | 3.35         | 0.00 | 6.39   | 5.984E-01  | 2.04       | 1.52       | 3.86       |
| 12 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -3.07  | -5.170E-01 | -8.969E-03 | -7.878E-01 | -5.95      |
|    | 9.5E-01      | 0.00 | -3.07  | -5.170E-01 | -8.969E-03 | -6.904E-01 | -3.50      |
|    | 1.75         | 0.00 | -3.07  | -5.170E-01 | -8.969E-03 | -6.639E-01 | -2.38      |
|    | 2.55         | 0.00 | -3.07  | -5.170E-01 | -8.969E-03 | -1.03      | -7.49      |
|    | 3.35         | 0.00 | -3.07  | -5.170E-01 | -8.969E-03 | -1.49      | -12.60     |
| 13 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 11.69  | 6.402E-01  | 1.27       | 1.41       | 18.53      |
|    | 1.00         | 0.00 | 11.69  | 6.402E-01  | 1.27       | 8.668E-01  | 8.59       |
|    | 1.85         | 0.00 | 11.69  | 6.402E-01  | 1.27       | 3.302E-01  | -1.33      |
|    | 2.70         | 0.00 | 11.69  | 6.402E-01  | 1.27       | 2.419E-01  | 5.86       |
|    | 3.55         | 0.00 | 11.69  | 6.402E-01  | 1.27       | 6.115E-01  | 15.21      |
| 13 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -11.00 | -5.134E-01 | -4.663E-01 | -1.16      | -22.18     |
|    | 1.00         | 0.00 | -11.00 | -5.134E-01 | -4.663E-01 | -7.303E-01 | -12.83     |
|    | 1.85         | 0.00 | -11.00 | -5.134E-01 | -4.663E-01 | -3.015E-01 | -3.51      |
|    | 2.70         | 0.00 | -11.00 | -5.134E-01 | -4.663E-01 | -3.209E-01 | -11.30     |
|    | 3.55         | 0.00 | -11.00 | -5.134E-01 | -4.663E-01 | -7.983E-01 | -21.24     |
| 14 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 13.35  | 3.355E-01  | 2.783E-03  | 5.143E-01  | 22.86      |
|    | 9.8E-01      | 0.00 | 13.35  | 3.355E-01  | 2.783E-03  | 2.766E-01  | 11.86      |
|    | 1.80         | 0.00 | 13.35  | 3.355E-01  | 2.783E-03  | 9.187E-02  | 2.93       |
|    | 2.63         | 0.00 | 13.35  | 3.355E-01  | 2.783E-03  | 1.728E-01  | 11.23      |
|    | 3.45         | 0.00 | 13.35  | 3.355E-01  | 2.783E-03  | 2.619E-01  | 19.65      |
| 14 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -10.20 | -1.139E-01 | -1.15      | -2.270E-01 | -14.05     |
|    | 9.8E-01      | 0.00 | -10.20 | -1.139E-01 | -1.15      | -1.722E-01 | -5.64      |
|    | 1.80         | 0.00 | -10.20 | -1.139E-01 | -1.15      | -1.703E-01 | 6.956E-01  |
|    | 2.63         | 0.00 | -10.20 | -1.139E-01 | -1.15      | -4.341E-01 | -10.21     |

|    |              |      |        |            |            |            |            |
|----|--------------|------|--------|------------|------------|------------|------------|
|    | 3.45         | 0.00 | -10.20 | -1.139E-01 | -1.15      | -7.060E-01 | -21.21     |
| 15 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 12.14  | 2.768E-01  | 1.52       | 6.268E-01  | 22.97      |
|    | 9.8E-01      | 0.00 | 12.14  | 2.768E-01  | 1.52       | 4.007E-01  | 12.96      |
|    | 1.80         | 0.00 | 12.14  | 2.768E-01  | 1.52       | 1.826E-01  | 3.02       |
|    | 2.63         | 0.00 | 12.14  | 2.768E-01  | 1.52       | 3.071E-01  | 11.65      |
|    | 3.45         | 0.00 | 12.14  | 2.768E-01  | 1.52       | 5.540E-01  | 22.50      |
| 15 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -13.17 | -4.060E-01 | -2.859E-01 | -8.240E-01 | -20.96     |
|    | 9.8E-01      | 0.00 | -13.17 | -4.060E-01 | -2.859E-01 | -4.914E-01 | -10.10     |
|    | 1.80         | 0.00 | -13.17 | -4.060E-01 | -2.859E-01 | -1.666E-01 | 6.900E-01  |
|    | 2.63         | 0.00 | -13.17 | -4.060E-01 | -2.859E-01 | -1.845E-01 | -7.09      |
|    | 3.45         | 0.00 | -13.17 | -4.060E-01 | -2.859E-01 | -3.248E-01 | -17.09     |
| 16 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 10.79  | 6.426E-01  | 2.675E-01  | 8.263E-01  | 16.41      |
|    | 1.05         | 0.00 | 10.79  | 6.426E-01  | 2.675E-01  | 2.964E-01  | 6.71       |
|    | 1.95         | 0.00 | 10.79  | 6.426E-01  | 2.675E-01  | 4.265E-01  | -6.141E-01 |
|    | 2.85         | 0.00 | 10.79  | 6.426E-01  | 2.675E-01  | 1.12       | 9.56       |
|    | 3.75         | 0.00 | 10.79  | 6.426E-01  | 2.675E-01  | 1.82       | 19.75      |
| 16 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -11.32 | -7.914E-01 | -2.04      | -1.08      | -20.99     |
|    | 1.05         | 0.00 | -11.32 | -7.914E-01 | -2.04      | -4.210E-01 | -10.80     |
|    | 1.95         | 0.00 | -11.32 | -7.914E-01 | -2.04      | -4.171E-01 | -3.01      |
|    | 2.85         | 0.00 | -11.32 | -7.914E-01 | -2.04      | -9.742E-01 | -12.71     |
|    | 3.75         | 0.00 | -11.32 | -7.914E-01 | -2.04      | -1.54      | -22.42     |
| 17 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 12.85  | 3.383E-01  | -6.554E-01 | 4.687E-01  | 19.91      |
|    | 9.9E-01      | 0.00 | 12.85  | 3.383E-01  | -6.554E-01 | 2.617E-01  | 9.15       |
|    | 1.83         | 0.00 | 12.85  | 3.383E-01  | -6.554E-01 | 9.070E-02  | -1.43      |
|    | 2.66         | 0.00 | 12.85  | 3.383E-01  | -6.554E-01 | 1.398E-01  | 7.12       |
|    | 3.50         | 0.00 | 12.85  | 3.383E-01  | -6.554E-01 | 2.068E-01  | 15.71      |
| 17 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -10.25 | -8.304E-02 | -1.15      | -1.412E-01 | -18.64     |
|    | 9.9E-01      | 0.00 | -10.25 | -8.304E-02 | -1.15      | -1.479E-01 | -10.05     |
|    | 1.83         | 0.00 | -10.25 | -8.304E-02 | -1.15      | -1.906E-01 | -1.64      |
|    | 2.66         | 0.00 | -10.25 | -8.304E-02 | -1.15      | -4.535E-01 | -12.37     |
|    | 3.50         | 0.00 | -10.25 | -8.304E-02 | -1.15      | -7.343E-01 | -23.13     |
| 18 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.7E-01      | 0.00 | 10.18  | 3.504E-01  | 1.62       | 7.207E-01  | 17.46      |
|    | 1.02         | 0.00 | 10.18  | 3.504E-01  | 1.62       | 4.304E-01  | 8.90       |
|    | 1.86         | 0.00 | 10.18  | 3.504E-01  | 1.62       | 1.634E-01  | 7.327E-01  |
|    | 2.70         | 0.00 | 10.18  | 3.504E-01  | 1.62       | 2.285E-01  | 6.86       |
|    | 3.54         | 0.00 | 10.18  | 3.504E-01  | 1.62       | 3.758E-01  | 12.98      |
| 18 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.7E-01      | 0.00 | -7.29  | -2.138E-01 | -1.710E-01 | -3.713E-01 | -11.52     |
|    | 1.02         | 0.00 | -7.29  | -2.138E-01 | -1.710E-01 | -1.958E-01 | -5.40      |
|    | 1.86         | 0.00 | -7.29  | -2.138E-01 | -1.710E-01 | -4.363E-02 | 3.414E-01  |
|    | 2.70         | 0.00 | -7.29  | -2.138E-01 | -1.710E-01 | -2.235E-01 | -8.21      |
|    | 3.54         | 0.00 | -7.29  | -2.138E-01 | -1.710E-01 | -4.856E-01 | -16.77     |
| 19 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.7E-01      | 0.00 | 10.53  | 3.884E-01  | 1.465E-01  | 7.480E-01  | 18.11      |
|    | 1.02         | 0.00 | 10.53  | 3.884E-01  | 1.465E-01  | 4.233E-01  | 9.25       |
|    | 1.86         | 0.00 | 10.53  | 3.884E-01  | 1.465E-01  | 1.176E-01  | 7.537E-01  |
|    | 2.70         | 0.00 | 10.53  | 3.884E-01  | 1.465E-01  | 2.700E-01  | 6.99       |
|    | 3.54         | 0.00 | 10.53  | 3.884E-01  | 1.465E-01  | 6.159E-01  | 13.24      |
| 19 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.7E-01      | 0.00 | -7.43  | -4.342E-01 | -1.86      | -8.537E-01 | -11.75     |
|    | 1.02         | 0.00 | -7.43  | -4.342E-01 | -1.86      | -4.906E-01 | -5.51      |
|    | 1.86         | 0.00 | -7.43  | -4.342E-01 | -1.86      | -1.464E-01 | 3.883E-01  |
|    | 2.70         | 0.00 | -7.43  | -4.342E-01 | -1.86      | -2.603E-01 | -8.45      |
|    | 3.54         | 0.00 | -7.43  | -4.342E-01 | -1.86      | -5.678E-01 | -17.31     |
| 20 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 15.21  | 2.125E-01  | 1.11       | 2.263E-01  | 23.45      |
|    | 9.9E-01      | 0.00 | 15.21  | 2.125E-01  | 1.11       | 1.338E-01  | 10.71      |
|    | 1.83         | 0.00 | 15.21  | 2.125E-01  | 1.11       | 2.485E-01  | -1.55      |



|    |              |      |        |            |            |            |            |
|----|--------------|------|--------|------------|------------|------------|------------|
|    | 2.66         | 0.00 | 15.21  | 2.125E-01  | 1.11       | 6.700E-01  | 8.66       |
|    | 3.50         | 0.00 | 15.21  | 2.125E-01  | 1.11       | 1.11       | 18.87      |
| 20 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -12.19 | -5.222E-01 | 5.448E-01  | -6.562E-01 | -21.98     |
|    | 9.9E-01      | 0.00 | -12.19 | -5.222E-01 | 5.448E-01  | -3.044E-01 | -11.77     |
|    | 1.83         | 0.00 | -12.19 | -5.222E-01 | 5.448E-01  | -1.597E-01 | -2.04      |
|    | 2.66         | 0.00 | -12.19 | -5.222E-01 | 5.448E-01  | -3.219E-01 | -14.78     |
|    | 3.50         | 0.00 | -12.19 | -5.222E-01 | 5.448E-01  | -4.980E-01 | -27.52     |
| 21 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 15.78  | 5.346E-01  | 1.13       | 9.171E-01  | 20.86      |
|    | 8.4E-01      | 0.00 | 15.78  | 5.346E-01  | 1.13       | 5.540E-01  | 10.03      |
|    | 1.52         | 0.00 | 15.78  | 5.346E-01  | 1.13       | 2.355E-01  | -5.899E-01 |
|    | 2.21         | 0.00 | 15.78  | 5.346E-01  | 1.13       | 2.548E-01  | 6.45       |
|    | 2.90         | 0.00 | 15.78  | 5.346E-01  | 1.13       | 3.988E-01  | 15.07      |
| 21 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -12.56 | -2.779E-01 | -8.070E-03 | -3.894E-01 | -19.43     |
|    | 8.4E-01      | 0.00 | -12.56 | -2.779E-01 | -8.070E-03 | -2.026E-01 | -10.82     |
|    | 1.52         | 0.00 | -12.56 | -2.779E-01 | -8.070E-03 | -6.034E-02 | -2.40      |
|    | 2.21         | 0.00 | -12.56 | -2.779E-01 | -8.070E-03 | -2.560E-01 | -11.66     |
|    | 2.90         | 0.00 | -12.56 | -2.779E-01 | -8.070E-03 | -5.761E-01 | -22.48     |
| 22 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | 12.37  | 4.918E-01  | 3.197E-01  | 6.010E-01  | 14.86      |
|    | 8.4E-01      | 0.00 | 12.37  | 4.918E-01  | 3.197E-01  | 2.813E-01  | 6.39       |
|    | 1.52         | 0.00 | 12.37  | 4.918E-01  | 3.197E-01  | 2.900E-01  | -8.938E-01 |
|    | 2.21         | 0.00 | 12.37  | 4.918E-01  | 3.197E-01  | 8.130E-01  | 8.92       |
|    | 2.89         | 0.00 | 12.37  | 4.918E-01  | 3.197E-01  | 1.38       | 18.88      |
| 22 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.5E-01      | 0.00 | -14.53 | -8.294E-01 | -1.69      | -9.048E-01 | -20.99     |
|    | 8.4E-01      | 0.00 | -14.53 | -8.294E-01 | -1.69      | -3.536E-01 | -11.04     |
|    | 1.52         | 0.00 | -14.53 | -8.294E-01 | -1.69      | -1.309E-01 | -2.28      |
|    | 2.21         | 0.00 | -14.53 | -8.294E-01 | -1.69      | -4.224E-01 | -10.62     |
|    | 2.89         | 0.00 | -14.53 | -8.294E-01 | -1.69      | -7.568E-01 | -19.09     |
| 23 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.7E-01      | 0.00 | 10.95  | 2.595E-01  | 1.23       | 3.519E-01  | 18.34      |
|    | 1.02         | 0.00 | 10.95  | 2.595E-01  | 1.23       | 1.792E-01  | 9.08       |
|    | 1.87         | 0.00 | 10.95  | 2.595E-01  | 1.23       | 1.665E-01  | 1.78       |
|    | 2.72         | 0.00 | 10.95  | 2.595E-01  | 1.23       | 3.317E-01  | 9.46       |
|    | 3.57         | 0.00 | 10.95  | 2.595E-01  | 1.23       | 5.340E-01  | 17.60      |
| 23 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.7E-01      | 0.00 | -9.65  | -2.545E-01 | -1.47      | -3.890E-01 | -15.27     |
|    | 1.02         | 0.00 | -9.65  | -2.545E-01 | -1.47      | -2.206E-01 | -7.12      |
|    | 1.87         | 0.00 | -9.65  | -2.545E-01 | -1.47      | -2.121E-01 | -9.310E-01 |
|    | 2.72         | 0.00 | -9.65  | -2.545E-01 | -1.47      | -3.815E-01 | -9.72      |
|    | 3.57         | 0.00 | -9.65  | -2.545E-01 | -1.47      | -5.882E-01 | -18.98     |
| 24 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.8E-01      | 0.00 | 10.93  | 4.104E-01  | 1.37       | 5.472E-01  | 18.40      |
|    | 1.02         | 0.00 | 10.93  | 4.104E-01  | 1.37       | 2.471E-01  | 9.17       |
|    | 1.87         | 0.00 | 10.93  | 4.104E-01  | 1.37       | 2.469E-01  | 1.85       |
|    | 2.72         | 0.00 | 10.93  | 4.104E-01  | 1.37       | 5.345E-01  | 9.71       |
|    | 3.57         | 0.00 | 10.93  | 4.104E-01  | 1.37       | 8.549E-01  | 18.03      |
| 24 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.8E-01      | 0.00 | -9.87  | -3.906E-01 | -1.24      | -5.219E-01 | -15.63     |
|    | 1.02         | 0.00 | -9.87  | -3.906E-01 | -1.24      | -2.386E-01 | -7.29      |
|    | 1.87         | 0.00 | -9.87  | -3.906E-01 | -1.24      | -2.552E-01 | -8.834E-01 |
|    | 2.72         | 0.00 | -9.87  | -3.906E-01 | -1.24      | -5.596E-01 | -9.65      |
|    | 3.57         | 0.00 | -9.87  | -3.906E-01 | -1.24      | -8.967E-01 | -18.88     |
| 25 | ENVOLVEN MAX |      |        |            |            |            |            |
|    | 1.8E-01      | 0.00 | 8.58   | 2.695E-01  | 9.017E-01  | 4.794E-01  | 18.75      |
|    | 1.28         | 0.00 | 8.58   | 2.695E-01  | 9.017E-01  | 2.652E-01  | 9.29       |
|    | 2.38         | 0.00 | 8.58   | 2.695E-01  | 9.017E-01  | 3.488E-01  | 1.76       |
|    | 3.49         | 0.00 | 8.58   | 2.695E-01  | 9.017E-01  | 5.720E-01  | 9.71       |
|    | 4.59         | 0.00 | 8.58   | 2.695E-01  | 9.017E-01  | 8.214E-01  | 18.26      |
| 25 | ENVOLVEN MIN |      |        |            |            |            |            |
|    | 1.8E-01      | 0.00 | -7.75  | -2.462E-01 | -1.03      | -4.075E-01 | -15.96     |
|    | 1.28         | 0.00 | -7.75  | -2.462E-01 | -1.03      | -2.190E-01 | -7.42      |
|    | 2.38         | 0.00 | -7.75  | -2.462E-01 | -1.03      | -3.283E-01 | -8.096E-01 |

|    |              |        |            |            |            |            |            |
|----|--------------|--------|------------|------------|------------|------------|------------|
|    | 3.49         | 0.00   | -7.75      | -2.462E-01 | -1.03      | -5.773E-01 | -9.67      |
|    | 4.59         | 0.00   | -7.75      | -2.462E-01 | -1.03      | -8.524E-01 | -19.14     |
| 26 | ENVOLVEN MAX |        |            |            |            |            |            |
|    | 1.8E-01      | 0.00   | 8.74       | 3.412E-01  | 1.05       | 7.492E-01  | 19.14      |
|    | 1.28         | 0.00   | 8.74       | 3.412E-01  | 1.05       | 4.263E-01  | 9.51       |
|    | 2.38         | 0.00   | 8.74       | 3.412E-01  | 1.05       | 3.659E-01  | 1.77       |
|    | 3.49         | 0.00   | 8.74       | 3.412E-01  | 1.05       | 5.802E-01  | 10.11      |
|    | 4.59         | 0.00   | 8.74       | 3.412E-01  | 1.05       | 8.911E-01  | 19.03      |
| 26 | ENVOLVEN MIN |        |            |            |            |            |            |
|    | 1.8E-01      | 0.00   | -8.08      | -3.330E-01 | -8.347E-01 | -7.219E-01 | -16.67     |
|    | 1.28         | 0.00   | -8.08      | -3.330E-01 | -8.347E-01 | -4.081E-01 | -7.75      |
|    | 2.38         | 0.00   | -8.08      | -3.330E-01 | -8.347E-01 | -3.567E-01 | -7.409E-01 |
|    | 3.49         | 0.00   | -8.08      | -3.330E-01 | -8.347E-01 | -5.801E-01 | -9.80      |
|    | 4.59         | 0.00   | -8.08      | -3.330E-01 | -8.347E-01 | -9.000E-01 | -19.44     |
| 50 | ENVOLVEN MAX |        |            |            |            |            |            |
|    | 1.5E-01      | 2.85   | -1.32      | 3.95       | 2.72       | 4.77       | 7.14       |
|    | 7.4E-01      | 2.85   | 3.26       | 3.95       | 2.72       | 2.54       | 6.57       |
|    | 1.33         | 2.85   | 7.85       | 3.95       | 2.72       | 8.675E-01  | 3.31       |
|    | 1.91         | 2.85   | 12.43      | 3.95       | 2.72       | 3.69       | 3.27       |
|    | 2.50         | 2.85   | 17.02      | 3.95       | 2.72       | 6.79       | 2.28       |
| 50 | ENVOLVEN MIN |        |            |            |            |            |            |
|    | 1.5E-01      | -9.67  | -14.36     | -5.97      | -1.67      | -8.02      | -9.92      |
|    | 7.4E-01      | -9.67  | -9.77      | -5.97      | -1.67      | -4.60      | -2.83      |
|    | 1.33         | -9.67  | -5.19      | -5.97      | -1.67      | -1.74      | 1.57       |
|    | 1.91         | -9.67  | -6.040E-01 | -5.97      | -1.67      | -3.37      | -2.65      |
|    | 2.50         | -9.67  | 3.98       | -5.97      | -1.67      | -5.28      | -11.30     |
| 51 | ENVOLVEN MAX |        |            |            |            |            |            |
|    | 1.5E-01      | 40.07  | -7.04      | 2.61       | 2.422E-01  | 5.73       | 1.00       |
|    | 9.8E-01      | 40.07  | -6.017E-01 | 2.61       | 2.422E-01  | 3.72       | 4.16       |
|    | 1.80         | 40.07  | 5.84       | 2.61       | 2.422E-01  | 2.17       | 4.20       |
|    | 2.63         | 40.07  | 12.28      | 2.61       | 2.422E-01  | 1.54       | 3.77       |
|    | 3.45         | 40.07  | 18.72      | 2.61       | 2.422E-01  | 3.55       | -1.97      |
| 51 | ENVOLVEN MIN |        |            |            |            |            |            |
|    | 1.5E-01      | -9.44  | -15.58     | -2.48      | -1.94      | -4.81      | -10.89     |
|    | 9.8E-01      | -9.44  | -9.14      | -2.48      | -1.94      | -2.91      | -6.895E-01 |
|    | 1.80         | -9.44  | -2.70      | -2.48      | -1.94      | -1.46      | 2.00       |
|    | 2.63         | -9.44  | 3.73       | -2.48      | -1.94      | -9.358E-01 | -5.48      |
|    | 3.45         | -9.44  | 10.17      | -2.48      | -1.94      | -3.04      | -18.26     |
| 52 | ENVOLVEN MAX |        |            |            |            |            |            |
|    | 1.5E-01      | 20.21  | -8.41      | 2.74       | 2.49       | 3.16       | 1.66       |
|    | 9.8E-01      | 20.21  | -1.97      | 2.74       | 2.49       | 1.02       | 5.94       |
|    | 1.80         | 20.21  | 4.47       | 2.74       | 2.49       | 2.00       | 4.91       |
|    | 2.63         | 20.21  | 10.91      | 2.74       | 2.49       | 4.40       | 4.80       |
|    | 3.45         | 20.21  | 17.35      | 2.74       | 2.49       | 7.30       | 2.84       |
| 52 | ENVOLVEN MIN |        |            |            |            |            |            |
|    | 1.5E-01      | -18.31 | -20.16     | -3.59      | -7.626E-01 | -4.64      | -21.21     |
|    | 9.8E-01      | -18.31 | -13.73     | -3.59      | -7.626E-01 | -1.81      | -7.23      |
|    | 1.80         | -18.31 | -7.29      | -3.59      | -7.626E-01 | -2.09      | 1.44       |
|    | 2.63         | -18.31 | -8.482E-01 | -3.59      | -7.626E-01 | -3.79      | -1.44      |
|    | 3.45         | -18.31 | 5.59       | -3.59      | -7.626E-01 | -5.99      | -13.09     |
| 53 | ENVOLVEN MAX |        |            |            |            |            |            |
|    | 1.5E-01      | 23.08  | -10.34     | 3.53       | 2.33       | 7.88       | -2.20      |
|    | 1.05         | 23.08  | -3.32      | 3.53       | 2.33       | 4.82       | 3.94       |
|    | 1.95         | 23.08  | 3.71       | 3.53       | 2.33       | 1.86       | 7.03       |
|    | 2.85         | 23.08  | 10.73      | 3.53       | 2.33       | 2.35       | 9.56       |
|    | 3.75         | 23.08  | 17.76      | 3.53       | 2.33       | 4.72       | 5.77       |
| 53 | ENVOLVEN MIN |        |            |            |            |            |            |
|    | 1.5E-01      | -2.89  | -20.37     | -2.92      | -2.36      | -6.44      | -16.99     |
|    | 1.05         | -2.89  | -13.35     | -2.92      | -2.36      | -3.92      | -1.82      |
|    | 1.95         | -2.89  | -6.32      | -2.92      | -2.36      | -1.52      | 3.77       |
|    | 2.85         | -2.89  | 7.016E-01  | -2.92      | -2.36      | -2.55      | -2.73      |
|    | 3.75         | -2.89  | 7.73       | -2.92      | -2.36      | -5.47      | -15.55     |
| 54 | ENVOLVEN MAX |        |            |            |            |            |            |
|    | 1.5E-01      | 11.09  | -16.60     | 1.55       | 1.87       | 4.87       | 2.38       |
|    | 9.9E-01      | 11.09  | -4.57      | 1.55       | 1.87       | 3.58       | 11.30      |

|    |              |        |           |            |            |            |            |
|----|--------------|--------|-----------|------------|------------|------------|------------|
|    | 1.83         | 11.09  | 7.47      | 1.55       | 1.87       | 2.28       | 10.47      |
|    | 2.67         | 11.09  | 19.50     | 1.55       | 1.87       | 1.08       | 5.61       |
|    | 3.50         | 11.09  | 31.53     | 1.55       | 1.87       | 8.631E-01  | -7.39      |
| 54 | ENVOLVEN MIN |        |           |            |            |            |            |
|    | 1.5E-01      | -21.63 | -26.66    | -4.604E-01 | -1.02      | -2.48      | -16.17     |
|    | 9.5E-01      | -21.63 | -14.63    | -4.604E-01 | -1.02      | -2.10      | 1.09       |
|    | 1.83         | -21.63 | -2.59     | -4.604E-01 | -1.02      | -1.72      | 7.92       |
|    | 2.67         | -21.63 | 9.44      | -4.604E-01 | -1.02      | -1.43      | -1.40      |
|    | 3.50         | -21.63 | 21.47     | -4.604E-01 | -1.02      | -2.13      | -22.76     |
| 55 | ENVOLVEN MAX |        |           |            |            |            |            |
|    | 1.5E-01      | 8.28   | -18.05    | 2.26       | 1.25       | 6.17       | 10.86      |
|    | 9.5E-01      | 8.28   | -1.34     | 2.26       | 1.25       | 4.37       | 18.62      |
|    | 1.75         | 8.28   | 15.38     | 2.26       | 1.25       | 2.57       | 13.01      |
|    | 2.55         | 8.28   | 32.10     | 2.26       | 1.25       | 9.552E-01  | 7.57       |
|    | 3.35         | 8.28   | 48.81     | 2.26       | 1.25       | 1.16       | -9.12      |
| 55 | ENVOLVEN MIN |        |           |            |            |            |            |
|    | 1.5E-01      | -12.01 | -37.65    | -1.57      | -1.28      | -4.44      | -22.60     |
|    | 9.5E-01      | -12.01 | -20.93    | -1.57      | -1.28      | -3.19      | 8.308E-01  |
|    | 1.75         | -12.01 | -4.21     | -1.57      | -1.28      | -1.94      | 10.88      |
|    | 2.55         | -12.01 | 12.50     | -1.57      | -1.28      | -8.819E-01 | -5.99      |
|    | 3.35         | -12.01 | 29.22     | -1.57      | -1.28      | -1.64      | -38.36     |
| 56 | ENVOLVEN MAX |        |           |            |            |            |            |
|    | 1.5E-01      | 8.57   | -17.80    | 2.74       | 1.38       | 6.70       | 11.31      |
|    | 9.5E-01      | 8.57   | -1.08     | 2.74       | 1.38       | 4.51       | 18.87      |
|    | 1.75         | 8.57   | 15.63     | 2.74       | 1.38       | 2.33       | 13.06      |
|    | 2.55         | 8.57   | 32.35     | 2.74       | 1.38       | 1.750E-01  | 7.69       |
|    | 3.35         | 8.57   | 49.07     | 2.74       | 1.38       | -9.857E-01 | -8.85      |
| 56 | ENVOLVEN MIN |        |           |            |            |            |            |
|    | 1.5E-01      | -13.34 | -37.83    | -1.28      | -6.726E-01 | -5.18      | -22.93     |
|    | 9.5E-01      | -13.34 | -21.12    | -1.28      | -6.726E-01 | -4.16      | 6.455E-01  |
|    | 1.75         | -13.34 | -4.40     | -1.28      | -6.726E-01 | -3.14      | 10.84      |
|    | 2.55         | -13.34 | 12.32     | -1.28      | -6.726E-01 | -2.15      | -6.15      |
|    | 3.35         | -13.34 | 29.03     | -1.28      | -6.726E-01 | -2.15      | -38.71     |
| 57 | ENVOLVEN MAX |        |           |            |            |            |            |
|    | 1.5E-01      | 1.95   | -13.04    | 2.92       | 2.65       | 6.98       | 4.60       |
|    | 9.5E-01      | 1.95   | -1.56     | 2.92       | 2.65       | 4.65       | 10.44      |
|    | 1.75         | 1.95   | 9.92      | 2.92       | 2.65       | 2.35       | 7.10       |
|    | 2.55         | 1.95   | 21.40     | 2.92       | 2.65       | 3.827E-01  | 1.802E-01  |
|    | 3.35         | 1.95   | 32.88     | 2.92       | 2.65       | -1.660E-01 | -14.29     |
| 57 | ENVOLVEN MIN |        |           |            |            |            |            |
|    | 1.5E-01      | -7.23  | -22.10    | -2.03      | 6.162E-01  | -6.74      | -11.52     |
|    | 9.5E-01      | -7.23  | -10.62    | -2.03      | 6.162E-01  | -5.12      | 1.56       |
|    | 1.75         | -7.23  | 8.641E-01 | -2.03      | 6.162E-01  | -3.52      | 5.46       |
|    | 2.55         | -7.23  | 12.34     | -2.03      | 6.162E-01  | -2.26      | -5.42      |
|    | 3.35         | -7.23  | 23.82     | -2.03      | 6.162E-01  | -2.42      | -27.13     |
| 58 | ENVOLVEN MAX |        |           |            |            |            |            |
|    | 1.5E-01      | 2.07   | -15.45    | 2.02       | 2.15       | 1.08       | -7.762E-01 |
|    | 9.5E-01      | 2.07   | -3.97     | 2.02       | 2.15       | 2.283E-01  | 6.99       |
|    | 1.75         | 2.07   | 7.51      | 2.02       | 2.15       | 1.53       | 6.94       |
|    | 2.55         | 2.07   | 18.99     | 2.02       | 2.15       | 3.25       | 6.00       |
|    | 3.35         | 2.07   | 30.47     | 2.02       | 2.15       | 4.97       | -4.01      |
| 58 | ENVOLVEN MIN |        |           |            |            |            |            |
|    | 1.5E-01      | -4.46  | -27.66    | -2.16      | 6.696E-01  | -1.95      | -19.07     |
|    | 9.5E-01      | -4.46  | -16.18    | -2.16      | 6.696E-01  | -9.955E-01 | -1.53      |
|    | 1.75         | -4.46  | -4.70     | -2.16      | 6.696E-01  | -2.18      | 5.46       |
|    | 2.55         | -4.46  | 6.78      | -2.16      | 6.696E-01  | -3.80      | -5.03      |
|    | 3.35         | -4.46  | 18.26     | -2.16      | 6.696E-01  | -5.41      | -24.82     |
| 59 | ENVOLVEN MAX |        |           |            |            |            |            |
|    | 1.5E-01      | 14.09  | -23.68    | 3.07       | 1.73       | 2.36       | -2.03      |
|    | 9.5E-01      | 14.09  | -6.97     | 3.07       | 1.73       | 4.891E-01  | 10.23      |
|    | 1.75         | 14.09  | 9.75      | 3.07       | 1.73       | 2.14       | 9.58       |
|    | 2.55         | 14.09  | 26.47     | 3.07       | 1.73       | 3.95       | 8.21       |
|    | 3.35         | 14.09  | 43.18     | 3.07       | 1.73       | 5.76       | -6.49      |
| 59 | ENVOLVEN MIN |        |           |            |            |            |            |
|    | 1.5E-01      | -5.69  | -40.14    | -2.28      | 6.771E-01  | -2.38      | -27.94     |
|    | 9.5E-01      | -5.69  | -23.42    | -2.28      | 6.771E-01  | -1.14      | -2.52      |

|    |              |            |           |           |            |            |           |
|----|--------------|------------|-----------|-----------|------------|------------|-----------|
|    | 1.75         | -5.69      | -6.70     | -2.28     | 6.771E-01  | -3.43      | 9.07      |
|    | 2.55         | -5.69      | 10.01     | -2.28     | 6.771E-01  | -5.88      | -5.38     |
|    | 3.35         | -5.69      | 26.73     | -2.28     | 6.771E-01  | -8.33      | -33.24    |
| 60 | ENVOLVEN MAX |            |           |           |            |            |           |
|    | 1.5E-01      | 14.26      | -23.43    | 1.50      | -9.585E-01 | -3.447E-01 | -1.65     |
|    | 9.5E-01      | 14.26      | -6.71     | 1.50      | -9.585E-01 | 1.573E-01  | 10.41     |
|    | 1.75         | 14.26      | 10.00     | 1.50      | -9.585E-01 | 3.23       | 9.66      |
|    | 2.55         | 14.26      | 26.72     | 1.50      | -9.585E-01 | 6.30       | 8.51      |
|    | 3.35         | 14.26      | 43.44     | 1.50      | -9.585E-01 | 9.38       | -5.97     |
| 60 | ENVOLVEN MIN |            |           |           |            |            |           |
|    | 1.5E-01      | -6.81      | -40.40    | -3.85     | -1.91      | -2.95      | -28.28    |
|    | 9.5E-01      | -6.81      | -23.69    | -3.85     | -1.91      | -1.57      | -2.65     |
|    | 1.75         | -6.81      | -6.97     | -3.85     | -1.91      | -2.76      | 9.05      |
|    | 2.55         | -6.81      | 9.75      | -3.85     | -1.91      | -3.96      | -5.60     |
|    | 3.35         | -6.81      | 26.46     | -3.85     | -1.91      | -5.15      | -33.66    |
| 61 | ENVOLVEN MAX |            |           |           |            |            |           |
|    | 1.5E-01      | -9.644E-01 | -52.23    | 9.701E-01 | 11.64      | -9.317E-01 | -18.91    |
|    | 9.5E-01      | -9.644E-01 | -23.66    | 9.701E-01 | 4.81       | 1.00       | 11.45     |
|    | 1.75         | -9.644E-01 | 4.91      | 9.701E-01 | -2.02      | 3.37       | 20.58     |
|    | 2.55         | -9.644E-01 | 33.47     | 9.701E-01 | -8.84      | 5.80       | 12.46     |
|    | 3.35         | -9.644E-01 | 62.04     | 9.701E-01 | -15.67     | 8.23       | -18.52    |
| 61 | ENVOLVEN MIN |            |           |           |            |            |           |
|    | 1.5E-01      | -10.25     | -61.26    | -3.05     | 10.54      | -1.84      | -31.73    |
|    | 9.5E-01      | -10.25     | -32.69    | -3.05     | 3.71       | -2.11      | 5.86      |
|    | 1.75         | -10.25     | -4.13     | -3.05     | -3.12      | -2.81      | 18.95     |
|    | 2.55         | -10.25     | 24.44     | -3.05     | -9.94      | -3.57      | 3.60      |
|    | 3.35         | -10.25     | 53.01     | -3.05     | -16.77     | -4.34      | -34.61    |
| 62 | ENVOLVEN MAX |            |           |           |            |            |           |
|    | 1.5E-01      | 23.16      | -38.84    | 2.78      | -14.43     | 3.57       | -1.59     |
|    | 1.00         | 23.16      | -14.05    | 2.78      | -7.18      | 1.81       | 20.89     |
|    | 1.85         | 23.16      | 10.74     | 2.78      | 7.150E-02  | 1.74       | 22.30     |
|    | 2.70         | 23.16      | 35.53     | 2.78      | 7.32       | 3.81       | 10.82     |
|    | 3.55         | 23.16      | 60.31     | 2.78      | 14.58      | 5.91       | -17.23    |
| 62 | ENVOLVEN MIN |            |           |           |            |            |           |
|    | 1.5E-01      | -10.07     | -53.76    | -2.51     | -17.23     | -3.44      | -31.45    |
|    | 1.00         | -10.07     | -28.97    | -2.51     | -9.98      | -1.91      | 3.71      |
|    | 1.85         | -10.07     | -4.18     | -2.51     | -2.73      | -2.07      | 17.80     |
|    | 2.70         | -10.07     | 20.61     | -2.51     | 4.53       | -4.37      | 2.64      |
|    | 3.55         | -10.07     | 45.40     | -2.51     | 11.78      | -6.70      | -38.09    |
| 63 | ENVOLVEN MAX |            |           |           |            |            |           |
|    | 1.5E-01      | 40.21      | -2.94     | 2.01      | 2.45       | 4.08       | 3.54      |
|    | 9.8E-01      | 40.21      | 3.50      | 2.01      | 2.45       | 2.42       | 3.32      |
|    | 1.80         | 40.21      | 9.94      | 2.01      | 2.45       | 7.825E-01  | 2.23      |
|    | 2.63         | 40.21      | 16.37     | 2.01      | 2.45       | 4.473E-01  | 4.14      |
|    | 3.45         | 40.21      | 22.81     | 2.01      | 2.45       | 1.78       | 7.575E-01 |
| 63 | ENVOLVEN MIN |            |           |           |            |            |           |
|    | 1.5E-01      | -18.38     | -18.44    | -1.63     | 9.921E-02  | -3.60      | -17.59    |
|    | 9.8E-01      | -18.38     | -12.00    | -1.63     | 9.921E-02  | -2.26      | -5.05     |
|    | 1.80         | -18.38     | -5.56     | -1.63     | 9.921E-02  | -9.402E-01 | -2.26     |
|    | 2.63         | -18.38     | 8.812E-01 | -1.63     | 9.921E-02  | -9.248E-01 | -13.09    |
|    | 3.45         | -18.38     | 7.32      | -1.63     | 9.921E-02  | -2.58      | -29.25    |
| 64 | ENVOLVEN MAX |            |           |           |            |            |           |
|    | 1.5E-01      | 37.13      | -6.12     | 3.68      | 3.415E-01  | 5.31       | 3.05      |
|    | 9.8E-01      | 37.13      | 3.198E-01 | 3.68      | 3.415E-01  | 2.29       | 5.45      |
|    | 1.80         | 37.13      | 6.76      | 3.68      | 3.415E-01  | 1.46       | 2.54      |
|    | 2.63         | 37.13      | 13.20     | 3.68      | 3.415E-01  | 3.93       | 3.22      |
|    | 3.45         | 37.13      | 19.64     | 3.68      | 3.415E-01  | 6.61       | 3.35      |
| 64 | ENVOLVEN MIN |            |           |           |            |            |           |
|    | 1.5E-01      | -24.31     | -22.70    | -3.26     | -3.15      | -4.16      | -29.08    |
|    | 9.8E-01      | -24.31     | -16.26    | -3.26     | -3.15      | -1.49      | -13.01    |
|    | 1.80         | -24.31     | -9.82     | -3.26     | -3.15      | -1.00      | -2.26     |
|    | 2.63         | -24.31     | -3.38     | -3.26     | -3.15      | -3.83      | -5.72     |
|    | 3.45         | -24.31     | 3.06      | -3.26     | -3.15      | -6.85      | -19.26    |
| 65 | ENVOLVEN MAX |            |           |           |            |            |           |
|    | 1.5E-01      | 28.09      | -46.25    | 3.87      | -10.83     | 8.93       | -17.80    |

|    |              |        |        |       |            |            |            |
|----|--------------|--------|--------|-------|------------|------------|------------|
|    | 1.05         | 28.09  | -20.00 | 3.87  | -3.15      | 5.48       | 12.02      |
|    | 1.95         | 28.09  | 6.24   | 3.87  | 4.53       | 2.07       | 22.82      |
|    | 2.85         | 28.09  | 32.49  | 3.87  | 12.21      | 1.76       | 18.36      |
|    | 3.75         | 28.09  | 58.74  | 3.87  | 19.89      | 4.27       | -9.71      |
| 65 | ENVOLVEN MIN |        |        |       |            |            |            |
|    | 1.5E-01      | -7.38  | -60.67 | -3.42 | -14.66     | -8.51      | -39.14     |
|    | 1.05         | -7.38  | -34.42 | -3.42 | -6.98      | -5.46      | 3.65       |
|    | 1.95         | -7.38  | -8.17  | -3.42 | 7.004E-01  | -2.46      | 18.21      |
|    | 2.85         | -7.38  | 18.07  | -3.42 | 8.38       | -2.56      | 7.787E-01  |
|    | 3.75         | -7.38  | 44.32  | -3.42 | 16.06      | -5.47      | -40.27     |
| 66 | ENVOLVEN MAX |        |        |       |            |            |            |
|    | 1.5E-01      | 24.57  | -41.24 | 1.77  | -13.00     | 3.66       | 1.70       |
|    | 9.9E-01      | 24.57  | -11.33 | 1.77  | -5.85      | 2.23       | 23.72      |
|    | 1.83         | 24.57  | 18.58  | 1.77  | 1.29       | 9.355E-01  | 20.73      |
|    | 2.66         | 24.57  | 48.48  | 1.77  | 8.44       | 2.85       | 14.71      |
|    | 3.50         | 24.57  | 78.39  | 1.77  | 15.59      | 5.06       | -16.35     |
| 66 | ENVOLVEN MIN |        |        |       |            |            |            |
|    | 1.5E-01      | 20.30  | -67.59 | -3.05 | -13.32     | -6.04      | -42.39     |
|    | 9.9E-01      | 20.30  | -37.68 | -3.05 | -6.17      | -3.54      | 1.69       |
|    | 1.83         | 20.30  | -7.78  | -3.05 | 9.719E-01  | -1.17      | 20.68      |
|    | 2.66         | 20.30  | 22.13  | -3.05 | 8.12       | -2.01      | -7.40      |
|    | 3.50         | 20.30  | 52.04  | -3.05 | 15.26      | -3.15      | -60.53     |
| 67 | ENVOLVEN MAX |        |        |       |            |            |            |
|    | 1.7E-01      | 12.16  | -22.92 | 2.68  | -2.91      | 5.51       | 2.51       |
|    | 1.02         | 12.16  | -4.04  | 2.68  | -2.91      | 3.27       | 13.85      |
|    | 1.86         | 12.16  | 14.84  | 2.68  | -2.91      | 1.22       | 9.61       |
|    | 2.70         | 12.16  | 33.72  | 2.68  | -2.91      | 5.44       | 4.18       |
|    | 3.54         | 12.16  | 52.60  | 2.68  | -2.91      | 10.71      | -17.10     |
| 67 | ENVOLVEN MIN |        |        |       |            |            |            |
|    | 1.7E-01      | 5.28   | -40.77 | -6.32 | -4.76      | -10.60     | -27.23     |
|    | 1.02         | 5.28   | -21.89 | -6.32 | -4.76      | -5.30      | -8.846E-01 |
|    | 1.86         | 5.28   | -3.01  | -6.32 | -4.76      | -1.804E-01 | 9.28       |
|    | 2.70         | 5.28   | 15.87  | -6.32 | -4.76      | -1.34      | -11.11     |
|    | 3.54         | 5.28   | 34.75  | -6.32 | -4.76      | -3.55      | -47.40     |
| 68 | ENVOLVEN MAX |        |        |       |            |            |            |
|    | 1.7E-01      | 13.58  | -22.00 | 6.58  | 4.84       | 11.46      | 3.82       |
|    | 1.02         | 13.58  | -3.11  | 6.58  | 4.84       | 5.96       | 14.37      |
|    | 1.86         | 13.58  | 15.77  | 6.58  | 4.84       | 1.12       | 9.54       |
|    | 2.70         | 13.58  | 34.66  | 6.58  | 4.84       | 2.97       | 4.36       |
|    | 3.54         | 13.58  | 53.54  | 6.58  | 4.84       | 6.21       | -16.68     |
| 68 | ENVOLVEN MIN |        |        |       |            |            |            |
|    | 1.7E-01      | 3.72   | -41.07 | -3.91 | 2.42       | -7.03      | -27.80     |
|    | 1.02         | 3.72   | -22.19 | -3.91 | 2.42       | -3.78      | -1.20      |
|    | 1.86         | 3.72   | -3.30  | -3.91 | 2.42       | -1.18      | 9.03       |
|    | 2.70         | 3.72   | 15.58  | -3.91 | 2.42       | -5.27      | -12.16     |
|    | 3.54         | 3.72   | 34.46  | -3.91 | 2.42       | -10.75     | -49.24     |
| 69 | ENVOLVEN MAX |        |        |       |            |            |            |
|    | 1.5E-01      | 22.32  | -38.92 | 2.18  | 13.25      | 4.97       | 6.30       |
|    | 9.9E-01      | 22.32  | -9.01  | 2.18  | 6.11       | 3.22       | 26.37      |
|    | 1.83         | 22.32  | 20.90  | 2.18  | -1.04      | 1.64       | 21.43      |
|    | 2.66         | 22.32  | 50.80  | 2.18  | -8.18      | 3.47       | 17.49      |
|    | 3.50         | 22.32  | 80.71  | 2.18  | -15.33     | 5.57       | -11.13     |
| 69 | ENVOLVEN MIN |        |        |       |            |            |            |
|    | 1.5E-01      | 17.65  | -70.51 | -2.65 | 12.88      | -5.48      | -46.96     |
|    | 9.9E-01      | 17.65  | -40.60 | -2.65 | 5.73       | -3.34      | -4.329E-01 |
|    | 1.83         | 17.65  | -10.70 | -2.65 | -1.41      | -1.36      | 21.02      |
|    | 2.66         | 17.65  | 19.21  | -2.65 | -8.56      | -2.80      | -8.63      |
|    | 3.50         | 17.65  | 49.12  | -2.65 | -15.71     | -4.50      | -63.70     |
| 70 | ENVOLVEN MAX |        |        |       |            |            |            |
|    | 1.5E-01      | 42.84  | -35.70 | 2.30  | -11.95     | 3.26       | -10.51     |
|    | 8.4E-01      | 42.84  | -15.68 | 2.30  | -6.09      | 1.93       | 7.13       |
|    | 1.52         | 42.84  | 4.34   | 2.30  | -2.351E-01 | 1.08       | 14.69      |
|    | 2.21         | 42.84  | 24.36  | 2.30  | 5.62       | 2.22       | 16.46      |
|    | 2.90         | 42.84  | 44.38  | 2.30  | 11.48      | 3.55       | 4.51       |
| 70 | ENVOLVEN MIN |        |        |       |            |            |            |
|    | 1.5E-01      | -12.30 | -52.67 | -1.97 | -14.60     | -2.00      | -30.18     |

|    |              |        |        |            |           |            |            |
|----|--------------|--------|--------|------------|-----------|------------|------------|
|    | 8.4E-01      | -12.30 | -32.65 | -1.97      | -8.74     | -8.986E-01 | -9.035E-01 |
|    | 1.52         | -12.30 | -12.63 | -1.97      | -2.89     | -2.735E-01 | 10.97      |
|    | 2.21         | -12.30 | 7.40   | -1.97      | 2.97      | -1.64      | 1.15       |
|    | 2.90         | -12.30 | 27.42  | -1.97      | 8.83      | -3.20      | -22.44     |
| 71 | ENVOLVEN MAX |        |        |            |           |            |            |
|    | 1.5E-01      | 39.96  | -27.59 | 3.13       | -8.21     | 5.45       | 4.45       |
|    | 8.4E-01      | 39.96  | -7.60  | 3.13       | -2.36     | 3.32       | 16.52      |
|    | 1.52         | 39.96  | 12.40  | 3.13       | 3.49      | 1.43       | 14.89      |
|    | 2.21         | 39.96  | 32.39  | 3.13       | 9.34      | 2.18       | 7.40       |
|    | 2.89         | 39.96  | 52.38  | 3.13       | 15.19     | 4.56       | -10.01     |
| 71 | ENVOLVEN MIN |        |        |            |           |            |            |
|    | 1.5E-01      | -10.18 | -44.60 | -3.50      | -11.70    | -5.06      | -22.67     |
|    | 8.4E-01      | -10.18 | -24.61 | -3.50      | -5.85     | -2.67      | 1.06       |
|    | 1.52         | -10.18 | -4.61  | -3.50      | 2.522E-03 | -5.218E-01 | 11.06      |
|    | 2.21         | -10.18 | 15.38  | -3.50      | 5.85      | -1.03      | -4.969E-01 |
|    | 2.89         | -10.18 | 35.38  | -3.50      | 11.70     | -3.15      | -29.55     |
| 72 | ENVOLVEN MAX |        |        |            |           |            |            |
|    | 1.7E-01      | 11.72  | -47.66 | 6.59       | -10.28    | 8.74       | -13.80     |
|    | 2.2E-01      | 11.72  | -45.84 | 6.59       | -9.87     | 8.45       | -11.51     |
|    | 2.7E-01      | 11.72  | -44.01 | 6.59       | -9.45     | 8.15       | -9.31      |
|    | 3.2E-01      | 11.72  | -42.19 | 6.59       | -9.03     | 7.86       | -7.19      |
|    | 3.7E-01      | 11.72  | -40.36 | 6.59       | -8.61     | 7.57       | -5.17      |
| 72 | ENVOLVEN MIN |        |        |            |           |            |            |
|    | 1.7E-01      | 1.43   | -65.42 | 1.86       | -19.59    | -1.38      | -42.78     |
|    | 2.2E-01      | 1.43   | -63.60 | 1.86       | -19.18    | -1.50      | -39.62     |
|    | 2.7E-01      | 1.43   | -61.77 | 1.86       | -18.76    | -1.62      | -36.56     |
|    | 3.2E-01      | 1.43   | -59.95 | 1.86       | -18.34    | -1.74      | -33.58     |
|    | 3.7E-01      | 1.43   | -58.12 | 1.86       | -17.92    | -1.86      | -30.69     |
| 73 | ENVOLVEN MAX |        |        |            |           |            |            |
|    | 0.00         | 13.60  | -55.00 | -1.85      | 21.59     | 1.23       | -22.55     |
|    | 4.9E-02      | 13.60  | -53.18 | -1.85      | 21.18     | 1.35       | -19.91     |
|    | 9.7E-02      | 13.60  | -51.37 | -1.85      | 20.76     | 1.47       | -17.36     |
|    | 1.5E-01      | 13.60  | -49.55 | -1.85      | 20.35     | 1.59       | -14.90     |
|    | 1.9E-01      | 13.60  | -47.74 | -1.85      | 19.93     | 1.71       | -12.53     |
| 73 | ENVOLVEN MIN |        |        |            |           |            |            |
|    | 0.00         | 1.26   | -72.71 | -7.52      | 12.35     | -11.31     | -55.17     |
|    | 4.9E-02      | 1.26   | -70.89 | -7.52      | 11.93     | -10.97     | -51.68     |
|    | 9.7E-02      | 1.26   | -69.08 | -7.52      | 11.52     | -10.63     | -48.27     |
|    | 1.5E-01      | 1.26   | -67.26 | -7.52      | 11.10     | -10.30     | -44.95     |
|    | 1.9E-01      | 1.26   | -65.45 | -7.52      | 10.69     | -9.97      | -41.72     |
| 74 | ENVOLVEN MAX |        |        |            |           |            |            |
|    | 0.00         | 12.55  | -40.36 | 5.45       | -13.71    | 7.57       | -1.95      |
|    | 2.1E-01      | 12.55  | -32.48 | 5.45       | -11.91    | 6.46       | 5.76       |
|    | 4.2E-01      | 12.55  | -24.61 | 5.45       | -10.10    | 5.37       | 11.81      |
|    | 6.3E-01      | 12.55  | -16.73 | 5.45       | -8.30     | 4.29       | 16.19      |
|    | 8.5E-01      | 12.55  | -8.85  | 5.45       | -6.50     | 3.24       | 18.92      |
| 74 | ENVOLVEN MIN |        |        |            |           |            |            |
|    | 0.00         | 1.90   | -58.13 | 5.373E-01  | -18.77    | -1.86      | -28.64     |
|    | 2.1E-01      | 1.90   | -50.25 | 5.373E-01  | -16.96    | -2.02      | -17.20     |
|    | 4.2E-01      | 1.90   | -42.37 | 5.373E-01  | -15.16    | -2.19      | -7.42      |
|    | 6.3E-01      | 1.90   | -34.49 | 5.373E-01  | -13.36    | -2.37      | 6.839E-01  |
|    | 8.5E-01      | 1.90   | -26.62 | 5.373E-01  | -11.55    | -2.59      | 7.12       |
| 75 | ENVOLVEN MAX |        |        |            |           |            |            |
|    | 0.00         | 14.57  | -41.21 | -6.456E-01 | 19.27     | 2.16       | -1.64      |
|    | 2.1E-01      | 14.57  | -33.33 | -6.456E-01 | 17.47     | 2.35       | 6.25       |
|    | 4.2E-01      | 14.57  | -25.46 | -6.456E-01 | 15.66     | 2.54       | 12.47      |
|    | 6.3E-01      | 14.57  | -17.58 | -6.456E-01 | 13.86     | 2.75       | 17.04      |
|    | 8.5E-01      | 14.57  | -9.70  | -6.456E-01 | 12.06     | 2.98       | 19.94      |
| 75 | ENVOLVEN MIN |        |        |            |           |            |            |
|    | 0.00         | 1.64   | -58.93 | -6.09      | 13.94     | -8.77      | -28.80     |
|    | 2.1E-01      | 1.64   | -51.05 | -6.09      | 12.14     | -7.54      | -17.19     |
|    | 4.2E-01      | 1.64   | -43.17 | -6.09      | 10.34     | -6.31      | -7.24      |
|    | 6.3E-01      | 1.64   | -35.30 | -6.09      | 8.53      | -5.09      | 1.03       |
|    | 8.5E-01      | 1.64   | -27.42 | -6.09      | 6.73      | -3.90      | 7.64       |
| 76 | ENVOLVEN MAX |        |        |            |           |            |            |

|    |              |       |            |            |            |            |            |
|----|--------------|-------|------------|------------|------------|------------|------------|
|    | 0.00         | 13.06 | -8.85      | 4.37       | -4.87      | 3.24       | 20.55      |
|    | 2.1E-01      | 13.06 | -9.703E-01 | 4.37       | -3.07      | 2.42       | 21.62      |
|    | 4.2E-01      | 13.06 | 6.91       | 4.37       | -1.27      | 1.75       | 21.04      |
|    | 6.3E-01      | 13.06 | 14.78      | 4.37       | 5.359E-01  | 1.29       | 18.89      |
|    | 8.5E-01      | 13.06 | 22.66      | 4.37       | 2.34       | 9.096E-01  | 18.14      |
| 76 | ENVOLVEN MIN |       |            |            |            |            |            |
|    | 0.00         | 2.21  | -26.62     | -9.853E-01 | -8.38      | -2.59      | 8.22       |
|    | 2.1E-01      | 2.21  | -18.74     | -9.853E-01 | -6.58      | -2.48      | 12.99      |
|    | 4.2E-01      | 2.21  | -10.87     | -9.853E-01 | -4.77      | -2.53      | 16.07      |
|    | 6.3E-01      | 2.21  | -2.99      | -9.853E-01 | -2.97      | -2.78      | 17.39      |
|    | 8.5E-01      | 2.21  | 4.89       | -9.853E-01 | -1.17      | -3.12      | 13.99      |
| 77 | ENVOLVEN MAX |       |            |            |            |            |            |
|    | 0.00         | 15.22 | -9.70      | 9.043E-01  | 8.73       | 2.98       | 21.60      |
|    | 2.1E-01      | 15.22 | -1.82      | 9.043E-01  | 6.93       | 2.87       | 22.84      |
|    | 4.2E-01      | 15.22 | 6.06       | 9.043E-01  | 5.12       | 2.87       | 22.44      |
|    | 6.3E-01      | 15.22 | 13.93      | 9.043E-01  | 3.32       | 3.14       | 20.40      |
|    | 8.5E-01      | 15.22 | 21.81      | 9.043E-01  | 1.52       | 3.53       | 19.47      |
| 77 | ENVOLVEN MIN |       |            |            |            |            |            |
|    | 0.00         | 1.93  | -27.42     | -4.72      | 4.98       | -3.90      | 8.82       |
|    | 2.1E-01      | 1.93  | -19.55     | -4.72      | 3.18       | -2.97      | 13.76      |
|    | 4.2E-01      | 1.93  | -11.67     | -4.72      | 1.38       | -2.17      | 17.02      |
|    | 6.3E-01      | 1.93  | -3.79      | -4.72      | -4.273E-01 | -1.63      | 18.58      |
|    | 8.5E-01      | 1.93  | 4.09       | -4.72      | -2.23      | -1.22      | 15.70      |
| 78 | ENVOLVEN MAX |       |            |            |            |            |            |
|    | 0.00         | 13.23 | 22.65      | 3.24       | 5.44       | 9.096E-01  | 17.48      |
|    | 2.1E-01      | 13.23 | 30.53      | 3.24       | 7.24       | 7.154E-01  | 15.34      |
|    | 4.2E-01      | 13.23 | 38.41      | 3.24       | 9.05       | 6.422E-01  | 11.70      |
|    | 6.3E-01      | 13.23 | 46.29      | 3.24       | 10.85      | 7.511E-01  | 6.45       |
|    | 8.5E-01      | 13.23 | 54.16      | 3.24       | 12.65      | 1.04       | -4.374E-01 |
| 78 | ENVOLVEN MIN |       |            |            |            |            |            |
|    | 0.00         | 2.40  | 4.89       | -2.56      | 1.29       | -3.12      | 13.96      |
|    | 2.1E-01      | 2.40  | 12.77      | -2.56      | 3.10       | -3.07      | 8.61       |
|    | 4.2E-01      | 2.40  | 20.65      | -2.56      | 4.90       | -3.14      | 1.43       |
|    | 6.3E-01      | 2.40  | 28.52      | -2.56      | 6.70       | -3.39      | -7.47      |
|    | 8.5E-01      | 2.40  | 36.40      | -2.56      | 8.51       | -3.82      | -18.06     |
| 79 | ENVOLVEN MAX |       |            |            |            |            |            |
|    | 0.00         | 15.43 | 21.81      | 2.55       | -1.26      | 3.53       | 18.82      |
|    | 2.1E-01      | 15.43 | 29.68      | 2.55       | -3.06      | 3.44       | 16.85      |
|    | 4.2E-01      | 15.43 | 37.56      | 2.55       | -4.86      | 3.42       | 13.36      |
|    | 6.3E-01      | 15.43 | 45.44      | 2.55       | -6.67      | 3.53       | 8.28       |
|    | 8.5E-01      | 15.43 | 53.31      | 2.55       | -8.47      | 3.81       | 1.56       |
| 79 | ENVOLVEN MIN |       |            |            |            |            |            |
|    | 0.00         | 2.11  | 4.09       | -3.33      | -5.55      | -1.22      | 15.69      |
|    | 2.1E-01      | 2.11  | 11.97      | -3.33      | -7.36      | -9.609E-01 | 10.52      |
|    | 4.2E-01      | 2.11  | 19.85      | -3.33      | -9.16      | -7.765E-01 | 3.54       |
|    | 6.3E-01      | 2.11  | 27.72      | -3.33      | -10.96     | -7.148E-01 | -5.17      |
|    | 8.5E-01      | 2.11  | 35.60      | -3.33      | -12.77     | -8.302E-01 | -15.58     |
| 80 | ENVOLVEN MAX |       |            |            |            |            |            |
|    | 0.00         | 13.01 | 54.15      | 2.00       | 12.23      | 1.04       | -2.67      |
|    | 1.9E-01      | 13.01 | 61.31      | 2.00       | 13.87      | 1.64       | -10.36     |
|    | 3.8E-01      | 13.01 | 68.47      | 2.00       | 15.51      | 2.33       | -19.43     |
|    | 5.8E-01      | 13.01 | 75.64      | 2.00       | 17.15      | 3.06       | -29.88     |
|    | 7.7E-01      | 13.01 | 82.80      | 2.00       | 18.79      | 3.82       | -41.70     |
| 80 | ENVOLVEN MIN |       |            |            |            |            |            |
|    | 0.00         | 2.47  | 36.42      | -4.20      | 5.17       | -3.82      | -19.40     |
|    | 1.9E-01      | 2.47  | 43.58      | -4.20      | 6.81       | -4.00      | -30.48     |
|    | 3.8E-01      | 2.47  | 50.74      | -4.20      | 8.45       | -4.27      | -42.95     |
|    | 5.8E-01      | 2.47  | 57.90      | -4.20      | 10.09      | -4.58      | -56.79     |
|    | 7.7E-01      | 2.47  | 65.07      | -4.20      | 11.73      | -4.91      | -72.01     |
| 81 | ENVOLVEN MAX |       |            |            |            |            |            |
|    | 1.8E-01      | 15.19 | 59.82      | 4.37       | -7.10      | 3.81       | -7.49      |
|    | 3.7E-01      | 15.19 | 66.99      | 4.37       | -8.74      | 3.97       | -16.28     |
|    | 5.6E-01      | 15.19 | 74.15      | 4.37       | -10.38     | 4.21       | -26.45     |
|    | 7.5E-01      | 15.19 | 81.31      | 4.37       | -12.02     | 4.50       | -37.99     |
|    | 9.4E-01      | 15.19 | 88.48      | 4.37       | -13.66     | 4.81       | -50.91     |
| 81 | ENVOLVEN MIN |       |            |            |            |            |            |

|                 |            |        |           |        |       |            |
|-----------------|------------|--------|-----------|--------|-------|------------|
| 1.8E-01         | 2.20       | 42.13  | -1.92     | -14.19 | -1.26 | -26.89     |
| 3.7E-01         | 2.20       | 49.30  | -1.92     | -15.83 | -1.89 | -39.07     |
| 5.6E-01         | 2.20       | 56.46  | -1.92     | -17.47 | -2.60 | -52.63     |
| 7.5E-01         | 2.20       | 63.62  | -1.92     | -19.11 | -3.36 | -67.56     |
| 9.4E-01         | 2.20       | 70.78  | -1.92     | -20.75 | -4.14 | -83.87     |
| 82 ENVOLVEN MAX |            |        |           |        |       |            |
| 1.8E-01         | 10.93      | -61.37 | 3.58      | -18.45 | 3.52  | -42.68     |
| 3.2E-01         | 10.93      | -56.98 | 3.58      | -17.23 | 3.14  | -34.21     |
| 4.6E-01         | 10.93      | -52.59 | 3.58      | -16.01 | 2.79  | -26.38     |
| 6.0E-01         | 10.93      | -48.19 | 3.58      | -14.79 | 2.46  | -19.17     |
| 7.5E-01         | 10.93      | -43.80 | 3.58      | -13.57 | 2.18  | -12.59     |
| 82 ENVOLVEN MIN |            |        |           |        |       |            |
| 1.8E-01         | 1.234E-01  | -74.05 | -1.00     | -26.97 | -4.81 | -68.75     |
| 3.2E-01         | 1.234E-01  | -69.66 | -1.00     | -25.75 | -4.80 | -58.47     |
| 4.6E-01         | 1.234E-01  | -65.26 | -1.00     | -24.53 | -4.81 | -48.83     |
| 6.0E-01         | 1.234E-01  | -60.87 | -1.00     | -23.31 | -4.86 | -39.81     |
| 7.5E-01         | 1.234E-01  | -56.47 | -1.00     | -22.09 | -4.94 | -31.42     |
| 83 ENVOLVEN MAX |            |        |           |        |       |            |
| 0.00            | 11.01      | -66.61 | 4.558E-01 | 28.80  | 4.21  | -52.10     |
| 1.4E-01         | 11.01      | -62.21 | 4.558E-01 | 27.58  | 4.25  | -42.88     |
| 2.9E-01         | 11.01      | -57.82 | 4.558E-01 | 26.36  | 4.31  | -34.30     |
| 4.3E-01         | 11.01      | -53.43 | 4.558E-01 | 25.13  | 4.38  | -26.35     |
| 5.7E-01         | 11.01      | -49.03 | 4.558E-01 | 23.91  | 4.49  | -19.02     |
| 83 ENVOLVEN MIN |            |        |           |        |       |            |
| 0.00            | 7.523E-01  | -79.43 | -3.44     | 20.47  | -3.62 | -81.00     |
| 1.4E-01         | 7.523E-01  | -75.04 | -3.44     | 19.25  | -3.23 | -69.96     |
| 2.9E-01         | 7.523E-01  | -70.65 | -3.44     | 18.03  | -2.86 | -59.54     |
| 4.3E-01         | 7.523E-01  | -66.25 | -3.44     | 16.81  | -2.51 | -49.75     |
| 5.7E-01         | 7.523E-01  | -61.86 | -3.44     | 15.59  | -2.19 | -40.59     |
| 84 ENVOLVEN MAX |            |        |           |        |       |            |
| 0.00            | 11.25      | -43.78 | 2.05      | -18.48 | 2.18  | -8.82      |
| 2.1E-01         | 11.25      | -37.29 | 2.05      | -16.67 | 1.93  | -2.543E-01 |
| 4.2E-01         | 11.25      | -30.80 | 2.05      | -14.87 | 1.71  | 6.94       |
| 6.3E-01         | 11.25      | -24.30 | 2.05      | -13.07 | 1.52  | 12.77      |
| 8.5E-01         | 11.25      | -17.81 | 2.05      | -11.26 | 1.36  | 17.23      |
| 84 ENVOLVEN MIN |            |        |           |        |       |            |
| 0.00            | 7.503E-02  | -56.49 | -1.31     | -23.90 | -4.94 | -28.76     |
| 2.1E-01         | 7.503E-02  | -50.00 | -1.31     | -22.09 | -4.85 | -17.51     |
| 4.2E-01         | 7.503E-02  | -43.50 | -1.31     | -20.29 | -4.79 | -7.63      |
| 6.3E-01         | 7.503E-02  | -37.01 | -1.31     | -18.49 | -4.75 | 8.724E-01  |
| 8.5E-01         | 7.503E-02  | -30.51 | -1.31     | -16.68 | -4.74 | 8.00       |
| 85 ENVOLVEN MAX |            |        |           |        |       |            |
| 0.00            | 11.35      | -43.64 | 8.572E-01 | 23.98  | 4.65  | -7.11      |
| 2.1E-01         | 11.35      | -37.15 | 8.572E-01 | 22.18  | 4.64  | 1.43       |
| 4.2E-01         | 11.35      | -30.66 | 8.572E-01 | 20.38  | 4.64  | 8.59       |
| 6.3E-01         | 11.35      | -24.16 | 8.572E-01 | 18.57  | 4.68  | 14.39      |
| 8.5E-01         | 11.35      | -17.67 | 8.572E-01 | 16.77  | 4.74  | 18.81      |
| 85 ENVOLVEN MIN |            |        |           |        |       |            |
| 0.00            | 7.402E-01  | -56.49 | -1.87     | 18.78  | -1.83 | -27.51     |
| 2.1E-01         | 7.402E-01  | -50.00 | -1.87     | 16.97  | -1.60 | -16.25     |
| 4.2E-01         | 7.402E-01  | -43.51 | -1.87     | 15.17  | -1.40 | -6.37      |
| 6.3E-01         | 7.402E-01  | -37.01 | -1.87     | 13.36  | -1.21 | 2.14       |
| 8.5E-01         | 7.402E-01  | -30.52 | -1.87     | 11.56  | -1.06 | 9.27       |
| 86 ENVOLVEN MAX |            |        |           |        |       |            |
| 0.00            | 11.35      | -17.79 | 5.668E-01 | -9.65  | 1.36  | 19.84      |
| 2.1E-01         | 11.35      | -11.30 | 5.668E-01 | -7.85  | 1.29  | 22.92      |
| 4.2E-01         | 11.35      | -4.81  | 5.668E-01 | -6.05  | 1.24  | 24.66      |
| 6.3E-01         | 11.35      | 1.69   | 5.668E-01 | -4.24  | 1.19  | 25.42      |
| 8.5E-01         | 11.35      | 8.18   | 5.668E-01 | -2.44  | 1.16  | 25.25      |
| 86 ENVOLVEN MIN |            |        |           |        |       |            |
| 0.00            | -6.884E-02 | -30.53 | -1.81     | -13.49 | -4.74 | 9.86       |
| 2.1E-01         | -6.884E-02 | -24.04 | -1.81     | -11.68 | -4.42 | 15.62      |
| 4.2E-01         | -6.884E-02 | -17.54 | -1.81     | -9.88  | -4.10 | 19.97      |
| 6.3E-01         | -6.884E-02 | -11.05 | -1.81     | -8.07  | -3.79 | 22.56      |
| 8.5E-01         | -6.884E-02 | -4.56  | -1.81     | -6.27  | -3.50 | 23.34      |



|    |              |            |        |            |            |            |        |
|----|--------------|------------|--------|------------|------------|------------|--------|
| 87 | ENVOLVEN MAX |            |        |            |            |            |        |
|    | 0.00         | 11.44      | -17.66 | 1.52       | 13.34      | 4.74       | 21.40  |
|    | 2.1E-01      | 11.44      | -11.16 | 1.52       | 11.53      | 4.48       | 24.45  |
|    | 4.2E-01      | 11.44      | -4.67  | 1.52       | 9.73       | 4.23       | 26.13  |
|    | 6.3E-01      | 11.44      | 1.83   | 1.52       | 7.93       | 3.99       | 26.60  |
|    | 8.5E-01      | 11.44      | 8.32   | 1.52       | 6.12       | 3.76       | 26.57  |
| 87 | ENVOLVEN MIN |            |        |            |            |            |        |
|    | 0.00         | 6.434E-01  | -30.53 | -4.158E-01 | 9.69       | -1.06      | 11.17  |
|    | 2.1E-01      | 6.434E-01  | -24.04 | -4.158E-01 | 7.88       | -1.04      | 16.94  |
|    | 4.2E-01      | 6.434E-01  | -17.54 | -4.158E-01 | 6.08       | -1.02      | 21.32  |
|    | 6.3E-01      | 6.434E-01  | -11.05 | -4.158E-01 | 4.28       | -1.01      | 24.17  |
|    | 8.5E-01      | 6.434E-01  | -4.56  | -4.158E-01 | 2.47       | -1.02      | 24.78  |
| 88 | ENVOLVEN MAX |            |        |            |            |            |        |
|    | 0.00         | 11.19      | 8.18   | -5.139E-02 | 1.88       | 1.16       | 25.70  |
|    | 2.1E-01      | 11.19      | 14.68  | -5.139E-02 | 3.68       | 1.21       | 25.08  |
|    | 4.2E-01      | 11.19      | 21.17  | -5.139E-02 | 5.48       | 1.28       | 23.98  |
|    | 6.3E-01      | 11.19      | 27.66  | -5.139E-02 | 7.29       | 1.37       | 21.51  |
|    | 8.5E-01      | 11.19      | 34.16  | -5.139E-02 | 9.09       | 1.49       | 17.67  |
| 88 | ENVOLVEN MIN |            |        |            |            |            |        |
|    | 0.00         | -3.030E-01 | -4.56  | -3.13      | -2.02      | -3.50      | 23.66  |
|    | 2.1E-01      | -3.030E-01 | 1.94   | -3.13      | -2.153E-01 | -2.88      | 22.15  |
|    | 4.2E-01      | -3.030E-01 | 8.43   | -3.13      | 1.59       | -2.27      | 18.37  |
|    | 6.3E-01      | -3.030E-01 | 14.92  | -3.13      | 3.39       | -1.69      | 13.21  |
|    | 8.5E-01      | -3.030E-01 | 21.42  | -3.13      | 5.20       | -1.14      | 6.68   |
| 89 | ENVOLVEN MAX |            |        |            |            |            |        |
|    | 0.00         | 11.25      | 8.32   | 2.90       | 1.62       | 3.76       | 26.97  |
|    | 2.1E-01      | 11.25      | 14.82  | 2.90       | -1.824E-01 | 3.20       | 26.38  |
|    | 4.2E-01      | 11.25      | 21.31  | 2.90       | -1.99      | 2.65       | 25.28  |
|    | 6.3E-01      | 11.25      | 27.80  | 2.90       | -3.79      | 2.11       | 22.81  |
|    | 8.5E-01      | 11.25      | 34.30  | 2.90       | -5.59      | 1.59       | 18.97  |
| 89 | ENVOLVEN MIN |            |        |            |            |            |        |
|    | 0.00         | 4.602E-01  | -4.56  | 2.828E-01  | -2.07      | -1.02      | 25.09  |
|    | 2.1E-01      | 4.602E-01  | 1.93   | 2.828E-01  | -3.88      | -1.13      | 23.52  |
|    | 4.2E-01      | 4.602E-01  | 8.43   | 2.828E-01  | -5.68      | -1.25      | 19.71  |
|    | 6.3E-01      | 4.602E-01  | 14.92  | 2.828E-01  | -7.48      | -1.38      | 14.52  |
|    | 8.5E-01      | 4.602E-01  | 21.42  | 2.828E-01  | -9.29      | -1.53      | 7.96   |
| 90 | ENVOLVEN MAX |            |        |            |            |            |        |
|    | 0.00         | 10.78      | 34.15  | -3.676E-01 | 11.97      | 1.49       | 15.85  |
|    | 2.1E-01      | 10.78      | 40.64  | -3.676E-01 | 13.78      | 1.73       | 10.63  |
|    | 4.2E-01      | 10.78      | 47.14  | -3.676E-01 | 15.58      | 2.09       | 4.04   |
|    | 6.3E-01      | 10.78      | 53.63  | -3.676E-01 | 17.38      | 2.76       | -3.92  |
|    | 8.5E-01      | 10.78      | 60.12  | -3.676E-01 | 19.19      | 3.61       | -13.25 |
| 90 | ENVOLVEN MIN |            |        |            |            |            |        |
|    | 0.00         | -6.101E-01 | 21.43  | -4.66      | 6.32       | -1.14      | 5.65   |
|    | 2.1E-01      | -6.101E-01 | 27.92  | -4.66      | 8.13       | -3.169E-01 | -2.25  |
|    | 4.2E-01      | -6.101E-01 | 34.41  | -4.66      | 9.93       | 3.796E-01  | -11.53 |
|    | 6.3E-01      | -6.101E-01 | 40.91  | -4.66      | 11.73      | 7.802E-01  | -22.18 |
|    | 8.5E-01      | -6.101E-01 | 47.40  | -4.66      | 13.54      | 9.844E-01  | -34.20 |
| 91 | ENVOLVEN MAX |            |        |            |            |            |        |
|    | 0.00         | 10.78      | 34.29  | 4.48       | -6.98      | 1.59       | 17.11  |
|    | 2.1E-01      | 10.78      | 40.78  | 4.48       | -8.78      | 7.810E-01  | 11.90  |
|    | 4.2E-01      | 10.78      | 47.27  | 4.48       | -10.59     | 1.097E-01  | 5.31   |
|    | 6.3E-01      | 10.78      | 53.77  | 4.48       | -12.39     | -2.784E-01 | -2.65  |
|    | 8.5E-01      | 10.78      | 60.26  | 4.48       | -14.19     | -5.442E-01 | -11.98 |
| 91 | ENVOLVEN MIN |            |        |            |            |            |        |
|    | 0.00         | 1.962E-01  | 21.43  | 6.840E-01  | -12.35     | -1.53      | 6.82   |
|    | 2.1E-01      | 1.962E-01  | 27.92  | 6.840E-01  | -14.15     | -1.82      | -1.11  |
|    | 4.2E-01      | 1.962E-01  | 34.41  | 6.840E-01  | -15.96     | -2.24      | -10.42 |
|    | 6.3E-01      | 1.962E-01  | 40.91  | 6.840E-01  | -17.76     | -2.94      | -21.09 |
|    | 8.5E-01      | 1.962E-01  | 47.40  | 6.840E-01  | -19.56     | -3.77      | -33.14 |
| 92 | ENVOLVEN MAX |            |        |            |            |            |        |
|    | 0.00         | 10.11      | 60.11  | -6.374E-01 | 16.55      | 3.61       | -16.36 |
|    | 1.7E-01      | 10.11      | 65.26  | -6.374E-01 | 17.98      | 4.57       | -24.74 |
|    | 3.4E-01      | 10.11      | 70.41  | -6.374E-01 | 19.41      | 5.55       | -33.98 |
|    | 5.0E-01      | 10.11      | 75.56  | -6.374E-01 | 20.84      | 6.53       | -44.09 |
|    | 6.7E-01      | 10.11      | 80.71  | -6.374E-01 | 22.28      | 7.52       | -55.06 |

|     |              |            |            |           |            |            |        |
|-----|--------------|------------|------------|-----------|------------|------------|--------|
| 92  | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -9.686E-01 | 47.41      | -6.08     | 7.43       | 9.844E-01  | -36.05 |
|     | 1.7E-01      | -9.686E-01 | 52.56      | -6.08     | 8.86       | 1.15       | -46.55 |
|     | 3.4E-01      | -9.686E-01 | 57.71      | -6.08     | 10.29      | 1.30       | -57.92 |
|     | 5.0E-01      | -9.686E-01 | 62.86      | -6.08     | 11.72      | 1.44       | -70.15 |
|     | 6.7E-01      | -9.686E-01 | 68.01      | -6.08     | 13.15      | 1.57       | -83.25 |
| 93  | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 1.8E-01      | 10.05      | 65.62      | 6.00      | -9.79      | -7.865E-01 | -23.94 |
|     | 3.4E-01      | 10.05      | 70.77      | 6.00      | -11.22     | -1.01      | -33.22 |
|     | 5.1E-01      | 10.05      | 75.92      | 6.00      | -12.65     | -1.22      | -43.36 |
|     | 6.8E-01      | 10.05      | 81.07      | 6.00      | -14.08     | -1.42      | -54.37 |
|     | 8.5E-01      | 10.05      | 86.22      | 6.00      | -15.51     | -1.62      | -66.24 |
| 93  | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 1.8E-01      | -1.368E-01 | 52.79      | 9.984E-01 | -18.61     | -4.75      | -46.15 |
|     | 3.4E-01      | -1.368E-01 | 57.94      | 9.984E-01 | -20.04     | -5.70      | -57.58 |
|     | 5.1E-01      | -1.368E-01 | 63.09      | 9.984E-01 | -21.47     | -6.67      | -69.87 |
|     | 6.8E-01      | -1.368E-01 | 68.24      | 9.984E-01 | -22.90     | -7.63      | -83.03 |
|     | 8.5E-01      | -1.368E-01 | 73.39      | 9.984E-01 | -24.33     | -8.61      | -97.05 |
| 94  | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 3.395E-02  | 3.243E-03  | 6.63      | 0.00       | 0.00       | 0.00   |
|     | 5.5E-01      | 3.14       | 10.98      | 6.63      | 0.00       | 2.98       | -2.99  |
|     | 1.09         | 6.24       | 21.96      | 6.63      | 0.00       | 5.95       | -11.98 |
| 94  | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -3.395E-02 | -3.243E-03 | -5.46     | 0.00       | 0.00       | 0.00   |
|     | 5.5E-01      | 3.07       | 10.98      | -5.46     | 0.00       | -3.62      | -3.00  |
|     | 1.09         | 6.17       | 21.96      | -5.46     | 0.00       | -7.24      | -11.98 |
| 97  | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 17.73      | -40.40     | 9.864E-01 | 9.109E-01  | 2.37       | -28.90 |
|     | 1.87         | 8.24       | -7.71      | 9.864E-01 | 9.109E-01  | 9.102E-01  | 16.19  |
|     | 3.75         | -1.25      | 24.98      | 9.864E-01 | 9.109E-01  | 3.12       | 0.00   |
| 97  | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -23.80     | -40.41     | -1.59     | -1.43      | -2.96      | -28.94 |
|     | 1.87         | -33.29     | -7.72      | -1.59     | -1.43      | -3.597E-01 | 16.17  |
|     | 3.75         | -42.79     | 24.97      | -1.59     | -1.43      | -1.44      | 0.00   |
| 98  | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 3.90       | -24.25     | 2.15      | 1.26       | 3.75       | 0.00   |
|     | 1.87         | 13.39      | 8.44       | 2.15      | 1.26       | 9.156E-01  | 15.04  |
|     | 3.75         | 22.88      | 41.14      | 2.15      | 1.26       | 3.95       | -31.20 |
| 98  | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -19.79     | -24.37     | -1.83     | -7.116E-01 | -2.95      | 0.00   |
|     | 1.87         | -10.30     | 8.32       | -1.83     | -7.116E-01 | -7.112E-01 | 14.82  |
|     | 3.75         | -8.056E-01 | 41.02      | -1.83     | -7.116E-01 | -4.34      | -31.64 |
| 100 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 15.74      | -50.77     | 2.05      | 1.60       | 4.34       | -39.88 |
|     | 2.02         | 4.79       | -9.88      | 2.05      | 1.60       | 4.290E-01  | 21.33  |
|     | 4.04         | -6.17      | 31.01      | 2.05      | 1.60       | 4.10       | 0.00   |
| 100 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -12.25     | -50.88     | -2.05     | -1.17      | -4.37      | -40.32 |
|     | 2.02         | -23.21     | -9.99      | -2.05     | -1.17      | -4.477E-01 | 21.11  |
|     | 4.04         | -34.17     | 30.90      | -2.05     | -1.17      | -4.10      | 0.00   |
| 101 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | -9.411E-01 | -28.24     | 1.37      | 8.087E-01  | 2.43       | 0.00   |
|     | 1.92         | 9.99       | 10.45      | 1.37      | 8.087E-01  | 4.254E-01  | 17.41  |
|     | 3.84         | 20.91      | 49.15      | 1.37      | 8.087E-01  | 3.72       | -39.56 |
| 101 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -45.21     | -28.40     | -1.78     | -1.07      | -3.44      | 0.00   |
|     | 1.92         | -34.28     | 10.29      | -1.78     | -1.07      | -6.435E-01 | 17.09  |
|     | 3.84         | -23.36     | 48.98      | -1.78     | -1.07      | -3.14      | -40.19 |
| 103 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 28.82      | -80.93     | 1.58      | 8.582E-01  | 3.08       | -57.62 |
|     | 1.87         | 9.79       | -15.37     | 1.58      | 8.582E-01  | 1.437E-01  | 32.63  |
|     | 3.75         | -9.24      | 50.19      | 1.58      | 8.582E-01  | 1.62       | 0.00   |
| 103 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -1.84      | -81.08     | -1.01     | -6.898E-01 | -2.17      | -58.20 |

|     |              |            |            |           |            |            |        |
|-----|--------------|------------|------------|-----------|------------|------------|--------|
|     | 1.87         | -20.87     | -15.52     | -1.01     | -6.898E-01 | -3.087E-01 | 32.34  |
|     | 3.75         | -39.90     | 50.03      | -1.01     | -6.898E-01 | -2.86      | 0.00   |
| 104 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | -2.15      | -49.93     | 1.74      | 1.23       | 3.27       | 0.00   |
|     | 1.87         | 16.88      | 15.63      | 1.74      | 1.23       | 5.180E-01  | 32.45  |
|     | 3.75         | 35.91      | 81.19      | 1.74      | 1.23       | 5.20       | -57.98 |
| 104 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -36.11     | -50.09     | -2.59     | -1.11      | -4.51      | 0.00   |
|     | 1.87         | -17.08     | 15.47      | -2.59     | -1.11      | -1.747E-01 | 32.14  |
|     | 3.75         | 1.95       | 81.02      | -2.59     | -1.11      | -3.27      | -58.59 |
| 106 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 21.48      | -51.60     | 2.90      | 1.98       | 6.03       | -43.23 |
|     | 2.02         | 10.53      | -10.71     | 2.90      | 1.98       | 3.091E-01  | 19.66  |
|     | 4.04         | -4.276E-01 | 30.18      | 2.90      | 1.98       | 2.18       | 0.00   |
| 106 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -24.81     | -51.75     | -1.40     | -6.785E-01 | -3.66      | -43.84 |
|     | 2.02         | -35.77     | -10.86     | -1.40     | -6.785E-01 | -9.842E-01 | 19.35  |
|     | 4.04         | -46.73     | 30.03      | -1.40     | -6.785E-01 | -5.89      | 0.00   |
| 108 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 6.31       | -16.06     | 1.03      | 4.430E-01  | 1.30       | -9.23  |
|     | 1.62         | 1.81       | -2.84      | 1.03      | 4.430E-01  | 8.731E-01  | 6.10   |
|     | 3.24         | -2.68      | 10.37      | 1.03      | 4.430E-01  | 3.32       | 0.00   |
| 108 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -30.64     | -16.20     | -1.52     | -5.522E-01 | -1.62      | -9.69  |
|     | 1.62         | -35.14     | -2.99      | -1.52     | -5.522E-01 | -4.002E-01 | 5.87   |
|     | 3.24         | -39.63     | 10.22      | -1.52     | -5.522E-01 | -2.06      | 0.00   |
| 109 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | -4.00      | -10.17     | 2.58      | -1.446E-01 | 5.02       | 0.00   |
|     | 1.62         | 4.999E-01  | 3.02       | 2.58      | -1.446E-01 | 8.795E-01  | 6.00   |
|     | 3.24         | 5.00       | 16.22      | 2.58      | -1.446E-01 | -2.36      | -9.38  |
| 109 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -37.03     | -10.30     | 3.929E-01 | -4.48      | -1.13      | 0.00   |
|     | 1.62         | -32.53     | 2.90       | 3.929E-01 | -4.48      | -1.81      | 5.79   |
|     | 3.24         | -28.04     | 16.09      | 3.929E-01 | -4.48      | -3.39      | -9.80  |
| 111 | ENVOLVEN MAX |            |            |           |            |            |        |
|     | 0.00         | 3.10       | -23.27     | 2.77      | 4.973E-01  | 4.21       | -5.91  |
|     | 1.38         | 10.93      | 4.44       | 2.77      | 4.973E-01  | 4.744E-01  | 7.05   |
|     | 2.75         | 18.76      | 32.15      | 2.77      | 4.973E-01  | 3.07       | -13.77 |
| 111 | ENVOLVEN MIN |            |            |           |            |            |        |
|     | 0.00         | -12.84     | -28.06     | -2.78     | -6.982E-01 | -4.78      | -14.73 |
|     | 1.38         | -5.01      | -3.505E-01 | -2.78     | -6.982E-01 | -1.02      | 4.83   |
|     | 2.75         | 2.82       | 27.36      | -2.78     | -6.982E-01 | -3.60      | -18.15 |

### 5.3.8.1.2 Cálculo de Refuerzo.

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CAFETERIA (LICEO U DE NAR)

C O N C R E T E D E S I G N O U T P U T (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |        |        |        | SHEAR | COMBO |
|------------|---------------|---------------|---------------------------------|--------|--------|--------|-------|-------|
|            |               |               | TOP                             | COMBO  | BOTTOM | COMBO  |       |       |
| 1          | 25X30CIM      | 15.000        | 0.509                           | VIGAS1 | 0.639  | VIGAS1 | 0.008 | CU    |
| 1          | 25X30CIM      | 73.750        | 0.283                           | VIGAS1 | 0.346  | VIGAS1 | 0.008 | CU    |
| 1          | 25X30CIM      | 132.500       | 0.159                           | VIGAS1 | 0.159  | VIGAS1 | 0.008 | CU    |

|    |          |         |       |        |       |        |       |        |
|----|----------|---------|-------|--------|-------|--------|-------|--------|
| 1  | 25X30CIM | 191.250 | 0.234 | VIGAS1 | 0.167 | VIGAS1 | 0.008 | CU     |
| 1  | 25X30CIM | 250.000 | 0.526 | VIGAS1 | 0.392 | VIGAS1 | 0.008 | CU     |
| 2  | 25X30CIM | 15.000  | 0.319 | VIGAS1 | 0.392 | VIGAS1 | 0.004 | CU     |
| 2  | 25X30CIM | 97.500  | 0.131 | VIGAS1 | 0.175 | VIGAS1 | 0.004 | CU     |
| 2  | 25X30CIM | 180.000 | 0.119 | VIGAS1 | 0.119 | VIGAS1 | 0.004 | CU     |
| 2  | 25X30CIM | 262.500 | 0.258 | VIGAS1 | 0.244 | VIGAS1 | 0.004 | CU     |
| 2  | 25X30CIM | 345.000 | 0.477 | VIGAS1 | 0.433 | VIGAS1 | 0.004 | CU     |
| 3  | 25X30CIM | 15.000  | 0.817 | VIGAS1 | 0.800 | VIGAS1 | 0.007 | CU     |
| 3  | 25X30CIM | 97.500  | 0.423 | VIGAS1 | 0.428 | VIGAS1 | 0.007 | CU     |
| 3  | 25X30CIM | 180.000 | 0.202 | VIGAS1 | 0.202 | VIGAS1 | 0.007 | CU     |
| 3  | 25X30CIM | 262.500 | 0.307 | VIGAS1 | 0.356 | VIGAS1 | 0.007 | CU     |
| 3  | 25X30CIM | 345.000 | 0.678 | VIGAS1 | 0.749 | VIGAS1 | 0.007 | CU     |
| 4  | 25X30CIM | 15.000  | 0.703 | VIGAS1 | 0.633 | VIGAS1 | 0.006 | CU     |
| 4  | 25X30CIM | 105.000 | 0.332 | VIGAS1 | 0.285 | VIGAS1 | 0.006 | CU     |
| 4  | 25X30CIM | 195.000 | 0.193 | VIGAS1 | 0.193 | VIGAS1 | 0.006 | CU     |
| 4  | 25X30CIM | 285.000 | 0.404 | VIGAS1 | 0.405 | VIGAS1 | 0.006 | CU     |
| 4  | 25X30CIM | 375.000 | 0.753 | VIGAS1 | 0.778 | VIGAS1 | 0.006 | CU     |
| 5  | 25X30CIM | 15.000  | 0.493 | VIGAS2 | 0.481 | VIGAS2 | 0.004 | VIGAS4 |
| 5  | 25X30CIM | 98.853  | 0.279 | VIGAS2 | 0.252 | VIGAS2 | 0.004 | VIGAS4 |
| 5  | 25X30CIM | 182.705 | 0.123 | VIGAS2 | 0.123 | VIGAS2 | 0.004 | VIGAS4 |
| 5  | 25X30CIM | 266.558 | 0.208 | VIGAS2 | 0.150 | VIGAS2 | 0.004 | VIGAS4 |
| 5  | 25X30CIM | 350.411 | 0.437 | VIGAS2 | 0.364 | VIGAS2 | 0.004 | VIGAS4 |
| 6  | 25X30CIM | 15.000  | 0.912 | VIGAS2 | 1.033 | VIGAS2 | 0.009 | CU     |
| 6  | 25X30CIM | 95.000  | 0.503 | VIGAS2 | 0.538 | VIGAS2 | 0.009 | CU     |
| 6  | 25X30CIM | 175.000 | 0.255 | VIGAS2 | 0.255 | VIGAS2 | 0.009 | CU     |
| 6  | 25X30CIM | 255.000 | 0.436 | VIGAS2 | 0.305 | VIGAS2 | 0.009 | CU     |
| 6  | 25X30CIM | 335.000 | 0.930 | VIGAS2 | 0.712 | VIGAS2 | 0.009 | CU     |
| 7  | 25X30CIM | 15.000  | 0.956 | VIGAS2 | 1.084 | VIGAS2 | 0.010 | CU     |
| 7  | 25X30CIM | 95.000  | 0.527 | VIGAS2 | 0.567 | VIGAS2 | 0.010 | CU     |
| 7  | 25X30CIM | 175.000 | 0.268 | VIGAS2 | 0.268 | VIGAS2 | 0.010 | CU     |
| 7  | 25X30CIM | 255.000 | 0.451 | VIGAS2 | 0.319 | VIGAS2 | 0.010 | CU     |
| 7  | 25X30CIM | 335.000 | 0.967 | VIGAS2 | 0.745 | VIGAS2 | 0.010 | CU     |
| 8  | 25X30CIM | 15.000  | 0.451 | VIGAS2 | 0.422 | VIGAS2 | 0.004 | CU     |
| 8  | 25X30CIM | 95.000  | 0.238 | VIGAS2 | 0.238 | VIGAS2 | 0.004 | CU     |
| 8  | 25X30CIM | 175.000 | 0.112 | VIGAS2 | 0.112 | VIGAS2 | 0.004 | CU     |
| 8  | 25X30CIM | 255.000 | 0.130 | VIGAS2 | 0.184 | VIGAS2 | 0.004 | CU     |
| 8  | 25X30CIM | 335.000 | 0.314 | VIGAS2 | 0.397 | VIGAS2 | 0.004 | CU     |
| 9  | 25X30CIM | 15.000  | 0.379 | VIGAS2 | 0.553 | VIGAS2 | 0.006 | CU     |
| 9  | 25X30CIM | 95.000  | 0.172 | VIGAS2 | 0.205 | VIGAS1 | 0.006 | CU     |
| 9  | 25X30CIM | 175.000 | 0.150 | VIGAS2 | 0.150 | VIGAS2 | 0.006 | CU     |
| 9  | 25X30CIM | 255.000 | 0.312 | VIGAS2 | 0.240 | VIGAS2 | 0.006 | CU     |
| 9  | 25X30CIM | 335.000 | 0.602 | VIGAS2 | 0.447 | VIGAS2 | 0.006 | CU     |
| 10 | 25X30CIM | 15.000  | 0.568 | VIGAS2 | 0.846 | VIGAS2 | 0.009 | CU     |
| 10 | 25X30CIM | 95.000  | 0.271 | VIGAS2 | 0.416 | VIGAS2 | 0.009 | CU     |
| 10 | 25X30CIM | 175.000 | 0.214 | VIGAS2 | 0.214 | VIGAS2 | 0.009 | CU     |
| 10 | 25X30CIM | 255.000 | 0.432 | VIGAS2 | 0.320 | VIGAS2 | 0.009 | CU     |
| 10 | 25X30CIM | 335.000 | 0.862 | VIGAS2 | 0.618 | VIGAS2 | 0.009 | CU     |
| 11 | 25X30CIM | 15.000  | 0.593 | VIGAS2 | 0.872 | VIGAS2 | 0.009 | CU     |
| 11 | 25X30CIM | 95.000  | 0.282 | VIGAS2 | 0.429 | VIGAS2 | 0.009 | CU     |
| 11 | 25X30CIM | 175.000 | 0.221 | VIGAS2 | 0.221 | VIGAS2 | 0.009 | CU     |
| 11 | 25X30CIM | 255.000 | 0.448 | VIGAS2 | 0.334 | VIGAS2 | 0.009 | CU     |
| 11 | 25X30CIM | 335.000 | 0.891 | VIGAS2 | 0.646 | VIGAS2 | 0.009 | CU     |
| 12 | 25X30CIM | 15.000  | 0.311 | VIGAS2 | 0.370 | VIGAS2 | 0.005 | CU     |
| 12 | 25X30CIM | 95.000  | 0.164 | VIGAS2 | 0.143 | VIGAS2 | 0.005 | CU     |
| 12 | 25X30CIM | 175.000 | 0.134 | VIGAS2 | 0.134 | VIGAS2 | 0.005 | CU     |
| 12 | 25X30CIM | 255.000 | 0.309 | VIGAS2 | 0.134 | VIGAS2 | 0.005 | CU     |
| 12 | 25X30CIM | 335.000 | 0.537 | VIGAS2 | 0.277 | VIGAS2 | 0.005 | CU     |
| 13 | 25X30CIM | 15.000  | 1.127 | VIGAS1 | 1.057 | VIGAS1 | 0.009 | CU     |
| 13 | 25X30CIM | 100.000 | 0.624 | VIGAS1 | 0.518 | VIGAS1 | 0.009 | CU     |

|    |          |         |       |        |       |        |       |    |
|----|----------|---------|-------|--------|-------|--------|-------|----|
| 13 | 25X30CIM | 185.000 | 0.278 | VIGAS1 | 0.278 | VIGAS1 | 0.009 | CU |
| 13 | 25X30CIM | 270.000 | 0.543 | VIGAS1 | 0.365 | VIGAS1 | 0.009 | CU |
| 13 | 25X30CIM | 355.000 | 1.083 | VIGAS1 | 0.865 | VIGAS1 | 0.009 | CU |
| 14 | 25X30CIM | 15.000  | 0.853 | VIGAS1 | 1.128 | VIGAS1 | 0.010 | CU |
| 14 | 25X30CIM | 97.500  | 0.367 | VIGAS1 | 0.562 | VIGAS1 | 0.010 | CU |
| 14 | 25X30CIM | 180.000 | 0.279 | VIGAS1 | 0.279 | VIGAS1 | 0.010 | CU |
| 14 | 25X30CIM | 262.500 | 0.552 | VIGAS1 | 0.596 | VIGAS1 | 0.010 | CU |
| 14 | 25X30CIM | 345.000 | 1.118 | VIGAS1 | 1.085 | VIGAS1 | 0.010 | CU |
| 15 | 25X30CIM | 15.000  | 1.127 | VIGAS1 | 1.199 | VIGAS1 | 0.010 | CU |
| 15 | 25X30CIM | 97.500  | 0.557 | VIGAS1 | 0.654 | VIGAS1 | 0.010 | CU |
| 15 | 25X30CIM | 180.000 | 0.296 | VIGAS1 | 0.296 | VIGAS1 | 0.010 | CU |
| 15 | 25X30CIM | 262.500 | 0.416 | VIGAS1 | 0.564 | VIGAS1 | 0.010 | CU |
| 15 | 25X30CIM | 345.000 | 0.957 | VIGAS1 | 1.134 | VIGAS1 | 0.010 | CU |
| 16 | 25X30CIM | 15.000  | 1.072 | VIGAS1 | 0.898 | VIGAS1 | 0.009 | CU |
| 16 | 25X30CIM | 105.000 | 0.527 | VIGAS1 | 0.388 | VIGAS1 | 0.009 | CU |
| 16 | 25X30CIM | 195.000 | 0.280 | VIGAS1 | 0.280 | VIGAS1 | 0.009 | CU |
| 16 | 25X30CIM | 285.000 | 0.621 | VIGAS1 | 0.548 | VIGAS1 | 0.009 | CU |
| 16 | 25X30CIM | 375.000 | 1.135 | VIGAS1 | 1.093 | VIGAS1 | 0.009 | CU |
| 17 | 25X30CIM | 15.000  | 0.955 | VIGAS2 | 0.990 | VIGAS2 | 0.009 | CU |
| 17 | 25X30CIM | 98.750  | 0.495 | VIGAS2 | 0.466 | VIGAS2 | 0.009 | CU |
| 17 | 25X30CIM | 182.500 | 0.269 | VIGAS2 | 0.269 | VIGAS2 | 0.009 | CU |
| 17 | 25X30CIM | 266.250 | 0.566 | VIGAS2 | 0.412 | VIGAS2 | 0.009 | CU |
| 17 | 25X30CIM | 350.000 | 1.091 | VIGAS2 | 0.870 | VIGAS2 | 0.009 | CU |
| 18 | 25X30CIM | 17.500  | 0.638 | VIGAS2 | 0.808 | VIGAS2 | 0.007 | CU |
| 18 | 25X30CIM | 101.578 | 0.306 | VIGAS2 | 0.404 | VIGAS2 | 0.007 | CU |
| 18 | 25X30CIM | 185.657 | 0.200 | VIGAS2 | 0.200 | VIGAS2 | 0.007 | CU |
| 18 | 25X30CIM | 269.735 | 0.395 | VIGAS2 | 0.354 | VIGAS2 | 0.007 | CU |
| 18 | 25X30CIM | 353.814 | 0.799 | VIGAS2 | 0.687 | VIGAS2 | 0.007 | CU |
| 19 | 25X30CIM | 17.500  | 0.659 | VIGAS2 | 0.841 | VIGAS2 | 0.008 | CU |
| 19 | 25X30CIM | 101.592 | 0.316 | VIGAS2 | 0.422 | VIGAS2 | 0.008 | CU |
| 19 | 25X30CIM | 185.683 | 0.208 | VIGAS2 | 0.208 | VIGAS2 | 0.008 | CU |
| 19 | 25X30CIM | 269.775 | 0.408 | VIGAS2 | 0.364 | VIGAS2 | 0.008 | CU |
| 19 | 25X30CIM | 353.867 | 0.827 | VIGAS2 | 0.708 | VIGAS2 | 0.008 | CU |
| 20 | 25X30CIM | 15.000  | 1.123 | VIGAS2 | 1.162 | VIGAS2 | 0.011 | CU |
| 20 | 25X30CIM | 98.750  | 0.578 | VIGAS2 | 0.543 | VIGAS2 | 0.011 | CU |
| 20 | 25X30CIM | 182.500 | 0.320 | VIGAS2 | 0.320 | VIGAS2 | 0.011 | CU |
| 20 | 25X30CIM | 266.250 | 0.675 | VIGAS2 | 0.495 | VIGAS2 | 0.011 | CU |
| 20 | 25X30CIM | 350.000 | 1.296 | VIGAS2 | 1.039 | VIGAS2 | 0.011 | CU |
| 21 | 25X30CIM | 15.000  | 1.018 | VIGAS1 | 1.093 | VIGAS1 | 0.012 | CU |
| 21 | 25X30CIM | 83.650  | 0.544 | VIGAS1 | 0.544 | VIGAS1 | 0.012 | CU |
| 21 | 25X30CIM | 152.300 | 0.270 | VIGAS1 | 0.270 | VIGAS1 | 0.012 | CU |
| 21 | 25X30CIM | 220.950 | 0.536 | VIGAS1 | 0.390 | VIGAS1 | 0.012 | CU |
| 21 | 25X30CIM | 289.600 | 1.084 | VIGAS1 | 0.862 | VIGAS1 | 0.012 | CU |
| 22 | 25X30CIM | 15.000  | 1.019 | VIGAS1 | 0.835 | VIGAS1 | 0.011 | CU |
| 22 | 25X30CIM | 83.558  | 0.512 | VIGAS1 | 0.382 | VIGAS1 | 0.011 | CU |
| 22 | 25X30CIM | 152.115 | 0.252 | VIGAS1 | 0.252 | VIGAS1 | 0.011 | CU |
| 22 | 25X30CIM | 220.673 | 0.515 | VIGAS1 | 0.489 | VIGAS1 | 0.011 | CU |
| 22 | 25X30CIM | 289.230 | 0.969 | VIGAS1 | 0.996 | VIGAS1 | 0.011 | CU |
| 23 | 25X30CIM | 17.500  | 0.776 | VIGAS2 | 0.872 | VIGAS2 | 0.008 | CU |
| 23 | 25X30CIM | 102.438 | 0.360 | VIGAS2 | 0.418 | VIGAS2 | 0.008 | CU |
| 23 | 25X30CIM | 187.376 | 0.233 | VIGAS2 | 0.233 | VIGAS2 | 0.008 | CU |
| 23 | 25X30CIM | 272.314 | 0.486 | VIGAS2 | 0.469 | VIGAS2 | 0.008 | CU |
| 23 | 25X30CIM | 357.252 | 0.941 | VIGAS2 | 0.887 | VIGAS2 | 0.008 | CU |
| 24 | 25X30CIM | 17.500  | 0.809 | VIGAS2 | 0.896 | VIGAS2 | 0.008 | CU |
| 24 | 25X30CIM | 102.451 | 0.376 | VIGAS2 | 0.431 | VIGAS2 | 0.008 | CU |
| 24 | 25X30CIM | 187.402 | 0.238 | VIGAS2 | 0.238 | VIGAS2 | 0.008 | CU |
| 24 | 25X30CIM | 272.354 | 0.495 | VIGAS2 | 0.488 | VIGAS2 | 0.008 | CU |
| 24 | 25X30CIM | 357.305 | 0.961 | VIGAS2 | 0.922 | VIGAS2 | 0.008 | CU |
| 25 | 25X30CIM | 17.500  | 0.726 | VIGAS1 | 0.807 | VIGAS1 | 0.005 | CU |

|    |          |         |       |        |       |        |       |        |
|----|----------|---------|-------|--------|-------|--------|-------|--------|
| 25 | 25X30CIM | 127.856 | 0.356 | VIGAS1 | 0.406 | VIGAS1 | 0.005 | CU     |
| 25 | 25X30CIM | 238.213 | 0.200 | VIGAS1 | 0.200 | VIGAS1 | 0.005 | CU     |
| 25 | 25X30CIM | 348.569 | 0.386 | VIGAS1 | 0.377 | VIGAS1 | 0.005 | CU     |
| 25 | 25X30CIM | 458.925 | 0.787 | VIGAS1 | 0.748 | VIGAS1 | 0.005 | CU     |
| 26 | 25X30CIM | 17.500  | 0.708 | VIGAS1 | 0.779 | VIGAS1 | 0.005 | CU     |
| 26 | 25X30CIM | 127.856 | 0.346 | VIGAS1 | 0.393 | VIGAS1 | 0.005 | CU     |
| 26 | 25X30CIM | 238.213 | 0.193 | VIGAS1 | 0.193 | VIGAS1 | 0.005 | CU     |
| 26 | 25X30CIM | 348.569 | 0.370 | VIGAS1 | 0.369 | VIGAS1 | 0.005 | CU     |
| 26 | 25X30CIM | 458.925 | 0.756 | VIGAS1 | 0.731 | VIGAS1 | 0.005 | CU     |
| 50 | 25X25    | 15.000  | 0.459 | VIGAS1 | 0.376 | VIGAS1 | 0.008 | CU     |
| 50 | 25X25    | 73.750  | 0.161 | VIGAS1 | 0.297 | VIGAS1 | 0.006 | CU     |
| 50 | 25X25    | 132.500 | 0.122 | VIGAS1 | 0.113 | CU     | 0.006 | CU     |
| 50 | 25X25    | 191.250 | 0.135 | VIGAS1 | 0.156 | VIGAS1 | 0.008 | CU     |
| 50 | 25X25    | 250.000 | 0.490 | VIGAS1 | 0.244 | VIGAS1 | 0.009 | CU     |
| 51 | 25X25    | 15.000  | 0.449 | VIGAS1 | 0.223 | VIGAS1 | 0.007 | VIGAS4 |
| 51 | 25X25    | 97.500  | 0.196 | VIGAS1 | 0.196 | VIGAS1 | 0.006 | VIGAS4 |
| 51 | 25X25    | 180.000 | 0.196 | VIGAS1 | 0.196 | VIGAS1 | 0.005 | VIGAS4 |
| 51 | 25X25    | 262.500 | 0.282 | VIGAS1 | 0.196 | VIGAS1 | 0.006 | VIGAS4 |
| 51 | 25X25    | 345.000 | 0.791 | VIGAS1 | 0.393 | VIGAS1 | 0.008 | VIGAS4 |
| 52 | 25X25    | 15.000  | 1.082 | VIGAS1 | 0.536 | VIGAS1 | 0.011 | CU     |
| 52 | 25X25    | 97.500  | 0.448 | VIGAS1 | 0.358 | VIGAS1 | 0.009 | CU     |
| 52 | 25X25    | 180.000 | 0.267 | VIGAS1 | 0.267 | VIGAS1 | 0.007 | CU     |
| 52 | 25X25    | 262.500 | 0.267 | VIGAS1 | 0.267 | VIGAS1 | 0.008 | CU     |
| 52 | 25X25    | 345.000 | 0.645 | VIGAS1 | 0.332 | VIGAS1 | 0.010 | CU     |
| 53 | 25X25    | 15.000  | 0.790 | VIGAS1 | 0.393 | VIGAS1 | 0.009 | VIGAS4 |
| 53 | 25X25    | 105.000 | 0.202 | VIGAS1 | 0.210 | VIGAS1 | 0.007 | VIGAS4 |
| 53 | 25X25    | 195.000 | 0.202 | VIGAS1 | 0.246 | CU     | 0.005 | VIGAS4 |
| 53 | 25X25    | 285.000 | 0.255 | VIGAS1 | 0.499 | VIGAS1 | 0.007 | VIGAS4 |
| 53 | 25X25    | 375.000 | 0.818 | VIGAS1 | 0.496 | VIGAS1 | 0.008 | VIGAS4 |
| 54 | 25X25    | 15.000  | 0.812 | VIGAS2 | 0.403 | VIGAS2 | 0.010 | VIGAS4 |
| 54 | 25X25    | 98.853  | 0.245 | VIGAS2 | 0.529 | VIGAS2 | 0.008 | VIGAS4 |
| 54 | 25X25    | 182.705 | 0.245 | VIGAS2 | 0.450 | CU     | 0.006 | VIGAS4 |
| 54 | 25X25    | 266.558 | 0.245 | VIGAS2 | 0.267 | VIGAS2 | 0.009 | VIGAS4 |
| 54 | 25X25    | 350.411 | 0.992 | VIGAS2 | 0.492 | VIGAS2 | 0.011 | VIGAS4 |
| 55 | 25X25    | 15.000  | 1.238 | VIGAS2 | 0.747 | VIGAS2 | 0.016 | VIGAS4 |
| 55 | 25X25    | 95.000  | 0.435 | VIGAS2 | 0.888 | VIGAS2 | 0.013 | VIGAS4 |
| 55 | 25X25    | 175.000 | 0.435 | VIGAS2 | 0.603 | CU     | 0.013 | VIGAS4 |
| 55 | 25X25    | 255.000 | 0.435 | VIGAS2 | 0.435 | VIGAS2 | 0.016 | VIGAS4 |
| 55 | 25X25    | 335.000 | 1.750 | VIGAS2 | 0.876 | VIGAS2 | 0.019 | VIGAS4 |
| 56 | 25X25    | 15.000  | 1.275 | VIGAS2 | 0.787 | VIGAS2 | 0.017 | VIGAS4 |
| 56 | 25X25    | 95.000  | 0.443 | VIGAS2 | 0.910 | VIGAS2 | 0.014 | VIGAS4 |
| 56 | 25X25    | 175.000 | 0.443 | VIGAS2 | 0.603 | CU     | 0.013 | VIGAS4 |
| 56 | 25X25    | 255.000 | 0.443 | VIGAS2 | 0.447 | VIGAS2 | 0.016 | VIGAS4 |
| 56 | 25X25    | 335.000 | 1.750 | VIGAS2 | 0.892 | VIGAS2 | 0.019 | VIGAS4 |
| 57 | 25X25    | 15.000  | 0.614 | VIGAS2 | 0.338 | VIGAS2 | 0.010 | VIGAS4 |
| 57 | 25X25    | 95.000  | 0.247 | CU     | 0.481 | VIGAS2 | 0.008 | VIGAS4 |
| 57 | 25X25    | 175.000 | 0.247 | CU     | 0.313 | CU     | 0.008 | VIGAS4 |
| 57 | 25X25    | 255.000 | 0.247 | CU     | 0.247 | CU     | 0.010 | VIGAS4 |
| 57 | 25X25    | 335.000 | 1.000 | CU     | 0.496 | CU     | 0.013 | VIGAS4 |
| 58 | 25X25    | 15.000  | 0.682 | VIGAS1 | 0.339 | VIGAS1 | 0.011 | VIGAS4 |
| 58 | 25X25    | 95.000  | 0.268 | VIGAS2 | 0.244 | VIGAS1 | 0.009 | VIGAS4 |
| 58 | 25X25    | 175.000 | 0.268 | VIGAS2 | 0.309 | CU     | 0.007 | VIGAS4 |
| 58 | 25X25    | 255.000 | 0.273 | VIGAS2 | 0.331 | VIGAS2 | 0.009 | VIGAS4 |
| 58 | 25X25    | 335.000 | 1.087 | VIGAS2 | 0.539 | VIGAS2 | 0.012 | VIGAS4 |
| 59 | 25X25    | 15.000  | 1.355 | VIGAS2 | 0.670 | VIGAS2 | 0.015 | VIGAS4 |
| 59 | 25X25    | 95.000  | 0.377 | VIGAS2 | 0.511 | VIGAS2 | 0.012 | VIGAS4 |
| 59 | 25X25    | 175.000 | 0.377 | VIGAS2 | 0.469 | CU     | 0.010 | VIGAS4 |
| 59 | 25X25    | 255.000 | 0.377 | VIGAS2 | 0.450 | VIGAS2 | 0.013 | VIGAS4 |
| 59 | 25X25    | 335.000 | 1.540 | VIGAS2 | 0.760 | VIGAS2 | 0.016 | VIGAS4 |

|    |       |         |       |        |       |        |       |        |
|----|-------|---------|-------|--------|-------|--------|-------|--------|
| 60 | 25X25 | 15.000  | 1.388 | VIGAS2 | 0.686 | VIGAS2 | 0.016 | VIGAS4 |
| 60 | 25X25 | 95.000  | 0.387 | VIGAS2 | 0.527 | VIGAS2 | 0.013 | VIGAS4 |
| 60 | 25X25 | 175.000 | 0.387 | VIGAS2 | 0.470 | CU     | 0.010 | VIGAS4 |
| 60 | 25X25 | 255.000 | 0.387 | VIGAS2 | 0.472 | VIGAS2 | 0.013 | VIGAS4 |
| 60 | 25X25 | 335.000 | 1.579 | VIGAS2 | 0.779 | VIGAS2 | 0.016 | VIGAS4 |
| 61 | 25X25 | 15.000  | 1.216 | CU     | 0.602 | CU     | 0.009 | VIGAS2 |
| 61 | 25X25 | 95.000  | 0.307 | CU     | 0.398 | CU     | 0.009 | VIGAS2 |
| 61 | 25X25 | 175.000 | 0.307 | CU     | 0.934 | CU     | 0.009 | VIGAS2 |
| 61 | 25X25 | 255.000 | 0.307 | CU     | 0.550 | VIGAS2 | 0.009 | VIGAS2 |
| 61 | 25X25 | 335.000 | 1.249 | CU     | 0.618 | CU     | 0.009 | VIGAS2 |
| 62 | 25X25 | 15.000  | 1.524 | VIGAS1 | 0.752 | VIGAS1 | 0.010 | VIGAS2 |
| 62 | 25X25 | 100.000 | 0.314 | CU     | 0.980 | VIGAS1 | 0.010 | VIGAS2 |
| 62 | 25X25 | 185.000 | 0.314 | CU     | 0.924 | CU     | 0.010 | VIGAS2 |
| 62 | 25X25 | 270.000 | 0.314 | CU     | 0.490 | VIGAS1 | 0.010 | VIGAS2 |
| 62 | 25X25 | 355.000 | 1.277 | CU     | 0.632 | CU     | 0.010 | VIGAS2 |
| 63 | 25X25 | 15.000  | 0.885 | VIGAS1 | 0.465 | VIGAS1 | 0.012 | CU     |
| 63 | 25X25 | 97.500  | 0.378 | VIGAS1 | 0.378 | VIGAS1 | 0.010 | VIGAS4 |
| 63 | 25X25 | 180.000 | 0.378 | VIGAS1 | 0.378 | VIGAS1 | 0.010 | CU     |
| 63 | 25X25 | 262.500 | 0.752 | VIGAS1 | 0.378 | VIGAS1 | 0.012 | CU     |
| 63 | 25X25 | 345.000 | 1.542 | VIGAS1 | 0.761 | VIGAS1 | 0.014 | CU     |
| 64 | 25X25 | 15.000  | 1.548 | VIGAS1 | 0.764 | VIGAS1 | 0.014 | CU     |
| 64 | 25X25 | 97.500  | 0.755 | VIGAS1 | 0.544 | VIGAS3 | 0.012 | CU     |
| 64 | 25X25 | 180.000 | 0.379 | VIGAS1 | 0.379 | VIGAS1 | 0.010 | CU     |
| 64 | 25X25 | 262.500 | 0.379 | VIGAS1 | 0.379 | VIGAS1 | 0.010 | VIGAS4 |
| 64 | 25X25 | 345.000 | 0.951 | VIGAS1 | 0.472 | VIGAS1 | 0.013 | CU     |
| 65 | 25X25 | 15.000  | 1.316 | CU     | 0.650 | CU     | 0.010 | VIGAS2 |
| 65 | 25X25 | 105.000 | 0.448 | VIGAS1 | 0.529 | VIGAS1 | 0.010 | VIGAS2 |
| 65 | 25X25 | 195.000 | 0.448 | VIGAS1 | 0.945 | CU     | 0.010 | VIGAS2 |
| 65 | 25X25 | 285.000 | 0.448 | VIGAS1 | 0.889 | VIGAS1 | 0.010 | VIGAS2 |
| 65 | 25X25 | 375.000 | 1.750 | VIGAS1 | 0.903 | VIGAS1 | 0.010 | VIGAS2 |
| 66 | 25X25 | 15.000  | 1.750 | VIGAS2 | 1.027 | VIGAS2 | 0.013 | VIGAS2 |
| 66 | 25X25 | 98.750  | 0.667 | VIGAS2 | 1.110 | VIGAS2 | 0.013 | VIGAS2 |
| 66 | 25X25 | 182.500 | 0.667 | VIGAS2 | 0.979 | CU     | 0.013 | VIGAS2 |
| 66 | 25X25 | 266.250 | 0.667 | VIGAS2 | 0.795 | VIGAS2 | 0.013 | VIGAS2 |
| 66 | 25X25 | 350.000 | 2.074 | VIGAS2 | 1.349 | VIGAS2 | 0.013 | VIGAS2 |
| 67 | 30X25 | 17.500  | 1.394 | VIGAS2 | 0.690 | VIGAS2 | 0.017 | VIGAS4 |
| 67 | 30X25 | 101.578 | 0.384 | CU     | 0.669 | VIGAS2 | 0.014 | VIGAS4 |
| 67 | 30X25 | 185.656 | 0.384 | CU     | 0.487 | CU     | 0.013 | VIGAS4 |
| 67 | 30X25 | 269.735 | 0.547 | VIGAS2 | 0.384 | CU     | 0.017 | VIGAS4 |
| 67 | 30X25 | 353.813 | 2.094 | VIGAS2 | 1.031 | VIGAS2 | 0.020 | VIGAS4 |
| 68 | 30X25 | 17.500  | 1.444 | VIGAS2 | 0.714 | VIGAS2 | 0.017 | VIGAS4 |
| 68 | 30X25 | 101.592 | 0.536 | VIGAS2 | 0.700 | VIGAS2 | 0.014 | VIGAS4 |
| 68 | 30X25 | 185.683 | 0.536 | VIGAS2 | 0.479 | CU     | 0.013 | VIGAS4 |
| 68 | 30X25 | 269.775 | 0.602 | VIGAS2 | 0.536 | VIGAS2 | 0.017 | VIGAS4 |
| 68 | 30X25 | 353.866 | 2.100 | VIGAS2 | 1.081 | VIGAS2 | 0.020 | VIGAS4 |
| 69 | 25X25 | 15.000  | 1.786 | VIGAS2 | 1.166 | VIGAS2 | 0.026 | VIGAS4 |
| 69 | 25X25 | 98.750  | 0.720 | VIGAS2 | 1.264 | VIGAS2 | 0.019 | VIGAS4 |
| 69 | 25X25 | 182.500 | 0.720 | VIGAS2 | 1.004 | CU     | 0.015 | VIGAS4 |
| 69 | 25X25 | 266.250 | 0.720 | VIGAS2 | 0.942 | VIGAS2 | 0.022 | VIGAS4 |
| 69 | 25X25 | 350.000 | 2.246 | VIGAS2 | 1.458 | VIGAS2 | 0.028 | VIGAS4 |
| 70 | 25X25 | 15.000  | 1.302 | VIGAS1 | 0.644 | VIGAS1 | 0.010 | VIGAS2 |
| 70 | 25X25 | 83.651  | 0.320 | VIGAS1 | 0.361 | VIGAS1 | 0.010 | VIGAS2 |
| 70 | 25X25 | 152.302 | 0.320 | VIGAS1 | 0.568 | CU     | 0.010 | VIGAS2 |
| 70 | 25X25 | 220.954 | 0.320 | VIGAS1 | 0.753 | VIGAS1 | 0.010 | VIGAS2 |
| 70 | 25X25 | 289.605 | 1.210 | VIGAS1 | 0.599 | VIGAS1 | 0.010 | VIGAS2 |
| 71 | 25X25 | 15.000  | 1.191 | VIGAS1 | 0.589 | VIGAS1 | 0.010 | VIGAS2 |
| 71 | 25X25 | 83.558  | 0.310 | VIGAS1 | 0.739 | VIGAS1 | 0.010 | VIGAS2 |
| 71 | 25X25 | 152.117 | 0.310 | VIGAS1 | 0.574 | CU     | 0.010 | VIGAS2 |
| 71 | 25X25 | 220.675 | 0.310 | VIGAS1 | 0.363 | VIGAS1 | 0.010 | VIGAS2 |
| 71 | 25X25 | 289.234 | 1.261 | VIGAS1 | 0.624 | VIGAS1 | 0.010 | VIGAS2 |

|    |       |        |                                      |        |       |        |       |    |
|----|-------|--------|--------------------------------------|--------|-------|--------|-------|----|
| 72 | 30X25 | 17.500 | 1.865                                | VIGAS2 | 0.920 | VIGAS2 | 0.205 | CU |
| 72 | 30X25 | 22.395 | 1.738                                | VIGAS2 | 0.457 | VIGAS2 | 0.205 | CU |
| 72 | 30X25 | 27.291 | 1.615                                | VIGAS2 | 0.457 | VIGAS2 | 0.204 | CU |
| 72 | 30X25 | 32.186 | 1.495                                | VIGAS2 | 0.457 | VIGAS2 | 0.203 | CU |
| 72 | 30X25 | 37.082 | 1.380                                | VIGAS2 | 0.683 | VIGAS2 | 0.203 | CU |
| 73 | 30X25 | 0.000  | Shear stress exceeds maximum allowed |        |       |        |       |    |
| 73 | 30X25 | 4.871  | Shear stress exceeds maximum allowed |        |       |        |       |    |
| 73 | 30X25 | 9.743  | Shear stress exceeds maximum allowed |        |       |        |       |    |
| 73 | 30X25 | 14.614 | Shear stress exceeds maximum allowed |        |       |        |       |    |
| 73 | 30X25 | 19.486 | Shear stress exceeds maximum allowed |        |       |        |       |    |
| 74 | 30X25 | 0.000  | 1.324                                | VIGAS2 | 0.656 | VIGAS2 | 0.054 | CU |
| 74 | 30X25 | 21.135 | 0.865                                | VIGAS2 | 0.434 | VIGAS2 | 0.051 | CU |
| 74 | 30X25 | 42.270 | 0.471                                | VIGAS2 | 0.607 | VIGAS2 | 0.048 | CU |
| 74 | 30X25 | 63.406 | 0.326                                | VIGAS2 | 0.722 | VIGAS2 | 0.045 | CU |
| 74 | 30X25 | 84.541 | 0.000                                | VIGAS4 | 0.606 | CU     | 0.042 | CU |
| 75 | 30X25 | 0.000  | 1.352                                | VIGAS2 | 0.669 | VIGAS2 | 0.056 | CU |
| 75 | 30X25 | 21.135 | 0.884                                | VIGAS2 | 0.473 | VIGAS2 | 0.053 | CU |
| 75 | 30X25 | 42.270 | 0.482                                | VIGAS2 | 0.650 | VIGAS2 | 0.050 | CU |
| 75 | 30X25 | 63.406 | 0.333                                | VIGAS2 | 0.769 | VIGAS2 | 0.047 | CU |
| 75 | 30X25 | 84.541 | 0.000                                | VIGAS4 | 0.643 | CU     | 0.044 | CU |
| 76 | 30X25 | 0.000  | 0.000                                | VIGAS4 | 0.669 | CU     | 0.021 | CU |
| 76 | 30X25 | 21.135 | 0.190                                | CU     | 0.811 | CU     | 0.018 | CU |
| 76 | 30X25 | 42.270 | 0.190                                | CU     | 0.875 | CU     | 0.015 | CU |
| 76 | 30X25 | 63.406 | 0.190                                | CU     | 0.859 | CU     | 0.016 | CU |
| 76 | 30X25 | 84.541 | 0.000                                | VIGAS4 | 0.765 | CU     | 0.019 | CU |
| 77 | 30X25 | 0.000  | 0.000                                | VIGAS4 | 0.708 | CU     | 0.022 | CU |
| 77 | 30X25 | 21.135 | 0.207                                | CU     | 0.859 | CU     | 0.019 | CU |
| 77 | 30X25 | 42.270 | 0.207                                | CU     | 0.931 | CU     | 0.016 | CU |
| 77 | 30X25 | 63.406 | 0.207                                | CU     | 0.923 | CU     | 0.017 | CU |
| 77 | 30X25 | 84.541 | 0.000                                | VIGAS4 | 0.837 | CU     | 0.020 | CU |
| 78 | 30X25 | 0.000  | 0.000                                | VIGAS4 | 0.748 | CU     | 0.032 | CU |
| 78 | 30X25 | 21.135 | 0.186                                | CU     | 0.575 | CU     | 0.035 | CU |
| 78 | 30X25 | 42.270 | 0.186                                | CU     | 0.551 | VIGAS2 | 0.038 | CU |
| 78 | 30X25 | 63.406 | 0.415                                | VIGAS2 | 0.413 | VIGAS2 | 0.041 | CU |
| 78 | 30X25 | 84.541 | 0.831                                | VIGAS2 | 0.413 | VIGAS2 | 0.044 | CU |
| 79 | 30X25 | 0.000  | 0.000                                | VIGAS4 | 0.821 | CU     | 0.031 | CU |
| 79 | 30X25 | 21.135 | 0.203                                | CU     | 0.655 | CU     | 0.034 | CU |
| 79 | 30X25 | 42.270 | 0.203                                | CU     | 0.609 | VIGAS2 | 0.037 | CU |
| 79 | 30X25 | 63.406 | 0.337                                | VIGAS2 | 0.479 | VIGAS2 | 0.040 | CU |
| 79 | 30X25 | 84.541 | 0.749                                | VIGAS2 | 0.372 | VIGAS2 | 0.043 | CU |
| 80 | 30X25 | 0.000  | 0.867                                | VIGAS2 | 0.431 | VIGAS2 | 0.065 | CU |
| 80 | 30X25 | 19.218 | 1.303                                | VIGAS2 | 0.656 | CU     | 0.068 | CU |
| 80 | 30X25 | 38.436 | 1.443                                | CU     | 0.656 | CU     | 0.070 | CU |
| 80 | 30X25 | 57.654 | 2.032                                | CU     | 0.656 | CU     | 0.073 | CU |
| 80 | 30X25 | 76.872 | 2.218                                | VIGAS2 | 1.324 | CU     | 0.076 | CU |
| 81 | 30X25 | 17.500 | 1.178                                | VIGAS2 | 0.584 | VIGAS2 | 0.076 | CU |
| 81 | 30X25 | 36.718 | 1.275                                | CU     | 0.780 | CU     | 0.079 | CU |
| 81 | 30X25 | 55.936 | 1.848                                | CU     | 0.780 | CU     | 0.082 | CU |
| 81 | 30X25 | 75.154 | 2.101                                | VIGAS2 | 0.780 | CU     | 0.084 | CU |
| 81 | 30X25 | 94.372 | 2.600                                | VIGAS2 | 1.578 | CU     | 0.087 | CU |
| 82 | 30X25 | 17.500 | 2.100                                | CU     | 1.264 | CU     | 0.091 | CU |
| 82 | 30X25 | 31.800 | 2.100                                | CU     | 0.626 | CU     | 0.090 | CU |
| 82 | 30X25 | 46.101 | 1.711                                | CU     | 0.626 | CU     | 0.088 | CU |
| 82 | 30X25 | 60.401 | 1.331                                | CU     | 0.626 | CU     | 0.086 | CU |
| 82 | 30X25 | 74.701 | 0.984                                | CU     | 0.489 | CU     | 0.085 | CU |
| 83 | 30X25 | 0.000  | 2.328                                | CU     | 1.517 | CU     | 0.102 | CU |
| 83 | 30X25 | 14.300 | 2.100                                | CU     | 0.750 | CU     | 0.101 | CU |
| 83 | 30X25 | 28.601 | 2.100                                | CU     | 0.750 | CU     | 0.099 | CU |
| 83 | 30X25 | 42.901 | 1.732                                | CU     | 0.750 | CU     | 0.097 | CU |



|    |       |         |       |        |       |        |       |        |
|----|-------|---------|-------|--------|-------|--------|-------|--------|
| 83 | 30X25 | 57.201  | 1.345 | CU     | 0.666 | CU     | 0.096 | CU     |
| 84 | 30X25 | 0.000   | 1.161 | VIGAS1 | 0.576 | VIGAS1 | 0.049 | CU     |
| 84 | 30X25 | 21.135  | 0.749 | VIGAS1 | 0.287 | VIGAS1 | 0.047 | CU     |
| 84 | 30X25 | 42.270  | 0.389 | VIGAS1 | 0.395 | VIGAS1 | 0.045 | CU     |
| 84 | 30X25 | 63.406  | 0.287 | VIGAS1 | 0.570 | VIGAS1 | 0.042 | CU     |
| 84 | 30X25 | 84.541  | 0.000 | VIGAS4 | 0.588 | CU     | 0.040 | CU     |
| 85 | 30X25 | 0.000   | 1.085 | VIGAS1 | 0.539 | VIGAS1 | 0.049 | CU     |
| 85 | 30X25 | 21.135  | 0.679 | VIGAS1 | 0.268 | VIGAS1 | 0.047 | CU     |
| 85 | 30X25 | 42.270  | 0.324 | VIGAS1 | 0.428 | VIGAS1 | 0.044 | CU     |
| 85 | 30X25 | 63.406  | 0.268 | VIGAS1 | 0.607 | VIGAS1 | 0.042 | CU     |
| 85 | 30X25 | 84.541  | 0.000 | VIGAS4 | 0.653 | CU     | 0.040 | CU     |
| 86 | 30X25 | 0.000   | 0.000 | VIGAS4 | 0.693 | CU     | 0.028 | CU     |
| 86 | 30X25 | 21.135  | 0.277 | CU     | 0.894 | CU     | 0.025 | CU     |
| 86 | 30X25 | 42.270  | 0.277 | CU     | 1.033 | CU     | 0.023 | CU     |
| 86 | 30X25 | 63.406  | 0.277 | CU     | 1.108 | CU     | 0.021 | CU     |
| 86 | 30X25 | 84.541  | 0.000 | VIGAS4 | 1.120 | CU     | 0.020 | CU     |
| 87 | 30X25 | 0.000   | 0.000 | VIGAS4 | 0.759 | CU     | 0.029 | CU     |
| 87 | 30X25 | 21.135  | 0.292 | CU     | 0.960 | CU     | 0.026 | CU     |
| 87 | 30X25 | 42.270  | 0.292 | CU     | 1.098 | CU     | 0.024 | CU     |
| 87 | 30X25 | 63.406  | 0.292 | CU     | 1.173 | CU     | 0.022 | CU     |
| 87 | 30X25 | 84.541  | 0.000 | VIGAS4 | 1.184 | CU     | 0.021 | CU     |
| 88 | 30X25 | 0.000   | 0.000 | VIGAS4 | 1.140 | CU     | 0.020 | CU     |
| 88 | 30X25 | 21.135  | 0.282 | CU     | 1.088 | CU     | 0.022 | CU     |
| 88 | 30X25 | 42.270  | 0.282 | CU     | 0.973 | CU     | 0.025 | CU     |
| 88 | 30X25 | 63.406  | 0.282 | CU     | 0.794 | CU     | 0.027 | CU     |
| 88 | 30X25 | 84.541  | 0.000 | VIGAS4 | 0.553 | CU     | 0.029 | CU     |
| 89 | 30X25 | 0.000   | 0.000 | VIGAS4 | 1.203 | CU     | 0.021 | CU     |
| 89 | 30X25 | 21.135  | 0.297 | CU     | 1.150 | CU     | 0.023 | CU     |
| 89 | 30X25 | 42.270  | 0.297 | CU     | 1.034 | CU     | 0.026 | CU     |
| 89 | 30X25 | 63.406  | 0.297 | CU     | 0.854 | CU     | 0.028 | CU     |
| 89 | 30X25 | 84.541  | 0.000 | VIGAS4 | 0.613 | CU     | 0.030 | CU     |
| 90 | 30X25 | 0.000   | 0.000 | VIGAS4 | 0.490 | CU     | 0.043 | CU     |
| 90 | 30X25 | 21.135  | 0.270 | CU     | 0.446 | VIGAS1 | 0.045 | CU     |
| 90 | 30X25 | 42.270  | 0.499 | VIGAS1 | 0.270 | CU     | 0.048 | CU     |
| 90 | 30X25 | 63.406  | 0.891 | VIGAS1 | 0.270 | CU     | 0.050 | CU     |
| 90 | 30X25 | 84.541  | 1.092 | CU     | 0.542 | CU     | 0.052 | CU     |
| 91 | 30X25 | 0.000   | 0.000 | VIGAS4 | 0.546 | CU     | 0.042 | CU     |
| 91 | 30X25 | 21.135  | 0.257 | CU     | 0.471 | VIGAS1 | 0.045 | CU     |
| 91 | 30X25 | 42.270  | 0.439 | VIGAS1 | 0.257 | CU     | 0.047 | CU     |
| 91 | 30X25 | 63.406  | 0.826 | VIGAS1 | 0.257 | CU     | 0.049 | CU     |
| 91 | 30X25 | 84.541  | 1.037 | CU     | 0.515 | CU     | 0.052 | CU     |
| 92 | 30X25 | 0.000   | 1.205 | CU     | 0.597 | CU     | 0.085 | CU     |
| 92 | 30X25 | 16.760  | 1.650 | CU     | 0.790 | CU     | 0.087 | CU     |
| 92 | 30X25 | 33.520  | 2.100 | CU     | 0.790 | CU     | 0.089 | CU     |
| 92 | 30X25 | 50.281  | 2.100 | CU     | 0.790 | CU     | 0.091 | CU     |
| 92 | 30X25 | 67.041  | 2.458 | CU     | 1.599 | CU     | 0.092 | CU     |
| 93 | 30X25 | 17.500  | 1.621 | CU     | 0.801 | CU     | 0.100 | CU     |
| 93 | 30X25 | 34.260  | 2.100 | CU     | 0.935 | CU     | 0.101 | CU     |
| 93 | 30X25 | 51.020  | 2.100 | CU     | 0.935 | CU     | 0.103 | CU     |
| 93 | 30X25 | 67.781  | 2.441 | CU     | 0.935 | CU     | 0.105 | CU     |
| 93 | 30X25 | 84.541  | 2.928 | CU     | 1.896 | CU     | 0.107 | CU     |
| 94 | 20X25 | 0.000   | 0.000 | VIGAS2 | 0.000 | VIGAS2 | 0.008 | VIGAS4 |
| 94 | 20X25 | 54.554  | 0.145 | CU     | 0.145 | CU     | 0.010 | VIGAS4 |
| 94 | 20X25 | 109.107 | 0.586 | CU     | 0.291 | CU     | 0.011 | VIGAS4 |
| 97 | 20X25 | 0.000   | 1.429 | CU     | 0.704 | CU     | 0.005 | VIGAS2 |
| 97 | 20X25 | 187.430 | 0.349 | CU     | 0.788 | CU     | 0.005 | VIGAS2 |
| 97 | 20X25 | 374.860 | 0.000 | CU     | 0.000 | CU     | 0.005 | VIGAS2 |
| 98 | 20X25 | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.005 | VIGAS2 |

|     |       |         |       |        |       |        |       |        |
|-----|-------|---------|-------|--------|-------|--------|-------|--------|
| 98  | 20X25 | 187.430 | 0.380 | CU     | 0.726 | CU     | 0.005 | VIGAS2 |
| 98  | 20X25 | 374.860 | 1.467 | CU     | 0.766 | CU     | 0.005 | VIGAS2 |
| 100 | 20X25 | 0.000   | 1.514 | CU     | 0.988 | CU     | 0.005 | VIGAS2 |
| 100 | 20X25 | 201.879 | 0.489 | CU     | 1.048 | CU     | 0.005 | VIGAS2 |
| 100 | 20X25 | 403.758 | 0.000 | VIGAS3 | 0.000 | CU     | 0.005 | VIGAS2 |
| 101 | 20X25 | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.005 | VIGAS2 |
| 101 | 20X25 | 192.237 | 0.487 | CU     | 0.846 | CU     | 0.005 | VIGAS2 |
| 101 | 20X25 | 384.474 | 1.508 | CU     | 0.984 | CU     | 0.005 | VIGAS2 |
| 103 | 20X25 | 0.000   | 2.280 | CU     | 1.467 | CU     | 0.008 | VIGAS2 |
| 103 | 20X25 | 187.430 | 0.724 | CU     | 1.467 | CU     | 0.008 | VIGAS2 |
| 103 | 20X25 | 374.860 | 0.000 | CU     | 0.000 | CU     | 0.008 | VIGAS2 |
| 104 | 20X25 | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.008 | VIGAS2 |
| 104 | 20X25 | 187.430 | 0.729 | CU     | 1.467 | CU     | 0.008 | VIGAS2 |
| 104 | 20X25 | 374.860 | 2.296 | CU     | 1.467 | CU     | 0.008 | VIGAS2 |
| 106 | 20X25 | 0.000   | 1.653 | CU     | 1.076 | CU     | 0.006 | VIGAS2 |
| 106 | 20X25 | 201.879 | 0.532 | CU     | 0.960 | CU     | 0.006 | VIGAS2 |
| 106 | 20X25 | 403.758 | 0.000 | VIGAS1 | 0.000 | CU     | 0.006 | VIGAS2 |
| 108 | 20X25 | 0.000   | 0.430 | CU     | 0.214 | CU     | 0.002 | VIGAS2 |
| 108 | 20X25 | 162.199 | 0.107 | CU     | 0.271 | CU     | 0.002 | VIGAS2 |
| 108 | 20X25 | 324.397 | 0.000 | CU     | 0.000 | CU     | 0.002 | VIGAS2 |
| 109 | 20X25 | 0.000   | 0.000 | VIGAS4 | 0.000 | VIGAS4 | 0.002 | VIGAS2 |
| 109 | 20X25 | 162.023 | 0.108 | CU     | 0.267 | CU     | 0.002 | VIGAS2 |
| 109 | 20X25 | 324.046 | 0.436 | CU     | 0.217 | CU     | 0.002 | VIGAS2 |
| 111 | 20X25 | 0.000   | 0.505 | CU     | 0.251 | CU     | 0.010 | VIGAS4 |
| 111 | 20X25 | 137.683 | 0.193 | CU     | 0.289 | CU     | 0.006 | VIGAS4 |
| 111 | 20X25 | 275.367 | 0.782 | CU     | 0.388 | CU     | 0.011 | VIGAS4 |

### 5.3.8.2 Diseño de Columnas.

#### 5.3.8.2.1 Análisis Dinámico.

C O N S T R A I N T C O O R D I N A T E S A N D M A S S E S

CONS ROD3 ===== TYPE = ROD, AXIS DIRECTION = U2

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |         |         |         |
|---|----------|----------|----------|---------|---------|---------|
| GLOBAL  | U1       | U2       | U3       | R1      | R2      | R3      |
| X   | 1.000000 | .000000  | .000000  | .000000 | .000000 | .000000 |
| Y   | .000000  | 1.000000 | .000000  | .000000 | .000000 | .000000 |
| Z   | .000000  | .000000  | 1.000000 | .000000 | .000000 | .000000 |

TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA

| U1      | U2       | U3      | R1      | R2      | R3      |
|---------|----------|---------|---------|---------|---------|
| .000000 | 0.005382 | .000000 | .000000 | .000000 | .000000 |

CONS ROD4 ===== TYPE = ROD, AXIS DIRECTION = U2

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |         |         |         |
|---|----------|----------|----------|---------|---------|---------|
| GLOBAL  | U1       | U2       | U3       | R1      | R2      | R3      |
| X   | 1.000000 | .000000  | .000000  | .000000 | .000000 | .000000 |
| Y   | .000000  | 1.000000 | .000000  | .000000 | .000000 | .000000 |
| Z   | .000000  | .000000  | 1.000000 | .000000 | .000000 | .000000 |

TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA

| U1 | U2 | U3 | R1 | R2 | R3 |
|----|----|----|----|----|----|
|    |    |    |    |    |    |

.000000 0.178039 .000000 .000000 .000000 .000000  
 CONS ROD5 ===== TYPE = ROD, AXIS DIRECTION = U2

LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER  
 GLOBAL U1 U2 U3 R1 R2 R3  
 X 1.000000 .000000 .000000 .000000 .000000 .000000  
 Y .000000 1.000000 .000000 .000000 .000000 .000000  
 Z .000000 .000000 1.000000 .000000 .000000 .000000

TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA  
 U1 U2 U3 R1 R2 R3  
 .000000 0.193047 .000000 .000000 .000000 .000000

CONS ROD6 ===== TYPE = ROD, AXIS DIRECTION = U1

LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER  
 GLOBAL U1 U2 U3 R1 R2 R3  
 X 1.000000 .000000 .000000 .000000 .000000 .000000  
 Y .000000 1.000000 .000000 .000000 .000000 .000000  
 Z .000000 .000000 1.000000 .000000 .000000 .000000

TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA  
 U1 U2 U3 R1 R2 R3  
 0.009950 .000000 .000000 .000000 .000000 .000000

CONS ROD7 ===== TYPE = ROD, AXIS DIRECTION = U1

LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER  
 GLOBAL U1 U2 U3 R1 R2 R3  
 X 1.000000 .000000 .000000 .000000 .000000 .000000  
 Y .000000 1.000000 .000000 .000000 .000000 .000000  
 Z .000000 .000000 1.000000 .000000 .000000 .000000

TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA  
 U1 U2 U3 R1 R2 R3  
 0.009884 .000000 .000000 .000000 .000000 .000000

DISPLACEMENT DEGREES OF FREEDOM

(A) = Active DOF, equilibrium equation  
 (-) = Restrained DOF, reaction computed  
 (+) = Constrained DOF  
 ( ) = Null DOF

JOINTS UX UY UZ RX RY RZ  
 1 TO 23 - - - A A A  
 24 A + A A A A  
 25 TO 30 A A A A A A  
 31 + + A A A A  
 32 TO 34 + A A A A A  
 35 TO 66 A A A A A A  
 67 TO 72 A + A A A A

CONSTRAINTS U1 U2 U3 R1 R2 R3  
 ROD3 TO ROD5 A  
 ROD6 TO ROD7 A

ASSEMBLED JOINT MASSES

IN GLOBAL COORDINATES

JOINT UX UY UZ RX RY RZ  
 1 0.005184 0.005184 0.005184 .000000 .000000 .000000

|    |          |          |          |         |         |         |
|----|----------|----------|----------|---------|---------|---------|
| 2  | 0.005156 | 0.005156 | 0.005156 | .000000 | .000000 | .000000 |
| 3  | 0.005593 | 0.005593 | 0.005593 | .000000 | .000000 | .000000 |
| 4  | 0.005593 | 0.005593 | 0.005593 | .000000 | .000000 | .000000 |
| 5  | 0.005799 | 0.005799 | 0.005799 | .000000 | .000000 | .000000 |
| 6  | 0.005747 | 0.005747 | 0.005747 | .000000 | .000000 | .000000 |
| 7  | 0.005621 | 0.005621 | 0.005621 | .000000 | .000000 | .000000 |
| 8  | 0.005542 | 0.005542 | 0.005542 | .000000 | .000000 | .000000 |
| 9  | 0.005542 | 0.005542 | 0.005542 | .000000 | .000000 | .000000 |
| 10 | 0.005542 | 0.005542 | 0.005542 | .000000 | .000000 | .000000 |
| 11 | 0.005644 | 0.005644 | 0.005644 | .000000 | .000000 | .000000 |
| 12 | 0.007572 | 0.007572 | 0.007572 | .000000 | .000000 | .000000 |
| 13 | 0.007489 | 0.007489 | 0.007489 | .000000 | .000000 | .000000 |
| 14 | 0.007489 | 0.007489 | 0.007489 | .000000 | .000000 | .000000 |
| 15 | 0.007675 | 0.007675 | 0.007675 | .000000 | .000000 | .000000 |
| 16 | 0.005747 | 0.005747 | 0.005747 | .000000 | .000000 | .000000 |
| 17 | 0.005398 | 0.005398 | 0.005398 | .000000 | .000000 | .000000 |
| 18 | 0.007478 | 0.007478 | 0.007478 | .000000 | .000000 | .000000 |
| 19 | 0.007477 | 0.007477 | 0.007477 | .000000 | .000000 | .000000 |
| 20 | 0.005396 | 0.005396 | 0.005396 | .000000 | .000000 | .000000 |
| 21 | 0.006453 | 0.006453 | 0.006453 | .000000 | .000000 | .000000 |
| 22 | 0.006453 | 0.006453 | 0.006453 | .000000 | .000000 | .000000 |
| 23 | 0.006975 | 0.006975 | 0.006975 | .000000 | .000000 | .000000 |
| 24 | 0.000374 | 0.000374 | 0.000374 | .000000 | .000000 | .000000 |
| 25 | 0.004827 | 0.004827 | 0.004827 | .000000 | .000000 | .000000 |
| 26 | 0.005265 | 0.005265 | 0.005265 | .000000 | .000000 | .000000 |
| 27 | 0.122928 | 0.122928 | 0.006269 | .000000 | .000000 | .000000 |
| 28 | 0.125212 | 0.125212 | 0.006269 | .000000 | .000000 | .000000 |
| 29 | 0.005801 | 0.005801 | 0.005801 | .000000 | .000000 | .000000 |
| 30 | 0.045497 | 0.045497 | 0.006497 | .000000 | .000000 | .000000 |
| 31 | 0.005008 | 0.005008 | 0.005008 | .000000 | .000000 | .000000 |
| 32 | 0.004942 | 0.004942 | 0.004942 | .000000 | .000000 | .000000 |
| 33 | 0.004942 | 0.004942 | 0.004942 | .000000 | .000000 | .000000 |
| 34 | 0.004942 | 0.004942 | 0.004942 | .000000 | .000000 | .000000 |
| 35 | 0.045574 | 0.045574 | 0.006345 | .000000 | .000000 | .000000 |
| 36 | 0.007279 | 0.007279 | 0.007279 | .000000 | .000000 | .000000 |
| 37 | 0.188206 | 0.188206 | 0.008165 | .000000 | .000000 | .000000 |
| 38 | 0.190490 | 0.190490 | 0.008165 | .000000 | .000000 | .000000 |
| 39 | 0.007364 | 0.007364 | 0.007364 | .000000 | .000000 | .000000 |
| 40 | 0.045497 | 0.045497 | 0.006497 | .000000 | .000000 | .000000 |
| 41 | 0.005467 | 0.005467 | 0.005467 | .000000 | .000000 | .000000 |
| 42 | 0.113656 | 0.113656 | 0.006591 | .000000 | .000000 | .000000 |
| 43 | 0.113653 | 0.113653 | 0.006588 | .000000 | .000000 | .000000 |
| 44 | 0.005465 | 0.005465 | 0.005465 | .000000 | .000000 | .000000 |
| 45 | 0.000625 | 0.000625 | 0.000625 | .000000 | .000000 | .000000 |
| 46 | 0.000625 | 0.000625 | 0.000625 | .000000 | .000000 | .000000 |
| 47 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 48 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 49 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 50 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 51 | 0.000920 | 0.000920 | 0.000920 | .000000 | .000000 | .000000 |
| 52 | 0.000920 | 0.000920 | 0.000920 | .000000 | .000000 | .000000 |
| 53 | 0.059477 | 0.059477 | 0.002946 | .000000 | .000000 | .000000 |
| 54 | 0.059477 | 0.059477 | 0.002946 | .000000 | .000000 | .000000 |
| 55 | 0.000819 | 0.000819 | 0.000819 | .000000 | .000000 | .000000 |
| 56 | 0.000819 | 0.000819 | 0.000819 | .000000 | .000000 | .000000 |
| 57 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 58 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 59 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 60 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 61 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 62 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 63 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 64 | 0.000869 | 0.000869 | 0.000869 | .000000 | .000000 | .000000 |
| 65 | 0.070098 | 0.070098 | 0.002946 | .000000 | .000000 | .000000 |
| 66 | 0.040729 | 0.040729 | 0.001501 | .000000 | .000000 | .000000 |
| 67 | 0.070595 | 0.070595 | 0.002873 | .000000 | .000000 | .000000 |
| 68 | 0.078287 | 0.078287 | 0.003313 | .000000 | .000000 | .000000 |
| 69 | 0.088328 | 0.088328 | 0.003247 | .000000 | .000000 | .000000 |
| 70 | 0.095646 | 0.095646 | 0.003313 | .000000 | .000000 | .000000 |
| 71 | 0.019115 | 0.019115 | 0.001756 | .000000 | .000000 | .000000 |
| 72 | 0.019114 | 0.019114 | 0.001755 | .000000 | .000000 | .000000 |

TOTAL ASSEMBLED JOINT MASSES

IN GLOBAL COORDINATES

|       | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| TOTAL | 1.810975 | 1.810975 | 0.307379 | .000000 | .000000 | .000000 |

TOTAL ACCELERATED MASS AND LOCATION

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

|       | UX         | UY         | UZ         |
|-------|------------|------------|------------|
| MASS  | 1.668411   | 1.668411   | 0.164815   |
| X-LOC | 455.528505 | 455.528505 | 454.990963 |
| Y-LOC | 254.603307 | 254.603307 | 255.167335 |
| Z-LOC | 133.451426 | 133.451426 | 128.180217 |

MODAL PERIODS AND FREQUENCIES

| MODE | PERIOD<br>(TIME) | FREQUENCY<br>(CYC/TIME) | FREQUENCY<br>(RAD/TIME) | EIGENVALUE<br>(RAD/TIME)**2 |
|------|------------------|-------------------------|-------------------------|-----------------------------|
| 1    | 0.597157         | 1.674602                | 10.521833               | 110.708972                  |
| 2    | 0.575504         | 1.737608                | 10.917715               | 119.196492                  |
| 3    | 0.555792         | 1.799234                | 11.304921               | 127.801246                  |
| 4    | 0.540791         | 1.849143                | 11.618508               | 134.989723                  |
| 5    | 0.509976         | 1.960878                | 12.320558               | 151.796153                  |
| 6    | 0.494959         | 2.020369                | 12.694354               | 161.146616                  |

MODAL PARTICIPATION FACTORS

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

| MODE | PERIOD   | UX        | UY        | UZ        |
|------|----------|-----------|-----------|-----------|
| 1    | 0.597157 | 0.140490  | 1.007138  | -0.000411 |
| 2    | 0.575504 | -0.303292 | 0.706291  | -0.000269 |
| 3    | 0.555792 | 0.791135  | 0.023100  | 1.04E-05  |
| 4    | 0.540791 | -0.866126 | -0.083590 | 5.32E-06  |
| 5    | 0.509976 | 0.062295  | 0.040821  | -2.42E-05 |
| 6    | 0.494959 | -0.247744 | -0.068048 | 2.73E-05  |

MODAL PARTICIPATING MASS RATIOS

| MODE | PERIOD   | INDIVIDUAL MODE (PERCENT) |         |        | CUMULATIVE SUM (PERCENT) |         |        |
|------|----------|---------------------------|---------|--------|--------------------------|---------|--------|
|      |          | UX                        | UY      | UZ     | UX                       | UY      | UZ     |
| 1    | 0.597157 | 1.1830                    | 60.7960 | 0.0001 | 1.1830                   | 60.7960 | 0.0001 |
| 2    | 0.575504 | 5.5134                    | 29.8996 | 0.0000 | 6.6964                   | 90.6956 | 0.0001 |
| 3    | 0.555792 | 37.5144                   | 0.0320  | 0.0000 | 44.2108                  | 90.7275 | 0.0001 |
| 4    | 0.540791 | 44.9634                   | 0.4188  | 0.0000 | 89.1741                  | 91.1463 | 0.0001 |
| 5    | 0.509976 | 0.2326                    | 0.0999  | 0.0000 | 89.4067                  | 91.2462 | 0.0001 |
| 6    | 0.494959 | 3.6788                    | 0.2775  | 0.0000 | 93.0855                  | 91.5238 | 0.0001 |

MODAL LOAD PARTICIPATION RATIOS

| LOAD, ACC, OR NLLINK/DEF<br>(TYPE) | STATIC<br>(NAME) | STATIC<br>(PERCENT) | DYNAMIC<br>(PERCENT) |              | EFFECTIVE<br>PERIOD |
|------------------------------------|------------------|---------------------|----------------------|--------------|---------------------|
| LOAD                               | MUERTA           | 3.2213              | -> 0.0003<-          | (*) SEE NOTE | 0.110228            |
| LOAD                               | VIVA             | 6.0044              | -> 0.0000<-          | (*) SEE NOTE | 0.140709            |
| ACC                                | UX               | 95.3860             | 93.0855              |              | 0.544782            |
| ACC                                | UY               | 97.3147             | 91.5238              |              | 0.585096            |
| ACC                                | UZ               | 0.2816              | 0.0001               |              | 0.043369            |

(\*) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

R E S P O N S E S P E C T R U M A C C E L E R A T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | DAMP-RATIO | U1        | U2      | U3      |
|------|----------|------------|-----------|---------|---------|
| 1    | 0.597157 | 0.050000   | 79.908073 | .000000 | .000000 |
| 2    | 0.575504 | 0.050000   | 79.908073 | .000000 | .000000 |
| 3    | 0.555792 | 0.050000   | 79.908073 | .000000 | .000000 |
| 4    | 0.540791 | 0.050000   | 79.908073 | .000000 | .000000 |
| 5    | 0.509976 | 0.050000   | 79.908073 | .000000 | .000000 |
| 6    | 0.494959 | 0.050000   | 79.908073 | .000000 | .000000 |

SPEC SPECY -----

| MODE | PERIOD   | DAMP-RATIO | U1      | U2        | U3      |
|------|----------|------------|---------|-----------|---------|
| 1    | 0.597157 | 0.050000   | .000000 | 79.908073 | .000000 |
| 2    | 0.575504 | 0.050000   | .000000 | 79.908073 | .000000 |
| 3    | 0.555792 | 0.050000   | .000000 | 79.908073 | .000000 |
| 4    | 0.540791 | 0.050000   | .000000 | 79.908073 | .000000 |
| 5    | 0.509976 | 0.050000   | .000000 | 79.908073 | .000000 |
| 6    | 0.494959 | 0.050000   | .000000 | 79.908073 | .000000 |

R E S P O N S E S P E C T R U M M O D A L A M P L I T U D E S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | U1        | U2      | U3      |
|------|----------|-----------|---------|---------|
| 1    | 0.597157 | 0.101403  | .000000 | .000000 |
| 2    | 0.575504 | -0.203324 | .000000 | .000000 |
| 3    | 0.555792 | 0.494659  | .000000 | .000000 |
| 4    | 0.540791 | -0.512709 | .000000 | .000000 |
| 5    | 0.509976 | 0.032793  | .000000 | .000000 |
| 6    | 0.494959 | -0.122849 | .000000 | .000000 |

SPEC SPECY -----

| MODE | PERIOD   | U1      | U2        | U3      |
|------|----------|---------|-----------|---------|
| 1    | 0.597157 | .000000 | 0.726937  | .000000 |
| 2    | 0.575504 | .000000 | 0.473490  | .000000 |
| 3    | 0.555792 | .000000 | 0.014444  | .000000 |
| 4    | 0.540791 | .000000 | -0.049482 | .000000 |
| 5    | 0.509976 | .000000 | 0.021489  | .000000 |
| 6    | 0.494959 | .000000 | -0.033743 | .000000 |

R E S P O N S E S P E C T R U M M O D A L C O R R E L A T I O N S

PARTIAL MATRIX SHOWING CORRELATION FACTORS BETWEEN NEARBY MODES

SPEC SPECX -----

| MODE I | PERIOD   | I     | I+1   | I+2   | I+3   | I+4   | I+5   | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|
| 1      | 0.597157 | 1.000 | 0.880 | 0.659 | 0.503 | 0.285 | 0.220 |     |     |     |     |
| 2      | 0.575504 | 1.000 | 0.892 | 0.721 | 0.405 | 0.304 |       |     |     |     |     |
| 3      | 0.555792 | 1.000 | 0.930 | 0.574 | 0.426 |       |       |     |     |     |     |
| 4      | 0.540791 | 1.000 | 0.744 | 0.560 |       |       |       |     |     |     |     |
| 5      | 0.509976 | 1.000 | 0.918 |       |       |       |       |     |     |     |     |
| 6      | 0.494959 | 1.000 |       |       |       |       |       |     |     |     |     |

SPEC SPECY -----

| MODE I | PERIOD   | I     | I+1   | I+2   | I+3   | I+4   | I+5   | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-------|-------|-------|-------|-----|-----|-----|-----|
| 1      | 0.597157 | 1.000 | 0.880 | 0.659 | 0.503 | 0.285 | 0.220 |     |     |     |     |
| 2      | 0.575504 | 1.000 | 0.892 | 0.721 | 0.405 | 0.304 |       |     |     |     |     |
| 3      | 0.555792 | 1.000 | 0.930 | 0.574 | 0.426 |       |       |     |     |     |     |
| 4      | 0.540791 | 1.000 | 0.744 | 0.560 |       |       |       |     |     |     |     |
| 5      | 0.509976 | 1.000 | 0.918 |       |       |       |       |     |     |     |     |
| 6      | 0.494959 | 1.000 |       |       |       |       |       |     |     |     |     |

R E S P O N S E S P E C T R U M B A S E R E A C T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U1:

| MODE | F1        | F2         | F3        | M1          | M2         | M3         |
|------|-----------|------------|-----------|-------------|------------|------------|
| 1    | 1.577172  | 11.306389  | -0.004609 | -1567.253   | 211.253460 | 6315.981   |
| 2    | 7.350415  | -17.117299 | 0.006519  | 2336.165    | 961.302766 | -5508.757  |
| 3    | 50.013987 | 1.460359   | 0.000660  | -338.348481 | 6727.345   | -15338.233 |
| 4    | 59.944958 | 5.785304   | -0.000368 | -628.114688 | 7989.100   | -18451.149 |
| 5    | 0.310092  | 0.203202   | -0.000120 | -26.644458  | 19.701854  | -1242.840  |
| 6    | 4.904529  | 1.347130   | -0.000540 | -176.888941 | 637.654485 | 113.941349 |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC       | F1       | F2       | F3         | M1        | M2        | M3 |
|------------|----------|----------|------------|-----------|-----------|----|
| 117.801687 | 6.161765 | 0.003442 | 798.273095 | 15722.505 | 34896.221 |    |

SPEC SPECY -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U2:

| MODE | F1         | F2        | F3        | M1         | M2         | M3          |
|------|------------|-----------|-----------|------------|------------|-------------|
| 1    | 11.306389  | 81.052934 | -0.033042 | -11235.281 | 1514.428   | 45277.831   |
| 2    | -17.117299 | 39.861954 | -0.015181 | -5440.351  | -2238.636  | 12828.531   |
| 3    | 1.460359   | 0.042641  | 1.93E-05  | -9.879443  | 196.431868 | -447.861327 |
| 4    | 5.785304   | 0.558341  | -3.56E-05 | -60.619522 | 771.030198 | -1780.725   |
| 5    | 0.203202   | 0.133157  | -7.89E-05 | -17.459946 | 12.910501  | -814.425321 |
| 6    | 1.347130   | 0.370017  | -0.000148 | -48.586212 | 175.145014 | 31.296352   |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC     | F1         | F2       | F3        | M1         | M2        | M3 |
|----------|------------|----------|-----------|------------|-----------|----|
| 6.161765 | 118.162985 | 0.047027 | 16290.788 | 806.070119 | 55362.080 |    |

### 5.3.8.2.2 Control de Derivas.

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CAFETERIA (LICEO U DE NAR)

#### J O I N T   D I S P L A C E M E N T S

| JOINT | LOAD  | U1     | U2     | U3        | R1        | R2        | R3        |
|-------|-------|--------|--------|-----------|-----------|-----------|-----------|
| 24    | SPECX | 0.6172 | 0.2675 | 0.1102    | 1.219E-03 | 1.030E-03 | 1.382E-03 |
| 24    | SPECY | 0.3433 | 0.7702 | 0.0668    | 4.971E-03 | 6.071E-04 | 5.041E-04 |
| 25    | SPECX | 0.6148 | 0.1601 | 1.997E-03 | 5.972E-04 | 1.172E-03 | 7.538E-04 |
| 25    | SPECY | 0.3420 | 0.8589 | 3.027E-03 | 2.744E-03 | 7.021E-04 | 1.796E-03 |
| 26    | SPECX | 0.6175 | 0.2512 | 7.955E-04 | 9.346E-04 | 6.085E-04 | 4.921E-04 |
| 26    | SPECY | 0.3430 | 1.5346 | 8.492E-04 | 5.742E-03 | 3.415E-04 | 1.542E-03 |
| 27    | SPECX | 0.6306 | 0.2917 | 2.595E-03 | 7.105E-04 | 1.690E-03 | 3.843E-04 |
| 27    | SPECY | 0.3496 | 1.4786 | 2.123E-03 | 3.831E-03 | 8.723E-04 | 3.501E-04 |
| 28    | SPECX | 1.2453 | 0.2650 | 3.575E-03 | 6.468E-04 | 3.310E-03 | 2.507E-04 |
| 28    | SPECY | 0.1449 | 1.5451 | 3.719E-03 | 4.014E-03 | 3.725E-04 | 1.218E-03 |
| 29    | SPECX | 1.2313 | 0.3166 | 9.664E-05 | 1.171E-03 | 1.026E-03 | 5.545E-04 |
| 29    | SPECY | 0.1435 | 1.8754 | 2.740E-04 | 6.687E-03 | 1.180E-04 | 1.148E-03 |
| 30    | SPECX | 1.2411 | 0.1175 | 3.782E-03 | 3.573E-04 | 3.361E-03 | 8.596E-04 |
| 30    | SPECY | 0.1449 | 0.6479 | 2.064E-03 | 1.982E-03 | 3.842E-04 | 2.489E-03 |
| 31    | SPECX | 1.1589 | 0.2675 | 9.841E-04 | 6.381E-04 | 3.699E-03 | 1.759E-03 |
| 31    | SPECY | 0.0989 | 0.7702 | 1.484E-04 | 1.276E-03 | 4.702E-04 | 1.340E-04 |
| 32    | SPECX | 1.1589 | 0.2908 | 1.207E-04 | 5.013E-04 | 3.738E-03 | 2.221E-03 |
| 32    | SPECY | 0.0989 | 1.4718 | 6.977E-04 | 2.538E-03 | 3.344E-04 | 9.455E-04 |
| 33    | SPECX | 1.5278 | 0.2642 | 1.175E-04 | 4.542E-04 | 4.916E-03 | 1.863E-03 |
| 33    | SPECY | 0.1134 | 1.5379 | 6.965E-04 | 2.648E-03 | 3.670E-04 | 8.197E-04 |
| 34    | SPECX | 1.5278 | 0.1170 | 3.397E-05 | 1.816E-04 | 4.921E-03 | 1.303E-03 |
| 34    | SPECY | 0.1134 | 0.6449 | 1.923E-06 | 9.909E-04 | 3.613E-04 | 9.734E-04 |
| 35    | SPECX | 1.7796 | 0.2668 | 5.401E-03 | 6.417E-04 | 4.660E-03 | 1.201E-03 |
| 35    | SPECY | 0.1166 | 0.7717 | 2.197E-03 | 2.166E-03 | 3.005E-04 | 1.883E-03 |
| 36    | SPECX | 1.7668 | 0.2583 | 9.729E-04 | 7.933E-04 | 1.469E-03 | 5.872E-04 |
| 36    | SPECY | 0.1158 | 1.5968 | 5.200E-03 | 4.779E-03 | 1.030E-04 | 7.457E-04 |
| 37    | SPECX | 1.7885 | 0.2924 | 6.068E-03 | 6.468E-04 | 4.577E-03 | 5.064E-04 |
| 37    | SPECY | 0.1174 | 1.4778 | 7.481E-04 | 2.694E-03 | 2.477E-04 | 3.442E-04 |
| 38    | SPECX | 1.8523 | 0.2658 | 6.429E-03 | 6.107E-04 | 4.751E-03 | 9.302E-04 |
| 38    | SPECY | 0.1647 | 1.5442 | 9.141E-04 | 2.869E-03 | 4.206E-04 | 7.386E-04 |
| 39    | SPECX | 1.8298 | 0.3255 | 1.092E-03 | 9.973E-04 | 1.541E-03 | 8.598E-04 |
| 39    | SPECY | 0.1627 | 1.8969 | 6.213E-03 | 5.837E-03 | 1.397E-04 | 7.884E-04 |
| 40    | SPECX | 1.8439 | 0.1176 | 5.864E-03 | 3.549E-04 | 4.920E-03 | 8.996E-04 |
| 40    | SPECY | 0.1639 | 0.6479 | 1.841E-03 | 1.980E-03 | 4.323E-04 | 2.713E-03 |
| 41    | SPECX | 1.2477 | 0.2583 | 6.152E-03 | 7.968E-04 | 1.225E-03 | 6.737E-04 |
| 41    | SPECY | 0.1221 | 1.5978 | 5.671E-03 | 4.808E-03 | 1.397E-04 | 5.875E-04 |
| 42    | SPECX | 1.2646 | 0.2502 | 5.246E-03 | 5.001E-04 | 3.372E-03 | 7.383E-04 |



|    |       |        |        |           |           |           |           |
|----|-------|--------|--------|-----------|-----------|-----------|-----------|
| 42 | SPECY | 0.1239 | 1.4766 | 4.343E-04 | 2.743E-03 | 2.843E-04 | 2.532E-04 |
| 43 | SPECX | 1.1868 | 0.2225 | 4.856E-03 | 4.679E-04 | 3.172E-03 | 1.041E-03 |
| 43 | SPECY | 0.1428 | 1.5516 | 7.377E-04 | 3.056E-03 | 4.582E-04 | 3.718E-04 |
| 44 | SPECX | 1.1718 | 0.3258 | 6.050E-03 | 9.650E-04 | 1.233E-03 | 9.928E-04 |
| 44 | SPECY | 0.1408 | 1.8979 | 6.309E-03 | 5.614E-03 | 1.469E-04 | 1.121E-03 |
| 45 | SPECX | 1.2489 | 0.2467 | 0.0268    | 2.544E-04 | 3.392E-03 | 6.683E-04 |
| 45 | SPECY | 0.1306 | 1.4764 | 0.0804    | 1.504E-03 | 4.047E-04 | 3.260E-04 |
| 46 | SPECX | 1.1649 | 0.2208 | 0.0263    | 2.553E-04 | 3.193E-03 | 9.768E-04 |
| 46 | SPECY | 0.1495 | 1.5531 | 0.0774    | 1.700E-03 | 3.906E-04 | 3.403E-04 |
| 47 | SPECX | 1.2500 | 0.2442 | 0.0756    | 5.376E-04 | 3.487E-03 | 7.594E-04 |
| 47 | SPECY | 0.1616 | 1.4750 | 0.0978    | 8.056E-04 | 8.514E-04 | 4.874E-04 |
| 48 | SPECX | 1.1515 | 0.2199 | 0.0725    | 4.824E-04 | 3.285E-03 | 1.060E-03 |
| 48 | SPECY | 0.1727 | 1.5528 | 0.1032    | 7.507E-04 | 6.742E-04 | 4.423E-04 |
| 49 | SPECX | 1.2953 | 0.2455 | 0.1055    | 8.157E-04 | 3.605E-03 | 9.512E-04 |
| 49 | SPECY | 0.2012 | 1.4767 | 0.0189    | 1.242E-03 | 1.296E-03 | 4.738E-04 |
| 50 | SPECX | 1.1919 | 0.2192 | 0.0982    | 7.466E-04 | 3.406E-03 | 1.285E-03 |
| 50 | SPECY | 0.2018 | 1.5533 | 0.0180    | 1.268E-03 | 1.082E-03 | 4.541E-04 |
| 51 | SPECX | 1.3614 | 0.2486 | 0.0950    | 8.448E-04 | 3.769E-03 | 9.327E-04 |
| 51 | SPECY | 0.2332 | 1.4806 | 0.1014    | 2.079E-04 | 1.456E-03 | 3.168E-04 |
| 52 | SPECX | 1.2647 | 0.2168 | 0.0863    | 8.070E-04 | 3.574E-03 | 1.340E-03 |
| 52 | SPECY | 0.2274 | 1.5539 | 0.0916    | 1.761E-04 | 1.230E-03 | 3.693E-04 |
| 53 | SPECX | 1.4208 | 0.2537 | 1.588E-03 | 9.194E-04 | 4.020E-03 | 5.597E-04 |
| 53 | SPECY | 0.2463 | 1.4803 | 2.443E-03 | 3.468E-03 | 1.182E-03 | 2.042E-04 |
| 54 | SPECX | 1.3429 | 0.2162 | 1.455E-03 | 8.643E-04 | 3.837E-03 | 1.029E-03 |
| 54 | SPECY | 0.2425 | 1.5487 | 2.336E-03 | 3.628E-03 | 9.106E-04 | 3.711E-04 |
| 55 | SPECX | 1.4429 | 0.2571 | 0.0671    | 1.776E-03 | 2.160E-03 | 2.765E-04 |
| 55 | SPECY | 0.2413 | 1.4734 | 0.1425    | 3.081E-03 | 1.752E-03 | 3.664E-04 |
| 56 | SPECX | 1.3801 | 0.2159 | 0.0461    | 1.750E-03 | 2.109E-03 | 8.840E-04 |
| 56 | SPECY | 0.2416 | 1.5354 | 0.1509    | 3.055E-03 | 1.579E-03 | 5.487E-04 |
| 57 | SPECX | 1.4446 | 0.2544 | 0.0362    | 2.419E-03 | 6.395E-04 | 3.506E-04 |
| 57 | SPECY | 0.2255 | 1.4626 | 0.1956    | 2.882E-03 | 2.281E-03 | 5.944E-04 |
| 58 | SPECX | 1.4040 | 0.2135 | 0.0287    | 2.377E-03 | 7.052E-04 | 8.076E-04 |
| 58 | SPECY | 0.2323 | 1.5157 | 0.2040    | 2.740E-03 | 2.262E-03 | 7.384E-04 |
| 59 | SPECX | 1.4344 | 0.2437 | 0.1056    | 2.426E-03 | 3.911E-04 | 5.636E-04 |
| 59 | SPECY | 0.2099 | 1.4600 | 0.1704    | 3.002E-03 | 2.436E-03 | 8.272E-04 |
| 60 | SPECX | 1.4140 | 0.2082 | 0.1101    | 2.426E-03 | 2.471E-04 | 8.010E-04 |
| 60 | SPECY | 0.2182 | 1.5018 | 0.1688    | 2.817E-03 | 2.486E-03 | 9.161E-04 |
| 61 | SPECX | 1.4229 | 0.2297 | 0.1943    | 1.918E-03 | 3.067E-04 | 6.895E-04 |
| 61 | SPECY | 0.2013 | 1.4726 | 0.1067    | 3.393E-03 | 2.146E-03 | 1.010E-03 |
| 62 | SPECX | 1.4162 | 0.2039 | 0.1870    | 2.007E-03 | 3.054E-04 | 7.991E-04 |
| 62 | SPECY | 0.2058 | 1.5011 | 0.0956    | 3.226E-03 | 2.160E-03 | 1.046E-03 |
| 63 | SPECX | 1.4159 | 0.2184 | 0.1837    | 1.071E-03 | 1.228E-03 | 7.191E-04 |
| 63 | SPECY | 0.1987 | 1.4967 | 0.0431    | 3.999E-03 | 1.375E-03 | 1.061E-03 |
| 64 | SPECX | 1.4151 | 0.2048 | 0.1685    | 1.272E-03 | 1.308E-03 | 7.624E-04 |
| 64 | SPECY | 0.1991 | 1.5105 | 0.0341    | 3.899E-03 | 1.243E-03 | 1.065E-03 |
| 65 | SPECX | 1.4139 | 0.2109 | 3.540E-04 | 6.332E-04 | 3.173E-03 | 6.879E-04 |
| 65 | SPECY | 0.1978 | 1.5147 | 2.110E-03 | 4.736E-03 | 4.674E-04 | 9.769E-04 |

|    |       |        |        |           |           |           |           |
|----|-------|--------|--------|-----------|-----------|-----------|-----------|
| 66 | SPECX | 0.6478 | 0.1778 | 2.016E-03 | 1.160E-03 | 1.031E-03 | 7.702E-04 |
| 66 | SPECY | 0.3613 | 0.9422 | 3.014E-03 | 5.575E-03 | 6.074E-04 | 1.642E-03 |
| 67 | SPECX | 0.6450 | 0.3543 | 1.275E-03 | 1.120E-03 | 9.429E-06 | 5.491E-04 |
| 67 | SPECY | 0.3585 | 2.1712 | 1.276E-03 | 6.927E-03 | 5.362E-06 | 1.678E-03 |
| 68 | SPECX | 1.2570 | 0.4461 | 5.788E-05 | 1.128E-03 | 1.174E-04 | 5.895E-04 |
| 68 | SPECY | 0.1462 | 2.6065 | 3.510E-04 | 6.232E-03 | 1.699E-05 | 1.258E-03 |
| 69 | SPECX | 1.8045 | 0.3543 | 1.157E-03 | 8.673E-04 | 1.556E-04 | 4.152E-04 |
| 69 | SPECY | 0.1185 | 2.1712 | 5.092E-03 | 4.784E-03 | 1.021E-05 | 8.744E-04 |
| 70 | SPECX | 1.8699 | 0.4461 | 1.140E-03 | 1.083E-03 | 1.562E-04 | 6.883E-04 |
| 70 | SPECY | 0.1663 | 2.6065 | 6.085E-03 | 5.972E-03 | 1.542E-05 | 9.249E-04 |
| 71 | SPECX | 1.2846 | 0.3543 | 7.001E-03 | 1.111E-03 | 6.577E-05 | 5.497E-04 |
| 71 | SPECY | 0.1268 | 2.1712 | 5.730E-03 | 4.066E-03 | 1.077E-05 | 8.786E-04 |
| 72 | SPECX | 1.2048 | 0.4461 | 6.796E-03 | 1.782E-03 | 5.691E-05 | 8.932E-04 |
| 72 | SPECY | 0.1445 | 2.6065 | 6.313E-03 | 9.286E-03 | 1.773E-05 | 1.308E-03 |

GROUP JOINT FORCE SUMMATION

| GROUP   | LOAD  | F-X     | F-Y     | F-Z       | M-X        | M-Y        | M-Z       |
|---|-------|---------|---------|-----------|------------|------------|-----------|
| CIMENTACION (Sum at X=1152.19 Y=626.1739 Z=0) |       |         |         |           |            |            |           |
|   | SPECX | 524.005 | 27.417  | 6.494E-02 | 9015.934   | 177645.068 | 81892.366 |
|   | SPECY | 27.412  | 525.542 | 0.214     | 183908.669 | 9099.658   | 65031.477 |

### 5.3.8.2.3 Fuerzas.

LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE         | TITLE                     |
|----------|------|--------|--------|--------------|---------------------------|
| CU       | ADD  | MUERTA | 1.4000 | STATIC(DEAD) | Estado CU                 |
|          |      | VIVA   | 1.7000 | STATIC(LIVE) |                           |
|          |      |        |        |              |                           |
| COLUMNA1 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|          |      | SISMOX | 1.2000 | COMBO        |                           |
|          |      | SISMOY | 0.3600 | COMBO        |                           |
|          |      |        |        |              |                           |
| COLUMNA2 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|          |      | SISMOX | 0.3600 | COMBO        |                           |
|          |      | SISMOY | 1.2000 | COMBO        |                           |
|          |      |        |        |              |                           |
| COLUMNA3 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|          |      | SISMOX | 1.2000 | COMBO        |                           |
|          |      | SISMOY | 0.3600 | COMBO        |                           |
|          |      |        |        |              |                           |
| COLUMNA4 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|          |      | SISMOX | 0.3600 | COMBO        |                           |
|          |      | SISMOY | 1.2000 | COMBO        |                           |
|          |      |        |        |              |                           |

FRAME ELEMENT FORCES

| FRAME | LOAD        | LOC | P      | V2        | V3         | T          | M2         | M3         |
|-------|-------------|-----|--------|-----------|------------|------------|------------|------------|
| 27    | CU          |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -33.43 | 3.187E-01 | -9.655E-01 | 2.609E-02  | -1.127E-01 | 6.096E-01  |
|       | 1.59        |     | -29.17 | 3.187E-01 | -9.655E-01 | 2.609E-02  | 1.28       | 1.515E-01  |
|       | 3.03        |     | -24.90 | 3.187E-01 | -9.655E-01 | 2.609E-02  | 2.66       | -3.066E-01 |
| 27    | COLUMN1 MAX |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -22.30 | 3.06      | 2.032E-01  | 6.074E-01  | 1.52       | 4.54       |
|       | 1.59        |     | -19.10 | 3.06      | 2.032E-01  | 6.074E-01  | 1.31       | 1.629E-01  |
|       | 3.03        |     | -15.90 | 3.06      | 2.032E-01  | 6.074E-01  | 3.09       | 3.79       |
| 27    | COLUMN1 MIN |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -27.85 | -2.58     | -1.65      | -5.683E-01 | -1.68      | -3.63      |
|       | 1.59        |     | -24.64 | -2.58     | -1.65      | -5.683E-01 | 6.058E-01  | 6.437E-02  |
|       | 3.03        |     | -21.44 | -2.58     | -1.65      | -5.683E-01 | 9.093E-01  | -4.25      |
| 27    | COLUMN2 MAX |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -21.62 | 2.12      | 8.923E-01  | 9.312E-01  | 2.99       | 3.15       |
|       | 1.59        |     | -18.42 | 2.12      | 8.923E-01  | 9.312E-01  | 1.73       | 1.478E-01  |
|       | 3.03        |     | -15.22 | 2.12      | 8.923E-01  | 9.312E-01  | 3.57       | 2.48       |
| 27    | COLUMN2 MIN |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -28.53 | -1.64     | -2.34      | -8.920E-01 | -3.16      | -2.23      |
|       | 1.59        |     | -25.33 | -1.64     | -2.34      | -8.920E-01 | 1.780E-01  | 7.943E-02  |
|       | 3.03        |     | -22.13 | -1.64     | -2.34      | -8.920E-01 | 4.203E-01  | -2.94      |
| 27    | COLUMN3 MAX |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -14.78 | 2.88      | 4.940E-01  | 6.193E-01  | 1.64       | 4.26       |
|       | 1.59        |     | -12.04 | 2.88      | 4.940E-01  | 6.193E-01  | 1.01       | 1.364E-01  |
|       | 3.03        |     | -9.29  | 2.88      | 4.940E-01  | 6.193E-01  | 2.37       | 4.01       |
| 27    | COLUMN3 MIN |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -20.32 | -2.76     | -1.36      | -5.565E-01 | -1.56      | -3.91      |
|       | 1.59        |     | -17.58 | -2.76     | -1.36      | -5.565E-01 | 3.128E-01  | 3.789E-02  |
|       | 3.03        |     | -14.83 | -2.76     | -1.36      | -5.565E-01 | 1.983E-01  | -4.02      |
| 27    | COLUMN4 MAX |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -14.09 | 1.94      | 1.18       | 9.430E-01  | 3.12       | 2.87       |
|       | 1.59        |     | -11.35 | 1.94      | 1.18       | 9.430E-01  | 1.44       | 1.213E-01  |
|       | 3.03        |     | -8.61  | 1.94      | 1.18       | 9.430E-01  | 2.86       | 2.71       |
| 27    | COLUMN4 MIN |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -21.01 | -1.82     | -2.05      | -8.802E-01 | -3.04      | -2.52      |
|       | 1.59        |     | -18.27 | -1.82     | -2.05      | -8.802E-01 | -1.150E-01 | 5.294E-02  |
|       | 3.03        |     | -15.52 | -1.82     | -2.05      | -8.802E-01 | -2.907E-01 | -2.71      |
| 28    | CU          |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -38.93 | 7.090E-01 | -9.270E-02 | 1.511E-01  | 3.356E-01  | 9.469E-01  |
|       | 1.59        |     | -34.66 | 7.090E-01 | -9.270E-02 | 1.511E-01  | 4.689E-01  | -7.230E-02 |
|       | 3.03        |     | -30.39 | 7.090E-01 | -9.270E-02 | 1.511E-01  | 6.021E-01  | -1.09      |
| 28    | COLUMN1 MAX |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -28.20 | 5.35      | -3.293E-02 | 5.389E-01  | 8.713E-01  | 7.63       |
|       | 1.59        |     | -24.99 | 5.35      | -3.293E-02 | 5.389E-01  | 9.618E-01  | -4.168E-02 |
|       | 3.03        |     | -21.79 | 5.35      | -3.293E-02 | 5.389E-01  | 1.06       | 6.12       |
| 28    | COLUMN1 MIN |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -30.20 | -4.29     | -1.061E-01 | -3.123E-01 | -3.679E-01 | -6.21      |
|       | 1.59        |     | -27.00 | -4.29     | -1.061E-01 | -3.123E-01 | -2.585E-01 | -6.678E-02 |
|       | 3.03        |     | -23.80 | -4.29     | -1.061E-01 | -3.123E-01 | -1.588E-01 | -7.75      |
| 28    | COLUMN2 MAX |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -28.16 | 4.08      | -4.524E-02 | 8.792E-01  | 1.64       | 5.81       |
|       | 1.59        |     | -24.96 | 4.08      | -4.524E-02 | 8.792E-01  | 1.72       | -4.400E-02 |
|       | 3.03        |     | -21.76 | 4.08      | -4.524E-02 | 8.792E-01  | 1.80       | 4.27       |
| 28    | COLUMN2 MIN |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -30.23 | -3.01     | -9.380E-02 | -6.526E-01 | -1.14      | -4.39      |
|       | 1.59        |     | -27.03 | -3.01     | -9.380E-02 | -6.526E-01 | -1.02      | -6.445E-02 |
|       | 3.03        |     | -23.83 | -3.01     | -9.380E-02 | -6.526E-01 | -9.014E-01 | -5.91      |
| 28    | COLUMN3 MAX |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -19.91 | 5.06      | -4.963E-03 | 5.206E-01  | 8.140E-01  | 7.26       |
|       | 1.59        |     | -17.17 | 5.06      | -4.963E-03 | 5.206E-01  | 8.643E-01  | 1.275E-02  |
|       | 3.03        |     | -14.42 | 5.06      | -4.963E-03 | 5.206E-01  | 9.242E-01  | 6.59       |
| 28    | COLUMN3 MIN |     |        |           |            |            |            |            |
|       | 1.5E-01     |     | -21.91 | -4.58     | -7.815E-02 | -3.307E-01 | -4.253E-01 | -6.58      |
|       | 1.59        |     | -19.17 | -4.58     | -7.815E-02 | -3.307E-01 | -3.561E-01 | -1.235E-02 |
|       | 3.03        |     | -16.42 | -4.58     | -7.815E-02 | -3.307E-01 | -2.966E-01 | -7.28      |
| 28    | COLUMN4 MAX |     |        |           |            |            |            |            |

|    |             |        |            |            |            |            |            |
|----|-------------|--------|------------|------------|------------|------------|------------|
|    | 1.5E-01     | -19.87 | 3.78       | -1.728E-02 | 8.608E-01  | 1.58       | 5.44       |
|    | 1.59        | -17.13 | 3.78       | -1.728E-02 | 8.608E-01  | 1.62       | 1.042E-02  |
|    | 3.03        | -14.39 | 3.78       | -1.728E-02 | 8.608E-01  | 1.67       | 4.75       |
| 28 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -21.95 | -3.31      | -6.584E-02 | -6.709E-01 | -1.19      | -4.76      |
|    | 1.59        | -19.20 | -3.31      | -6.584E-02 | -6.709E-01 | -1.11      | -1.003E-02 |
|    | 3.03        | -16.46 | -3.31      | -6.584E-02 | -6.709E-01 | -1.04      | -5.43      |
| 29 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -47.14 | -3.533E-01 | -7.155E-01 | 1.523E-02  | 6.153E-01  | 1.779E-01  |
|    | 1.59        | -42.87 | -3.533E-01 | -7.155E-01 | 1.523E-02  | 1.64       | 6.858E-01  |
|    | 3.03        | -38.61 | -3.533E-01 | -7.155E-01 | 1.523E-02  | 2.67       | 1.19       |
| 29 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -32.27 | 1.68       | 1.72       | 2.386E-01  | 4.08       | 3.31       |
|    | 1.59        | -29.07 | 1.68       | 1.72       | 2.386E-01  | 1.63       | 8.889E-01  |
|    | 3.03        | -25.87 | 1.68       | 1.72       | 2.386E-01  | 4.87       | 3.32       |
| 29 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -38.44 | -2.21      | -2.79      | -2.157E-01 | -3.16      | -3.04      |
|    | 1.59        | -35.24 | -2.21      | -2.79      | -2.157E-01 | 8.393E-01  | 1.398E-01  |
|    | 3.03        | -32.04 | -2.21      | -2.79      | -2.157E-01 | -8.618E-01 | -1.53      |
| 29 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -32.59 | 1.31       | 4.15       | 1.871E-01  | 8.08       | 2.68       |
|    | 1.59        | -29.39 | 1.31       | 4.15       | 1.871E-01  | 2.13       | 7.884E-01  |
|    | 3.03        | -26.19 | 1.31       | 4.15       | 1.871E-01  | 7.85       | 2.89       |
| 29 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -38.12 | -1.84      | -5.22      | -1.643E-01 | -7.16      | -2.41      |
|    | 1.59        | -34.92 | -1.84      | -5.22      | -1.643E-01 | 3.388E-01  | 2.403E-01  |
|    | 3.03        | -31.72 | -1.84      | -5.22      | -1.643E-01 | -3.84      | -1.10      |
| 29 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -18.96 | 2.00       | 2.10       | 2.382E-01  | 4.17       | 3.33       |
|    | 1.59        | -16.22 | 2.00       | 2.10       | 2.382E-01  | 1.17       | 4.579E-01  |
|    | 3.03        | -13.48 | 2.00       | 2.10       | 2.382E-01  | 3.87       | 2.44       |
| 29 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -25.13 | -1.90      | -2.41      | -2.161E-01 | -3.07      | -3.02      |
|    | 1.59        | -22.38 | -1.90      | -2.41      | -2.161E-01 | 3.804E-01  | -2.911E-01 |
|    | 3.03        | -19.64 | -1.90      | -2.41      | -2.161E-01 | -1.86      | -2.41      |
| 29 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -19.28 | 1.63       | 4.52       | 1.867E-01  | 8.17       | 2.70       |
|    | 1.59        | -16.54 | 1.63       | 4.52       | 1.867E-01  | 1.67       | 3.574E-01  |
|    | 3.03        | -13.79 | 1.63       | 4.52       | 1.867E-01  | 6.84       | 2.01       |
| 29 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -24.81 | -1.53      | -4.84      | -1.647E-01 | -7.07      | -2.39      |
|    | 1.59        | -22.07 | -1.53      | -4.84      | -1.647E-01 | -1.201E-01 | -1.906E-01 |
|    | 3.03        | -19.33 | -1.53      | -4.84      | -1.647E-01 | -4.84      | -1.98      |
| 30 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -45.77 | 3.528E-01  | -7.209E-01 | -9.749E-02 | 6.097E-01  | -1.649E-01 |
|    | 1.59        | -41.51 | 3.528E-01  | -7.209E-01 | -9.749E-02 | 1.65       | -6.720E-01 |
|    | 3.03        | -37.24 | 3.528E-01  | -7.209E-01 | -9.749E-02 | 2.68       | -1.18      |
| 30 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -29.86 | 3.95       | 1.67       | 1.813E-01  | 4.00       | 5.96       |
|    | 1.59        | -26.66 | 3.95       | 1.67       | 1.813E-01  | 1.63       | 2.865E-01  |
|    | 3.03        | -23.46 | 3.95       | 1.67       | 1.813E-01  | 4.84       | 3.62       |
| 30 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -38.80 | -3.42      | -2.76      | -3.276E-01 | -3.09      | -6.21      |
|    | 1.59        | -35.60 | -3.42      | -2.76      | -3.276E-01 | 8.409E-01  | -1.29      |
|    | 3.03        | -32.40 | -3.42      | -2.76      | -3.276E-01 | -8.199E-01 | -5.39      |
| 30 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -29.76 | 1.78       | 4.24       | 4.542E-01  | 8.22       | 2.37       |
|    | 1.59        | -26.56 | 1.78       | 4.24       | 4.542E-01  | 2.14       | -1.867E-01 |
|    | 3.03        | -23.36 | 1.78       | 4.24       | 4.542E-01  | 7.98       | 9.776E-01  |
| 30 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -38.90 | -1.25      | -5.32      | -6.005E-01 | -7.31      | -2.62      |
|    | 1.59        | -35.70 | -1.25      | -5.32      | -6.005E-01 | 3.266E-01  | -8.213E-01 |
|    | 3.03        | -32.50 | -1.25      | -5.32      | -6.005E-01 | -3.96      | -2.75      |
| 30 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -16.91 | 3.66       | 2.05       | 1.921E-01  | 4.09       | 5.97       |
|    | 1.59        | -14.16 | 3.66       | 2.05       | 1.921E-01  | 1.17       | 7.119E-01  |
|    | 3.03        | -11.42 | 3.66       | 2.05       | 1.921E-01  | 3.84       | 4.47       |
| 30 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -25.85 | -3.71      | -2.38      | -3.168E-01 | -3.00      | -6.21      |

|    |             |        |            |            |            |            |            |
|----|-------------|--------|------------|------------|------------|------------|------------|
|    | 1.59        | -23.11 | -3.71      | -2.38      | -3.168E-01 | 3.805E-01  | -8.691E-01 |
|    | 3.03        | -20.37 | -3.71      | -2.38      | -3.168E-01 | -1.83      | -4.55      |
| 30 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -16.81 | 1.49       | 4.62       | 4.650E-01  | 8.31       | 2.38       |
|    | 1.59        | -14.07 | 1.49       | 4.62       | 4.650E-01  | 1.68       | 2.388E-01  |
|    | 3.03        | -11.32 | 1.49       | 4.62       | 4.650E-01  | 6.98       | 1.82       |
| 30 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -25.95 | -1.54      | -4.94      | -5.897E-01 | -7.22      | -2.61      |
|    | 1.59        | -23.21 | -1.54      | -4.94      | -5.897E-01 | -1.338E-01 | -3.959E-01 |
|    | 3.03        | -20.46 | -1.54      | -4.94      | -5.897E-01 | -4.97      | -1.90      |
| 31 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -46.93 | -4.952E-01 | -4.406E-02 | -9.533E-02 | 2.978E-01  | -6.098E-01 |
|    | 1.59        | -42.66 | -4.952E-01 | -4.406E-02 | -9.533E-02 | 3.611E-01  | 1.020E-01  |
|    | 3.03        | -38.39 | -4.952E-01 | -4.406E-02 | -9.533E-02 | 4.245E-01  | 8.138E-01  |
| 31 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -35.02 | 7.82       | 1.053E-01  | 3.181E-01  | 1.04       | 10.84      |
|    | 1.59        | -31.82 | 7.82       | 1.053E-01  | 3.181E-01  | 9.276E-01  | 5.455E-01  |
|    | 3.03        | -28.62 | 7.82       | 1.053E-01  | 3.181E-01  | 8.255E-01  | 12.85      |
| 31 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -35.37 | -8.56      | -1.714E-01 | -4.611E-01 | -5.974E-01 | -11.76     |
|    | 1.59        | -32.16 | -8.56      | -1.714E-01 | -4.611E-01 | -3.859E-01 | -3.925E-01 |
|    | 3.03        | -28.96 | -8.56      | -1.714E-01 | -4.611E-01 | -1.888E-01 | -11.63     |
| 31 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -34.91 | 2.92       | 2.803E-01  | 5.104E-01  | 1.99       | 4.08       |
|    | 1.59        | -31.70 | 2.92       | 2.803E-01  | 5.104E-01  | 1.59       | 2.692E-01  |
|    | 3.03        | -28.50 | 2.92       | 2.803E-01  | 5.104E-01  | 1.21       | 5.54       |
| 31 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -35.48 | -3.66      | -3.464E-01 | -6.534E-01 | -1.54      | -5.00      |
|    | 1.59        | -32.28 | -3.66      | -3.464E-01 | -6.534E-01 | -1.05      | -1.162E-01 |
|    | 3.03        | -29.08 | -3.66      | -3.464E-01 | -6.534E-01 | -5.700E-01 | -4.31      |
| 31 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -24.52 | 8.07       | 1.251E-01  | 3.329E-01  | 9.917E-01  | 11.17      |
|    | 1.59        | -21.78 | 8.07       | 1.251E-01  | 3.329E-01  | 8.468E-01  | 5.082E-01  |
|    | 3.03        | -19.03 | 8.07       | 1.251E-01  | 3.329E-01  | 7.163E-01  | 12.45      |
| 31 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -24.86 | -8.31      | -1.516E-01 | -4.463E-01 | -6.497E-01 | -11.43     |
|    | 1.59        | -22.12 | -8.31      | -1.516E-01 | -4.463E-01 | -4.667E-01 | -4.298E-01 |
|    | 3.03        | -19.37 | -8.31      | -1.516E-01 | -4.463E-01 | -2.980E-01 | -12.03     |
| 31 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -24.40 | 3.17       | 3.001E-01  | 5.252E-01  | 1.93       | 4.41       |
|    | 1.59        | -21.66 | 3.17       | 3.001E-01  | 5.252E-01  | 1.51       | 2.319E-01  |
|    | 3.03        | -18.91 | 3.17       | 3.001E-01  | 5.252E-01  | 1.10       | 5.14       |
| 31 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -24.98 | -3.41      | -3.266E-01 | -6.386E-01 | -1.59      | -4.67      |
|    | 1.59        | -22.24 | -3.41      | -3.266E-01 | -6.386E-01 | -1.13      | -1.535E-01 |
|    | 3.03        | -19.49 | -3.41      | -3.266E-01 | -6.386E-01 | -6.792E-01 | -4.71      |
| 32 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -28.64 | 4.342E-01  | -6.997E-01 | -1.391E-01 | -1.933E-01 | -2.798E-02 |
|    | 1.59        | -24.38 | 4.342E-01  | -6.997E-01 | -1.391E-01 | 8.125E-01  | -6.521E-01 |
|    | 3.03        | -20.11 | 4.342E-01  | -6.997E-01 | -1.391E-01 | 1.82       | -1.28      |
| 32 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -17.29 | 3.76       | 1.382E-01  | 5.886E-01  | 1.07       | 5.69       |
|    | 1.59        | -14.08 | 3.76       | 1.382E-01  | 5.886E-01  | 8.740E-01  | 2.823E-01  |
|    | 3.03        | -10.88 | 3.76       | 1.382E-01  | 5.886E-01  | 2.05       | 3.21       |
| 32 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -25.68 | -3.11      | -1.19      | -7.973E-01 | -1.36      | -5.74      |
|    | 1.59        | -22.48 | -3.11      | -1.19      | -7.973E-01 | 3.448E-01  | -1.26      |
|    | 3.03        | -19.28 | -3.11      | -1.19      | -7.973E-01 | 6.743E-01  | -5.13      |
| 32 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -18.43 | 1.74       | 9.073E-01  | 1.06       | 2.49       | 2.33       |
|    | 1.59        | -15.23 | 1.74       | 9.073E-01  | 1.06       | 1.19       | -1.751E-01 |
|    | 3.03        | -12.03 | 1.74       | 9.073E-01  | 1.06       | 2.85       | 7.628E-01  |
| 32 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -24.53 | -1.09      | -1.96      | -1.27      | -2.78      | -2.37      |
|    | 1.59        | -21.33 | -1.09      | -1.96      | -1.27      | 3.315E-02  | -8.030E-01 |
|    | 3.03        | -18.13 | -1.09      | -1.96      | -1.27      | -1.189E-01 | -2.68      |
| 32 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -11.23 | 3.81       | 3.677E-01  | 5.868E-01  | 1.17       | 5.85       |
|    | 1.59        | -8.49  | 3.81       | 3.677E-01  | 5.868E-01  | 6.453E-01  | 3.799E-01  |

|    |             |        |            |            |            |            |            |
|----|-------------|--------|------------|------------|------------|------------|------------|
|    | 3.03        | -5.75  | 3.81       | 3.677E-01  | 5.868E-01  | 1.49       | 3.25       |
| 32 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -19.63 | -3.07      | -9.582E-01 | -7.991E-01 | -1.26      | -5.58      |
|    | 1.59        | -16.88 | -3.07      | -9.582E-01 | -7.991E-01 | 1.160E-01  | -1.16      |
|    | 3.03        | -14.14 | -3.07      | -9.582E-01 | -7.991E-01 | 1.156E-01  | -5.09      |
| 32 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -12.38 | 1.78       | 1.14       | 1.06       | 2.59       | 2.48       |
|    | 1.59        | -9.64  | 1.78       | 1.14       | 1.06       | 9.569E-01  | -7.759E-02 |
|    | 3.03        | -6.89  | 1.78       | 1.14       | 1.06       | 2.29       | 8.010E-01  |
| 32 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -18.48 | -1.05      | -1.73      | -1.27      | -2.68      | -2.21      |
|    | 1.59        | -15.74 | -1.05      | -1.73      | -1.27      | -1.956E-01 | -7.055E-01 |
|    | 3.03        | -13.00 | -1.05      | -1.73      | -1.27      | -6.776E-01 | -2.64      |
| 33 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -23.90 | -5.385E-01 | 8.201E-01  | -8.183E-02 | 1.09       | 1.952E-01  |
|    | 1.59        | -19.63 | -5.385E-01 | 8.201E-01  | -8.183E-02 | -9.007E-02 | 9.692E-01  |
|    | 3.03        | -15.36 | -5.385E-01 | 8.201E-01  | -8.183E-02 | -1.27      | 1.74       |
| 33 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -16.94 | 2.406E-01  | 2.74       | 7.401E-01  | 4.02       | 1.33       |
|    | 1.59        | -13.74 | 2.406E-01  | 2.74       | 7.401E-01  | 8.253E-02  | 9.853E-01  |
|    | 3.03        | -10.54 | 2.406E-01  | 2.74       | 7.401E-01  | 1.96       | 1.99       |
| 33 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -18.90 | -1.05      | -1.51      | -8.629E-01 | -2.39      | -1.03      |
|    | 1.59        | -15.70 | -1.05      | -1.51      | -8.629E-01 | -2.176E-01 | 4.684E-01  |
|    | 3.03        | -12.50 | -1.05      | -1.51      | -8.629E-01 | -3.86      | 6.295E-01  |
| 33 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -17.50 | 3.178E-01  | 5.03       | 2.226E-01  | 7.45       | 1.27       |
|    | 1.59        | -14.30 | 3.178E-01  | 5.03       | 2.226E-01  | 2.253E-01  | 8.208E-01  |
|    | 3.03        | -11.10 | 3.178E-01  | 5.03       | 2.226E-01  | 5.10       | 2.26       |
| 33 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -18.35 | -1.13      | -3.80      | -3.453E-01 | -5.82      | -9.783E-01 |
|    | 1.59        | -15.15 | -1.13      | -3.80      | -3.453E-01 | -3.604E-01 | 6.330E-01  |
|    | 3.03        | -11.94 | -1.13      | -3.80      | -3.453E-01 | -7.00      | 3.557E-01  |
| 33 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -12.19 | 3.354E-01  | 2.66       | 7.691E-01  | 3.91       | 1.25       |
|    | 1.59        | -9.44  | 3.354E-01  | 2.66       | 7.691E-01  | 9.043E-02  | 7.733E-01  |
|    | 3.03        | -6.70  | 3.354E-01  | 2.66       | 7.691E-01  | 2.09       | 1.64       |
| 33 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -14.15 | -9.535E-01 | -1.60      | -8.339E-01 | -2.51      | -1.11      |
|    | 1.59        | -11.41 | -9.535E-01 | -1.60      | -8.339E-01 | -2.097E-01 | 2.563E-01  |
|    | 3.03        | -8.66  | -9.535E-01 | -1.60      | -8.339E-01 | -3.73      | 2.811E-01  |
| 33 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -12.75 | 4.126E-01  | 4.94       | 2.516E-01  | 7.34       | 1.20       |
|    | 1.59        | -10.00 | 4.126E-01  | 4.94       | 2.516E-01  | 2.332E-01  | 6.087E-01  |
|    | 3.03        | -7.26  | 4.126E-01  | 4.94       | 2.516E-01  | 5.23       | 1.91       |
| 33 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -13.59 | -1.03      | -3.88      | -3.163E-01 | -5.94      | -1.05      |
|    | 1.59        | -10.85 | -1.03      | -3.88      | -3.163E-01 | -3.525E-01 | 4.209E-01  |
|    | 3.03        | -8.11  | -1.03      | -3.88      | -3.163E-01 | -6.87      | 7.350E-03  |
| 34 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -31.54 | -3.837E-02 | 1.61       | -1.043E-01 | 2.20       | 3.028E-01  |
|    | 1.59        | -27.27 | -3.837E-02 | 1.61       | -1.043E-01 | -1.178E-01 | 3.580E-01  |
|    | 3.03        | -23.00 | -3.837E-02 | 1.61       | -1.043E-01 | -2.43      | 4.131E-01  |
| 34 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -23.34 | 3.112E-01  | 5.14       | 9.980E-01  | 7.63       | 9.607E-01  |
|    | 1.59        | -20.14 | 3.112E-01  | 5.14       | 9.980E-01  | 2.396E-01  | 5.218E-01  |
|    | 3.03        | -16.94 | 3.112E-01  | 5.14       | 9.980E-01  | 3.50       | 5.556E-01  |
| 34 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -23.97 | -3.687E-01 | -2.73      | -1.15      | -4.33      | -5.065E-01 |
|    | 1.59        | -20.77 | -3.687E-01 | -2.73      | -1.15      | -4.163E-01 | 1.512E-02  |
|    | 3.03        | -17.57 | -3.687E-01 | -2.73      | -1.15      | -7.15      | 6.402E-02  |
| 34 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -22.96 | 1.099E-01  | 9.54       | 6.008E-01  | 14.31      | 4.943E-01  |
|    | 1.59        | -19.75 | 1.099E-01  | 9.54       | 6.008E-01  | 5.925E-01  | 3.642E-01  |
|    | 3.03        | -16.55 | 1.099E-01  | 9.54       | 6.008E-01  | 9.48       | 4.477E-01  |
| 34 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -24.35 | -1.674E-01 | -7.13      | -7.572E-01 | -11.02     | -4.014E-02 |
|    | 1.59        | -21.15 | -1.674E-01 | -7.13      | -7.572E-01 | -7.693E-01 | 1.727E-01  |
|    | 3.03        | -17.95 | -1.674E-01 | -7.13      | -7.572E-01 | -13.13     | 1.719E-01  |

|    |             |        |            |            |            |            |            |
|----|-------------|--------|------------|------------|------------|------------|------------|
| 34 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -15.72 | 3.435E-01  | 4.95       | 1.04       | 7.42       | 8.297E-01  |
|    | 1.59        | -12.97 | 3.435E-01  | 4.95       | 1.04       | 3.041E-01  | 3.444E-01  |
|    | 3.03        | -10.23 | 3.435E-01  | 4.95       | 1.04       | 3.84       | 3.318E-01  |
| 34 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -16.35 | -3.364E-01 | -2.91      | -1.12      | -4.54      | -6.374E-01 |
|    | 1.59        | -13.60 | -3.364E-01 | -2.91      | -1.12      | -3.518E-01 | -1.623E-01 |
|    | 3.03        | -10.86 | -3.364E-01 | -2.91      | -1.12      | -6.82      | -1.599E-01 |
| 34 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -15.33 | 1.422E-01  | 9.36       | 6.379E-01  | 14.11      | 3.634E-01  |
|    | 1.59        | -12.59 | 1.422E-01  | 9.36       | 6.379E-01  | 6.570E-01  | 1.868E-01  |
|    | 3.03        | -9.84  | 1.422E-01  | 9.36       | 6.379E-01  | 9.81       | 2.238E-01  |
| 34 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -16.73 | -1.351E-01 | -7.32      | -7.200E-01 | -11.22     | -1.711E-01 |
|    | 1.59        | -13.99 | -1.351E-01 | -7.32      | -7.200E-01 | -7.048E-01 | -4.699E-03 |
|    | 3.03        | -11.24 | -1.351E-01 | -7.32      | -7.200E-01 | -12.79     | -5.193E-02 |
| 35 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -31.55 | 1.541E-01  | 1.62       | 5.206E-02  | 2.22       | -1.063E-01 |
|    | 1.59        | -27.28 | 1.541E-01  | 1.62       | 5.206E-02  | -1.134E-01 | -3.278E-01 |
|    | 3.03        | -23.02 | 1.541E-01  | 1.62       | 5.206E-02  | -2.45      | -5.492E-01 |
| 35 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -23.35 | 6.083E-01  | 5.12       | 9.319E-01  | 7.60       | 9.686E-01  |
|    | 1.59        | -20.15 | 6.083E-01  | 5.12       | 9.319E-01  | 2.403E-01  | 9.437E-02  |
|    | 3.03        | -16.95 | 6.083E-01  | 5.12       | 9.319E-01  | 3.45       | -4.328E-02 |
| 35 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -23.97 | -3.772E-01 | -2.69      | -8.538E-01 | -4.27      | -1.13      |
|    | 1.59        | -20.77 | -3.772E-01 | -2.69      | -8.538E-01 | -4.104E-01 | -5.860E-01 |
|    | 3.03        | -17.57 | -3.772E-01 | -2.69      | -8.538E-01 | -7.12      | -7.806E-01 |
| 35 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -22.97 | 2.935E-01  | 9.88       | 5.999E-01  | 14.83      | 3.020E-01  |
|    | 1.59        | -19.76 | 2.935E-01  | 9.88       | 5.999E-01  | 6.225E-01  | -1.195E-01 |
|    | 3.03        | -16.56 | 2.935E-01  | 9.88       | 5.999E-01  | 9.91       | -2.812E-01 |
| 35 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -24.36 | -6.238E-02 | -7.45      | -5.218E-01 | -11.50     | -4.614E-01 |
|    | 1.59        | -21.16 | -6.238E-02 | -7.45      | -5.218E-01 | -7.926E-01 | -3.721E-01 |
|    | 3.03        | -17.96 | -6.238E-02 | -7.45      | -5.218E-01 | -13.59     | -5.426E-01 |
| 35 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -15.73 | 5.647E-01  | 4.93       | 9.020E-01  | 7.39       | 1.08       |
|    | 1.59        | -12.98 | 5.647E-01  | 4.93       | 9.020E-01  | 3.043E-01  | 2.682E-01  |
|    | 3.03        | -10.24 | 5.647E-01  | 4.93       | 9.020E-01  | 3.79       | 1.932E-01  |
| 35 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -16.35 | -4.208E-01 | -2.88      | -8.837E-01 | -4.48      | -1.02      |
|    | 1.59        | -13.61 | -4.208E-01 | -2.88      | -8.837E-01 | -3.464E-01 | -4.122E-01 |
|    | 3.03        | -10.86 | -4.208E-01 | -2.88      | -8.837E-01 | -6.79      | -5.441E-01 |
| 35 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -15.34 | 2.499E-01  | 9.69       | 5.700E-01  | 14.62      | 4.132E-01  |
|    | 1.59        | -12.60 | 2.499E-01  | 9.69       | 5.700E-01  | 6.866E-01  | 5.430E-02  |
|    | 3.03        | -9.85  | 2.499E-01  | 9.69       | 5.700E-01  | 10.25      | -4.471E-02 |
| 35 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -16.74 | -1.060E-01 | -7.64      | -5.517E-01 | -11.71     | -3.503E-01 |
|    | 1.59        | -13.99 | -1.060E-01 | -7.64      | -5.517E-01 | -7.286E-01 | -1.983E-01 |
|    | 3.03        | -11.25 | -1.060E-01 | -7.64      | -5.517E-01 | -13.25     | -3.061E-01 |
| 36 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -34.53 | -1.04      | -7.838E-01 | 5.718E-02  | 5.408E-02  | -2.878E-01 |
|    | 1.59        | -30.26 | -1.04      | -7.838E-01 | 5.718E-02  | 1.18       | 1.21       |
|    | 3.03        | -26.00 | -1.04      | -7.838E-01 | 5.718E-02  | 2.31       | 2.71       |
| 36 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -25.87 | -3.200E-01 | 1.19       | 7.326E-01  | 2.70       | 7.779E-01  |
|    | 1.59        | -22.66 | -3.200E-01 | 1.19       | 7.326E-01  | 9.918E-01  | 1.24       |
|    | 3.03        | -19.46 | -3.200E-01 | 1.19       | 7.326E-01  | 4.17       | 2.37       |
| 36 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -25.93 | -1.24      | -2.36      | -6.468E-01 | -2.61      | -1.21      |
|    | 1.59        | -22.73 | -1.24      | -2.36      | -6.468E-01 | 7.793E-01  | 5.786E-01  |
|    | 3.03        | -19.53 | -1.24      | -2.36      | -6.468E-01 | -7.121E-01 | 1.70       |
| 36 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -25.89 | -6.022E-01 | 3.30       | 5.551E-01  | 5.86       | 1.612E-01  |
|    | 1.59        | -22.69 | -6.022E-01 | 3.30       | 5.551E-01  | 1.12       | 1.03       |
|    | 3.03        | -19.49 | -6.022E-01 | 3.30       | 5.551E-01  | 7.09       | 2.17       |
| 36 | COLUMN2 MIN |        |            |            |            |            |            |

|    |             |        |            |           |            |            |            |
|----|-------------|--------|------------|-----------|------------|------------|------------|
|    | 1.5E-01     | -25.91 | -9.621E-01 | -4.48     | -4.694E-01 | -5.78      | -5.928E-01 |
|    | 1.59        | -22.71 | -9.621E-01 | -4.48     | -4.694E-01 | 6.553E-01  | 7.887E-01  |
|    | 3.03        | -19.51 | -9.621E-01 | -4.48     | -4.694E-01 | -3.63      | 1.89       |
| 36 | COLUMN3 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -19.96 | -1.918E-01 | 1.27      | 7.080E-01  | 2.70       | 8.482E-01  |
|    | 1.59        | -17.22 | -1.918E-01 | 1.27      | 7.080E-01  | 8.678E-01  | 1.12       |
|    | 3.03        | -14.48 | -1.918E-01 | 1.27      | 7.080E-01  | 3.93       | 2.07       |
| 36 | COLUMN3 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -20.03 | -1.12      | -2.27     | -6.714E-01 | -2.61      | -1.14      |
|    | 1.59        | -17.29 | -1.12      | -2.27     | -6.714E-01 | 6.553E-01  | 4.645E-01  |
|    | 3.03        | -14.54 | -1.12      | -2.27     | -6.714E-01 | -9.600E-01 | 1.40       |
| 36 | COLUMN4 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -19.99 | -4.740E-01 | 3.39      | 5.306E-01  | 5.86       | 2.314E-01  |
|    | 1.59        | -17.24 | -4.740E-01 | 3.39      | 5.306E-01  | 9.918E-01  | 9.143E-01  |
|    | 3.03        | -14.50 | -4.740E-01 | 3.39      | 5.306E-01  | 6.84       | 1.88       |
| 36 | COLUMN4 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -20.01 | -8.339E-01 | -4.39     | -4.940E-01 | -5.78      | -5.226E-01 |
|    | 1.59        | -17.27 | -8.339E-01 | -4.39     | -4.940E-01 | 5.313E-01  | 6.746E-01  |
|    | 3.03        | -14.52 | -8.339E-01 | -4.39     | -4.940E-01 | -3.88      | 1.59       |
| 37 | CU          |        |            |           |            |            |            |
|    | 1.5E-01     | -39.45 | -2.00      | 4.225E-01 | 3.612E-02  | 8.335E-01  | -1.791E-01 |
|    | 1.59        | -35.18 | -2.00      | 4.225E-01 | 3.612E-02  | 2.263E-01  | 2.70       |
|    | 3.03        | -30.92 | -2.00      | 4.225E-01 | 3.612E-02  | -3.810E-01 | 5.57       |
| 37 | COLUMN1 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -23.81 | 3.92       | 1.92      | 8.099E-01  | 3.27       | 8.78       |
|    | 1.59        | -20.61 | 3.92       | 1.92      | 8.099E-01  | 5.102E-01  | 3.15       |
|    | 3.03        | -17.41 | 3.92       | 1.92      | 8.099E-01  | 1.69       | 10.84      |
| 37 | COLUMN1 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -35.37 | -6.92      | -1.29     | -7.557E-01 | -2.01      | -9.04      |
|    | 1.59        | -32.17 | -6.92      | -1.29     | -7.557E-01 | -1.708E-01 | 8.970E-01  |
|    | 3.03        | -28.97 | -6.92      | -1.29     | -7.557E-01 | -2.26      | -2.48      |
| 37 | COLUMN2 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -25.95 | 4.772E-01  | 2.71      | 1.00       | 4.72       | 3.12       |
|    | 1.59        | -22.75 | 4.772E-01  | 2.71      | 1.00       | 8.176E-01  | 2.43       |
|    | 3.03        | -19.55 | 4.772E-01  | 2.71      | 1.00       | 2.51       | 6.61       |
| 37 | COLUMN2 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -33.23 | -3.48      | -2.08     | -9.462E-01 | -3.47      | -3.39      |
|    | 1.59        | -30.03 | -3.48      | -2.08     | -9.462E-01 | -4.782E-01 | 1.61       |
|    | 3.03        | -26.83 | -3.48      | -2.08     | -9.462E-01 | -3.09      | 1.75       |
| 37 | COLUMN3 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -17.12 | 3.97       | 1.71      | 8.145E-01  | 3.06       | 8.48       |
|    | 1.59        | -14.38 | 3.97       | 1.71      | 8.145E-01  | 6.162E-01  | 2.78       |
|    | 3.03        | -11.64 | 3.97       | 1.71      | 8.145E-01  | 2.10       | 10.40      |
| 37 | COLUMN3 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -28.68 | -6.86      | -1.50     | -7.511E-01 | -2.22      | -9.34      |
|    | 1.59        | -25.94 | -6.86      | -1.50     | -7.511E-01 | -6.480E-02 | 5.298E-01  |
|    | 3.03        | -23.19 | -6.86      | -1.50     | -7.511E-01 | -1.84      | -2.93      |
| 37 | COLUMN4 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -19.26 | 5.285E-01  | 2.50      | 1.01       | 4.51       | 2.83       |
|    | 1.59        | -16.52 | 5.285E-01  | 2.50      | 1.01       | 9.236E-01  | 2.07       |
|    | 3.03        | -13.77 | 5.285E-01  | 2.50      | 1.01       | 2.93       | 6.16       |
| 37 | COLUMN4 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -26.54 | -3.43      | -2.29     | -9.416E-01 | -3.67      | -3.68      |
|    | 1.59        | -23.80 | -3.43      | -2.29     | -9.416E-01 | -3.722E-01 | 1.24       |
|    | 3.03        | -21.05 | -3.43      | -2.29     | -9.416E-01 | -2.67      | 1.31       |
| 38 | CU          |        |            |           |            |            |            |
|    | 1.5E-01     | -85.20 | 2.49       | -1.22     | 1.196E-01  | 1.264E-01  | 2.19       |
|    | 1.59        | -80.93 | 2.49       | -1.22     | 1.196E-01  | 1.87       | -1.40      |
|    | 3.03        | -76.66 | 2.49       | -1.22     | 1.196E-01  | 3.62       | -4.99      |
| 38 | COLUMN1 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -61.48 | 13.45      | 1.13      | 4.626E-01  | 3.84       | 17.61      |
|    | 1.59        | -58.28 | 13.45      | 1.13      | 4.626E-01  | 2.22       | -3.850E-01 |
|    | 3.03        | -55.08 | 13.45      | 1.13      | 4.626E-01  | 4.86       | 13.56      |
| 38 | COLUMN1 MIN |        |            |           |            |            |            |
|    | 1.5E-01     | -66.31 | -9.70      | -2.96     | -2.832E-01 | -3.65      | -14.33     |
|    | 1.59        | -63.11 | -9.70      | -2.96     | -2.832E-01 | 5.883E-01  | -1.71      |
|    | 3.03        | -59.91 | -9.70      | -2.96     | -2.832E-01 | 5.794E-01  | -21.04     |
| 38 | COLUMN2 MAX |        |            |           |            |            |            |
|    | 1.5E-01     | -58.66 | 6.00       | 3.77      | 5.179E-01  | 8.65       | 7.33       |



|    |             |        |        |       |            |            |            |
|----|-------------|--------|--------|-------|------------|------------|------------|
|    | 1.59        | -55.46 | 6.00   | 3.77  | 5.179E-01  | 3.24       | -8.070E-01 |
|    | 3.03        | -52.26 | 6.00   | 3.77  | 5.179E-01  | 7.63       | 2.43       |
| 38 | COLUMN2 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -69.13 | -2.25  | -5.60 | -3.385E-01 | -8.46      | -4.05      |
|    | 1.59        | -65.93 | -2.25  | -5.60 | -3.385E-01 | -4.227E-01 | -1.29      |
|    | 3.03        | -62.73 | -2.25  | -5.60 | -3.385E-01 | -2.19      | -9.91      |
| 38 | COLUMN3 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -42.47 | 12.76  | 1.32  | 4.465E-01  | 3.85       | 16.90      |
|    | 1.59        | -39.72 | 12.76  | 1.32  | 4.465E-01  | 1.97       | -1.141E-01 |
|    | 3.03        | -36.98 | 12.76  | 1.32  | 4.465E-01  | 4.33       | 14.82      |
| 38 | COLUMN3 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -47.30 | -10.39 | -2.77 | -2.993E-01 | -3.64      | -15.05     |
|    | 1.59        | -44.56 | -10.39 | -2.77 | -2.993E-01 | 3.313E-01  | -1.44      |
|    | 3.03        | -41.81 | -10.39 | -2.77 | -2.993E-01 | 5.447E-02  | -19.79     |
| 38 | COLUMN4 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -39.65 | 5.31   | 3.96  | 5.018E-01  | 8.66       | 6.62       |
|    | 1.59        | -36.90 | 5.31   | 3.96  | 5.018E-01  | 2.98       | -5.361E-01 |
|    | 3.03        | -34.16 | 5.31   | 3.96  | 5.018E-01  | 7.10       | 3.69       |
| 38 | COLUMN4 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -50.12 | -2.94  | -5.41 | -3.546E-01 | -8.45      | -4.76      |
|    | 1.59        | -47.38 | -2.94  | -5.41 | -3.546E-01 | -6.797E-01 | -1.02      |
|    | 3.03        | -44.63 | -2.94  | -5.41 | -3.546E-01 | -2.72      | -8.66      |
| 39 | CU          |        |        |       |            |            |            |
|    | 1.5E-01     | -91.56 | -1.58  | 1.18  | 1.390E-01  | 2.00       | -7.285E-02 |
|    | 1.59        | -87.29 | -1.58  | 1.18  | 1.390E-01  | 3.099E-01  | 2.19       |
|    | 3.03        | -83.02 | -1.58  | 1.18  | 1.390E-01  | -1.38      | 4.46       |
| 39 | COLUMN1 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -62.67 | 4.65   | 4.37  | 3.629E-01  | 6.82       | 9.43       |
|    | 1.59        | -59.47 | 4.65   | 4.37  | 3.629E-01  | 5.618E-01  | 2.75       |
|    | 3.03        | -56.27 | 4.65   | 4.37  | 3.629E-01  | 3.67       | 10.64      |
| 39 | COLUMN1 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -74.67 | -7.02  | -2.60 | -1.544E-01 | -3.81      | -9.54      |
|    | 1.59        | -71.47 | -7.02  | -2.60 | -1.544E-01 | -9.701E-02 | 5.386E-01  |
|    | 3.03        | -68.27 | -7.02  | -2.60 | -1.544E-01 | -5.75      | -3.95      |
| 39 | COLUMN2 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -66.22 | 1.23   | 8.65  | 3.079E-01  | 13.31      | 3.76       |
|    | 1.59        | -63.02 | 1.23   | 8.65  | 3.079E-01  | 8.867E-01  | 2.03       |
|    | 3.03        | -59.82 | 1.23   | 8.65  | 3.079E-01  | 9.48       | 6.47       |
| 39 | COLUMN2 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -71.12 | -3.60  | -6.88 | -9.932E-02 | -10.31     | -3.87      |
|    | 1.59        | -67.92 | -3.60  | -6.88 | -9.932E-02 | -4.219E-01 | 1.26       |
|    | 3.03        | -64.72 | -3.60  | -6.88 | -9.932E-02 | -11.55     | 2.146E-01  |
| 39 | COLUMN3 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -32.82 | 5.44   | 4.34  | 3.448E-01  | 6.65       | 9.53       |
|    | 1.59        | -30.07 | 5.44   | 4.34  | 3.448E-01  | 4.407E-01  | 1.73       |
|    | 3.03        | -27.33 | 5.44   | 4.34  | 3.448E-01  | 3.59       | 8.50       |
| 39 | COLUMN3 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -44.82 | -6.24  | -2.63 | -1.725E-01 | -3.97      | -9.43      |
|    | 1.59        | -42.07 | -6.24  | -2.63 | -1.725E-01 | -2.181E-01 | -4.776E-01 |
|    | 3.03        | -39.33 | -6.24  | -2.63 | -1.725E-01 | -5.83      | -6.09      |
| 39 | COLUMN4 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -36.37 | 2.01   | 8.62  | 2.898E-01  | 13.15      | 3.87       |
|    | 1.59        | -33.62 | 2.01   | 8.62  | 2.898E-01  | 7.656E-01  | 1.02       |
|    | 3.03        | -30.88 | 2.01   | 8.62  | 2.898E-01  | 9.40       | 4.33       |
| 39 | COLUMN4 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -41.27 | -2.81  | -6.91 | -1.174E-01 | -10.47     | -3.76      |
|    | 1.59        | -38.52 | -2.81  | -6.91 | -1.174E-01 | -5.430E-01 | 2.413E-01  |
|    | 3.03        | -35.78 | -2.81  | -6.91 | -1.174E-01 | -11.63     | -1.93      |
| 40 | CU          |        |        |       |            |            |            |
|    | 1.5E-01     | -90.86 | 1.83   | 1.23  | -4.183E-02 | 2.07       | 4.936E-01  |
|    | 1.59        | -86.59 | 1.83   | 1.23  | -4.183E-02 | 2.972E-01  | -2.14      |
|    | 3.03        | -82.32 | 1.83   | 1.23  | -4.183E-02 | -1.47      | -4.78      |
| 40 | COLUMN1 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -61.75 | 7.38   | 4.33  | 4.783E-01  | 6.77       | 10.12      |
|    | 1.59        | -58.55 | 7.38   | 4.33  | 4.783E-01  | 5.705E-01  | -4.588E-01 |
|    | 3.03        | -55.35 | 7.38   | 4.33  | 4.783E-01  | 3.48       | 3.92       |
| 40 | COLUMN1 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -74.54 | -4.63  | -2.48 | -5.410E-01 | -3.67      | -9.38      |
|    | 1.59        | -71.34 | -4.63  | -2.48 | -5.410E-01 | -1.248E-01 | -2.75      |

|    |             |        |        |       |            |            |            |
|----|-------------|--------|--------|-------|------------|------------|------------|
|    | 3.03        | -68.14 | -4.63  | -2.48 | -5.410E-01 | -5.68      | -11.09     |
| 40 | COLUMN2 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -65.43 | 3.90   | 8.88  | 4.097E-01  | 13.70      | 4.37       |
|    | 1.59        | -62.23 | 3.90   | 8.88  | 4.097E-01  | 9.409E-01  | -1.16      |
|    | 3.03        | -59.03 | 3.90   | 8.88  | 4.097E-01  | 9.63       | -3.129E-01 |
| 40 | COLUMN2 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -70.86 | -1.15  | -7.04 | -4.724E-01 | -10.60     | -3.63      |
|    | 1.59        | -67.65 | -1.15  | -7.04 | -4.724E-01 | -4.952E-01 | -2.05      |
|    | 3.03        | -64.45 | -1.15  | -7.04 | -4.724E-01 | -11.84     | -6.85      |
| 40 | COLUMN3 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -32.00 | 6.57   | 4.29  | 4.874E-01  | 6.60       | 9.98       |
|    | 1.59        | -29.26 | 6.57   | 4.29  | 4.874E-01  | 4.502E-01  | 5.517E-01  |
|    | 3.03        | -26.52 | 6.57   | 4.29  | 4.874E-01  | 3.41       | 6.09       |
| 40 | COLUMN3 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -44.79 | -5.43  | -2.52 | -5.319E-01 | -3.84      | -9.53      |
|    | 1.59        | -42.04 | -5.43  | -2.52 | -5.319E-01 | -2.451E-01 | -1.74      |
|    | 3.03        | -39.30 | -5.43  | -2.52 | -5.319E-01 | -5.75      | -8.92      |
| 40 | COLUMN4 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -35.68 | 3.09   | 8.85  | 4.189E-01  | 13.53      | 4.22       |
|    | 1.59        | -32.94 | 3.09   | 8.85  | 4.189E-01  | 8.207E-01  | -1.530E-01 |
|    | 3.03        | -30.20 | 3.09   | 8.85  | 4.189E-01  | 9.56       | 1.85       |
| 40 | COLUMN4 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -41.11 | -1.95  | -7.07 | -4.633E-01 | -10.78     | -3.77      |
|    | 1.59        | -38.36 | -1.95  | -7.07 | -4.633E-01 | -6.155E-01 | -1.04      |
|    | 3.03        | -35.62 | -1.95  | -7.07 | -4.633E-01 | -11.91     | -4.69      |
| 41 | CU          |        |        |       |            |            |            |
|    | 1.5E-01     | -86.80 | -2.03  | -1.37 | -1.359E-01 | 3.923E-02  | -1.55      |
|    | 1.59        | -82.53 | -2.03  | -1.37 | -1.359E-01 | 2.01       | 1.37       |
|    | 3.03        | -78.27 | -2.03  | -1.37 | -1.359E-01 | 3.99       | 4.28       |
| 41 | COLUMN1 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -62.28 | 10.48  | 1.46  | 4.086E-01  | 4.64       | 15.39      |
|    | 1.59        | -59.08 | 10.48  | 1.46  | 4.086E-01  | 2.58       | 1.72       |
|    | 3.03        | -55.88 | 10.48  | 1.46  | 4.086E-01  | 5.55       | 21.16      |
| 41 | COLUMN1 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -67.92 | -13.52 | -3.52 | -6.125E-01 | -4.58      | -17.71     |
|    | 1.59        | -64.72 | -13.52 | -3.52 | -6.125E-01 | 4.428E-01  | 3.262E-01  |
|    | 3.03        | -61.52 | -13.52 | -3.52 | -6.125E-01 | 4.328E-01  | -14.73     |
| 41 | COLUMN2 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -58.86 | 3.01   | 4.44  | 3.878E-01  | 10.25      | 5.09       |
|    | 1.59        | -55.66 | 3.01   | 4.44  | 3.878E-01  | 3.88       | 1.29       |
|    | 3.03        | -52.46 | 3.01   | 4.44  | 3.878E-01  | 8.51       | 10.00      |
| 41 | COLUMN2 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -71.34 | -6.06  | -6.50 | -5.917E-01 | -10.19     | -7.41      |
|    | 1.59        | -68.14 | -6.06  | -6.50 | -5.917E-01 | -8.553E-01 | 7.574E-01  |
|    | 3.03        | -64.94 | -6.06  | -6.50 | -5.917E-01 | -2.53      | -3.57      |
| 41 | COLUMN3 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -42.95 | 11.11  | 1.67  | 4.290E-01  | 4.67       | 16.03      |
|    | 1.59        | -40.20 | 11.11  | 1.67  | 4.290E-01  | 2.30       | 1.46       |
|    | 3.03        | -37.46 | 11.11  | 1.67  | 4.290E-01  | 4.96       | 19.98      |
| 41 | COLUMN3 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -48.58 | -12.89 | -3.30 | -5.921E-01 | -4.55      | -17.06     |
|    | 1.59        | -45.84 | -12.89 | -3.30 | -5.921E-01 | 1.627E-01  | 6.171E-02  |
|    | 3.03        | -43.10 | -12.89 | -3.30 | -5.921E-01 | -1.583E-01 | -15.91     |
| 41 | COLUMN4 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -39.53 | 3.65   | 4.66  | 4.082E-01  | 10.28      | 5.73       |
|    | 1.59        | -36.78 | 3.65   | 4.66  | 4.082E-01  | 3.60       | 1.03       |
|    | 3.03        | -34.04 | 3.65   | 4.66  | 4.082E-01  | 7.92       | 8.82       |
| 41 | COLUMN4 MIN |        |        |       |            |            |            |
|    | 1.5E-01     | -52.00 | -5.42  | -6.29 | -5.712E-01 | -10.16     | -6.76      |
|    | 1.59        | -49.26 | -5.42  | -6.29 | -5.712E-01 | -1.14      | 4.929E-01  |
|    | 3.03        | -46.51 | -5.42  | -6.29 | -5.712E-01 | -3.12      | -4.75      |
| 42 | CU          |        |        |       |            |            |            |
|    | 1.5E-01     | -50.95 | 1.41   | 1.82  | -3.840E-02 | 1.24       | 2.257E-01  |
|    | 1.59        | -46.68 | 1.41   | 1.82  | -3.840E-02 | -1.38      | -1.80      |
|    | 3.03        | -42.42 | 1.41   | 1.82  | -3.840E-02 | -3.99      | -3.83      |
| 42 | COLUMN1 MAX |        |        |       |            |            |            |
|    | 1.5E-01     | -32.09 | 6.38   | 2.10  | 7.096E-01  | 2.29       | 8.97       |
|    | 1.59        | -28.89 | 6.38   | 2.10  | 7.096E-01  | -7.349E-01 | -2.011E-01 |
|    | 3.03        | -25.69 | 6.38   | 2.10  | 7.096E-01  | -2.22      | 3.62       |

|    |             |        |            |            |            |            |            |
|----|-------------|--------|------------|------------|------------|------------|------------|
| 42 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -44.33 | -4.26      | 6.237E-01  | -7.673E-01 | -4.324E-01 | -8.63      |
|    | 1.59        | -41.13 | -4.26      | 6.237E-01  | -7.673E-01 | -1.33      | -2.51      |
|    | 3.03        | -37.93 | -4.26      | 6.237E-01  | -7.673E-01 | -3.76      | -9.37      |
| 42 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -34.78 | 3.10       | 2.97       | 1.23       | 3.89       | 3.54       |
|    | 1.59        | -31.58 | 3.10       | 2.97       | 1.23       | -3.759E-01 | -9.123E-01 |
|    | 3.03        | -28.38 | 3.10       | 2.97       | 1.23       | -1.34      | -3.880E-01 |
| 42 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -41.65 | -9.779E-01 | -2.420E-01 | -1.29      | -2.04      | -3.20      |
|    | 1.59        | -38.45 | -9.779E-01 | -2.420E-01 | -1.29      | -1.69      | -1.79      |
|    | 3.03        | -35.25 | -9.779E-01 | -2.420E-01 | -1.29      | -4.64      | -5.36      |
| 42 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -24.03 | 6.39       | 1.76       | 7.082E-01  | 2.07       | 9.25       |
|    | 1.59        | -21.29 | 6.39       | 1.76       | 7.082E-01  | -4.554E-01 | 6.199E-02  |
|    | 3.03        | -18.55 | 6.39       | 1.76       | 7.082E-01  | -1.45      | 3.86       |
| 42 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -36.27 | -4.25      | 2.808E-01  | -7.688E-01 | -6.458E-01 | -8.35      |
|    | 1.59        | -33.53 | -4.25      | 2.808E-01  | -7.688E-01 | -1.05      | -2.24      |
|    | 3.03        | -30.79 | -4.25      | 2.808E-01  | -7.688E-01 | -2.99      | -9.12      |
| 42 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -26.72 | 3.11       | 2.62       | 1.23       | 3.68       | 3.82       |
|    | 1.59        | -23.98 | 3.11       | 2.62       | 1.23       | -9.633E-02 | -6.492E-01 |
|    | 3.03        | -21.23 | 3.11       | 2.62       | 1.23       | -5.678E-01 | -1.417E-01 |
| 42 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -33.59 | -9.663E-01 | -5.849E-01 | -1.29      | -2.25      | -2.92      |
|    | 1.59        | -30.84 | -9.663E-01 | -5.849E-01 | -1.29      | -1.41      | -1.53      |
|    | 3.03        | -28.10 | -9.663E-01 | -5.849E-01 | -1.29      | -3.87      | -5.12      |
| 43 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -47.01 | -8.589E-02 | 9.775E-01  | 1.485E-01  | 1.05       | 1.852E-01  |
|    | 1.59        | -42.75 | -8.589E-02 | 9.775E-01  | 1.485E-01  | -3.502E-01 | 3.087E-01  |
|    | 3.03        | -38.48 | -8.589E-02 | 9.775E-01  | 1.485E-01  | -1.76      | 4.322E-01  |
| 43 | COLUMN1 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -27.77 | 6.62       | 2.73       | 4.970E-01  | 4.46       | 8.81       |
|    | 1.59        | -24.57 | 6.62       | 2.73       | 4.970E-01  | 5.524E-01  | 1.18       |
|    | 3.03        | -21.37 | 6.62       | 2.73       | 4.970E-01  | 7.500E-01  | 10.88      |
| 43 | COLUMN1 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -42.75 | -6.75      | -1.26      | -2.743E-01 | -2.88      | -8.54      |
|    | 1.59        | -39.55 | -6.75      | -1.26      | -2.743E-01 | -1.08      | -7.125E-01 |
|    | 3.03        | -36.35 | -6.75      | -1.26      | -2.743E-01 | -3.38      | -10.23     |
| 43 | COLUMN2 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -28.09 | 2.53       | 5.29       | 4.545E-01  | 9.14       | 3.53       |
|    | 1.59        | -24.89 | 2.53       | 5.29       | 4.545E-01  | 1.54       | 5.815E-01  |
|    | 3.03        | -21.69 | 2.53       | 5.29       | 4.545E-01  | 3.43       | 4.39       |
| 43 | COLUMN2 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -42.43 | -2.66      | -3.82      | -2.318E-01 | -7.56      | -3.25      |
|    | 1.59        | -39.23 | -2.66      | -3.82      | -2.318E-01 | -2.07      | -1.185E-01 |
|    | 3.03        | -36.03 | -2.66      | -3.82      | -2.318E-01 | -6.06      | -3.74      |
| 43 | COLUMN3 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -21.72 | 6.39       | 2.55       | 4.830E-01  | 4.32       | 8.53       |
|    | 1.59        | -18.97 | 6.39       | 2.55       | 4.830E-01  | 6.661E-01  | 1.22       |
|    | 3.03        | -16.23 | 6.39       | 2.55       | 4.830E-01  | 1.12       | 11.26      |
| 43 | COLUMN3 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -36.69 | -6.99      | -1.44      | -2.883E-01 | -3.02      | -8.82      |
|    | 1.59        | -33.95 | -6.99      | -1.44      | -2.883E-01 | -9.639E-01 | -6.637E-01 |
|    | 3.03        | -31.21 | -6.99      | -1.44      | -2.883E-01 | -3.01      | -9.85      |
| 43 | COLUMN4 MAX |        |            |            |            |            |            |
|    | 1.5E-01     | -22.04 | 2.30       | 5.11       | 4.405E-01  | 9.00       | 3.24       |
|    | 1.59        | -19.29 | 2.30       | 5.11       | 4.405E-01  | 1.66       | 6.302E-01  |
|    | 3.03        | -16.55 | 2.30       | 5.11       | 4.405E-01  | 3.80       | 4.77       |
| 43 | COLUMN4 MIN |        |            |            |            |            |            |
|    | 1.5E-01     | -36.37 | -2.89      | -4.00      | -2.458E-01 | -7.70      | -3.53      |
|    | 1.59        | -33.63 | -2.89      | -4.00      | -2.458E-01 | -1.96      | -6.971E-02 |
|    | 3.03        | -30.89 | -2.89      | -4.00      | -2.458E-01 | -5.69      | -3.36      |
| 44 | CU          |        |            |            |            |            |            |
|    | 1.5E-01     | -71.98 | 1.71       | -2.083E-01 | 4.567E-02  | 9.303E-01  | 1.06       |
|    | 1.59        | -67.42 | 1.71       | -2.083E-01 | 4.567E-02  | 1.23       | -1.39      |
|    | 3.03        | -62.86 | 1.70       | -2.083E-01 | 4.567E-02  | 1.53       | -3.84      |
| 44 | COLUMN1 MAX |        |            |            |            |            |            |

|    |             |        |            |            |            |           |            |
|----|-------------|--------|------------|------------|------------|-----------|------------|
|    | 1.5E-01     | -48.53 | 5.96       | 3.48       | 5.141E-01  | 6.24      | 8.67       |
|    | 1.59        | -45.10 | 5.96       | 3.48       | 5.141E-01  | 1.25      | 1.713E-01  |
|    | 3.03        | -41.68 | 5.96       | 3.48       | 5.141E-01  | 6.05      | 2.73       |
| 44 | COLUMN1 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -59.45 | -3.40      | -3.79      | -4.456E-01 | -4.84     | -7.07      |
|    | 1.59        | -56.03 | -3.40      | -3.79      | -4.456E-01 | 5.966E-01 | -2.25      |
|    | 3.03        | -52.61 | -3.40      | -3.79      | -4.456E-01 | -3.76     | -8.49      |
| 44 | COLUMN2 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -51.95 | 3.17       | 8.08       | 3.179E-01  | 13.22     | 3.82       |
|    | 1.59        | -48.53 | 3.17       | 8.08       | 3.179E-01  | 1.61      | -4.868E-01 |
|    | 3.03        | -45.10 | 3.17       | 8.08       | 3.179E-01  | 12.30     | -4.191E-01 |
| 44 | COLUMN2 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -56.03 | -6.097E-01 | -8.39      | -2.494E-01 | -11.82    | -2.22      |
|    | 1.59        | -52.61 | -6.097E-01 | -8.39      | -2.494E-01 | 2.375E-01 | -1.59      |
|    | 3.03        | -49.18 | -6.098E-01 | -8.39      | -2.494E-01 | -10.01    | -5.34      |
| 44 | COLUMN3 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -32.29 | 5.98       | 3.40       | 5.018E-01  | 6.08      | 8.40       |
|    | 1.59        | -29.36 | 5.98       | 3.40       | 5.018E-01  | 1.20      | -1.181E-01 |
|    | 3.03        | -26.42 | 5.98       | 3.40       | 5.018E-01  | 6.11      | 2.42       |
| 44 | COLUMN3 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -43.21 | -3.39      | -3.87      | -4.579E-01 | -5.01     | -7.34      |
|    | 1.59        | -40.28 | -3.39      | -3.87      | -4.579E-01 | 5.479E-01 | -2.54      |
|    | 3.03        | -37.34 | -3.39      | -3.87      | -4.579E-01 | -3.69     | -8.80      |
| 44 | COLUMN4 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -35.71 | 3.18       | 8.00       | 3.056E-01  | 13.05     | 3.55       |
|    | 1.59        | -32.78 | 3.18       | 8.00       | 3.056E-01  | 1.56      | -7.762E-01 |
|    | 3.03        | -29.84 | 3.18       | 8.00       | 3.056E-01  | 12.37     | -7.334E-01 |
| 44 | COLUMN4 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -39.79 | -5.924E-01 | -8.47      | -2.617E-01 | -11.98    | -2.49      |
|    | 1.59        | -36.86 | -5.924E-01 | -8.47      | -2.617E-01 | 1.888E-01 | -1.88      |
|    | 3.03        | -33.92 | -5.925E-01 | -8.47      | -2.617E-01 | -9.94     | -5.65      |
| 45 | CU          |        |            |            |            |           |            |
|    | 1.5E-01     | -75.47 | -1.60      | -2.907E-01 | -5.635E-02 | 9.117E-01 | -8.866E-01 |
|    | 1.59        | -69.28 | -1.60      | -2.907E-01 | -5.635E-02 | 1.33      | 1.41       |
|    | 3.03        | -63.09 | -1.59      | -2.907E-01 | -5.635E-02 | 1.75      | 3.70       |
| 45 | COLUMN1 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -51.44 | 3.15       | 3.28       | 6.506E-01  | 6.09      | 6.69       |
|    | 1.59        | -46.80 | 3.15       | 3.28       | 6.506E-01  | 1.38      | 2.21       |
|    | 3.03        | -42.15 | 3.15       | 3.28       | 6.506E-01  | 5.95      | 7.95       |
| 45 | COLUMN1 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -61.77 | -5.54      | -3.71      | -7.351E-01 | -4.72     | -8.02      |
|    | 1.59        | -57.12 | -5.54      | -3.71      | -7.351E-01 | 6.114E-01 | -1.019E-01 |
|    | 3.03        | -52.48 | -5.54      | -3.71      | -7.351E-01 | -3.33     | -2.40      |
| 45 | COLUMN2 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -54.37 | 5.688E-01  | 8.10       | 3.865E-01  | 13.51     | 2.33       |
|    | 1.59        | -49.73 | 5.689E-01  | 8.10       | 3.865E-01  | 1.87      | 1.68       |
|    | 3.03        | -45.08 | 5.689E-01  | 8.10       | 3.865E-01  | 12.39     | 4.96       |
| 45 | COLUMN2 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -58.84 | -2.96      | -8.54      | -4.710E-01 | -12.15    | -3.66      |
|    | 1.59        | -54.19 | -2.96      | -8.54      | -4.710E-01 | 1.219E-01 | 4.325E-01  |
|    | 3.03        | -49.55 | -2.96      | -8.54      | -4.710E-01 | -9.77     | 5.866E-01  |
| 45 | COLUMN3 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -34.83 | 3.12       | 3.21       | 6.681E-01  | 5.93      | 6.93       |
|    | 1.59        | -30.85 | 3.12       | 3.21       | 6.681E-01  | 1.32      | 2.50       |
|    | 3.03        | -26.87 | 3.12       | 3.21       | 6.681E-01  | 5.99      | 8.29       |
| 45 | COLUMN3 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -45.15 | -5.58      | -3.78      | -7.176E-01 | -4.88     | -7.78      |
|    | 1.59        | -41.17 | -5.58      | -3.78      | -7.176E-01 | 5.499E-01 | 1.874E-01  |
|    | 3.03        | -37.19 | -5.58      | -3.78      | -7.176E-01 | -3.30     | -2.06      |
| 45 | COLUMN4 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -37.76 | 5.363E-01  | 8.03       | 4.040E-01  | 13.36     | 2.58       |
|    | 1.59        | -33.78 | 5.364E-01  | 8.03       | 4.040E-01  | 1.81      | 1.97       |
|    | 3.03        | -29.80 | 5.364E-01  | 8.03       | 4.040E-01  | 12.43     | 5.30       |
| 45 | COLUMN4 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -42.22 | -2.99      | -8.60      | -4.534E-01 | -12.30    | -3.42      |
|    | 1.59        | -38.24 | -2.99      | -8.60      | -4.534E-01 | 6.043E-02 | 7.219E-01  |
|    | 3.03        | -34.26 | -2.99      | -8.60      | -4.534E-01 | -9.74     | 9.227E-01  |
| 46 | CU          |        |            |            |            |           |            |
|    | 1.5E-01     | -47.10 | 2.588E-01  | 1.30       | -1.783E-01 | 1.21      | -1.808E-03 |

|    |             |        |           |            |            |            |            |
|----|-------------|--------|-----------|------------|------------|------------|------------|
|    | 1.59        | -42.83 | 2.588E-01 | 1.30       | -1.783E-01 | -6.549E-01 | -3.738E-01 |
|    | 3.03        | -38.57 | 2.588E-01 | 1.30       | -1.783E-01 | -2.52      | -7.458E-01 |
| 46 | COLUMN1 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -27.75 | 6.44      | 3.47       | 4.670E-01  | 5.42       | 8.16       |
|    | 1.59        | -24.55 | 6.44      | 3.47       | 4.670E-01  | 4.331E-01  | 5.345E-01  |
|    | 3.03        | -21.35 | 6.44      | 3.47       | 4.670E-01  | 7.816E-01  | 9.22       |
| 46 | COLUMN1 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -42.90 | -6.05     | -1.52      | -7.345E-01 | -3.60      | -8.16      |
|    | 1.59        | -39.70 | -6.05     | -1.52      | -7.345E-01 | -1.42      | -1.10      |
|    | 3.03        | -36.50 | -6.05     | -1.52      | -7.345E-01 | -4.56      | -10.34     |
| 46 | COLUMN2 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -27.58 | 2.73      | 6.52       | 4.891E-01  | 10.92      | 3.31       |
|    | 1.59        | -24.38 | 2.73      | 6.52       | 4.891E-01  | 1.56       | 6.557E-02  |
|    | 3.03        | -21.18 | 2.73      | 6.52       | 4.891E-01  | 4.03       | 3.42       |
| 46 | COLUMN2 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -43.07 | -2.34     | -4.57      | -7.566E-01 | -9.11      | -3.32      |
|    | 1.59        | -39.87 | -2.34     | -4.57      | -7.566E-01 | -2.54      | -6.262E-01 |
|    | 3.03        | -36.67 | -2.34     | -4.57      | -7.566E-01 | -7.81      | -4.54      |
| 46 | COLUMN3 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -21.70 | 6.65      | 3.25       | 4.899E-01  | 5.26       | 8.42       |
|    | 1.59        | -18.95 | 6.65      | 3.25       | 4.899E-01  | 5.984E-01  | 4.939E-01  |
|    | 3.03        | -16.21 | 6.65      | 3.25       | 4.899E-01  | 1.27       | 8.88       |
| 46 | COLUMN3 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -36.84 | -5.83     | -1.75      | -7.116E-01 | -3.76      | -7.90      |
|    | 1.59        | -34.10 | -5.83     | -1.75      | -7.116E-01 | -1.25      | -1.14      |
|    | 3.03        | -31.36 | -5.83     | -1.75      | -7.116E-01 | -4.07      | -10.69     |
| 46 | COLUMN4 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -21.52 | 2.94      | 6.29       | 5.120E-01  | 10.77      | 3.58       |
|    | 1.59        | -18.78 | 2.94      | 6.29       | 5.120E-01  | 1.72       | 2.494E-02  |
|    | 3.03        | -16.04 | 2.94      | 6.29       | 5.120E-01  | 4.52       | 3.08       |
| 46 | COLUMN4 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -37.02 | -2.13     | -4.79      | -7.337E-01 | -9.27      | -3.05      |
|    | 1.59        | -34.27 | -2.13     | -4.79      | -7.337E-01 | -2.37      | -6.669E-01 |
|    | 3.03        | -31.53 | -2.13     | -4.79      | -7.337E-01 | -7.33      | -4.89      |
| 47 | CU          |        |           |            |            |            |            |
|    | 1.5E-01     | -72.17 | 3.187E-01 | -8.574E-01 | 4.937E-02  | 5.823E-01  | 3.007E-01  |
|    | 1.60        | -67.57 | 3.187E-01 | -8.574E-01 | 4.937E-02  | 1.83       | -1.617E-01 |
|    | 3.05        | -62.97 | 3.187E-01 | -8.574E-01 | 4.937E-02  | 3.07       | -6.240E-01 |
| 47 | COLUMN1 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -51.76 | 4.02      | 3.17       | 3.448E-01  | 6.00       | 6.43       |
|    | 1.60        | -48.31 | 4.02      | 3.17       | 3.448E-01  | 1.75       | 6.598E-01  |
|    | 3.05        | -44.86 | 4.02      | 3.17       | 3.448E-01  | 7.81       | 4.32       |
| 47 | COLUMN1 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -56.50 | -3.55     | -4.46      | -2.708E-01 | -5.12      | -5.97      |
|    | 1.60        | -53.04 | -3.55     | -4.46      | -2.708E-01 | 9.928E-01  | -9.023E-01 |
|    | 3.05        | -49.59 | -3.55     | -4.46      | -2.708E-01 | -3.21      | -5.25      |
| 47 | COLUMN2 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -51.15 | 3.22      | 5.29       | 2.338E-01  | 9.54       | 4.71       |
|    | 1.60        | -47.70 | 3.22      | 5.29       | 2.338E-01  | 1.98       | 2.611E-01  |
|    | 3.05        | -44.25 | 3.22      | 5.29       | 2.338E-01  | 10.40      | 3.71       |
| 47 | COLUMN2 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -57.11 | -2.74     | -6.57      | -1.598E-01 | -8.67      | -4.25      |
|    | 1.60        | -53.65 | -2.74     | -6.57      | -1.598E-01 | 7.608E-01  | -5.036E-01 |
|    | 3.05        | -50.20 | -2.74     | -6.57      | -1.598E-01 | -5.80      | -4.65      |
| 47 | COLUMN3 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -37.00 | 4.34      | 3.03       | 2.788E-01  | 5.84       | 6.33       |
|    | 1.60        | -34.04 | 4.34      | 3.03       | 2.788E-01  | 1.80       | 1.065E-01  |
|    | 3.05        | -31.08 | 4.34      | 3.03       | 2.788E-01  | 8.07       | 3.30       |
| 47 | COLUMN3 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -41.73 | -3.23     | -4.60      | -3.368E-01 | -5.28      | -6.07      |
|    | 1.60        | -38.77 | -3.23     | -4.60      | -3.368E-01 | 1.05       | -1.46      |
|    | 3.05        | -35.81 | -3.23     | -4.60      | -3.368E-01 | -2.94      | -6.27      |
| 47 | COLUMN4 MAX |        |           |            |            |            |            |
|    | 1.5E-01     | -36.39 | 3.54      | 5.14       | 1.678E-01  | 9.39       | 4.62       |
|    | 1.60        | -33.43 | 3.54      | 5.14       | 1.678E-01  | 2.03       | -2.922E-01 |
|    | 3.05        | -30.47 | 3.54      | 5.14       | 1.678E-01  | 10.66      | 2.70       |
| 47 | COLUMN4 MIN |        |           |            |            |            |            |
|    | 1.5E-01     | -42.34 | -2.43     | -6.71      | -2.258E-01 | -8.82      | -4.35      |
|    | 1.60        | -39.38 | -2.43     | -6.71      | -2.258E-01 | 8.147E-01  | -1.06      |
|    | 3.05        | -36.42 | -2.43     | -6.71      | -2.258E-01 | -5.54      | -5.67      |

|    |             |        |            |            |            |           |            |
|----|-------------|--------|------------|------------|------------|-----------|------------|
| 48 | CU          |        |            |            |            |           |            |
|    | 1.5E-01     | -71.94 | -3.365E-01 | -1.06      | -2.182E-02 | 4.975E-01 | -2.683E-01 |
|    | 1.60        | -67.33 | -3.365E-01 | -1.06      | -2.182E-02 | 2.03      | 2.199E-01  |
|    | 3.05        | -62.73 | -3.365E-01 | -1.06      | -2.182E-02 | 3.57      | 7.080E-01  |
| 48 | COLUMN1 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -51.76 | 3.39       | 2.90       | 5.758E-01  | 5.80      | 5.81       |
|    | 1.60        | -48.30 | 3.39       | 2.90       | 5.758E-01  | 1.90      | 9.267E-01  |
|    | 3.05        | -44.85 | 3.39       | 2.90       | 5.758E-01  | 7.97      | 5.10       |
| 48 | COLUMN1 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -56.15 | -3.90      | -4.49      | -6.086E-01 | -5.06     | -6.21      |
|    | 1.60        | -52.70 | -3.90      | -4.49      | -6.086E-01 | 1.15      | -5.969E-01 |
|    | 3.05        | -49.24 | -3.90      | -4.49      | -6.086E-01 | -2.62     | -4.04      |
| 48 | COLUMN2 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -51.13 | 3.03       | 5.43       | 3.494E-01  | 9.99      | 4.80       |
|    | 1.60        | -47.67 | 3.03       | 5.43       | 3.494E-01  | 2.21      | 5.267E-01  |
|    | 3.05        | -44.22 | 3.03       | 5.43       | 3.494E-01  | 11.12     | 5.05       |
| 48 | COLUMN2 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -56.78 | -3.53      | -7.02      | -3.821E-01 | -9.24     | -5.20      |
|    | 1.60        | -53.33 | -3.53      | -7.02      | -3.821E-01 | 8.429E-01 | -1.969E-01 |
|    | 3.05        | -49.87 | -3.53      | -7.02      | -3.821E-01 | -5.76     | -3.99      |
| 48 | COLUMN3 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -37.01 | 3.07       | 2.79       | 6.380E-01  | 5.66      | 5.90       |
|    | 1.60        | -34.06 | 3.07       | 2.79       | 6.380E-01  | 1.92      | 1.48       |
|    | 3.05        | -31.10 | 3.07       | 2.79       | 6.380E-01  | 8.15      | 6.12       |
| 48 | COLUMN3 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -41.41 | -4.22      | -4.60      | -5.464E-01 | -5.19     | -6.12      |
|    | 1.60        | -38.45 | -4.22      | -4.60      | -5.464E-01 | 1.17      | -4.691E-02 |
|    | 3.05        | -35.49 | -4.22      | -4.60      | -5.464E-01 | -2.43     | -3.03      |
| 48 | COLUMN4 MAX |        |            |            |            |           |            |
|    | 1.5E-01     | -36.39 | 2.71       | 5.32       | 4.115E-01  | 9.85      | 4.89       |
|    | 1.60        | -33.43 | 2.71       | 5.32       | 4.115E-01  | 2.23      | 1.08       |
|    | 3.05        | -30.47 | 2.71       | 5.32       | 4.115E-01  | 11.30     | 6.06       |
| 48 | COLUMN4 MIN |        |            |            |            |           |            |
|    | 1.5E-01     | -42.04 | -3.85      | -7.13      | -3.200E-01 | -9.38     | -5.12      |
|    | 1.60        | -39.08 | -3.85      | -7.13      | -3.200E-01 | 8.665E-01 | 3.531E-01  |
|    | 3.05        | -36.12 | -3.85      | -7.13      | -3.200E-01 | -5.58     | -2.98      |
| 49 | CU          |        |            |            |            |           |            |
|    | 1.1E-01     | -51.91 | 9.902E-02  | -1.95      | 6.159E-03  | 4.362E-01 | 5.259E-02  |
|    | 1.57        | -47.29 | 9.902E-02  | -1.95      | 6.159E-03  | 3.27      | -9.158E-02 |
|    | 3.03        | -42.67 | 9.902E-02  | -1.95      | 6.159E-03  | 6.11      | -2.358E-01 |
| 49 | COLUMN1 MAX |        |            |            |            |           |            |
|    | 1.1E-01     | -37.92 | 5.96       | -5.062E-01 | 4.899E-01  | 2.10      | 9.33       |
|    | 1.57        | -34.46 | 5.96       | -5.062E-01 | 4.899E-01  | 2.84      | 6.727E-01  |
|    | 3.03        | -30.99 | 5.96       | -5.062E-01 | 4.899E-01  | 5.59      | 7.66       |
| 49 | COLUMN1 MIN |        |            |            |            |           |            |
|    | 1.1E-01     | -39.94 | -5.81      | -2.42      | -4.806E-01 | -1.45     | -9.25      |
|    | 1.57        | -36.47 | -5.81      | -2.42      | -4.806E-01 | 2.07      | -8.101E-01 |
|    | 3.03        | -33.01 | -5.81      | -2.42      | -4.806E-01 | 3.57      | -8.01      |
| 49 | COLUMN2 MAX |        |            |            |            |           |            |
|    | 1.1E-01     | -36.67 | 2.54       | 5.873E-01  | 6.024E-01  | 4.20      | 3.94       |
|    | 1.57        | -33.21 | 2.54       | 5.873E-01  | 6.024E-01  | 3.35      | 2.758E-01  |
|    | 3.03        | -29.74 | 2.54       | 5.873E-01  | 6.024E-01  | 6.67      | 3.11       |
| 49 | COLUMN2 MIN |        |            |            |            |           |            |
|    | 1.1E-01     | -41.19 | -2.39      | -3.51      | -5.931E-01 | -3.55     | -3.86      |
|    | 1.57        | -37.72 | -2.39      | -3.51      | -5.931E-01 | 1.56      | -4.132E-01 |
|    | 3.03        | -34.26 | -2.39      | -3.51      | -5.931E-01 | 2.49      | -3.47      |
| 49 | COLUMN3 MAX |        |            |            |            |           |            |
|    | 1.1E-01     | -32.12 | 5.94       | -4.389E-01 | 4.889E-01  | 1.93      | 9.32       |
|    | 1.57        | -29.15 | 5.94       | -4.389E-01 | 4.889E-01  | 2.57      | 6.843E-01  |
|    | 3.03        | -26.18 | 5.94       | -4.389E-01 | 4.889E-01  | 5.22      | 7.69       |
| 49 | COLUMN3 MIN |        |            |            |            |           |            |
|    | 1.1E-01     | -34.13 | -5.82      | -2.35      | -4.816E-01 | -1.62     | -9.26      |
|    | 1.57        | -31.16 | -5.82      | -2.35      | -4.816E-01 | 1.80      | -7.985E-01 |
|    | 3.03        | -28.19 | -5.82      | -2.35      | -4.816E-01 | 3.21      | -7.98      |
| 49 | COLUMN4 MAX |        |            |            |            |           |            |
|    | 1.1E-01     | -30.87 | 2.53       | 6.546E-01  | 6.014E-01  | 4.03      | 3.93       |
|    | 1.57        | -27.90 | 2.53       | 6.546E-01  | 6.014E-01  | 3.08      | 2.873E-01  |
|    | 3.03        | -24.93 | 2.53       | 6.546E-01  | 6.014E-01  | 6.31      | 3.14       |
| 49 | COLUMN4 MIN |        |            |            |            |           |            |

|    |             |        |            |           |            |            |            |
|----|-------------|--------|------------|-----------|------------|------------|------------|
|    | 1.1E-01     | -35.39 | -2.41      | -3.44     | -5.941E-01 | -3.72      | -3.87      |
|    | 1.57        | -32.42 | -2.41      | -3.44     | -5.941E-01 | 1.29       | -4.016E-01 |
|    | 3.03        | -29.45 | -2.41      | -3.44     | -5.941E-01 | 2.13       | -3.44      |
| 95 | CU          |        |            |           |            |            |            |
|    | 1.3E-01     | -14.99 | 7.640E-01  | 1.369E-01 | -1.014E-01 | 2.349E-02  | -3.542E-01 |
|    | 2.1E-01     | -14.73 | 7.640E-01  | 1.369E-01 | -1.014E-01 | 1.174E-02  | -4.197E-01 |
|    | 3.0E-01     | -14.48 | 7.640E-01  | 1.369E-01 | -1.014E-01 | 0.00       | -4.852E-01 |
| 95 | COLUMN1 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -11.00 | 1.68       | 2.77      | 3.639E-01  | 4.760E-01  | 1.43       |
|    | 2.1E-01     | -10.81 | 1.68       | 2.77      | 3.639E-01  | 2.380E-01  | 1.29       |
|    | 3.0E-01     | -10.62 | 1.68       | 2.77      | 3.639E-01  | 0.00       | 1.15       |
| 95 | COLUMN1 MIN |        |            |           |            |            |            |
|    | 1.3E-01     | -11.48 | -5.387E-01 | -2.57     | -5.160E-01 | -4.408E-01 | -1.96      |
|    | 2.1E-01     | -11.29 | -5.387E-01 | -2.57     | -5.160E-01 | -2.204E-01 | -1.92      |
|    | 3.0E-01     | -11.10 | -5.387E-01 | -2.57     | -5.160E-01 | 0.00       | -1.88      |
| 95 | COLUMN2 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -11.05 | 2.16       | 5.09      | 8.035E-01  | 8.733E-01  | 1.14       |
|    | 2.1E-01     | -10.86 | 2.16       | 5.09      | 8.035E-01  | 4.366E-01  | 9.572E-01  |
|    | 3.0E-01     | -10.67 | 2.16       | 5.09      | 8.035E-01  | 0.00       | 7.731E-01  |
| 95 | COLUMN2 MIN |        |            |           |            |            |            |
|    | 1.3E-01     | -11.43 | -1.01      | -4.89     | -9.556E-01 | -8.381E-01 | -1.67      |
|    | 2.1E-01     | -11.24 | -1.01      | -4.89     | -9.556E-01 | -4.190E-01 | -1.59      |
|    | 3.0E-01     | -11.05 | -1.01      | -4.89     | -9.556E-01 | 0.00       | -1.50      |
| 95 | COLUMN3 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -6.41  | 1.30       | 2.80      | 3.819E-01  | 4.800E-01  | 1.51       |
|    | 2.1E-01     | -6.24  | 1.30       | 2.80      | 3.819E-01  | 2.400E-01  | 1.40       |
|    | 3.0E-01     | -6.08  | 1.30       | 2.80      | 3.819E-01  | 0.00       | 1.29       |
| 95 | COLUMN3 MIN |        |            |           |            |            |            |
|    | 1.3E-01     | -6.89  | -9.206E-01 | -2.55     | -4.980E-01 | -4.368E-01 | -1.89      |
|    | 2.1E-01     | -6.73  | -9.206E-01 | -2.55     | -4.980E-01 | -2.184E-01 | -1.81      |
|    | 3.0E-01     | -6.56  | -9.206E-01 | -2.55     | -4.980E-01 | 0.00       | -1.73      |
| 95 | COLUMN4 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -6.46  | 1.77       | 5.11      | 8.215E-01  | 8.773E-01  | 1.22       |
|    | 2.1E-01     | -6.29  | 1.77       | 5.11      | 8.215E-01  | 4.387E-01  | 1.07       |
|    | 3.0E-01     | -6.13  | 1.77       | 5.11      | 8.215E-01  | 0.00       | 9.137E-01  |
| 95 | COLUMN4 MIN |        |            |           |            |            |            |
|    | 1.3E-01     | -6.84  | -1.39      | -4.86     | -9.376E-01 | -8.341E-01 | -1.60      |
|    | 2.1E-01     | -6.68  | -1.39      | -4.86     | -9.376E-01 | -4.170E-01 | -1.48      |
|    | 3.0E-01     | -6.51  | -1.39      | -4.86     | -9.376E-01 | 0.00       | -1.36      |
| 96 | CU          |        |            |           |            |            |            |
|    | 1.3E-01     | -23.36 | -4.75      | 1.914E-01 | 3.408E-02  | 1.761E-01  | -5.738E-01 |
|    | 5.9E-01     | -22.00 | -4.75      | 1.914E-01 | 3.408E-02  | 8.806E-02  | 1.61       |
|    | 1.05        | -20.63 | -4.75      | 1.914E-01 | 3.408E-02  | 0.00       | 3.79       |
| 96 | COLUMN1 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -15.78 | -1.81      | 1.30      | 1.747E-01  | 1.20       | 1.93       |
|    | 5.9E-01     | -14.75 | -1.81      | 1.30      | 1.747E-01  | 5.987E-01  | 2.76       |
|    | 1.05        | -13.73 | -1.81      | 1.30      | 1.747E-01  | 0.00       | 3.59       |
| 96 | COLUMN1 MIN |        |            |           |            |            |            |
|    | 1.3E-01     | -19.27 | -5.31      | -1.01     | -1.236E-01 | -9.332E-01 | -2.79      |
|    | 5.9E-01     | -18.25 | -5.31      | -1.01     | -1.236E-01 | -4.666E-01 | -3.424E-01 |
|    | 1.05        | -17.22 | -5.31      | -1.01     | -1.236E-01 | 0.00       | 2.10       |
| 96 | COLUMN2 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -15.88 | -2.30      | 2.72      | 2.580E-01  | 2.50       | 1.30       |
|    | 5.9E-01     | -14.86 | -2.30      | 2.72      | 2.580E-01  | 1.25       | 2.35       |
|    | 1.05        | -13.83 | -2.30      | 2.72      | 2.580E-01  | 0.00       | 3.41       |
| 96 | COLUMN2 MIN |        |            |           |            |            |            |
|    | 1.3E-01     | -19.16 | -4.83      | -2.43     | -2.068E-01 | -2.24      | -2.16      |
|    | 5.9E-01     | -18.14 | -4.83      | -2.43     | -2.068E-01 | -1.12      | 6.445E-02  |
|    | 1.05        | -17.11 | -4.83      | -2.43     | -2.068E-01 | 0.00       | 2.29       |
| 96 | COLUMN3 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -8.98  | -5.481E-01 | 1.30      | 1.695E-01  | 1.20       | 1.98       |
|    | 5.9E-01     | -8.11  | -5.481E-01 | 1.30      | 1.695E-01  | 5.977E-01  | 2.23       |
|    | 1.05        | -7.23  | -5.481E-01 | 1.30      | 1.695E-01  | 0.00       | 2.48       |
| 96 | COLUMN3 MIN |        |            |           |            |            |            |
|    | 1.3E-01     | -12.48 | -4.05      | -1.02     | -1.288E-01 | -9.350E-01 | -2.73      |
|    | 5.9E-01     | -11.60 | -4.05      | -1.02     | -1.288E-01 | -4.675E-01 | -8.697E-01 |
|    | 1.05        | -10.72 | -4.05      | -1.02     | -1.288E-01 | 0.00       | 9.952E-01  |
| 96 | COLUMN4 MAX |        |            |           |            |            |            |
|    | 1.3E-01     | -9.09  | -1.03      | 2.71      | 2.527E-01  | 2.50       | 1.35       |

|     |             |        |           |            |            |            |            |
|-----|-------------|--------|-----------|------------|------------|------------|------------|
|     | 5.9E-01     | -8.21  | -1.03     | 2.71       | 2.527E-01  | 1.25       | 1.82       |
|     | 1.05        | -7.33  | -1.03     | 2.71       | 2.527E-01  | 0.00       | 2.30       |
| 96  | COLUMN4 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -12.37 | -3.57     | -2.43      | -2.121E-01 | -2.24      | -2.10      |
|     | 5.9E-01     | -11.49 | -3.57     | -2.43      | -2.121E-01 | -1.12      | -4.629E-01 |
|     | 1.05        | -10.61 | -3.57     | -2.43      | -2.121E-01 | 0.00       | 1.18       |
| 99  | CU          |        |           |            |            |            |            |
|     | 1.3E-01     | -30.05 | -3.16     | 1.487E-01  | -8.532E-02 | 1.368E-01  | -2.795E-01 |
|     | 5.9E-01     | -28.68 | -3.16     | 1.487E-01  | -8.532E-02 | 6.842E-02  | 1.17       |
|     | 1.05        | -27.32 | -3.16     | 1.487E-01  | -8.532E-02 | 0.00       | 2.63       |
| 99  | COLUMN1 MAX |        |           |            |            |            |            |
|     | 1.3E-01     | -22.20 | 3.54      | 1.32       | 4.002E-02  | 1.21       | 5.04       |
|     | 5.9E-01     | -21.17 | 3.54      | 1.32       | 4.002E-02  | 6.071E-01  | 3.41       |
|     | 1.05        | -20.15 | 3.54      | 1.32       | 4.002E-02  | 0.00       | 2.16       |
| 99  | COLUMN1 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -22.87 | -8.28     | -1.10      | -1.680E-01 | -1.01      | -5.46      |
|     | 5.9E-01     | -21.85 | -8.28     | -1.10      | -1.680E-01 | -5.045E-01 | -1.65      |
|     | 1.05        | -20.83 | -8.28     | -1.10      | -1.680E-01 | 0.00       | 1.78       |
| 99  | COLUMN2 MAX |        |           |            |            |            |            |
|     | 1.3E-01     | -22.23 | 1.335E-02 | 2.44       | 1.194E-01  | 2.25       | 1.91       |
|     | 5.9E-01     | -21.21 | 1.335E-02 | 2.44       | 1.194E-01  | 1.12       | 1.90       |
|     | 1.05        | -20.18 | 1.335E-02 | 2.44       | 1.194E-01  | 0.00       | 2.05       |
| 99  | COLUMN2 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -22.84 | -4.76     | -2.22      | -2.474E-01 | -2.04      | -2.33      |
|     | 5.9E-01     | -21.82 | -4.76     | -2.22      | -2.474E-01 | -1.02      | -1.395E-01 |
|     | 1.05        | -20.79 | -4.76     | -2.22      | -2.474E-01 | 0.00       | 1.90       |
| 99  | COLUMN3 MAX |        |           |            |            |            |            |
|     | 1.3E-01     | -13.30 | 4.55      | 1.32       | 5.894E-02  | 1.21       | 5.05       |
|     | 5.9E-01     | -12.43 | 4.55      | 1.32       | 5.894E-02  | 6.067E-01  | 2.96       |
|     | 1.05        | -11.55 | 4.55      | 1.32       | 5.894E-02  | 0.00       | 1.24       |
| 99  | COLUMN3 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -13.98 | -7.27     | -1.10      | -1.491E-01 | -1.01      | -5.44      |
|     | 5.9E-01     | -13.10 | -7.27     | -1.10      | -1.491E-01 | -5.049E-01 | -2.10      |
|     | 1.05        | -12.23 | -7.27     | -1.10      | -1.491E-01 | 0.00       | 8.659E-01  |
| 99  | COLUMN4 MAX |        |           |            |            |            |            |
|     | 1.3E-01     | -13.34 | 1.03      | 2.44       | 1.383E-01  | 2.25       | 1.92       |
|     | 5.9E-01     | -12.46 | 1.03      | 2.44       | 1.383E-01  | 1.12       | 1.45       |
|     | 1.05        | -11.58 | 1.03      | 2.44       | 1.383E-01  | 0.00       | 1.13       |
| 99  | COLUMN4 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -13.95 | -3.74     | -2.22      | -2.284E-01 | -2.04      | -2.31      |
|     | 5.9E-01     | -13.07 | -3.74     | -2.22      | -2.284E-01 | -1.02      | -5.905E-01 |
|     | 1.05        | -12.19 | -3.74     | -2.22      | -2.284E-01 | 0.00       | 9.778E-01  |
| 102 | CU          |        |           |            |            |            |            |
|     | 1.3E-01     | -41.55 | 3.119E-01 | -7.31      | -3.791E-02 | -6.73      | 5.97       |
|     | 5.9E-01     | -40.18 | 3.119E-01 | -7.31      | -3.791E-02 | -3.36      | 5.83       |
|     | 1.05        | -38.81 | 3.119E-01 | -7.31      | -3.791E-02 | 0.00       | 5.69       |
| 102 | COLUMN1 MAX |        |           |            |            |            |            |
|     | 1.3E-01     | -30.16 | 8.50      | -3.08      | 3.402E-01  | -2.83      | 11.83      |
|     | 5.9E-01     | -29.14 | 8.50      | -3.08      | 3.402E-01  | -1.41      | 7.92       |
|     | 1.05        | -28.11 | 8.50      | -3.08      | 3.402E-01  | 0.00       | 4.52       |
| 102 | COLUMN1 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -32.16 | -8.03     | -7.89      | -3.971E-01 | -7.26      | -2.87      |
|     | 5.9E-01     | -31.13 | -8.03     | -7.89      | -3.971E-01 | -3.63      | 8.264E-01  |
|     | 1.05        | -30.11 | -8.03     | -7.89      | -3.971E-01 | 0.00       | 4.01       |
| 102 | COLUMN2 MAX |        |           |            |            |            |            |
|     | 1.3E-01     | -30.57 | 3.23      | -2.023E-01 | 2.653E-01  | -1.861E-01 | 7.14       |
|     | 5.9E-01     | -29.55 | 3.23      | -2.023E-01 | 2.653E-01  | -9.306E-02 | 5.65       |
|     | 1.05        | -28.53 | 3.23      | -2.023E-01 | 2.653E-01  | 0.00       | 4.36       |
| 102 | COLUMN2 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -31.74 | -2.76     | -10.77     | -3.222E-01 | -9.91      | 1.82       |
|     | 5.9E-01     | -30.72 | -2.76     | -10.77     | -3.222E-01 | -4.95      | 3.09       |
|     | 1.05        | -29.69 | -2.76     | -10.77     | -3.222E-01 | 0.00       | 4.17       |
| 102 | COLUMN3 MAX |        |           |            |            |            |            |
|     | 1.3E-01     | -16.46 | 10.32     | -1.89      | 3.411E-01  | -1.73      | 11.14      |
|     | 5.9E-01     | -15.58 | 10.32     | -1.89      | 3.411E-01  | -8.673E-01 | 6.40       |
|     | 1.05        | -14.70 | 10.32     | -1.89      | 3.411E-01  | 0.00       | 2.17       |
| 102 | COLUMN3 MIN |        |           |            |            |            |            |
|     | 1.3E-01     | -18.46 | -6.22     | -6.70      | -3.963E-01 | -6.17      | -3.55      |
|     | 5.9E-01     | -17.58 | -6.22     | -6.70      | -3.963E-01 | -3.08      | -6.939E-01 |



|         |             |            |            |            |            |            |
|---------|-------------|------------|------------|------------|------------|------------|
| 1.05    | -16.70      | -6.22      | -6.70      | -3.963E-01 | 0.00       | 1.65       |
| 102     | COLUMN4 MAX |            |            |            |            |            |
| 1.3E-01 | -16.87      | 5.05       | 9.881E-01  | 2.661E-01  | 9.091E-01  | 6.46       |
| 5.9E-01 | -16.00      | 5.05       | 9.881E-01  | 2.661E-01  | 4.545E-01  | 4.13       |
| 1.05    | -15.12      | 5.05       | 9.881E-01  | 2.661E-01  | 0.00       | 2.00       |
| 102     | COLUMN4 MIN |            |            |            |            |            |
| 1.3E-01 | -18.04      | -9.454E-01 | -9.58      | -3.213E-01 | -8.81      | 1.13       |
| 5.9E-01 | -17.16      | -9.454E-01 | -9.58      | -3.213E-01 | -4.41      | 1.57       |
| 1.05    | -16.29      | -9.454E-01 | -9.58      | -3.213E-01 | 0.00       | 1.81       |
| 105     | CU          |            |            |            |            |            |
| 1.3E-01 | -42.74      | -1.92      | -6.82      | -1.084E-01 | -6.27      | -6.48      |
| 5.9E-01 | -41.37      | -1.92      | -6.82      | -1.084E-01 | -3.13      | -5.60      |
| 1.05    | -40.01      | -1.92      | -6.82      | -1.084E-01 | 0.00       | -4.71      |
| 105     | COLUMN1 MAX |            |            |            |            |            |
| 1.3E-01 | -31.32      | 7.22       | -1.89      | 2.688E-01  | -1.74      | 2.85       |
| 5.9E-01 | -30.30      | 7.22       | -1.89      | 2.688E-01  | -8.713E-01 | -4.692E-01 |
| 1.05    | -29.27      | 7.22       | -1.89      | 2.688E-01  | 0.00       | -3.28      |
| 105     | COLUMN1 MIN |            |            |            |            |            |
| 1.3E-01 | -32.78      | -10.10     | -8.33      | -4.314E-01 | -7.66      | -12.57     |
| 5.9E-01 | -31.76      | -10.10     | -8.33      | -4.314E-01 | -3.83      | -7.93      |
| 1.05    | -30.74      | -10.10     | -8.33      | -4.314E-01 | 0.00       | -3.79      |
| 105     | COLUMN2 MAX |            |            |            |            |            |
| 1.3E-01 | -31.49      | 1.86       | 1.91       | 2.152E-01  | 1.75       | -1.92      |
| 5.9E-01 | -30.47      | 1.86       | 1.91       | 2.152E-01  | 8.775E-01  | -2.78      |
| 1.05    | -29.45      | 1.86       | 1.91       | 2.152E-01  | 0.00       | -3.44      |
| 105     | COLUMN2 MIN |            |            |            |            |            |
| 1.3E-01 | -32.61      | -4.74      | -12.13     | -3.778E-01 | -11.16     | -7.80      |
| 5.9E-01 | -31.59      | -4.74      | -12.13     | -3.778E-01 | -5.58      | -5.62      |
| 1.05    | -30.56      | -4.74      | -12.13     | -3.778E-01 | 0.00       | -3.63      |
| 105     | COLUMN3 MAX |            |            |            |            |            |
| 1.3E-01 | -17.34      | 5.79       | -7.776E-01 | 2.853E-01  | -7.154E-01 | 3.59       |
| 5.9E-01 | -16.46      | 5.79       | -7.776E-01 | 2.853E-01  | -3.577E-01 | 9.233E-01  |
| 1.05    | -15.59      | 5.79       | -7.776E-01 | 2.853E-01  | 0.00       | -1.23      |
| 105     | COLUMN3 MIN |            |            |            |            |            |
| 1.3E-01 | -18.80      | -11.54     | -7.21      | -4.149E-01 | -6.63      | -11.84     |
| 5.9E-01 | -17.93      | -11.54     | -7.21      | -4.149E-01 | -3.32      | -6.53      |
| 1.05    | -17.05      | -11.54     | -7.21      | -4.149E-01 | 0.00       | -1.74      |
| 105     | COLUMN4 MAX |            |            |            |            |            |
| 1.3E-01 | -17.51      | 4.283E-01  | 3.02       | 2.317E-01  | 2.78       | -1.19      |
| 5.9E-01 | -16.64      | 4.283E-01  | 3.02       | 2.317E-01  | 1.39       | -1.39      |
| 1.05    | -15.76      | 4.283E-01  | 3.02       | 2.317E-01  | 0.00       | -1.38      |
| 105     | COLUMN4 MIN |            |            |            |            |            |
| 1.3E-01 | -18.63      | -6.18      | -11.01     | -3.613E-01 | -10.13     | -7.07      |
| 5.9E-01 | -17.75      | -6.18      | -11.01     | -3.613E-01 | -5.07      | -4.23      |
| 1.05    | -16.88      | -6.18      | -11.01     | -3.613E-01 | 0.00       | -1.58      |
| 107     | CU          |            |            |            |            |            |
| 1.3E-01 | -5.90       | -4.55      | 7.15       | 3.416E-02  | 6.58       | -1.57      |
| 5.9E-01 | -4.53       | -4.55      | 7.15       | 3.416E-02  | 3.29       | 5.231E-01  |
| 1.05    | -3.17       | -4.55      | 7.15       | 3.416E-02  | 0.00       | 2.62       |
| 107     | COLUMN1 MAX |            |            |            |            |            |
| 1.3E-01 | -1.89       | 3.00       | 7.68       | 4.258E-01  | 7.07       | 4.63       |
| 5.9E-01 | -8.621E-01  | 3.00       | 7.68       | 4.258E-01  | 3.53       | 3.24       |
| 1.05    | 1.621E-01   | 3.00       | 7.68       | 4.258E-01  | 0.00       | 2.06       |
| 107     | COLUMN1 MIN |            |            |            |            |            |
| 1.3E-01 | -6.96       | -9.83      | 3.04       | -3.746E-01 | 2.80       | -6.98      |
| 5.9E-01 | -5.94       | -9.83      | 3.04       | -3.746E-01 | 1.40       | -2.46      |
| 1.05    | -4.91       | -9.83      | 3.04       | -3.746E-01 | 0.00       | 1.86       |
| 107     | COLUMN2 MAX |            |            |            |            |            |
| 1.3E-01 | -3.43       | -8.883E-01 | 10.38      | 5.522E-01  | 9.55       | 1.11       |
| 5.9E-01 | -2.41       | -8.883E-01 | 10.38      | 5.522E-01  | 4.77       | 1.51       |
| 1.05    | -1.38       | -8.883E-01 | 10.38      | 5.522E-01  | 0.00       | 2.00       |
| 107     | COLUMN2 MIN |            |            |            |            |            |
| 1.3E-01 | -5.42       | -5.94      | 3.481E-01  | -5.010E-01 | 3.202E-01  | -3.46      |
| 5.9E-01 | -4.39       | -5.94      | 3.481E-01  | -5.010E-01 | 1.601E-01  | -7.294E-01 |
| 1.05    | -3.37       | -5.94      | 3.481E-01  | -5.010E-01 | 0.00       | 1.92       |
| 107     | COLUMN3 MAX |            |            |            |            |            |
| 1.3E-01 | -9.337E-01  | 3.75       | 6.47       | 4.422E-01  | 5.95       | 4.81       |
| 5.9E-01 | -5.578E-02  | 3.75       | 6.47       | 4.422E-01  | 2.97       | 3.08       |
| 1.05    | 8.221E-01   | 3.75       | 6.47       | 4.422E-01  | 0.00       | 1.56       |

|     |             |            |            |            |            |            |            |  |
|-----|-------------|------------|------------|------------|------------|------------|------------|--|
| 107 | COLUMN3 MIN |            |            |            |            |            |            |  |
|     | 1.3E-01     | -6.01      | -9.09      | 1.82       | -3.582E-01 | 1.68       | -6.80      |  |
|     | 5.9E-01     | -5.13      | -9.09      | 1.82       | -3.582E-01 | 8.378E-01  | -2.62      |  |
|     | 1.05        | -4.25      | -9.09      | 1.82       | -3.582E-01 | 0.00       | 1.36       |  |
| 107 | COLUMN4 MAX |            |            |            |            |            |            |  |
|     | 1.3E-01     | -2.48      | -1.451E-01 | 9.16       | 5.686E-01  | 8.43       | 1.29       |  |
|     | 5.9E-01     | -1.60      | -1.451E-01 | 9.16       | 5.686E-01  | 4.21       | 1.35       |  |
|     | 1.05        | -7.223E-01 | -1.451E-01 | 9.16       | 5.686E-01  | 0.00       | 1.50       |  |
| 107 | COLUMN4 MIN |            |            |            |            |            |            |  |
|     | 1.3E-01     | -4.46      | -5.19      | -8.697E-01 | -4.846E-01 | -8.001E-01 | -3.28      |  |
|     | 5.9E-01     | -3.59      | -5.19      | -8.697E-01 | -4.846E-01 | -4.000E-01 | -8.891E-01 |  |
|     | 1.05        | -2.71      | -5.19      | -8.697E-01 | -4.846E-01 | 0.00       | 1.42       |  |
| 110 | CU          |            |            |            |            |            |            |  |
|     | 0.00        | -6.33      | 4.39       | 6.81       | -5.269E-01 | 6.27       | 1.94       |  |
|     | 4.6E-01     | -4.96      | 4.39       | 6.81       | -5.269E-01 | 3.13       | -8.297E-02 |  |
|     | 9.2E-01     | -3.60      | 4.39       | 6.81       | -5.269E-01 | 0.00       | -2.10      |  |
| 110 | COLUMN1 MAX |            |            |            |            |            |            |  |
|     | 0.00        | -2.49      | 8.98       | 8.06       | -6.721E-02 | 7.42       | 7.31       |  |
|     | 4.6E-01     | -1.47      | 8.98       | 8.06       | -6.721E-02 | 3.71       | 3.18       |  |
|     | 9.2E-01     | -4.453E-01 | 8.98       | 8.06       | -6.721E-02 | 0.00       | -9.557E-01 |  |
| 110 | COLUMN1 MIN |            |            |            |            |            |            |  |
|     | 0.00        | -7.00      | -2.40      | 2.15       | -7.232E-01 | 1.98       | -4.40      |  |
|     | 4.6E-01     | -5.98      | -2.40      | 2.15       | -7.232E-01 | 9.900E-01  | -3.30      |  |
|     | 9.2E-01     | -4.95      | -2.40      | 2.15       | -7.232E-01 | 0.00       | -2.20      |  |
| 110 | COLUMN2 MAX |            |            |            |            |            |            |  |
|     | 0.00        | -3.84      | 5.58       | 11.58      | -3.783E-02 | 10.65      | 3.81       |  |
|     | 4.6E-01     | -2.82      | 5.58       | 11.58      | -3.783E-02 | 5.33       | 1.24       |  |
|     | 9.2E-01     | -1.79      | 5.58       | 11.58      | -3.783E-02 | 0.00       | -1.33      |  |
| 110 | COLUMN2 MIN |            |            |            |            |            |            |  |
|     | 0.00        | -5.65      | 1.00       | -1.36      | -7.526E-01 | -1.25      | -9.061E-01 |  |
|     | 4.6E-01     | -4.63      | 1.00       | -1.36      | -7.526E-01 | -6.267E-01 | -1.37      |  |
|     | 9.2E-01     | -3.61      | 1.00       | -1.36      | -7.526E-01 | 0.00       | -1.83      |  |
| 110 | COLUMN3 MAX |            |            |            |            |            |            |  |
|     | 0.00        | -1.49      | 8.26       | 6.90       | -1.075E-03 | 6.34       | 7.06       |  |
|     | 4.6E-01     | -6.162E-01 | 8.26       | 6.90       | -1.075E-03 | 3.17       | 3.26       |  |
|     | 9.2E-01     | 2.617E-01  | 8.26       | 6.90       | -1.075E-03 | 0.00       | -5.376E-01 |  |
| 110 | COLUMN3 MIN |            |            |            |            |            |            |  |
|     | 0.00        | -6.00      | -3.12      | 9.842E-01  | -6.571E-01 | 9.055E-01  | -4.65      |  |
|     | 4.6E-01     | -5.12      | -3.12      | 9.842E-01  | -6.571E-01 | 4.527E-01  | -3.22      |  |
|     | 9.2E-01     | -4.25      | -3.12      | 9.842E-01  | -6.571E-01 | 0.00       | -1.78      |  |
| 110 | COLUMN4 MAX |            |            |            |            |            |            |  |
|     | 0.00        | -2.84      | 4.86       | 10.41      | 2.830E-02  | 9.58       | 3.56       |  |
|     | 4.6E-01     | -1.96      | 4.86       | 10.41      | 2.830E-02  | 4.79       | 1.33       |  |
|     | 9.2E-01     | -1.09      | 4.86       | 10.41      | 2.830E-02  | 0.00       | -9.075E-01 |  |
| 110 | COLUMN4 MIN |            |            |            |            |            |            |  |
|     | 0.00        | -4.65      | 2.771E-01  | -2.53      | -6.864E-01 | -2.33      | -1.16      |  |
|     | 4.6E-01     | -3.78      | 2.771E-01  | -2.53      | -6.864E-01 | -1.16      | -1.28      |  |
|     | 9.2E-01     | -2.90      | 2.771E-01  | -2.53      | -6.864E-01 | 0.00       | -1.41      |  |

### 5.3.8.2.1 Cálculo de Refuerzo.

CONCRETE DESIGN OUTPUT (ACI 318-95)

BIAXIAL P-M INTERACTION AND SHEAR DESIGN OF COLUMN-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | REQUIRED REINFORCING |         |         |       |         |       |
|------------|---------------|---------------|----------------------|---------|---------|-------|---------|-------|
|            |               |               | LONGITUDINAL         | COMBO   | SHEAR22 | COMBO | SHEAR33 | COMBO |
| 27         | 30X30C        | 15.000        | 9.000                | COLUMN4 | 0.011   | CU    | 0.011   | CU    |
| 27         | 30X30C        | 158.750       | 9.000                | COLUMN4 | 0.011   | CU    | 0.011   | CU    |
| 27         | 30X30C        | 302.500       | 9.000                | COLUMN4 | 0.010   | CU    | 0.010   | CU    |
| 28         | 30X30C        | 15.000        | 9.000                | COLUMN4 | 0.012   | CU    | 0.012   | CU    |
| 28         | 30X30C        | 158.750       | 9.000                | COLUMN4 | 0.011   | CU    | 0.011   | CU    |

|    |        |         |              |       |    |              |    |
|----|--------|---------|--------------|-------|----|--------------|----|
| 28 | 30X30C | 302.500 | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 29 | 30X30C | 15.000  | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 29 | 30X30C | 158.750 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 29 | 30X30C | 302.500 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 30 | 30X30C | 15.000  | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 30 | 30X30C | 158.750 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 30 | 30X30C | 302.500 | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 31 | 30X30C | 15.000  | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 31 | 30X30C | 158.750 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 31 | 30X30C | 302.500 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 32 | 30X30C | 15.000  | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 32 | 30X30C | 158.750 | 9.000COLUMN4 | 0.010 | CU | 0.010        | CU |
| 32 | 30X30C | 302.500 | 9.000COLUMN4 | 0.010 | CU | 0.010        | CU |
| 33 | 30X30C | 15.000  | 9.000COLUMN4 | 0.010 | CU | 0.010        | CU |
| 33 | 30X30C | 158.750 | 9.000COLUMN4 | 0.010 | CU | 0.010        | CU |
| 33 | 30X30C | 302.500 | 9.000COLUMN4 | 0.009 | CU | 0.009        | CU |
| 34 | 30X30C | 15.000  | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 34 | 30X30C | 158.750 | 9.000COLUMN4 | 0.010 | CU | 0.010COLUMN2 |    |
| 34 | 30X30C | 302.500 | 9.000COLUMN4 | 0.010 | CU | 0.010COLUMN2 |    |
| 35 | 30X30C | 15.000  | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 35 | 30X30C | 158.750 | 9.000COLUMN4 | 0.010 | CU | 0.011COLUMN2 |    |
| 35 | 30X30C | 302.500 | 9.000COLUMN4 | 0.010 | CU | 0.011COLUMN2 |    |
| 36 | 30X30C | 15.000  | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 36 | 30X30C | 158.750 | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 36 | 30X30C | 302.500 | 9.000COLUMN4 | 0.010 | CU | 0.010        | CU |
| 37 | 30X30C | 15.000  | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 37 | 30X30C | 158.750 | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 37 | 30X30C | 302.500 | 9.000COLUMN4 | 0.011 | CU | 0.011        | CU |
| 38 | 30X30C | 15.000  | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 38 | 30X30C | 158.750 | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 38 | 30X30C | 302.500 | 9.000COLUMN4 | 0.015 | CU | 0.015        | CU |
| 39 | 30X30C | 15.000  | 9.000COLUMN4 | 0.017 | CU | 0.017        | CU |
| 39 | 30X30C | 158.750 | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 39 | 30X30C | 302.500 | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 40 | 30X30C | 15.000  | 9.000COLUMN4 | 0.017 | CU | 0.017        | CU |
| 40 | 30X30C | 158.750 | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 40 | 30X30C | 302.500 | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 41 | 30X30C | 15.000  | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 41 | 30X30C | 158.750 | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 41 | 30X30C | 302.500 | 9.000COLUMN4 | 0.016 | CU | 0.016        | CU |
| 42 | 30X30C | 15.000  | 9.000COLUMN4 | 0.013 | CU | 0.013        | CU |
| 42 | 30X30C | 158.750 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 42 | 30X30C | 302.500 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 43 | 30X30C | 15.000  | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 43 | 30X30C | 158.750 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 43 | 30X30C | 302.500 | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |
| 44 | DIAM35 | 15.000  | 9.621COLUMN4 | 0.014 | CU | 0.014        | CU |
| 44 | DIAM35 | 158.750 | 9.621COLUMN4 | 0.013 | CU | 0.013        | CU |
| 44 | DIAM35 | 302.500 | 9.621COLUMN4 | 0.013 | CU | 0.013        | CU |
| 45 | DIAM35 | 15.000  | 9.621COLUMN4 | 0.014 | CU | 0.014        | CU |
| 45 | DIAM35 | 158.750 | 9.621COLUMN4 | 0.013 | CU | 0.013        | CU |
| 45 | DIAM35 | 302.500 | 9.621COLUMN4 | 0.013 | CU | 0.013        | CU |
| 46 | 30X30C | 15.000  | 9.000COLUMN4 | 0.012 | CU | 0.012        | CU |

|     |        |         |               |               |    |               |    |
|-----|--------|---------|---------------|---------------|----|---------------|----|
| 46  | 30X30C | 158.750 | 9.000COLUMNA4 | 0.012         | CU | 0.012         | CU |
| 46  | 30X30C | 302.500 | 9.000COLUMNA4 | 0.012         | CU | 0.012         | CU |
| 47  | DIAM35 | 14.701  | 9.621COLUMNA4 | 0.013         | CU | 0.013         | CU |
| 47  | DIAM35 | 159.766 | 9.621COLUMNA4 | 0.013         | CU | 0.013         | CU |
| 47  | DIAM35 | 304.831 | 9.621COLUMNA4 | 0.013         | CU | 0.013         | CU |
| 48  | DIAM35 | 14.697  | 9.621COLUMNA4 | 0.013         | CU | 0.013         | CU |
| 48  | DIAM35 | 159.764 | 9.621COLUMNA4 | 0.013         | CU | 0.013         | CU |
| 48  | DIAM35 | 304.831 | 9.621COLUMNA4 | 0.013         | CU | 0.013         | CU |
| 49  | DIAM35 | 11.381  | 9.621COLUMNA4 | 0.012         | CU | 0.012         | CU |
| 49  | DIAM35 | 156.988 | 9.621COLUMNA4 | 0.011         | CU | 0.011         | CU |
| 49  | DIAM35 | 302.595 | 9.621COLUMNA4 | 0.011         | CU | 0.011         | CU |
| 95  | 30X30C | 12.500  | 9.000COLUMNA4 | 0.153         | CU | 0.153         | CU |
| 95  | 30X30C | 21.078  | 9.000COLUMNA4 | 0.153         | CU | 0.153         | CU |
| 95  | 30X30C | 29.655  | 9.000COLUMNA4 | 0.152         | CU | 0.152         | CU |
| 96  | 30X30C | 12.500  | 9.000COLUMNA4 | 0.031         | CU | 0.031         | CU |
| 96  | 30X30C | 58.500  | 9.000COLUMNA4 | 0.031         | CU | 0.031         | CU |
| 96  | 30X30C | 104.500 | 9.000COLUMNA4 | 0.030         | CU | 0.030         | CU |
| 99  | 30X30C | 12.500  | 9.000COLUMNA4 | 0.033         | CU | 0.033         | CU |
| 99  | 30X30C | 58.500  | 9.000COLUMNA4 | 0.033         | CU | 0.033         | CU |
| 99  | 30X30C | 104.500 | 9.000COLUMNA4 | 0.032         | CU | 0.032         | CU |
| 102 | 30X30C | 12.500  | 9.000COLUMNA4 | 0.037         | CU | 0.037         | CU |
| 102 | 30X30C | 58.500  | 9.000COLUMNA4 | 0.037         | CU | 0.037         | CU |
| 102 | 30X30C | 104.500 | 9.000COLUMNA4 | 0.036         | CU | 0.036         | CU |
| 105 | 30X30C | 12.500  | 9.000COLUMNA4 | 0.037         | CU | 0.037         | CU |
| 105 | 30X30C | 58.500  | 9.000COLUMNA4 | 0.037         | CU | 0.037         | CU |
| 105 | 30X30C | 104.500 | 9.000COLUMNA4 | 0.037         | CU | 0.037         | CU |
| 107 | 30X30C | 12.500  | 9.000COLUMNA4 | 0.026COLUMNA1 |    | 0.026COLUMNA1 |    |
| 107 | 30X30C | 58.500  | 9.000COLUMNA4 | 0.026COLUMNA1 |    | 0.026COLUMNA1 |    |
| 107 | 30X30C | 104.500 | 9.000COLUMNA4 | 0.025COLUMNA1 |    | 0.025COLUMNA1 |    |
| 110 | 30X30C | 0.000   | 9.000COLUMNA4 | 0.026COLUMNA1 |    | 0.026COLUMNA1 |    |
| 110 | 30X30C | 46.000  | 9.000COLUMNA4 | 0.026COLUMNA1 |    | 0.026COLUMNA1 |    |
| 110 | 30X30C | 92.000  | 9.000COLUMNA4 | 0.025COLUMNA1 |    | 0.025COLUMNA1 |    |

### 5.3.9. diseño de cimentación.

#### 5.3.9.1 Envoltente de diseño.

| LOAD COMBINATION MULTIPLIERS |      |          |        |       |                             |  |
|------------------------------|------|----------|--------|-------|-----------------------------|--|
| COMBO                        | TYPE | CASE     | FACTOR | TYPE  | TITLE                       |  |
| ENVOLCIM                     | ENVE |          |        |       | Envoltente para Cimentación |  |
|                              |      | CIMENTAX | 1.0000 | COMBO |                             |  |
|                              |      | CIMENTAY | 1.0000 | COMBO |                             |  |

J O I N T   R E A C T I O N S

| JOINT | LOAD         | F1       | F2       | F3       | M1     | M2     | M3     |
|-------|--------------|----------|----------|----------|--------|--------|--------|
| 1     | ENVOLCIM MAX | 11.9847  | 6.1816   | 58.7978  | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MIN | -12.3599 | -4.7953  | -12.7571 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MAX | 21.2048  | 2.3064   | 30.4669  | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MIN | -22.1323 | -2.2128  | 24.6035  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MAX | 7.6012   | 23.6609  | 61.0105  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MIN | -7.1693  | -22.7988 | 3.2522   | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MAX | 17.9821  | 23.8099  | 72.4329  | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MIN | -18.3767 | -22.9399 | -10.1283 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MAX | 41.8651  | 3.5329   | 35.8267  | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MIN | -41.2359 | -3.4852  | 29.6669  | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MAX | 16.7239  | 6.0341   | 56.0551  | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MIN | -17.3590 | -5.0448  | -15.5909 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MAX | 3.0809   | 21.1234  | 28.5440  | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MIN | -2.3385  | -22.3028 | 4.8646   | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MAX | 1.9490   | 40.1516  | 29.8446  | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MIN | -1.9359  | -42.4450 | 13.8311  | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MAX | 2.6591   | 42.0864  | 30.2510  | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MIN | -2.8936  | -44.4002 | 13.4557  | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MAX | 3.0626   | 19.9353  | 24.7007  | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MIN | -1.6154  | -18.8165 | 23.5499  | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLCIM MAX | 30.4902  | 9.7022   | 76.4663  | 0.0000 | 0.0000 | 0.0000 |
| 11    | ENVOLCIM MIN | -27.5814 | -10.2159 | -19.9863 | 0.0000 | 0.0000 | 0.0000 |
| 12    | ENVOLCIM MAX | 58.2726  | 25.5059  | 109.3326 | 0.0000 | 0.0000 | 0.0000 |
| 12    | ENVOLCIM MIN | -61.7216 | -23.7713 | 8.2501   | 0.0000 | 0.0000 | 0.0000 |
| 13    | ENVOLCIM MAX | 31.8542  | 37.8120  | 123.5409 | 0.0000 | 0.0000 | 0.0000 |
| 13    | ENVOLCIM MIN | -29.8734 | -39.5791 | 1.1518   | 0.0000 | 0.0000 | 0.0000 |
| 14    | ENVOLCIM MAX | 30.2525  | 38.8844  | 126.0577 | 0.0000 | 0.0000 | 0.0000 |
| 14    | ENVOLCIM MIN | -32.6091 | -40.7059 | -2.7859  | 0.0000 | 0.0000 | 0.0000 |
| 15    | ENVOLCIM MAX | 63.2713  | 29.9242  | 119.9691 | 0.0000 | 0.0000 | 0.0000 |
| 15    | ENVOLCIM MIN | -60.4767 | -27.9921 | 0.1289   | 0.0000 | 0.0000 | 0.0000 |
| 16    | ENVOLCIM MAX | 26.8325  | 5.2410   | 90.8208  | 0.0000 | 0.0000 | 0.0000 |
| 16    | ENVOLCIM MIN | -28.8970 | -7.7508  | -17.9436 | 0.0000 | 0.0000 | 0.0000 |
| 17    | ENVOLCIM MAX | 33.9115  | 22.4917  | 94.9000  | 0.0000 | 0.0000 | 0.0000 |
| 17    | ENVOLCIM MIN | -33.6461 | -23.8119 | -27.6617 | 0.0000 | 0.0000 | 0.0000 |
| 18    | ENVOLCIM MAX | 21.8503  | 41.0708  | 106.4332 | 0.0000 | 0.0000 | 0.0000 |
| 18    | ENVOLCIM MIN | -24.3431 | -40.7764 | -5.3344  | 0.0000 | 0.0000 | 0.0000 |
| 19    | ENVOLCIM MAX | 22.4233  | 41.5058  | 105.3291 | 0.0000 | 0.0000 | 0.0000 |
| 19    | ENVOLCIM MIN | -20.0737 | -41.1146 | 0.8818   | 0.0000 | 0.0000 | 0.0000 |
| 20    | ENVOLCIM MAX | 30.9004  | 27.4838  | 94.4313  | 0.0000 | 0.0000 | 0.0000 |
| 20    | ENVOLCIM MIN | -31.4233 | -29.2403 | -26.7853 | 0.0000 | 0.0000 | 0.0000 |
| 21    | ENVOLCIM MAX | 16.6121  | 28.3517  | 78.5417  | 0.0000 | 0.0000 | 0.0000 |
| 21    | ENVOLCIM MIN | -17.2041 | -27.0290 | 22.5733  | 0.0000 | 0.0000 | 0.0000 |
| 22    | ENVOLCIM MAX | 15.9932  | 30.4700  | 77.2232  | 0.0000 | 0.0000 | 0.0000 |
| 22    | ENVOLCIM MIN | -15.3733 | -28.8685 | 23.5405  | 0.0000 | 0.0000 | 0.0000 |
| 23    | ENVOLCIM MAX | 29.7067  | 11.4755  | 63.2617  | 0.0000 | 0.0000 | 0.0000 |
| 23    | ENVOLCIM MIN | -29.8445 | -8.6444  | 11.6107  | 0.0000 | 0.0000 | 0.0000 |

### 5.3.9.2 Cálculo del Refuerzo.

DISEÑO DE ZAPATAS AISLADAS CUADRADAS

#### INFORMACION GENERAL

| Dato | Concepto                                    |       |
|------|---|-------|
| 1    | Resistencia del Concreto F'c <kg/cm2> =     | 210   |
| 2    | Limite Fluencia Acero Princip Fy <kg/cm2> = | 4200  |
| 3    | Recubrimiento d' <cm> =                     | 5     |
| 4    | Capacidad Admisible Suelo <kg/cm2> =        | 1.276 |
| 5    | No. de Zapatas Cuadradas Diseñadas =        | 20    |

#### INFORMACION DE LAS ZAPATAS

| Zap | Nombre | H col<br><cm> | B col<br><cm> | Carga P<br><t> | Carga Pu<br><t> |
|-----|--------|---------------|---------------|----------------|-----------------|
| 1   | Z1A    | 30            | 30            | 5.87           | 3.34            |
| 2   | Z2A    | 30            | 30            | 3.04           | 3.89            |
| 3   | Z3A    | 30            | 30            | 6.10           | 4.71            |
| 4   | Z3K    | 30            | 30            | 7.24           | 4.58            |
| 5   | Z4K    | 30            | 30            | 3.58           | 4.69            |
| 6   | Z1B    | 30            | 30            | 2.85           | 2.40            |
| 7   | Z3B    | 30            | 30            | 2.98           | 3.15            |
| 8   | Z3J    | 30            | 30            | 3.02           | 3.15            |
| 9   | Z2C    | 30            | 30            | 10.93          | 8.52            |
| 10  | Z3C    | 30            | 30            | 12.35          | 9.15            |
| 11  | Z3I    | 30            | 30            | 12.60          | 9.08            |
| 12  | Z4I    | 30            | 30            | 11.90          | 8.68            |
| 13  | Z5I    | 30            | 30            | 9.08           | 5.09            |
| 14  | Z2D    | 30            | 30            | 9.50           | 4.70            |
| 15  | Z3D    | 35            | 35            | 10.64          | 7.20            |
| 16  | Z3H    | 35            | 35            | 10.53          | 6.17            |
| 17  | Z4H    | 30            | 30            | 9.44           | 4.71            |
| 18  | Z3E    | 35            | 35            | 7.85           | 7.21            |
| 19  | Z3G    | 35            | 35            | 7.72           | 7.19            |
| 20  | Z3F    | 35            | 35            | 6.32           | 5.19            |

#### R E S U L T A D O S

| Referencia | Nudo | Longitud   | Lados <cm> | Espesor Min | ARMADURA (Sep: cm)    |
|------------|------|------------|------------|-------------|-----------------------|
| Apoyo      | #    | Paralelo H | Paralelo B | <cm>        | Paralelo H            |
| Paralelo B |      |            |            |             |                       |
| Z1A        |      | 68         | 68         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |
| Z2A        |      | 49         | 49         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |
| Z3A        |      | 69         | 69         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |
| Z3K        |      | 75         | 75         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |
| Z4K        |      | 53         | 53         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |
| Z1B        |      | 47         | 47         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |
| Z3B        |      | 48         | 48         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |
| Z3J        |      | 49         | 49         | 30.0        | 1 # 4 a 30 1 # 4 a 30 |

|     |    |    |      |            |            |
|-----|----|----|------|------------|------------|
| Z2C | 93 | 93 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z3C | 98 | 98 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z3I | 99 | 99 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z4I | 97 | 97 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z5I | 84 | 84 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z2D | 86 | 86 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z3D | 91 | 91 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z3H | 91 | 91 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z4H | 86 | 86 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z3E | 78 | 78 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z3G | 78 | 78 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |
| Z3F | 70 | 70 | 30.0 | 1 # 4 a 30 | 1 # 4 a 30 |

DISEÑO ZAPATAS EXCENTRICAS

INFORMACION GENERAL

| Dato | Concepto                         |                  |
|------|----------------------------------|------------------|
| 1    | Resistencia del Concreto F'c     | <kg/cm2> = 210   |
| 2    | Límite Fluencia Acero Princip Fy | <kg/cm2> = 4200  |
| 3    | Recubrimiento al Centroides d'   | <cm> = 5         |
| 4    | Número de Ramas del Estribo      | = 2              |
| 5    | # del Diametro del Estribo       | = 3              |
| 6    | Límite Fluencia Acero Estrib Fy  | <kg/cm2> = 4200  |
| 7    | Capacidad Admisible Suelo Qa     | <kg/cm2> = 1.276 |
| 8    | No. de Zapatas Diseñadas         | = 2              |

INFORMACION DE LA GEOMETRIA DE LAS ZAPATAS

| Zap Ref | Sep Col (m) | B ColExt (m) | H ColExt (m) | Ancho Adop Zap Ext(m) | Distanc (m) Borde - Eje | Viga Trabe (m) B Inic | H Inic |
|---------|-------------|--------------|--------------|-----------------------|-------------------------|-----------------------|--------|
| 1A      | 3.9         | .3           | .3           | .8                    | .15                     | .25                   | .3     |
| 2A      | 3.7         | .3           | .3           | .8                    | .15                     | .25                   | .3     |

INFORMACION DE LAS SOLICITACIONES DE LAS ZAPATAS

| Zap Ref | Pserv (t) Zapat EXT | Pult (t) Zapat EXT | Pserv (t) Zapat INT | Pult (t) Zapat INT |
|---------|---------------------|--------------------|---------------------|--------------------|
| 1A      | 5.6                 | 2.86               | 3.58                | 4.69               |
| 2A      | 7.64                | 3.94               | 10.93               | 8.52               |

RESULTADOS DEL DISEÑO

| Zap Ref | Largo L | Ancho B | Zapata Espes T (cm) | EXTERIOR As Paralelo L | As Paralelo B | Zapata INT Lado L (cm) |
|---------|---------|---------|---------------------|------------------------|---------------|------------------------|
| 1A      | 59      | 40      | 34                  | 1 # 4 a 60             | 1 # 3 a 25    | 52                     |
| 2A      | 0.80    | 40      | 34                  | 1 # 4 a 37             | 1 # 3 a 25    | 92                     |

VIGA TRABE O DE ENLACE

| Zap Ref | B Min (cm) | H Min (cm) | Mu M x (t-m) | As M ximo SUP (cm2) | Extr EXT INF (cm2) | Vu M x (t) | Separac Flejes Extremo EXT |
|---------|------------|------------|--------------|---------------------|--------------------|------------|----------------------------|
| 1A      | 25.0       | 30.0       | 0.14         | 2.08                | 0.00               | 7.33       | 1FL# 3 de 2 rams c/12.5    |
| 2A      | 25.0       | 30.0       | 0.19         | 2.08                | 0.00               | 10.11      | 1FL# 3 de 2 rams c/12.1    |

CALCULO DE CONTRAPESOS

En la Zapata Z5J

$$P = 34.5 \text{ KNw-m}$$

$$l = 2 \text{ m}$$

$$q = 124.95 \text{ KNw/m}^2$$

a : 0.30 m (Ancho de la columna)

$$\Delta R = P \cdot e / l - e \quad e = (B - a) / 2 = (0.8 - 0.3) / 2 = 0.25 \text{ m}$$

$$\Delta R = (34.5 \text{ KNw} \cdot 0.25 \text{ m}) / (2 \text{ m} - 0.25 \text{ m}) = 4.93 \text{ KNw}$$

$$C = P + \Delta R / q \cdot B = 34.5 + 4.93 / (124.95 \cdot 0.8) = 0.4 \text{ m} \approx 0.8 \text{ m}$$

Zapata de 0.8 m x 0.8 m

$$q_{\text{neto}} = P + 15\% / CB = 34.5 \cdot 1.15 / (0.8 \cdot 0.8) = 61.99 \text{ KNw/m}^2$$

DISEÑO VIGA DE CONTRAPESO

$$C_{ZE} = q_{\text{neto}} \cdot C = 61.99 \cdot 0.8 = 49.59 \text{ KNw/m}$$

Ai : Cortante izquierdo del elemento en el nudo.

$$A_i = C_{ZE} \cdot a / 2 = 49.59 \cdot 0.30 / 2 = 7.43 \text{ KNw}$$

Ad : Cortante derecho.

$$A_d = P - A_i = 34.5 - 7.43 = 27.07 \text{ KNw}$$

V<sub>borde</sub> = Cortante de borde

$$V_{\text{borde}} = A_d - a / 2 \cdot C_{ZE} = 27.07 - 0.30 / 2 \cdot 49.59 = 19.63 \text{ KNw}$$

Estribos

$$X_{(v=0)} = A_d / C_{ZE} = 27.07 / 49.59 = 0.54 \text{ m}$$

$$v_u = V_b / b d_{\text{vig}} = 19.63 \cdot 1000 / 25 \cdot 25 = 31.40 \text{ Nw/cm}^2$$



$$\phi v_c = 0.85 * \sqrt{21} \text{ Mpa} / 6 = 0.649 \text{ Mpa} = 64.91 \text{ Nw/cm}^2$$

$\phi v_c > v_u$  No requiere esfuerzo por cortante

Diseño a flexión

$$M_u = 8.63 \text{ KNw} - \text{m}$$

$$K = M/bd^2 = 86.3 \text{ Tn-cm} / 25 * 25^2 = 0.0055$$

$$\rho = 0.0014 \quad \text{Asumimos } \rho_{\min} = 0.0033$$

$$A_s = \rho_{\min} b d = 0.0033 * 25 * 25 = 2.06 \text{ cm}^2 \rightarrow 2N4$$

## 5.4 DISEÑO ESTRUCTURAL DE BAÑOS

NORMA NSR-98

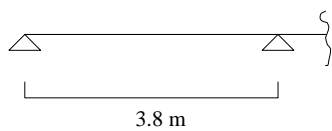
**5.4.1 Materiales:** Generales.

**5.4.2 Predimensionamiento y Secciones Definitivas.**

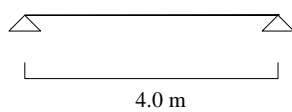
Sistema de Pórtico

**5.4.2.1 Vigas aéreas.**

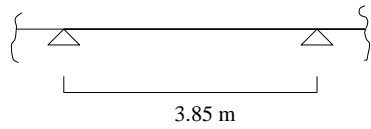
**5.4.2.1.1 Evaluación de peraltes:** Tabla C.9-1(b).



$$h = l / 18.5 = 0.21 \text{ m}$$



$$h = l / 16 = 0.25 \text{ m}$$



$$h=l/21 = 0.18 \text{ m}$$

Nota: Se selecciona la tabla C.9-1(b) debido a que las vigas no soportan muros ni particiones frágiles.

Peralte seleccionado = 25 cm

#### 5.4.2.1.2 Ancho de Alma.

$b_w \geq 0.25 \text{ mt}$  C.21.3.1(d)

Ancho seleccionado = 0.25 mt

#### 5.4.2.2 Losa de Cubierta.

5.4.2.2.1 Tipo de Losa: Aligerada y armada en una dirección

5.4.2.2.2 Materiales: Generales

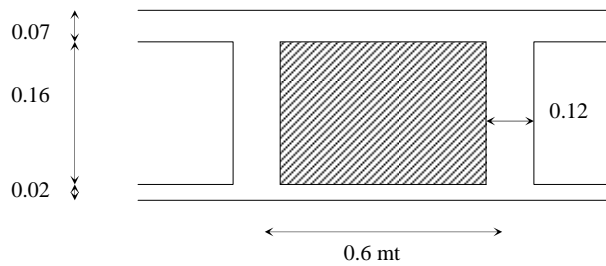
#### 5.4.2.2.3 Predimensionamiento.

5.4.2.2.3.1 Evaluación de Peralte: tabla C.9-1(b)

Tomado del predimensionamiento de vigas

$$h = 25 \text{ cm}$$

### 5.4.2.2.3.2 Geometría de la Losa.



Ancho de nervios

$$b_w (\text{nervios}) = 0.12 \text{ m} > 0.10 \text{ m} \quad \text{C.13.2.2(a)}$$

Separación entre nervios centro a centro

$$2.5 * e_{\text{losa}} = 2.5 * 25 = 62.5 \text{ cm} \approx 60 \text{ cm} \quad \text{C.13.2.2(c)}$$

Separación entre riostras

$$10h \text{ o } 4 \text{ m El menor: } 10 * 0.25 = 2.5 \text{ m} \quad \text{C.13.2.2(d)}$$

Espesor de diafragma

$$e = 0.07 \text{ m} > 0.05 \text{ m} \quad \text{C.21.6.4.1}$$

### 5.4.2.2.3.3 Análisis de cargas.

$$\text{Carga de placa superior} = 24 * 0.07 = 1.68 \text{ KNw/m}^2$$

$$\text{Carga de nervios} = 0.12 * 0.16 * 24 / 0.6 = 0.77 \text{ KNw/m}^2$$

$$\text{Carga de solado inferior} = 0.02 * 22 = 0.44 \text{ KNw/m}^2$$

$$\text{Casetón} = 0.3 \text{ KNw/m}^2$$

$$\text{Carga unitaria de losa} = 3.19 \text{ KNw/m}^2$$

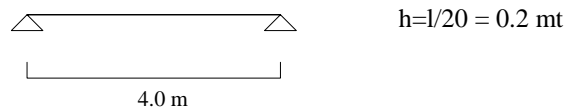
### 5.4.2.3 Columnas.

Como la estructura es sencilla no vale la pena hacer un predimensionamiento analítico de las columnas.

Rectangulares 30 x 30 cm                      C.21.4.1(b)

### 5.4.2.4 Vigas de cimentación.

#### 5.4.2.4.1 Evaluación de peralte: (como viga de amarre) C.15.13.3



Peralte seleccionado 30 cm

#### 5.4.2.4.2 Ancho del Alma: (como viga de amarre)

La selección de la viga de amarre debe ser capaz de soportar una fuerza de compresión o tensión de 0.25 veces la carga vertical total del elemento que tenga la mayor carga entre los que interconecta, por tanto.

$$P = 0.25 F_{vmax} \quad A.3.6.4.2$$

Por tratarse de una viga de cimentación podemos escoger un ancho de 25 cm

$$A_g \approx 0.3 * 0.25 = 0.075 \text{ m}^2$$

$$P_{max} = 0.1 f_c A_g \quad C.21.3.1(a)$$

$$F_{vmax} = \frac{0.1 f_c A_g}{0.25} = \frac{0.1 * 21 * 0.075}{0.25} = 0.63 \text{ MN} = 630 \text{ KN}$$

#### 5.4.2.5 Recubrimientos: Generales.

### 5.4.3. Evaluacion de Carga Permanente

#### 5.4.3.1 Carga Muerta: (B.3)

◆ Peso propio de los elementos estructurales

- Longitud de vigas de sección 25 \* 25 = 47.35 m

Total peso propio de vigas =  $47.35 * 0.25 * 0.25 * 24 = 71 \text{ KNw}$

- Area de la placa =  $(14.51 + 11.08) * 4 / 2 = 51.18 \text{ m}^2$

Total peso propio de losa =  $51.18 * 3.19 = 163 \text{ KNw}$

- Longitud de columnas de sección 30 \* 30 =  $2.45 * 10 = 24.5 \text{ m}$

Total peso propio de columnas referido a la losa de cubierta en la evaluación de la carga permanente para efectos sísmicos. =  $0.233 * 0.3 * 0.3 * 24.5 * 24 = 12 \text{ KNw}$

◆ Mampostería:

|                           |   |                         |
|---------------------------|---|-------------------------|
| Altura de muro            | : | 2.45 m                  |
| Espesor del muro          | : | 0.12 m                  |
| Peso unitario de ladrillo |   |                         |
| Farol                     | : | 13 KNw/m <sup>3</sup>   |
| Peso unitario de repello  | : | 21 KNw/m <sup>3</sup>   |
| Carga de repello (4 cm)   | : | 0.84 KNw/m <sup>2</sup> |
| Carga de mampostería      | : | 1.56 KNw/m <sup>2</sup> |
| Carga total por longitud  | = | 5.88 KNw/m              |

Total peso de Mampostería =  $5.88 * 27.2 = 160 \text{ KNw}$

$$\text{Carga por área de placa} = 160 / 51.18 = 3.13 \text{ KNw/m}^2$$

Total peso propio de mampostería referido a la losa de cubierta en la evaluación de la carga permanente para efectos sísmicos.

$$0.233 * 160 = 38 \text{ KNw}$$

◆ Acabados:  $1.5 \text{ KNw/m}^2$

$$\text{Total peso de acabados} = 1.5 * 51.18 = 77 \text{ KN}$$

◆ Muro Culata:

Altura de muro : 1.5 m

Espesor del muro : 0.12 m

Peso unitario de ladrillo

Farol :  $13 \text{ KNw/m}^3$

Peso unitario de repello :  $21 \text{ KNw/m}$

Carga de repello (4 cm) :  $0.84 \text{ KNw/m}^2$

Carga de mampostería :  $1.56 \text{ KNw/m}^2$

Carga de Cinta de amarre

Secc.  $0.12 * 0.15 \text{ mt}$  :  $0.432 \text{ KNw/m}$

Carga total sin viga de culata =  $2.4 \text{ KNw/m}^2$

Carga total por longitud =  $4.03 \text{ KNw/m}$

Total peso de Culata =  $4.03 * 14.51 = 58 \text{ KNw}$

◆ Total Carga Muerta = 419 KNw

#### 5.4.3.2 Carga Viva: (B.4)

◆ Para tramos entre los ejes 2 – 5 =  $1.8 \text{ KNw/m}^2$

◆ Para tramos entre ejes 1 – 2 (Tanques):

Peso por área de contacto del tanque =  $10.4/(0.25\pi) = 13.2 \text{ KNw/m}^2$

#### 5.4.3.3 Carga Permanente en la estructura: (Wp)

|  |   |                       |
|--|---|-----------------------|
| 100 %                                    | : | Carga Muerta          |
| 60 %                                     | : | Carga Viva de Tanques |
| 25 %                                     | : | Carga Viva Adicional  |
| Area de Tanques                          | : | $6.86 \text{ m}^2$    |
| Area de losa con carga<br>viva adicional | : | $44.32 \text{ m}^2$   |

Total Carga Permanente =  $419+0.6*13.2*6.86+0.25*1.8*44.32=493 \text{ KNw}$

Total Carga Permanente = 493 KNw

### 5.4.3.4 Transferencia de Cargas a Pórticos.

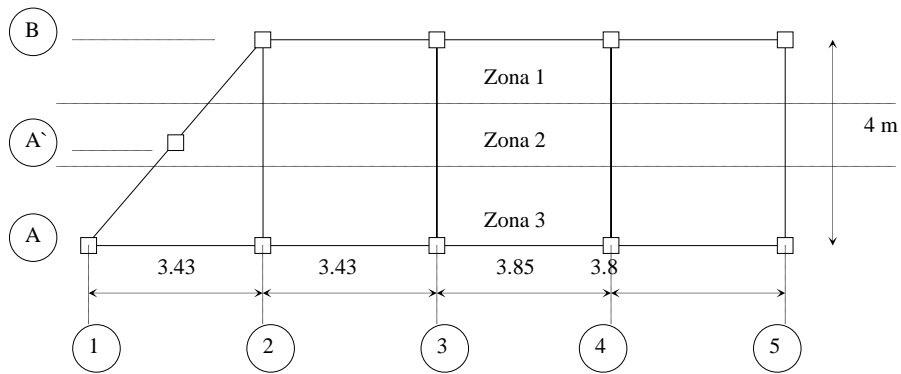
#### 5.4.3.4.1 Cargas sobre las Nervaduras.

Cargas Distribuidas (Aferencia 0.6 mt)

| Tramo | CM<br>KNw/m | CV <sub>1</sub><br>KNw/m | CV <sub>2</sub><br>KNw/m |
|-------|-------------|--------------------------|--------------------------|
| 1 – 5 | 2.81*       | -                        | -                        |
| 1 – 2 | -           | 7.92                     | -                        |
| 2 – 5 | -           | -                        | 1.08                     |

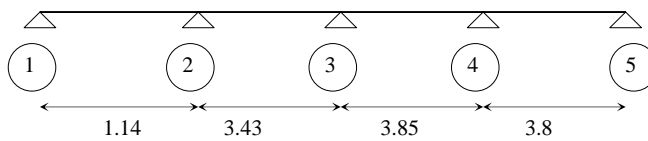
(\*) Las cargas no incluyen el peso propio de vigas, columnas ni muro culata, por estar analizados directamente sobre los pórticos.

#### 5.4.3.4.2 Disposición de los Nervios



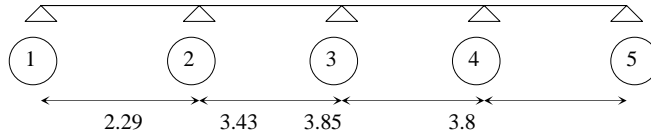
Para el análisis de los nervios se ha dispuesto de tres zonas:

**Zona 1:** Nervio tipo (I)

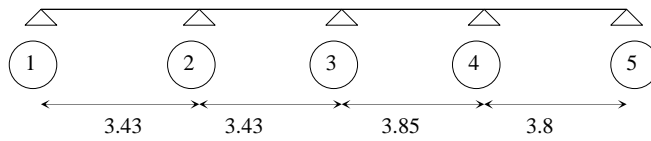




**Zona 2:** Nervio tipo (II)



**Zona 3:** Nervio tipo (III)



Las condiciones de carga se han analizado de acuerdo a las posibilidades más desfavorables durante la vida de la estructura, como son:

- Comb (1) : CM con  $CV_1$  (1.4CM + 1.7  $CV_1$ )
- Comb (2) : CM con  $CV_2$  (1.4CM + 1.7  $CV_2$ )
- Comb (3) : CM con  $CV_1$  Y  $CV_2$  (1.4CM + 1.7 ( $CV_1+CV_2$ ))

**5.4.3.4.3 Reacciones en nervios.**

▪ **Nervio I**

| Carga  | REACCION EN APOYOS (KNw) |      |       |       |       |
|--------|--------------------------|------|-------|-------|-------|
|        | 1                        | 2    | 3     | 4     | 5     |
| CM     | -0.20                    | 7.92 | 10.19 | 12.23 | 4.19  |
| $CV_1$ | 4.21                     | 4.95 | -0.16 | 0.03  | -0.01 |
| $CV_2$ | -0.65                    | 2.37 | 3.94  | 4.7   | 1.61  |

▪ **Nervio II**

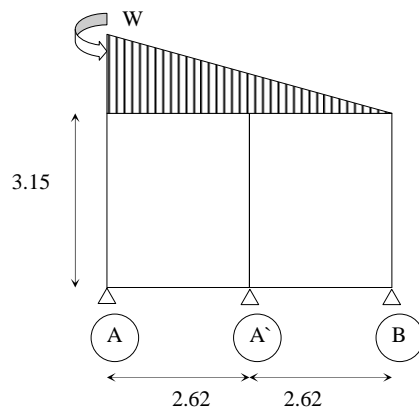
| Carga           | REACCION EN APOYOS (KNw) |       |       |       |       |
|-----------------|--------------------------|-------|-------|-------|-------|
|                 | 1                        | 2     | 3     | 4     | 5     |
| CM              | 2.21                     | 8.84  | 10.07 | 12.26 | 4.19  |
| CV <sub>1</sub> | 8.09                     | 10.86 | -0.99 | 0.22  | -0.04 |
| CV <sub>2</sub> | -0.25                    | 1.92  | 4.01  | 4.68  | 1.61  |

▪ **Nervio III**

| Carga           | REACCION EN APOYOS (KNw) |       |       |       |       |
|-----------------|--------------------------|-------|-------|-------|-------|
|                 | 1                        | 2     | 3     | 4     | 5     |
| CM              | 3.81                     | 10.85 | 9.57  | 12.37 | 4.17  |
| CV <sub>1</sub> | 11.78                    | 17.64 | -2.75 | 0.60  | -0.10 |
| CV <sub>2</sub> | -0.14                    | 1.77  | 4.05  | 4.67  | 1.62  |

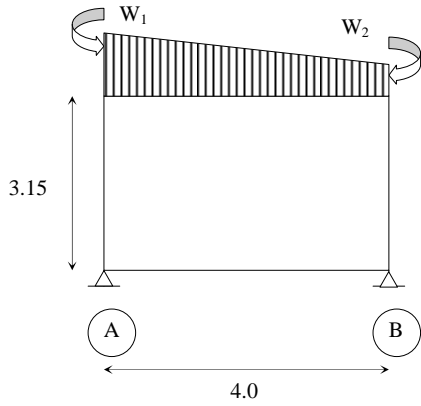
**5.4.3.4.5 Cargas en Pórticos:** Aferencia de 0.6 m.

**Pórtico 1**



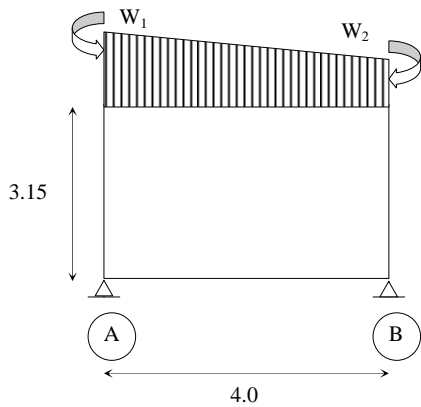
| CARGA  | W (KNw/m) |
|--------|-----------|
| Muerta | 6.35      |
| Viva   | 19.63     |

Pórtico 2



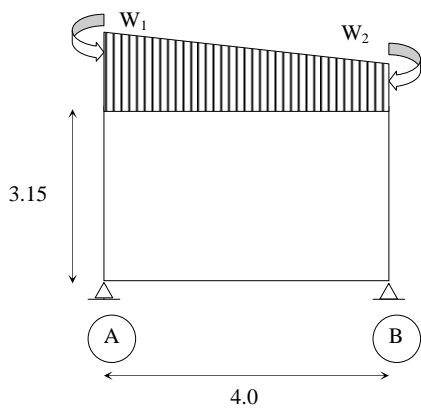
| CARGA  | $W_1$ (KNw/m) | $W_2$ (KNw/m) |
|--------|---------------|---------------|
| Muerta | 18.08         | 13.2          |
| Viva   | 32.35         | 12.2          |

Pórtico 3

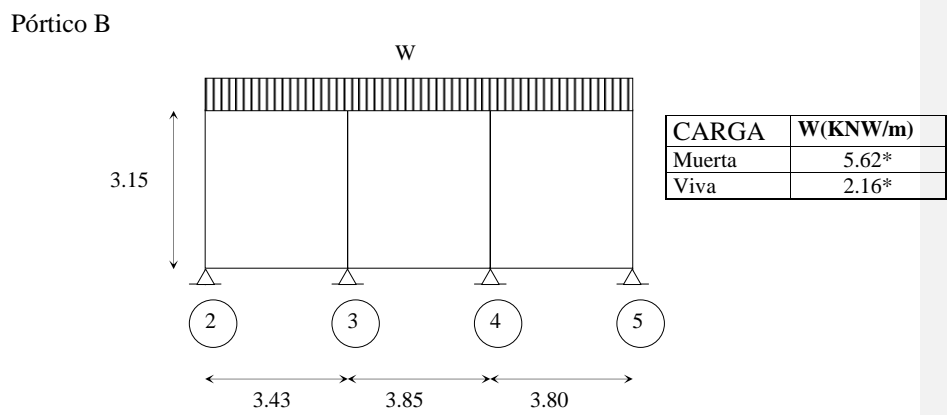
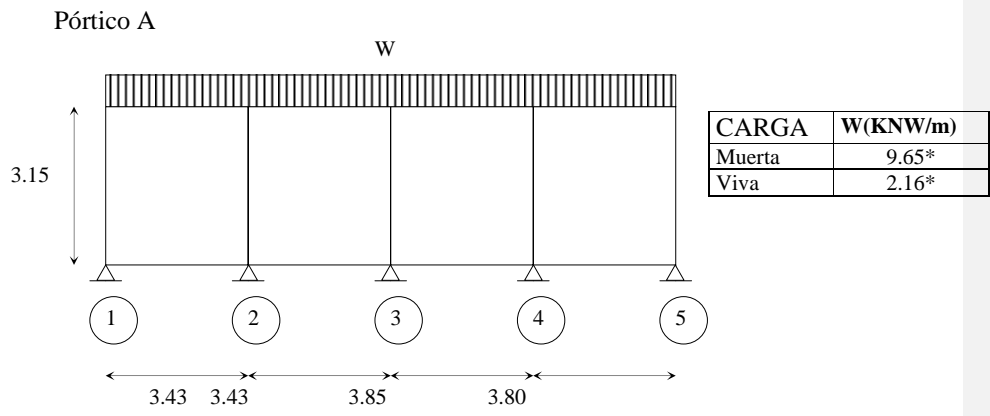
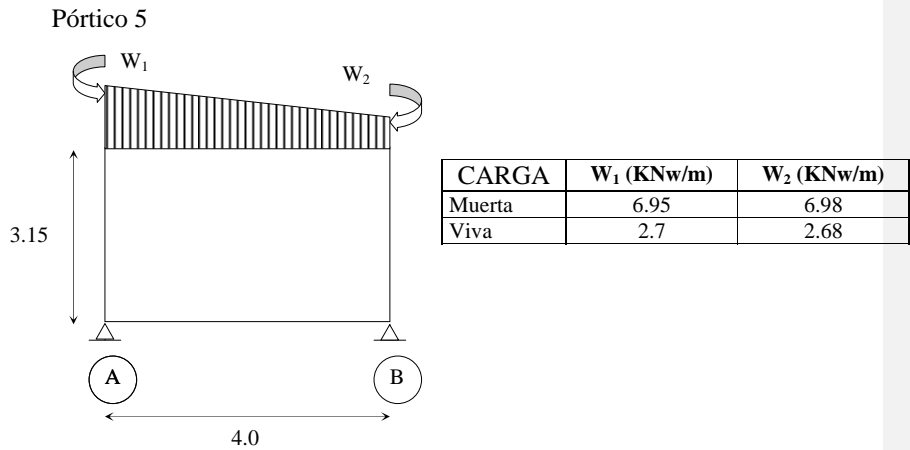


| CARGA  | $W_1$ (KNw/m) | $W_2$ (KNw/m) |
|--------|---------------|---------------|
| Muerta | 15.95         | 16.98         |
| Viva   | 6.75          | 6.57          |

Pórtico 4



| CARGA  | $W_1$ (KNw/m) | $W_2$ (KNw/m) |
|--------|---------------|---------------|
| Muerta | 20.62         | 20.38         |
| Viva   | 8.78          | 7.88          |



(\*) Valores que incluyen el comportamiento de pórtico riostra, con carga del doble de aferencia de un nervio tipo. C.13.3.2.2

Nota: Las cargas en los pórticos incluyen el máximo efecto, producido por la superposición de las cargas vivas (Las reacciones negativas se desprecian).

Las cargas sobre los pórticos están evaluadas sin peso propio. El peso propio de todos los elementos estructurales es evaluado directamente sobre el programa de diseño estructural SAP2000, además el programa evalúa las masas aferentes para cada nudo con dichos elementos, por esta razón la carga permanente incluida en el análisis es reducida en la masa de estos elementos.

#### 5.4.4 Fuerzas Sísmicas.

##### 5.4.4.1 Método de Análisis para Evaluación de Carga Sísmica.

Se utiliza el Análisis Dinámico Elástico y se realiza una comparación con el método de Fuerza Horizontal Equivalente, utilizando diafragma rígido

##### 5.4.4.2 Centro de Masa.

| CM                     | CARGAS |         |           | TOTAL |
|------------------------|--------|---------|-----------|-------|
|                        | MUERTA | VIVA    |           |       |
|                        |        | Tanques | Adicional |       |
| $X_{CM}$               | 7.95   | 2.29    | 8.97      | 7.34  |
| $Y_{CM}$               | 1.62   | 1.33    | 2         | 1.60  |
| <b>Peso Total(KNw)</b> | 419    | 54      | 20        | 493   |

Nota: El centro de masas fue evaluado con las características de la carga permanente.

**5.4.4.3 Zona de Amenaza Sísmica.** Alta (  $A_a = 0.3$ ).

**5.4.4.4 Efectos Locales.**

Perfil del suelo tipo : S3

Coefficiente de Sitio : 1.5

**5.4.4.5 Coeficiente de Importancia.**

Estructura de ocupación especial : (Grupo II)

Coefficiente de Importancia : 1.1

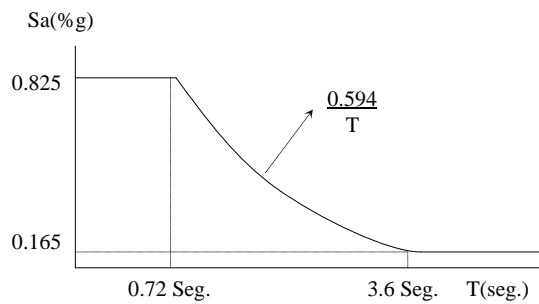
**5.4.4.6 Espectro de Diseño.**

$$S_{a_{\max}} = 2.5 A_a I = 0.825 \%g$$

$$S_{a_{\min}} = A_a I/2 = 0.165 \%g$$

$$T_c = 0.48 S = 0.72 \text{ Seg.}$$

$$T_L = 2.4 S = 3.6 \text{ Seg.}$$



**5.4.4.7 Período Fundamental Aproximado ( $T_a$ ).**

$$T_a = 0.08 * 2.75^{3/4} = 0.17 \text{ Seg.}$$

#### **5.4.4.8 Cortante Sísmico en la Base (Vs).**

$$V_s = S_a W_p$$

$$V_s = 0.825 * 493 = 407 \text{ KNw}$$

#### **5.4.4.9 Análisis Dinámico Elástico.**

##### **5.4.4.9.1 Modelo Matemático a emplear.**

Modelo Tridimensional con diafragma rígido.

Se tiene en cuenta los siguientes puntos:

- Efectos directos en la dirección bajo estudio.
- Torsión Natural.
- Torsión accidental (Tomando el 5% en la dirección perpendicular a la de estudio)
- Efectos direccionales (Tomando 30% de incidencia en la dirección perpendicular a la de estudio).

##### **5.4.4.9.2 Masa de la Edificación.**

Por tratarse de una estructura de un solo piso tenemos una carga permanente aplicada en la losa superior.

$$W_p = 493 \text{ KNw}$$

$$\text{Masa concentrada} = 493/9.81 = 50.25 \text{ KNw Seg}^2/\text{m}$$

##### **5.4.4.9.3 Representación de los Movimientos Sísmicos.**

Procedimiento espectral (NSR-98)

#### **5.4.4.10 Metodología de Análisis.**

##### **5.4.4.10.1 Modos de Vibración.**

El número de modos empleados es de 3 tal que por lo menos 90 % de la masa participe en el cálculo de la respuesta sísmica, esto equivale a que participen mas de 45229 Kgm.. Después de el análisis, con los tres modos de vibración se obtiene un 100 % de participación en el sentido X y de 100 % en el sentido.

##### **5.4.4.10.2 Respuesta Espectral Modal.**

La respuesta máxima espectral se obtiene utilizando las ordenadas del espectro de diseño para el período de cada modo de vibración.

##### **5.4.4.10.3 Respuesta Total.**

Todas las respuestas del análisis se combinan de acuerdo a las características de todos los modos de vibración. Los métodos empleados son:

- Combinación Cuadrática Completa (CQC): Con una razón de amortiguamiento del 5%. Para el caso este es el método más apropiado por las características de la estructura.
- Raíz Cuadrada de la Suma de los Cuadrados (SRSS)

##### **5.4.4.10.4 Comparación con Fuerza Horizontal Equivalente.**

Por ser una estructura irregular  $V_t \geq V_s$  A.5.4.5(a)

$352 \text{ KNw} < 407 \text{ KNw} \Rightarrow \text{No Cumple.}$



Como resultado del análisis dinámico tenemos que el cortante basal modal ( $V_t$ ) es inferior al cortante sísmico en la base ( $V_s$ ) entonces hay la necesidad de modificar los factores de amplificación para carga sísmica en  $407/352 = 1.16$

#### 5.4.4.10.5 Evaluación de las Derivas.

Se verifica las derivas para cada modo de vibración que no exceda 0.01 hpi

| Dirección | Deriva (cm) | 0.01hpi (cm) | Observación |
|-----------|-------------|--------------|-------------|
| <b>X</b>  | 1.97        | 3.15         | Cumple      |
| <b>Y</b>  | 2.76        | 3.15         |             |

#### 5.4.4.10.6 Fuerzas de Diseño de los Elementos.

Las fuerzas combinadas de los modos en el análisis dinámico son reducidas por el coeficiente de disipación de energía.

### 5.4.5. Combinaciones de las Diferentes Solicitaciones: Generales

#### 5.4.5.1 Coeficiente de Capacidad de Disipación de Energía (R)

$$R = R_o \phi_a \phi_p$$

$$R_o = 7 \text{ Tabla A.3-3}$$

$$\phi_a = 1$$

$$\phi_p = 0.9 ; \text{ Tipo 5P Tabla A.3-6}$$

$$R = 6.3$$

Debido a que es necesario preservar el concepto de columna fuerte y viga débil, se ha considerado un coeficiente de capacidad de disipación de energía de 5.25 para columnas.

#### 5.4.6 Evaluación del Índice de Estabilidad (Qi)

$$Q_i = \frac{P_i \Delta_{cm}}{V_i h_{pi}} \quad \text{A.6-3}$$

#### Índice de Estabilidad (Sentido X)

| Piso | P (KNw) |        | Vx (KNw) | hp (m) | Δcm (m) | Qi   | Observación      |
|------|---------|--------|----------|--------|---------|------|------------------|
|      | Pm      | Pv     |          |        |         |      |                  |
| 1    | 419     | 170.33 | 403.5    | 3.15   | 0.0197  | 0.01 | Piso arriostrado |

#### Índice de Estabilidad (Sentido Y)

| Piso | P (KNw) |        | Vy (KNw) | hp (m) | Δcm (m) | Qi    | Observación      |
|------|---------|--------|----------|--------|---------|-------|------------------|
|      | Pm      | Pv     |          |        |         |       |                  |
| 1    | 419     | 170.33 | 407.6    | 3.15   | 0.0276  | 0.013 | Piso arriostrado |

#### 5.4.7 Efectos Locales ( Pandeo Local)

$$\frac{Klu}{r} \leq 34 - 12 \frac{M_1}{M_2} \quad \text{C.10-8}$$

| Nivel | Columna | Klu/r | M <sub>1</sub> (KNw-m) | M <sub>2</sub> (KNw-m) | 34-12M <sub>1</sub> /M <sub>2</sub> | Observación  |
|-------|---------|-------|------------------------|------------------------|-------------------------------------|--|
| 1     | 1A      | 35    | -1.23                  | 10.19                  | 35.45                               | No es necesario considerar los efectos locales de esbeltez |
|       | 2A      |       | -11.16                 | 64.3                   | 36.08                               |  |
|       | 3A      |       | -6.5                   | 42.65                  | 35.83                               |  |
|       | 4A      |       | -8.6                   | 48.67                  | 36.12                               |  |
|       | 5A      |       | -5.92                  | 22.55                  | 37.15                               |  |
|       | 1A'     |       | -1.43                  | 5.34                   | 37.21                               |  |
|       | 2B      |       | -15.82                 | 56.85                  | 37.34                               |  |
|       | 3B      |       | -8.93                  | 44.33                  | 36.42                               |  |
|       | 4B      |       | -9.44                  | 49.25                  | 36.30                               |  |
|       | 5B      |       | -5.35                  | 22.06                  | 36.91                               |  |

Nota: Los efectos locales han sido evaluados para todas las combinaciones de carga y se presentan en la tabla los resultados más críticos

### 5.4.8 Diseño de la Losa de Cubierta.

El propósito de la losa aligerada es: servir de losa de cubierta y dar soporte a los tanques de almacenamiento; para cumplir su primer objetivo se ha dispuesto de un espesor de loseta superior de 70 mm y además por las consideraciones de carga y facilidad de ejecución en obra se ha dispuesto de un ancho de nervios de 120 mm.

#### 5.4.8.1 Envoltentes de Diseño.

| LOAD COMBINATION MULTIPLIERS |      |       |        |       |                               |
|------------------------------|------|-------|--------|-------|-------------------------------|
| COMBO                        | TYPE | CASE  | FACTOR | TYPE  | TITLE                         |
| ENVOLVEN                     | ENVE | COMB1 | 1.0000 | COMBO | Envoltente de diseño nervio 1 |
|                              |      | COMB2 | 1.0000 | COMBO |                               |
|                              |      | COMB3 | 1.0000 | COMBO |                               |

| FRAME ELEMENT FORCES |              |      |       |           |      |      |       |            |
|----------------------|--------------|------|-------|-----------|------|------|-------|------------|
| FRAME                | LOAD         | LOC  | P     | V2        | V3   | T    | M2    | M3         |
| 1                    | ENVOLVEN MAX |      |       |           |      |      |       |            |
|                      | 0.00         |      | 0.00  | 1.38      | 0.00 | 0.00 | 0.00  | 0.00       |
|                      | 2.9E-01      |      | 0.00  | 2.50      | 0.00 | 0.00 | 0.00  | 1.25       |
|                      | 5.7E-01      |      | 0.00  | 4.14      | 0.00 | 0.00 | 0.00  | 1.09       |
|                      | 8.6E-01      |      | 0.00  | 9.10      | 0.00 | 0.00 | 0.00  | -4.787E-01 |
|                      | 1.14         |      | 0.00  | 14.06     | 0.00 | 0.00 | 0.00  | -3.46      |
| 1                    | ENVOLVEN MIN |      |       |           |      |      |       |            |
|                      | 0.00         |      | 0.00  | -6.88     | 0.00 | 0.00 | 0.00  | 0.00       |
|                      | 2.9E-01      |      | 0.00  | -1.92     | 0.00 | 0.00 | 0.00  | -5.531E-01 |
|                      | 5.7E-01      |      | 0.00  | 3.04      | 0.00 | 0.00 | 0.00  | -1.43      |
|                      | 8.6E-01      |      | 0.00  | 4.74      | 0.00 | 0.00 | 0.00  | -2.62      |
|                      | 1.14         |      | 0.00  | 5.86      | 0.00 | 0.00 | 0.00  | -4.72      |
| 2                    | ENVOLVEN MAX |      |       |           |      |      |       |            |
|                      | 0.00         |      | 0.00  | -6.55     | 0.00 | 0.00 | 0.00  | -3.46      |
|                      | 8.6E-01      |      | 0.00  | -3.18     | 0.00 | 0.00 | 0.00  | 1.69       |
|                      | 1.72         |      | 0.00  | 6.367E-01 | 0.00 | 0.00 | 0.00  | 3.26       |
|                      | 2.57         |      | 0.00  | 5.58      | 0.00 | 0.00 | 0.00  | 5.967E-01  |
| 3.43                 |              | 0.00 | 10.53 | 0.00      | 0.00 | 0.00 | -4.14 |            |
| 2                    | ENVOLVEN MIN |      |       |           |      |      |       |            |
|                      | 0.00         |      | 0.00  | -9.48     | 0.00 | 0.00 | 0.00  | -4.72      |
|                      | 8.6E-01      |      | 0.00  | -4.53     | 0.00 | 0.00 | 0.00  | 7.049E-01  |
|                      | 1.72         |      | 0.00  | 1.977E-01 | 0.00 | 0.00 | 0.00  | 1.98       |
|                      | 2.57         |      | 0.00  | 3.57      | 0.00 | 0.00 | 0.00  | 3.659E-01  |
| 3.43                 |              | 0.00 | 6.94  | 0.00      | 0.00 | 0.00 | -6.31 |            |

|   |              |      |           |      |      |      |            |
|---|--------------|------|-----------|------|------|------|------------|
| 3 | ENVOLVEN MAX |      |           |      |      |      |            |
|   | 0.00         | 0.00 | -7.05     | 0.00 | 0.00 | 0.00 | -4.14      |
|   | 9.6E-01      | 0.00 | -3.27     | 0.00 | 0.00 | 0.00 | 1.15       |
|   | 1.93         | 0.00 | 7.322E-01 | 0.00 | 0.00 | 0.00 | 3.12       |
|   | 2.89         | 0.00 | 6.29      | 0.00 | 0.00 | 0.00 | -1.743E-01 |
|   | 3.85         | 0.00 | 11.84     | 0.00 | 0.00 | 0.00 | -6.14      |
| 3 | ENVOLVEN MIN |      |           |      |      |      |            |
|   | 0.00         | 0.00 | -10.42    | 0.00 | 0.00 | 0.00 | -6.31      |
|   | 9.6E-01      | 0.00 | -4.87     | 0.00 | 0.00 | 0.00 | 8.246E-01  |
|   | 1.93         | 0.00 | 5.189E-01 | 0.00 | 0.00 | 0.00 | 2.15       |
|   | 2.89         | 0.00 | 4.31      | 0.00 | 0.00 | 0.00 | -2.707E-01 |
|   | 3.85         | 0.00 | 8.09      | 0.00 | 0.00 | 0.00 | -8.98      |
| 4 | ENVOLVEN MAX |      |           |      |      |      |            |
|   | 0.00         | 0.00 | -9.09     | 0.00 | 0.00 | 0.00 | -6.14      |
|   | 9.5E-01      | 0.00 | -5.35     | 0.00 | 0.00 | 0.00 | 1.10       |
|   | 1.90         | 0.00 | -1.62     | 0.00 | 0.00 | 0.00 | 5.94       |
|   | 2.85         | 0.00 | 3.13      | 0.00 | 0.00 | 0.00 | 5.57       |
|   | 3.80         | 0.00 | 8.61      | 0.00 | 0.00 | 0.00 | 0.00       |
| 4 | ENVOLVEN MIN |      |           |      |      |      |            |
|   | 0.00         | 0.00 | -13.33    | 0.00 | 0.00 | 0.00 | -8.98      |
|   | 9.5E-01      | 0.00 | -7.85     | 0.00 | 0.00 | 0.00 | 7.202E-01  |
|   | 1.90         | 0.00 | -2.36     | 0.00 | 0.00 | 0.00 | 4.03       |
|   | 2.85         | 0.00 | 2.12      | 0.00 | 0.00 | 0.00 | 3.79       |
|   | 3.80         | 0.00 | 5.86      | 0.00 | 0.00 | 0.00 | 0.00       |

LOAD COMBINATION MULTIPLIERS

| COMBO | TYPE | CASE  | FACTOR | TYPE  | TITLE                         |
|-------|------|-------|--------|-------|-------------------------------|
| COMB4 | ENVE |       |        |       | Envolvente de diseño nervio 2 |
|       |      | COMB1 | 1.0000 | COMBO |                               |
|       |      | COMB2 | 1.0000 | COMBO |                               |
|       |      | COMB3 | 1.0000 | COMBO |                               |

FRAME ELEMENT FORCES

| FRAME | LOAD      | LOC  | P | V2         | V3   | T    | M2   | M3        |
|-------|-----------|------|---|------------|------|------|------|-----------|
| 1     | COMB4 MAX |      |   |            |      |      |      |           |
|       | 0.00      | 0.00 |   | -2.66      | 0.00 | 0.00 | 0.00 | 0.00      |
|       | 5.7E-01   | 0.00 |   | -4.072E-01 | 0.00 | 0.00 | 0.00 | 6.80      |
|       | 1.15      | 0.00 |   | 3.50       | 0.00 | 0.00 | 0.00 | 7.89      |
|       | 1.72      | 0.00 |   | 13.46      | 0.00 | 0.00 | 0.00 | 3.28      |
|       | 2.29      | 0.00 |   | 23.42      | 0.00 | 0.00 | 0.00 | -4.23     |
| 1     | COMB4 MIN |      |   |            |      |      |      |           |
|       | 0.00      | 0.00 |   | -16.85     | 0.00 | 0.00 | 0.00 | 0.00      |
|       | 5.7E-01   | 0.00 |   | -6.89      | 0.00 | 0.00 | 0.00 | 8.778E-01 |
|       | 1.15      | 0.00 |   | 1.85       | 0.00 | 0.00 | 0.00 | 4.662E-01 |
|       | 1.72      | 0.00 |   | 4.10       | 0.00 | 0.00 | 0.00 | -1.23     |
|       | 2.29      | 0.00 |   | 6.35       | 0.00 | 0.00 | 0.00 | -8.02     |
| 2     | COMB4 MAX |      |   |            |      |      |      |           |
|       | 0.00      | 0.00 |   | -7.85      | 0.00 | 0.00 | 0.00 | -4.23     |
|       | 8.6E-01   | 0.00 |   | -4.35      | 0.00 | 0.00 | 0.00 | 1.62      |
|       | 1.72      | 0.00 |   | 6.018E-01  | 0.00 | 0.00 | 0.00 | 3.23      |
|       | 2.57      | 0.00 |   | 5.55       | 0.00 | 0.00 | 0.00 | 5.907E-01 |
|       | 3.43      | 0.00 |   | 10.50      | 0.00 | 0.00 | 0.00 | -3.25     |
| 2     | COMB4 MIN |      |   |            |      |      |      |           |
|       | 0.00      | 0.00 |   | -10.68     | 0.00 | 0.00 | 0.00 | -8.02     |
|       | 8.6E-01   | 0.00 |   | -5.73      | 0.00 | 0.00 | 0.00 | -1.74     |
|       | 1.72      | 0.00 |   | -1.10      | 0.00 | 0.00 | 0.00 | 6.448E-01 |
|       | 2.57      | 0.00 |   | 2.27       | 0.00 | 0.00 | 0.00 | 1.413E-01 |

|   |           |      |           |      |      |      |            |
|---|-----------|------|-----------|------|------|------|------------|
|   | 3.43      | 0.00 | 5.65      | 0.00 | 0.00 | 0.00 | -6.29      |
| 3 | COMB4 MAX |      |           |      |      |      |            |
|   | 0.00      | 0.00 | -6.77     | 0.00 | 0.00 | 0.00 | -3.25      |
|   | 9.6E-01   | 0.00 | -2.98     | 0.00 | 0.00 | 0.00 | 1.71       |
|   | 1.93      | 0.00 | 9.986E-01 | 0.00 | 0.00 | 0.00 | 3.42       |
|   | 2.89      | 0.00 | 6.55      | 0.00 | 0.00 | 0.00 | -1.184E-01 |
|   | 3.85      | 0.00 | 12.11     | 0.00 | 0.00 | 0.00 | -6.36      |
| 3 | COMB4 MIN |      |           |      |      |      |            |
|   | 0.00      | 0.00 | -10.42    | 0.00 | 0.00 | 0.00 | -6.29      |
|   | 9.6E-01   | 0.00 | -4.86     | 0.00 | 0.00 | 0.00 | 1.06       |
|   | 1.93      | 0.00 | 6.919E-01 | 0.00 | 0.00 | 0.00 | 2.48       |
|   | 2.89      | 0.00 | 4.59      | 0.00 | 0.00 | 0.00 | -2.692E-01 |
|   | 3.85      | 0.00 | 8.38      | 0.00 | 0.00 | 0.00 | -9.19      |
| 4 | COMB4 MAX |      |           |      |      |      |            |
|   | 0.00      | 0.00 | -9.15     | 0.00 | 0.00 | 0.00 | -6.36      |
|   | 9.5E-01   | 0.00 | -5.41     | 0.00 | 0.00 | 0.00 | 1.10       |
|   | 1.90      | 0.00 | -1.67     | 0.00 | 0.00 | 0.00 | 5.94       |
|   | 2.85      | 0.00 | 3.13      | 0.00 | 0.00 | 0.00 | 5.57       |
|   | 3.80      | 0.00 | 8.61      | 0.00 | 0.00 | 0.00 | 0.00       |
| 4 | COMB4 MIN |      |           |      |      |      |            |
|   | 0.00      | 0.00 | -13.38    | 0.00 | 0.00 | 0.00 | -9.19      |
|   | 9.5E-01   | 0.00 | -7.90     | 0.00 | 0.00 | 0.00 | 5.542E-01  |
|   | 1.90      | 0.00 | -2.42     | 0.00 | 0.00 | 0.00 | 3.92       |
|   | 2.85      | 0.00 | 2.06      | 0.00 | 0.00 | 0.00 | 3.74       |
|   | 3.80      | 0.00 | 5.80      | 0.00 | 0.00 | 0.00 | 0.00       |

LOAD COMBINATION MULTIPLIERS

| COMBO | TYPE | CASE  | FACTOR | TYPE  | TITLE                         |
|-------|------|-------|--------|-------|-------------------------------|
| COMB4 | ENVE |       |        |       | Envolvente de diseño Nervio 3 |
|       |      | COMB1 | 1.0000 | COMBO |                               |
|       |      | COMB2 | 1.0000 | COMBO |                               |
|       |      | COMB3 | 1.0000 | COMBO |                               |

FRAME ELEMENT FORCES

| FRAME | LOAD      | LOC  | P    | V2        | V3   | T    | M2   | M3        |
|-------|-----------|------|------|-----------|------|------|------|-----------|
| 1     | COMB4 MAX |      |      |           |      |      |      |           |
|       | 0.00      | 0.00 | 0.00 | -5.10     | 0.00 | 0.00 | 0.00 | 0.00      |
|       | 8.6E-01   | 0.00 | 0.00 | -1.73     | 0.00 | 0.00 | 0.00 | 15.36     |
|       | 1.72      | 0.00 | 0.00 | 4.71      | 0.00 | 0.00 | 0.00 | 17.92     |
|       | 2.57      | 0.00 | 0.00 | 19.63     | 0.00 | 0.00 | 0.00 | 7.69      |
|       | 3.43      | 0.00 | 0.00 | 34.55     | 0.00 | 0.00 | 0.00 | -5.64     |
| 1     | COMB4 MIN |      |      |           |      |      |      |           |
|       | 0.00      | 0.00 | 0.00 | -25.37    | 0.00 | 0.00 | 0.00 | 0.00      |
|       | 8.6E-01   | 0.00 | 0.00 | -10.45    | 0.00 | 0.00 | 0.00 | 2.93      |
|       | 1.72      | 0.00 | 0.00 | 1.64      | 0.00 | 0.00 | 0.00 | 2.96      |
|       | 2.57      | 0.00 | 0.00 | 5.02      | 0.00 | 0.00 | 0.00 | 1.083E-01 |
|       | 3.43      | 0.00 | 0.00 | 8.39      | 0.00 | 0.00 | 0.00 | -16.15    |
| 2     | COMB4 MAX |      |      |           |      |      |      |           |
|       | 0.00      | 0.00 | 0.00 | -9.81     | 0.00 | 0.00 | 0.00 | -5.64     |
|       | 8.6E-01   | 0.00 | 0.00 | -4.86     | 0.00 | 0.00 | 0.00 | 6.491E-01 |
|       | 1.72      | 0.00 | 0.00 | 8.616E-02 | 0.00 | 0.00 | 0.00 | 2.70      |
|       | 2.57      | 0.00 | 0.00 | 5.03      | 0.00 | 0.00 | 0.00 | 5.014E-01 |
|       | 3.43      | 0.00 | 0.00 | 9.98      | 0.00 | 0.00 | 0.00 | -1.18     |
| 2     | COMB4 MIN |      |      |           |      |      |      |           |
|       | 0.00      | 0.00 | 0.00 | -13.64    | 0.00 | 0.00 | 0.00 | -16.15    |
|       | 8.6E-01   | 0.00 | 0.00 | -8.69     | 0.00 | 0.00 | 0.00 | -7.46     |

|   |           |      |            |      |      |      |            |
|---|-----------|------|------------|------|------|------|------------|
|   | 1.72      | 0.00 | -4.13      | 0.00 | 0.00 | 0.00 | -2.47      |
|   | 2.57      | 0.00 | -7.516E-01 | 0.00 | 0.00 | 0.00 | -3.825E-01 |
|   | 3.43      | 0.00 | 2.62       | 0.00 | 0.00 | 0.00 | -5.94      |
| 3 | COMB4 MAX |      |            |      |      |      |            |
|   | 0.00      | 0.00 | -6.09      | 0.00 | 0.00 | 0.00 | -1.18      |
|   | 9.6E-01   | 0.00 | -2.31      | 0.00 | 0.00 | 0.00 | 3.11       |
|   | 1.93      | 0.00 | 1.66       | 0.00 | 0.00 | 0.00 | 4.19       |
|   | 2.89      | 0.00 | 7.21       | 0.00 | 0.00 | 0.00 | 1.202E-02  |
|   | 3.85      | 0.00 | 12.76      | 0.00 | 0.00 | 0.00 | -6.88      |
| 3 | COMB4 MIN |      |            |      |      |      |            |
|   | 0.00      | 0.00 | -10.30     | 0.00 | 0.00 | 0.00 | -5.94      |
|   | 9.6E-01   | 0.00 | -4.75      | 0.00 | 0.00 | 0.00 | 1.31       |
|   | 1.93      | 0.00 | 8.064E-01  | 0.00 | 0.00 | 0.00 | 3.20       |
|   | 2.89      | 0.00 | 5.27       | 0.00 | 0.00 | 0.00 | -2.469E-01 |
|   | 3.85      | 0.00 | 9.05       | 0.00 | 0.00 | 0.00 | -9.69      |
| 4 | COMB4 MAX |      |            |      |      |      |            |
|   | 0.00      | 0.00 | -9.28      | 0.00 | 0.00 | 0.00 | -6.88      |
|   | 9.5E-01   | 0.00 | -5.55      | 0.00 | 0.00 | 0.00 | 1.03       |
|   | 1.90      | 0.00 | -1.81      | 0.00 | 0.00 | 0.00 | 5.89       |
|   | 2.85      | 0.00 | 3.10       | 0.00 | 0.00 | 0.00 | 5.55       |
|   | 3.80      | 0.00 | 8.58       | 0.00 | 0.00 | 0.00 | 0.00       |
| 4 | COMB4 MIN |      |            |      |      |      |            |
|   | 0.00      | 0.00 | -13.51     | 0.00 | 0.00 | 0.00 | -9.69      |
|   | 9.5E-01   | 0.00 | -8.03      | 0.00 | 0.00 | 0.00 | 1.670E-01  |
|   | 1.90      | 0.00 | -2.55      | 0.00 | 0.00 | 0.00 | 3.66       |
|   | 2.85      | 0.00 | 1.93       | 0.00 | 0.00 | 0.00 | 3.61       |
|   | 3.80      | 0.00 | 5.66       | 0.00 | 0.00 | 0.00 | 0.00       |

## 5.4.8.2 Reacciones

### Reacciones Nervio 1

#### LOAD COMBINATION MULTIPLIERS

| COMBO | TYPE | CASE     | FACTOR  | TYPE         | TITLE                    |
|-------|------|----------|---------|--------------|--------------------------|
| COMB4 | ADD  |          |         |              | Envolvente de carga Viva |
|       |      | ENVOLVEN | 0.5882  | COMBO        |                          |
|       |      | MUERTA   | -0.8235 | STATIC(DEAD) |                          |

#### JOINT REACTIONS

| JOINT | LOAD      | F1     | F2     | F3      | M1     | M2     | M3     |
|-------|-----------|--------|--------|---------|--------|--------|--------|
| 1     | MUERTA    | 0.0000 | 0.0000 | -0.1970 | 0.0000 | 0.0000 | 0.0000 |
| 1     | COMB4 MAX | 0.0000 | 0.0000 | 4.2077  | 0.0000 | 0.0000 | 0.0000 |
| 1     | COMB4 MIN | 0.0000 | 0.0000 | -0.6495 | 0.0000 | 0.0000 | 0.0000 |
| 2     | MUERTA    | 0.0000 | 0.0000 | 7.9239  | 0.0000 | 0.0000 | 0.0000 |
| 2     | COMB4 MAX | 0.0000 | 0.0000 | 7.3182  | 0.0000 | 0.0000 | 0.0000 |
| 2     | COMB4 MIN | 0.0000 | 0.0000 | 2.3704  | 0.0000 | 0.0000 | 0.0000 |
| 3     | MUERTA    | 0.0000 | 0.0000 | 10.1877 | 0.0000 | 0.0000 | 0.0000 |
| 3     | COMB4 MAX | 0.0000 | 0.0000 | 3.9363  | 0.0000 | 0.0000 | 0.0000 |
| 3     | COMB4 MIN | 0.0000 | 0.0000 | -0.1557 | 0.0000 | 0.0000 | 0.0000 |
| 4     | MUERTA    | 0.0000 | 0.0000 | 12.2319 | 0.0000 | 0.0000 | 0.0000 |

|   |           |        |        |            |        |        |        |
|---|-----------|--------|--------|------------|--------|--------|--------|
| 4 | COMB4 MAX | 0.0000 | 0.0000 | 4.7300     | 0.0000 | 0.0000 | 0.0000 |
| 4 | COMB4 MIN | 0.0000 | 0.0000 | 0.0337     | 0.0000 | 0.0000 | 0.0000 |
| 5 | MUERTA    | 0.0000 | 0.0000 | 4.1917     | 0.0000 | 0.0000 | 0.0000 |
| 5 | COMB4 MAX | 0.0000 | 0.0000 | 1.6116     | 0.0000 | 0.0000 | 0.0000 |
| 5 | COMB4 MIN | 0.0000 | 0.0000 | -5.797E-03 | 0.0000 | 0.0000 | 0.0000 |

## Reacciones Nervio 2

| LOAD COMBINATION MULTIPLIERS |      |        |         |              |                          |  |
|------------------------------|------|--------|---------|--------------|--------------------------|--|
| COMBO                        | TYPE | CASE   | FACTOR  | TYPE         | TITLE                    |  |
| COMB5                        | ADD  |        |         |              | Envolvente de Carga Viva |  |
|                              |      | COMB4  | 0.5882  | COMBO        |                          |  |
|                              |      | MUERTA | -0.8235 | STATIC(DEAD) |                          |  |

| JOINT REACTIONS |           |        |        |         |        |        |        |
|-----------------|-----------|--------|--------|---------|--------|--------|--------|
| JOINT           | LOAD      | F1     | F2     | F3      | M1     | M2     | M3     |
| 1               | MUERTA    | 0.0000 | 0.0000 | 2.2089  | 0.0000 | 0.0000 | 0.0000 |
| 1               | COMB5 MAX | 0.0000 | 0.0000 | 8.0936  | 0.0000 | 0.0000 | 0.0000 |
| 1               | COMB5 MIN | 0.0000 | 0.0000 | -0.2548 | 0.0000 | 0.0000 | 0.0000 |
| 2               | MUERTA    | 0.0000 | 0.0000 | 8.8438  | 0.0000 | 0.0000 | 0.0000 |
| 2               | COMB5 MAX | 0.0000 | 0.0000 | 12.7732 | 0.0000 | 0.0000 | 0.0000 |
| 2               | COMB5 MIN | 0.0000 | 0.0000 | 1.9185  | 0.0000 | 0.0000 | 0.0000 |
| 3               | MUERTA    | 0.0000 | 0.0000 | 10.0724 | 0.0000 | 0.0000 | 0.0000 |
| 3               | COMB5 MAX | 0.0000 | 0.0000 | 4.0062  | 0.0000 | 0.0000 | 0.0000 |
| 3               | COMB5 MIN | 0.0000 | 0.0000 | -0.9932 | 0.0000 | 0.0000 | 0.0000 |
| 4               | MUERTA    | 0.0000 | 0.0000 | 12.2571 | 0.0000 | 0.0000 | 0.0000 |
| 4               | COMB5 MAX | 0.0000 | 0.0000 | 4.8977  | 0.0000 | 0.0000 | 0.0000 |
| 4               | COMB5 MIN | 0.0000 | 0.0000 | 0.2167  | 0.0000 | 0.0000 | 0.0000 |
| 5               | MUERTA    | 0.0000 | 0.0000 | 4.1875  | 0.0000 | 0.0000 | 0.0000 |
| 5               | COMB5 MAX | 0.0000 | 0.0000 | 1.6142  | 0.0000 | 0.0000 | 0.0000 |
| 5               | COMB5 MIN | 0.0000 | 0.0000 | -0.0366 | 0.0000 | 0.0000 | 0.0000 |

## Reacciones Nervio 3

| LOAD COMBINATION MULTIPLIERS |      |        |         |              |                          |  |
|------------------------------|------|--------|---------|--------------|--------------------------|--|
| COMBO                        | TYPE | CASE   | FACTOR  | TYPE         | TITLE                    |  |
| COMB5                        | ADD  |        |         |              | Envolvente de Carga Viva |  |
|                              |      | COMB4  | 0.5882  | COMBO        |                          |  |
|                              |      | MUERTA | -0.8235 | STATIC(DEAD) |                          |  |

J O I N T R E A C T I O N S

| JOINT  | LOAD        | F1     | F2     | F3      | M1     | M2     |
|--------|-------------|--------|--------|---------|--------|--------|
| M3     |             |        |        |         |        |        |
| 0.0000 | 1 MUERTA    | 0.0000 | 0.0000 | 3.8147  | 0.0000 | 0.0000 |
| 0.0000 | 1 COMB5 MAX | 0.0000 | 0.0000 | 11.7796 | 0.0000 | 0.0000 |
| 0.0000 | 1 COMB5 MIN | 0.0000 | 0.0000 | -0.1403 | 0.0000 | 0.0000 |
| 0.0000 | 2 MUERTA    | 0.0000 | 0.0000 | 10.8550 | 0.0000 | 0.0000 |
| 0.0000 | 2 COMB5 MAX | 0.0000 | 0.0000 | 19.4025 | 0.0000 | 0.0000 |
| 0.0000 | 2 COMB5 MIN | 0.0000 | 0.0000 | 1.7667  | 0.0000 | 0.0000 |
| 0.0000 | 3 MUERTA    | 0.0000 | 0.0000 | 9.5670  | 0.0000 | 0.0000 |
| 0.0000 | 3 COMB5 MAX | 0.0000 | 0.0000 | 4.0518  | 0.0000 | 0.0000 |
| 0.0000 | 3 COMB5 MIN | 0.0000 | 0.0000 | -2.7518 | 0.0000 | 0.0000 |
| 0.0000 | 4 MUERTA    | 0.0000 | 0.0000 | 12.3675 | 0.0000 | 0.0000 |
| 0.0000 | 4 COMB5 MAX | 0.0000 | 0.0000 | 5.2720  | 0.0000 | 0.0000 |
| 0.0000 | 4 COMB5 MIN | 0.0000 | 0.0000 | 0.6009  | 0.0000 | 0.0000 |
| 0.0000 | 5 MUERTA    | 0.0000 | 0.0000 | 4.1689  | 0.0000 | 0.0000 |
| 0.0000 | 5 COMB5 MAX | 0.0000 | 0.0000 | 1.6159  | 0.0000 | 0.0000 |
| 0.0000 | 5 COMB5 MIN | 0.0000 | 0.0000 | -0.1012 | 0.0000 | 0.0000 |

### 5.4.8.3 Cálculo de Refuerzo

#### Refuerzo Nervio 1

C O N C R E T E D E S I G N O U T P U T (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM ID | SECTION ID | STATION ID | ←-----REQUIRED REINFORCING-----→ |       |        |       |       |       |  |
|---------|------------|------------|----------------------------------|-------|--------|-------|-------|-------|--|
|         |            |            | TOP                              | COMBO | BOTTOM | COMBO | SHEAR | COMBO |  |
| 1       | 12X25      | 0.000      | 0.000                            | COMB1 | 0.000  | COMB1 | 0.011 | COMB2 |  |
| 1       | 12X25      | 28.500     | 0.189                            | COMB3 | 0.201  | COMB1 | 0.013 | COMB2 |  |
| 1       | 12X25      | 57.000     | 0.229                            | COMB2 | 0.175  | COMB1 | 0.014 | COMB2 |  |
| 1       | 12X25      | 85.500     | 0.422                            | COMB2 | 0.189  | COMB3 | 0.016 | COMB2 |  |
| 1       | 12X25      | 114.000    | 0.771                            | COMB3 | 0.381  | COMB3 | 0.017 | COMB2 |  |
| 2       | 12X25      | 0.000      | 0.771                            | COMB3 | 0.381  | COMB3 | 0.000 | COMB3 |  |
| 2       | 12X25      | 85.750     | 0.253                            | COMB2 | 0.271  | COMB2 | 0.000 | COMB3 |  |
| 2       | 12X25      | 171.500    | 0.253                            | COMB2 | 0.529  | COMB2 | 0.000 | COMB3 |  |
| 2       | 12X25      | 257.250    | 0.253                            | COMB2 | 0.253  | COMB2 | 0.000 | COMB3 |  |
| 2       | 12X25      | 343.000    | 0.900                            | COMB2 | 0.511  | COMB2 | 0.000 | COMB3 |  |



|   |       |         |       |       |       |       |       |       |
|---|-------|---------|-------|-------|-------|-------|-------|-------|
| 3 | 12X25 | 0.000   | 0.900 | COMB2 | 0.511 | COMB2 | 0.000 | COMB3 |
| 3 | 12X25 | 96.250  | 0.360 | COMB2 | 0.360 | COMB2 | 0.000 | COMB3 |
| 3 | 12X25 | 192.500 | 0.360 | COMB2 | 0.495 | COMB2 | 0.000 | COMB3 |
| 3 | 12X25 | 288.750 | 0.360 | COMB2 | 0.360 | COMB2 | 0.000 | COMB3 |
| 3 | 12X25 | 385.000 | 1.128 | COMB3 | 0.729 | COMB2 | 0.000 | COMB3 |
| 4 | 12X25 | 0.000   | 1.128 | COMB3 | 0.729 | COMB2 | 0.000 | COMB3 |
| 4 | 12X25 | 95.000  | 0.360 | COMB2 | 0.360 | COMB2 | 0.000 | COMB3 |
| 4 | 12X25 | 190.000 | 0.360 | COMB2 | 0.900 | COMB2 | 0.000 | COMB3 |
| 4 | 12X25 | 285.000 | 0.360 | COMB2 | 0.900 | COMB2 | 0.000 | COMB3 |
| 4 | 12X25 | 380.000 | 0.000 | COMB2 | 0.000 | COMB3 | 0.000 | COMB3 |

## Refuerzo Nervio 2

C O N C R E T E D E S I G N O U T P U T (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |       |        |       |       |       |
|------------|---------------|---------------|---------------------------------|-------|--------|-------|-------|-------|
|            |               |               | TOP                             | COMBO | BOTTOM | COMBO | SHEAR | COMBO |
| 1          | 12X25         | 0.000         | 0.000                           | COMB3 | 0.000  | COMB1 | 0.005 | COMB1 |
| 1          | 12X25         | 57.250        | 0.282                           | COMB1 | 0.900  | COMB1 | 0.000 | COMB3 |
| 1          | 12X25         | 114.500       | 0.282                           | COMB1 | 0.984  | COMB1 | 0.000 | COMB3 |
| 1          | 12X25         | 171.750       | 0.282                           | COMB1 | 0.532  | COMB1 | 0.001 | COMB3 |
| 1          | 12X25         | 229.000       | 1.001                           | COMB3 | 0.570  | COMB1 | 0.014 | COMB3 |
| 2          | 12X25         | 0.000         | 1.001                           | COMB3 | 0.570  | COMB1 | 0.000 | COMB3 |
| 2          | 12X25         | 85.750        | 0.282                           | COMB1 | 0.282  | COMB1 | 0.000 | COMB3 |
| 2          | 12X25         | 171.500       | 0.282                           | COMB1 | 0.523  | COMB2 | 0.000 | COMB3 |
| 2          | 12X25         | 257.250       | 0.282                           | COMB1 | 0.282  | COMB1 | 0.000 | COMB3 |
| 2          | 12X25         | 343.000       | 0.900                           | COMB2 | 0.509  | COMB2 | 0.000 | COMB3 |
| 3          | 12X25         | 0.000         | 0.900                           | COMB2 | 0.509  | COMB2 | 0.000 | COMB3 |
| 3          | 12X25         | 96.250        | 0.360                           | COMB2 | 0.360  | COMB2 | 0.000 | COMB3 |
| 3          | 12X25         | 192.500       | 0.360                           | COMB2 | 0.555  | COMB3 | 0.000 | COMB3 |
| 3          | 12X25         | 288.750       | 0.360                           | COMB2 | 0.360  | COMB2 | 0.000 | COMB3 |
| 3          | 12X25         | 385.000       | 1.155                           | COMB3 | 0.730  | COMB2 | 0.000 | COMB3 |
| 4          | 12X25         | 0.000         | 1.155                           | COMB3 | 0.730  | COMB2 | 0.000 | COMB3 |
| 4          | 12X25         | 95.000        | 0.360                           | COMB2 | 0.360  | COMB2 | 0.000 | COMB3 |
| 4          | 12X25         | 190.000       | 0.360                           | COMB2 | 0.900  | COMB2 | 0.000 | COMB3 |
| 4          | 12X25         | 285.000       | 0.360                           | COMB2 | 0.900  | COMB2 | 0.000 | COMB3 |
| 4          | 12X25         | 380.000       | 0.000                           | COMB3 | 0.000  | COMB1 | 0.000 | COMB3 |

## Refuerzo Nervio 3

C O N C R E T E D E S I G N O U T P U T (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |       |        |       |       |       |
|------------|---------------|---------------|---------------------------------|-------|--------|-------|-------|-------|
|            |               |               | TOP                             | COMBO | BOTTOM | COMBO | SHEAR | COMBO |
| 1          | 12X25         | 0.000         | 0.000                           | COMB1 | 0.000  | COMB1 | 0.018 | COMB1 |
| 1          | 12X25         | 85.750        | 0.623                           | COMB1 | 2.009  | COMB1 | 0.000 | COMB3 |
| 1          | 12X25         | 171.500       | 0.623                           | COMB1 | 2.387  | COMB1 | 0.000 | COMB3 |
| 1          | 12X25         | 257.250       | 0.623                           | COMB1 | 0.958  | COMB1 | 0.011 | COMB3 |
| 1          | 12X25         | 343.000       | 2.125                           | COMB3 | 1.008  | COMB3 | 0.030 | COMB3 |
| 2          | 12X25         | 0.000         | 2.125                           | COMB3 | 1.008  | COMB3 | 0.005 | COMB3 |
| 2          | 12X25         | 85.750        | 0.928                           | COMB1 | 0.623  | COMB1 | 0.000 | COMB3 |
| 2          | 12X25         | 171.500       | 0.623                           | COMB1 | 0.623  | COMB1 | 0.000 | COMB3 |

|   |       |         |       |       |       |       |           |       |
|---|-------|---------|-------|-------|-------|-------|-----------|-------|
| 2 | 12X25 | 257.250 | 0.623 | COMB1 | 0.623 | COMB1 | 0.000     | COMB3 |
| 2 | 12X25 | 343.000 | 0.900 | COMB2 | 0.480 | COMB2 | 7.667E-04 | COMB2 |
| 3 | 12X25 | 0.000   | 0.900 | COMB2 | 0.480 | COMB2 | 0.000     | COMB3 |
| 3 | 12X25 | 96.250  | 0.391 | COMB3 | 0.462 | COMB1 | 0.000     | COMB3 |
| 3 | 12X25 | 192.500 | 0.391 | COMB3 | 0.528 | COMB1 | 0.000     | COMB3 |
| 3 | 12X25 | 288.750 | 0.391 | COMB3 | 0.391 | COMB3 | 0.000     | COMB3 |
| 3 | 12X25 | 385.000 | 1.222 | COMB3 | 0.792 | COMB3 | 3.876E-04 | COMB3 |
| 4 | 12X25 | 0.000   | 1.222 | COMB3 | 0.792 | COMB3 | 0.000     | COMB3 |
| 4 | 12X25 | 95.000  | 0.391 | COMB3 | 0.391 | COMB3 | 0.000     | COMB3 |
| 4 | 12X25 | 190.000 | 0.391 | COMB3 | 0.900 | COMB2 | 0.000     | COMB3 |
| 4 | 12X25 | 285.000 | 0.391 | COMB3 | 0.900 | COMB2 | 0.000     | COMB3 |
| 4 | 12X25 | 380.000 | 0.000 | COMB3 | 0.000 | COMB1 | 0.000     | COMB3 |

## 5.4.9. Diseño de Elementos Estructurales.

### 5.4.9.1 Diseño de Vigas.

#### 5.1.9.1.1 Envoltente de Diseño.

#### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE   | FACTOR | TYPE  | TITLE |
|----------|------|--------|--------|-------|-------|
| ENVOLVIG | ENVE |        |        |       | COMB1 |
|          |      | CU     | 1.0000 | COMBO |       |
|          |      | VIGAS1 | 1.0000 | COMBO |       |
|          |      | VIGAS2 | 1.0000 | COMBO |       |
|          |      | VIGAS3 | 1.0000 | COMBO |       |
|          |      | VIGAS4 | 1.0000 | COMBO |       |

#### FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2    | V3         | T          | M2         | M3         |
|-------|--------------|-----|------|-------|------------|------------|------------|------------|
| 1     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 5.50  | 1.084E-01  | 1.78       | 1.768E-01  | 8.92       |
|       | 9.3E-01      |     | 0.00 | 5.50  | 1.084E-01  | 1.78       | 9.195E-02  | 4.64       |
|       | 1.72         |     | 0.00 | 5.50  | 1.084E-01  | 1.78       | 7.093E-03  | 6.425E-01  |
|       | 2.50         |     | 0.00 | 5.50  | 1.084E-01  | 1.78       | 1.038E-01  | 4.10       |
|       | 3.28         |     | 0.00 | 5.50  | 1.084E-01  | 1.78       | 2.170E-01  | 9.60       |
| 1     | ENVOLVIG MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -7.04 | -1.447E-01 | 3.351E-02  | -2.359E-01 | -12.45     |
|       | 9.3E-01      |     | 0.00 | -7.04 | -1.447E-01 | 3.351E-02  | -1.227E-01 | -6.97      |
|       | 1.72         |     | 0.00 | -7.04 | -1.447E-01 | 3.351E-02  | -9.464E-03 | -1.77      |
|       | 2.50         |     | 0.00 | -7.04 | -1.447E-01 | 3.351E-02  | -7.776E-02 | -4.03      |
|       | 3.28         |     | 0.00 | -7.04 | -1.447E-01 | 3.351E-02  | -1.626E-01 | -8.33      |
| 2     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 5.03  | 9.859E-02  | 2.835E-01  | 1.524E-01  | 7.88       |
|       | 9.3E-01      |     | 0.00 | 5.03  | 9.859E-02  | 2.835E-01  | 7.526E-02  | 3.97       |
|       | 1.72         |     | 0.00 | 5.03  | 9.859E-02  | 2.835E-01  | 2.524E-03  | 3.581E-01  |
|       | 2.50         |     | 0.00 | 5.03  | 9.859E-02  | 2.835E-01  | 1.055E-01  | 4.26       |
|       | 3.28         |     | 0.00 | 5.03  | 9.859E-02  | 2.835E-01  | 2.084E-01  | 8.20       |
| 2     | ENVOLVIG MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -5.03 | -1.315E-01 | -4.847E-01 | -2.033E-01 | -7.57      |
|       | 9.3E-01      |     | 0.00 | -5.03 | -1.315E-01 | -4.847E-01 | -1.004E-01 | -3.66      |
|       | 1.72         |     | 0.00 | -5.03 | -1.315E-01 | -4.847E-01 | -1.892E-03 | -4.674E-02 |
|       | 2.50         |     | 0.00 | -5.03 | -1.315E-01 | -4.847E-01 | -7.904E-02 | -3.95      |
|       | 3.28         |     | 0.00 | -5.03 | -1.315E-01 | -4.847E-01 | -1.562E-01 | -7.89      |

|   |              |      |       |            |            |            |           |
|---|--------------|------|-------|------------|------------|------------|-----------|
| 3 | ENVOLVIG MAX |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | 3.84  | 7.869E-02  | 2.595E-01  | 1.405E-01  | 6.89      |
|   | 1.04         | 0.00 | 3.84  | 7.869E-02  | 2.595E-01  | 7.066E-02  | 3.49      |
|   | 1.93         | 0.00 | 3.84  | 7.869E-02  | 2.595E-01  | 8.229E-04  | 1.124E-01 |
|   | 2.81         | 0.00 | 3.84  | 7.869E-02  | 2.595E-01  | 9.208E-02  | 4.02      |
|   | 3.70         | 0.00 | 3.84  | 7.869E-02  | 2.595E-01  | 1.853E-01  | 8.01      |
| 3 | ENVOLVIG MIN |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | -4.49 | -1.050E-01 | -6.525E-02 | -1.875E-01 | -7.94     |
|   | 1.04         | 0.00 | -4.49 | -1.050E-01 | -6.525E-02 | -9.428E-02 | -3.95     |
|   | 1.93         | 0.00 | -4.49 | -1.050E-01 | -6.525E-02 | -1.098E-03 | 9.403E-03 |
|   | 2.81         | 0.00 | -4.49 | -1.050E-01 | -6.525E-02 | -6.902E-02 | -3.32     |
|   | 3.70         | 0.00 | -4.49 | -1.050E-01 | -6.525E-02 | -1.389E-01 | -6.72     |
| 4 | ENVOLVIG MAX |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | 5.91  | 1.027E-01  | -1.714E-01 | 1.661E-01  | 8.95      |
|   | 1.03         | 0.00 | 5.91  | 1.027E-01  | -1.714E-01 | 7.619E-02  | 3.86      |
|   | 1.90         | 0.00 | 5.91  | 1.027E-01  | -1.714E-01 | 1.830E-02  | 1.673E-02 |
|   | 2.78         | 0.00 | 5.91  | 1.027E-01  | -1.714E-01 | 1.382E-01  | 3.94      |
|   | 3.65         | 0.00 | 5.91  | 1.027E-01  | -1.714E-01 | 2.582E-01  | 7.86      |
| 4 | ENVOLVIG MIN |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | -4.48 | -1.371E-01 | -7.136E-01 | -2.216E-01 | -7.83     |
|   | 1.03         | 0.00 | -4.48 | -1.371E-01 | -7.136E-01 | -1.017E-01 | -3.99     |
|   | 1.90         | 0.00 | -4.48 | -1.371E-01 | -7.136E-01 | -1.371E-02 | -1.39     |
|   | 2.78         | 0.00 | -4.48 | -1.371E-01 | -7.136E-01 | -1.036E-01 | -6.56     |
|   | 3.65         | 0.00 | -4.48 | -1.371E-01 | -7.136E-01 | -1.935E-01 | -11.73    |
| 5 | ENVOLVIG MAX |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | 7.99  | 1.965E-01  | 2.123E-01  | 2.363E-01  | 10.26     |
|   | 7.3E-01      | 0.00 | 7.99  | 1.965E-01  | 2.123E-01  | 1.216E-01  | 5.61      |
|   | 1.32         | 0.00 | 7.99  | 1.965E-01  | 2.123E-01  | 6.839E-03  | 1.02      |
|   | 1.90         | 0.00 | 7.99  | 1.965E-01  | 2.123E-01  | 1.439E-01  | 4.06      |
|   | 2.48         | 0.00 | 7.99  | 1.965E-01  | 2.123E-01  | 2.970E-01  | 9.76      |
| 5 | ENVOLVIG MIN |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | -9.98 | -2.622E-01 | -4.465E-01 | -3.152E-01 | -13.55    |
|   | 7.3E-01      | 0.00 | -9.98 | -2.622E-01 | -4.465E-01 | -1.622E-01 | -7.74     |
|   | 1.32         | 0.00 | -9.98 | -2.622E-01 | -4.465E-01 | -9.124E-03 | -1.99     |
|   | 1.90         | 0.00 | -9.98 | -2.622E-01 | -4.465E-01 | -1.079E-01 | -3.87     |
|   | 2.48         | 0.00 | -9.98 | -2.622E-01 | -4.465E-01 | -2.226E-01 | -8.41     |
| 6 | ENVOLVIG MAX |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | 6.57  | 6.410E-02  | 8.413E-03  | 1.214E-01  | 10.78     |
|   | 1.08         | 0.00 | 6.57  | 6.410E-02  | 8.413E-03  | 6.216E-02  | 4.71      |
|   | 2.00         | 0.00 | 6.57  | 6.410E-02  | 8.413E-03  | 2.868E-03  | -1.31     |
|   | 2.93         | 0.00 | 6.57  | 6.410E-02  | 8.413E-03  | 7.528E-02  | 4.32      |
|   | 3.85         | 0.00 | 6.57  | 6.410E-02  | 8.413E-03  | 1.544E-01  | 10.80     |
| 6 | ENVOLVIG MIN |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | -7.34 | -8.552E-02 | -5.822E-01 | -1.620E-01 | -18.94    |
|   | 1.08         | 0.00 | -7.34 | -8.552E-02 | -5.822E-01 | -8.293E-02 | -12.15    |
|   | 2.00         | 0.00 | -7.34 | -8.552E-02 | -5.822E-01 | -3.826E-03 | -6.62     |
|   | 2.93         | 0.00 | -7.34 | -8.552E-02 | -5.822E-01 | -5.642E-02 | -10.33    |
|   | 3.85         | 0.00 | -7.34 | -8.552E-02 | -5.822E-01 | -1.157E-01 | -16.09    |
| 7 | ENVOLVIG MAX |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | 6.96  | 7.475E-02  | 2.552E-01  | 1.378E-01  | 9.88      |
|   | 1.08         | 0.00 | 6.96  | 7.475E-02  | 2.552E-01  | 6.861E-02  | 3.75      |
|   | 2.00         | 0.00 | 6.96  | 7.475E-02  | 2.552E-01  | 7.206E-04  | -2.38     |
|   | 2.93         | 0.00 | 6.96  | 7.475E-02  | 2.552E-01  | 9.298E-02  | 3.61      |
|   | 3.85         | 0.00 | 6.96  | 7.475E-02  | 2.552E-01  | 1.852E-01  | 9.63      |
| 7 | ENVOLVIG MIN |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | -6.51 | -9.974E-02 | -8.512E-02 | -1.838E-01 | -15.75    |
|   | 1.08         | 0.00 | -6.51 | -9.974E-02 | -8.512E-02 | -9.154E-02 | -10.04    |
|   | 2.00         | 0.00 | -6.51 | -9.974E-02 | -8.512E-02 | -5.401E-04 | -5.75     |
|   | 2.93         | 0.00 | -6.51 | -9.974E-02 | -8.512E-02 | -6.969E-02 | -10.74    |
|   | 3.85         | 0.00 | -6.51 | -9.974E-02 | -8.512E-02 | -1.388E-01 | -17.18    |
| 8 | ENVOLVIG MAX |      |       |            |            |            |           |
|   | 1.5E-01      | 0.00 | 6.11  | 7.119E-02  | 1.219E-01  | 1.318E-01  | 8.30      |
|   | 1.08         | 0.00 | 6.11  | 7.119E-02  | 1.219E-01  | 6.595E-02  | 2.78      |
|   | 2.00         | 0.00 | 6.11  | 7.119E-02  | 1.219E-01  | 9.389E-05  | -2.73     |
|   | 2.93         | 0.00 | 6.11  | 7.119E-02  | 1.219E-01  | 8.774E-02  | 2.75      |

|    |              |      |       |            |            |            |            |
|----|--------------|------|-------|------------|------------|------------|------------|
|    | 3.85         | 0.00 | 6.11  | 7.119E-02  | 1.219E-01  | 1.756E-01  | 8.23       |
| 8  | ENVOLVIG MIN |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | -5.92 | -9.499E-02 | -8.869E-02 | -1.758E-01 | -15.35     |
|    | 1.08         | 0.00 | -5.92 | -9.499E-02 | -8.869E-02 | -8.799E-02 | -10.01     |
|    | 2.00         | 0.00 | -5.92 | -9.499E-02 | -8.869E-02 | -1.253E-04 | -6.22      |
|    | 2.93         | 0.00 | -5.92 | -9.499E-02 | -8.869E-02 | -6.576E-02 | -10.32     |
|    | 3.85         | 0.00 | -5.92 | -9.499E-02 | -8.869E-02 | -1.316E-01 | -15.97     |
| 9  | ENVOLVIG MAX |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | 5.40  | 1.132E-01  | 1.187E-01  | 2.093E-01  | 8.67       |
|    | 1.08         | 0.00 | 5.40  | 1.132E-01  | 1.187E-01  | 1.047E-01  | 3.67       |
|    | 2.00         | 0.00 | 5.40  | 1.132E-01  | 1.187E-01  | 3.099E-05  | -1.33      |
|    | 2.93         | 0.00 | 5.40  | 1.132E-01  | 1.187E-01  | 1.397E-01  | 3.72       |
|    | 3.85         | 0.00 | 5.40  | 1.132E-01  | 1.187E-01  | 2.794E-01  | 8.77       |
| 9  | ENVOLVIG MIN |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | -5.52 | -1.510E-01 | -1.980E-01 | -2.793E-01 | -12.39     |
|    | 1.08         | 0.00 | -5.52 | -1.510E-01 | -1.980E-01 | -1.396E-01 | -7.28      |
|    | 2.00         | 0.00 | -5.52 | -1.510E-01 | -1.980E-01 | -2.323E-05 | -2.90      |
|    | 2.93         | 0.00 | -5.52 | -1.510E-01 | -1.980E-01 | -1.047E-01 | -7.11      |
|    | 3.85         | 0.00 | -5.52 | -1.510E-01 | -1.980E-01 | -2.094E-01 | -12.05     |
| 10 | ENVOLVIG MAX |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | 11.50 | 1.618E-01  | 5.762E-01  | 1.959E-01  | 11.33      |
|    | 7.3E-01      | 0.00 | 11.50 | 1.618E-01  | 5.762E-01  | 1.014E-01  | 4.62       |
|    | 1.32         | 0.00 | 11.50 | 1.618E-01  | 5.762E-01  | 6.969E-03  | -2.913E-01 |
|    | 1.90         | 0.00 | 11.50 | 1.618E-01  | 5.762E-01  | 1.167E-01  | 2.73       |
|    | 2.48         | 0.00 | 11.50 | 1.618E-01  | 5.762E-01  | 2.427E-01  | 5.76       |
| 10 | ENVOLVIG MIN |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | -5.20 | -2.159E-01 | -1.88      | -2.613E-01 | -6.37      |
|    | 7.3E-01      | 0.00 | -5.20 | -2.159E-01 | -1.88      | -1.353E-01 | -3.34      |
|    | 1.32         | 0.00 | -5.20 | -2.159E-01 | -1.88      | -9.298E-03 | -2.38      |
|    | 1.90         | 0.00 | -5.20 | -2.159E-01 | -1.88      | -8.747E-02 | -8.80      |
|    | 2.48         | 0.00 | -5.20 | -2.159E-01 | -1.88      | -1.819E-01 | -15.51     |
| 11 | ENVOLVIG MAX |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | 4.15  | 9.342E-02  | 2.683E-01  | 1.403E-01  | 6.40       |
|    | 9.3E-01      | 0.00 | 4.15  | 9.342E-02  | 2.683E-01  | 6.721E-02  | 3.16       |
|    | 1.72         | 0.00 | 4.15  | 9.342E-02  | 2.683E-01  | 7.861E-03  | 1.814E-01  |
|    | 2.50         | 0.00 | 4.15  | 9.342E-02  | 2.683E-01  | 1.054E-01  | 3.37       |
|    | 3.28         | 0.00 | 4.15  | 9.342E-02  | 2.683E-01  | 2.029E-01  | 8.09       |
| 11 | ENVOLVIG MIN |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | -6.18 | -1.246E-01 | -4.601E-01 | -1.872E-01 | -11.26     |
|    | 9.3E-01      | 0.00 | -6.18 | -1.246E-01 | -4.601E-01 | -8.967E-02 | -6.43      |
|    | 1.72         | 0.00 | -6.18 | -1.246E-01 | -4.601E-01 | -5.892E-03 | -1.87      |
|    | 2.50         | 0.00 | -6.18 | -1.246E-01 | -4.601E-01 | -7.899E-02 | -3.47      |
|    | 3.28         | 0.00 | -6.18 | -1.246E-01 | -4.601E-01 | -1.521E-01 | -6.60      |
| 12 | ENVOLVIG MAX |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | 3.40  | 7.947E-02  | 1.012E-01  | 1.425E-01  | 6.32       |
|    | 1.04         | 0.00 | 3.40  | 7.947E-02  | 1.012E-01  | 7.201E-02  | 3.30       |
|    | 1.93         | 0.00 | 3.40  | 7.947E-02  | 1.012E-01  | 1.483E-03  | 4.039E-01  |
|    | 2.81         | 0.00 | 3.40  | 7.947E-02  | 1.012E-01  | 9.212E-02  | 3.07       |
|    | 3.70         | 0.00 | 3.40  | 7.947E-02  | 1.012E-01  | 1.862E-01  | 5.95       |
| 12 | ENVOLVIG MIN |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | -3.26 | -1.060E-01 | -2.191E-01 | -1.902E-01 | -5.61      |
|    | 1.04         | 0.00 | -3.26 | -1.060E-01 | -2.191E-01 | -9.608E-02 | -2.72      |
|    | 1.93         | 0.00 | -3.26 | -1.060E-01 | -2.191E-01 | -1.978E-03 | 7.999E-02  |
|    | 2.81         | 0.00 | -3.26 | -1.060E-01 | -2.191E-01 | -6.905E-02 | -2.75      |
|    | 3.70         | 0.00 | -3.26 | -1.060E-01 | -2.191E-01 | -1.396E-01 | -5.76      |
| 13 | ENVOLVIG MAX |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | 4.95  | 1.026E-01  | 8.131E-01  | 1.658E-01  | 7.52       |
|    | 1.03         | 0.00 | 4.95  | 1.026E-01  | 8.131E-01  | 7.596E-02  | 3.18       |
|    | 1.90         | 0.00 | 4.95  | 1.026E-01  | 8.131E-01  | 1.846E-02  | 5.099E-02  |
|    | 2.78         | 0.00 | 4.95  | 1.026E-01  | 8.131E-01  | 1.383E-01  | 3.30       |
|    | 3.65         | 0.00 | 4.95  | 1.026E-01  | 8.131E-01  | 2.581E-01  | 6.56       |
| 13 | ENVOLVIG MIN |      |       |            |            |            |            |
|    | 1.5E-01      | 0.00 | -3.72 | -1.369E-01 | 1.852E-01  | -2.211E-01 | -6.45      |
|    | 1.03         | 0.00 | -3.72 | -1.369E-01 | 1.852E-01  | -1.013E-01 | -3.20      |
|    | 1.90         | 0.00 | -3.72 | -1.369E-01 | 1.852E-01  | -1.384E-02 | -1.15      |
|    | 2.78         | 0.00 | -3.72 | -1.369E-01 | 1.852E-01  | -1.036E-01 | -5.49      |

|    |               |      |           |            |            |            |            |
|----|---------------|------|-----------|------------|------------|------------|------------|
|    | 3.65          | 0.00 | -3.72     | -1.369E-01 | 1.852E-01  | -1.934E-01 | -9.82      |
| 24 | ENNVOLVIG MAX |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -9.18     | 0.00       | -9.347E-01 | 0.00       | 3.75       |
|    | 9.3E-01       | 0.00 | -1.34     | 0.00       | -9.347E-01 | 0.00       | 9.98       |
|    | 1.72          | 0.00 | 7.38      | 0.00       | -9.347E-01 | 0.00       | 10.92      |
|    | 2.50          | 0.00 | 18.68     | 0.00       | -9.347E-01 | 0.00       | 5.86       |
|    | 3.28          | 0.00 | 32.90     | 0.00       | -9.347E-01 | 0.00       | -8.395E-01 |
| 24 | ENNVOLVIG MIN |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -27.34    | 0.00       | -4.99      | 0.00       | -14.95     |
|    | 9.3E-01       | 0.00 | -14.51    | 0.00       | -4.99      | 0.00       | -1.29      |
|    | 1.72          | 0.00 | -4.11     | 0.00       | -4.99      | 0.00       | 4.78       |
|    | 2.50          | 0.00 | 3.73      | 0.00       | -4.99      | 0.00       | -2.31      |
|    | 3.28          | 0.00 | 11.56     | 0.00       | -4.99      | 0.00       | -20.62     |
| 25 | ENNVOLVIG MAX |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -10.91    | 0.00       | 2.12       | 0.00       | -6.379E-01 |
|    | 9.3E-01       | 0.00 | -3.07     | 0.00       | 2.12       | 0.00       | 5.37       |
|    | 1.72          | 0.00 | 4.81      | 0.00       | 2.12       | 0.00       | 8.11       |
|    | 2.50          | 0.00 | 16.10     | 0.00       | 2.12       | 0.00       | 5.27       |
|    | 3.28          | 0.00 | 30.30     | 0.00       | 2.12       | 0.00       | -7.934E-01 |
| 25 | ENNVOLVIG MIN |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -29.93    | 0.00       | -4.101E-01 | 0.00       | -18.62     |
|    | 9.3E-01       | 0.00 | -15.82    | 0.00       | -4.101E-01 | 0.00       | -2.35      |
|    | 1.72          | 0.00 | -4.58     | 0.00       | -4.101E-01 | 0.00       | 4.17       |
|    | 2.50          | 0.00 | 3.25      | 0.00       | -4.101E-01 | 0.00       | -2.62      |
|    | 3.28          | 0.00 | 11.09     | 0.00       | -4.101E-01 | 0.00       | -19.18     |
| 26 | ENNVOLVIG MAX |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -13.67    | 0.00       | -3.820E-02 | 0.00       | -2.74      |
|    | 1.04          | 0.00 | -4.78     | 0.00       | -3.820E-02 | 0.00       | 6.29       |
|    | 1.93          | 0.00 | 4.16      | 0.00       | -3.820E-02 | 0.00       | 11.05      |
|    | 2.81          | 0.00 | 17.60     | 0.00       | -3.820E-02 | 0.00       | 5.60       |
|    | 3.70          | 0.00 | 34.68     | 0.00       | -3.820E-02 | 0.00       | -3.91      |
| 26 | ENNVOLVIG MIN |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -33.64    | 0.00       | -4.812E-01 | 0.00       | -20.44     |
|    | 1.04          | 0.00 | -16.56    | 0.00       | -4.812E-01 | 0.00       | -1.23      |
|    | 1.93          | 0.00 | -3.43     | 0.00       | -4.812E-01 | 0.00       | 5.76       |
|    | 2.81          | 0.00 | 5.45      | 0.00       | -4.812E-01 | 0.00       | -1.82      |
|    | 3.70          | 0.00 | 14.33     | 0.00       | -4.812E-01 | 0.00       | -21.83     |
| 27 | ENNVOLVIG MAX |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -14.42    | 0.00       | 2.44       | 0.00       | -3.65      |
|    | 1.03          | 0.00 | -5.66     | 0.00       | 2.44       | 0.00       | 5.79       |
|    | 1.90          | 0.00 | 3.10      | 0.00       | 2.44       | 0.00       | 12.80      |
|    | 2.78          | 0.00 | 15.03     | 0.00       | 2.44       | 0.00       | 10.28      |
|    | 3.65          | 0.00 | 30.85     | 0.00       | 2.44       | 0.00       | 2.12       |
| 27 | ENNVOLVIG MIN |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -36.50    | 0.00       | 8.098E-01  | 0.00       | -23.72     |
|    | 1.03          | 0.00 | -19.66    | 0.00       | 8.098E-01  | 0.00       | -1.99      |
|    | 1.90          | 0.00 | -6.64     | 0.00       | 8.098E-01  | 0.00       | 6.26       |
|    | 2.78          | 0.00 | 2.81      | 0.00       | 8.098E-01  | 0.00       | -2.864E-01 |
|    | 3.65          | 0.00 | 11.57     | 0.00       | 8.098E-01  | 0.00       | -17.10     |
| 28 | ENNVOLVIG MAX |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | 2.96      | 0.00       | 2.419E-01  | 0.00       | 10.99      |
|    | 7.3E-01       | 0.00 | 6.79      | 0.00       | 2.419E-01  | 0.00       | 14.49      |
|    | 1.32          | 0.00 | 15.24     | 0.00       | 2.419E-01  | 0.00       | 12.43      |
|    | 1.90          | 0.00 | 28.99     | 0.00       | 2.419E-01  | 0.00       | 4.51       |
|    | 2.48          | 0.00 | 44.02     | 0.00       | 2.419E-01  | 0.00       | 4.03       |
| 28 | ENNVOLVIG MIN |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -34.79    | 0.00       | -3.595E-01 | 0.00       | -10.46     |
|    | 7.3E-01       | 0.00 | -15.93    | 0.00       | -3.595E-01 | 0.00       | -2.41      |
|    | 1.32          | 0.00 | -5.12     | 0.00       | -3.595E-01 | 0.00       | 1.53       |
|    | 1.90          | 0.00 | -2.03     | 0.00       | -3.595E-01 | 0.00       | -3.77      |
|    | 2.48          | 0.00 | 6.877E-01 | 0.00       | -3.595E-01 | 0.00       | -23.35     |
| 29 | ENNVOLVIG MAX |      |           |            |            |            |            |
|    | 1.5E-01       | 0.00 | -23.49    | 0.00       | 1.29       | 0.00       | -1.53      |
|    | 1.08          | 0.00 | -7.84     | 0.00       | 1.29       | 0.00       | 30.42      |
|    | 2.00          | 0.00 | 11.27     | 0.00       | 1.29       | 0.00       | 51.61      |

|    |              |      |            |      |            |      |            |
|----|--------------|------|------------|------|------------|------|------------|
|    | 2.93         | 0.00 | 59.94      | 0.00 | 1.29       | 0.00 | 20.12      |
|    | 3.85         | 0.00 | 103.95     | 0.00 | 1.29       | 0.00 | -3.36      |
| 29 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -124.81    | 0.00 | 2.945E-01  | 0.00 | -51.80     |
|    | 1.08         | 0.00 | -54.44     | 0.00 | 2.945E-01  | 0.00 | 1.38       |
|    | 2.00         | 0.00 | -4.95      | 0.00 | 2.945E-01  | 0.00 | 12.65      |
|    | 2.93         | 0.00 | 8.83       | 0.00 | 2.945E-01  | 0.00 | 4.476E-01  |
|    | 3.85         | 0.00 | 21.67      | 0.00 | 2.945E-01  | 0.00 | -56.57     |
| 30 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -23.77     | 0.00 | 7.821E-02  | 0.00 | -2.68      |
|    | 1.08         | 0.00 | -9.14      | 0.00 | 7.821E-02  | 0.00 | 18.29      |
|    | 2.00         | 0.00 | 6.12       | 0.00 | 7.821E-02  | 0.00 | 32.37      |
|    | 2.93         | 0.00 | 34.37      | 0.00 | 7.821E-02  | 0.00 | 17.45      |
|    | 3.85         | 0.00 | 68.43      | 0.00 | 7.821E-02  | 0.00 | -3.13      |
| 30 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -66.38     | 0.00 | -2.952E-01 | 0.00 | -32.08     |
|    | 1.08         | 0.00 | -33.04     | 0.00 | -2.952E-01 | 0.00 | 1.97       |
|    | 2.00         | 0.00 | -5.73      | 0.00 | -2.952E-01 | 0.00 | 14.14      |
|    | 2.93         | 0.00 | 9.30       | 0.00 | -2.952E-01 | 0.00 | 1.97       |
|    | 3.85         | 0.00 | 24.54      | 0.00 | -2.952E-01 | 0.00 | -34.01     |
| 31 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -31.44     | 0.00 | 1.837E-01  | 0.00 | -7.12      |
|    | 1.08         | 0.00 | -13.08     | 0.00 | 1.837E-01  | 0.00 | 20.00      |
|    | 2.00         | 0.00 | 5.53       | 0.00 | 1.837E-01  | 0.00 | 38.84      |
|    | 2.93         | 0.00 | 41.83      | 0.00 | 1.837E-01  | 0.00 | 19.25      |
|    | 3.85         | 0.00 | 82.78      | 0.00 | 1.837E-01  | 0.00 | -7.23      |
| 31 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -83.43     | 0.00 | -1.497E-01 | 0.00 | -37.81     |
|    | 1.08         | 0.00 | -41.28     | 0.00 | -1.497E-01 | 0.00 | 3.90       |
|    | 2.00         | 0.00 | -5.11      | 0.00 | -1.497E-01 | 0.00 | 17.09      |
|    | 2.93         | 0.00 | 13.16      | 0.00 | -1.497E-01 | 0.00 | 3.80       |
|    | 3.85         | 0.00 | 31.38      | 0.00 | -1.497E-01 | 0.00 | -38.41     |
| 32 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -9.32      | 0.00 | 4.981E-01  | 0.00 | 2.61       |
|    | 1.08         | 0.00 | -2.31      | 0.00 | 4.981E-01  | 0.00 | 10.23      |
|    | 2.00         | 0.00 | 4.71       | 0.00 | 4.981E-01  | 0.00 | 14.89      |
|    | 2.93         | 0.00 | 16.04      | 0.00 | 4.981E-01  | 0.00 | 10.35      |
|    | 3.85         | 0.00 | 30.23      | 0.00 | 4.981E-01  | 0.00 | 2.67       |
| 32 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -30.40     | 0.00 | 3.149E-02  | 0.00 | -18.74     |
|    | 1.08         | 0.00 | -16.17     | 0.00 | 3.149E-02  | 0.00 | -7.658E-01 |
|    | 2.00         | 0.00 | -4.80      | 0.00 | 3.149E-02  | 0.00 | 6.88       |
|    | 2.93         | 0.00 | 2.27       | 0.00 | 3.149E-02  | 0.00 | -7.298E-01 |
|    | 3.85         | 0.00 | 9.31       | 0.00 | 3.149E-02  | 0.00 | -18.50     |
| 33 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -7.590E-01 | 0.00 | 4.89       | 0.00 | 3.32       |
|    | 7.3E-01      | 0.00 | 1.40       | 0.00 | 4.89       | 0.00 | 3.11       |
|    | 1.32         | 0.00 | 3.19       | 0.00 | 4.89       | 0.00 | 8.31       |
|    | 1.90         | 0.00 | 4.62       | 0.00 | 4.89       | 0.00 | 14.06      |
|    | 2.48         | 0.00 | 5.67       | 0.00 | 4.89       | 0.00 | 19.62      |
| 33 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -32.34     | 0.00 | 5.442E-01  | 0.00 | -19.59     |
|    | 7.3E-01      | 0.00 | -21.98     | 0.00 | 5.442E-01  | 0.00 | -4.35      |
|    | 1.32         | 0.00 | -15.43     | 0.00 | 5.442E-01  | 0.00 | 1.75       |
|    | 1.90         | 0.00 | -10.93     | 0.00 | 5.442E-01  | 0.00 | -5.463E-01 |
|    | 2.48         | 0.00 | -8.47      | 0.00 | 5.442E-01  | 0.00 | -3.57      |
| 34 | ENVOLVIG MAX |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -4.45      | 0.00 | 7.334E-01  | 0.00 | 4.67       |
|    | 9.3E-01      | 0.00 | 5.417E-01  | 0.00 | 7.334E-01  | 0.00 | 8.55       |
|    | 1.72         | 0.00 | 6.89       | 0.00 | 7.334E-01  | 0.00 | 8.01       |
|    | 2.50         | 0.00 | 14.87      | 0.00 | 7.334E-01  | 0.00 | 3.96       |
|    | 3.28         | 0.00 | 24.74      | 0.00 | 7.334E-01  | 0.00 | 2.645E-01  |
| 34 | ENVOLVIG MIN |      |            |      |            |      |            |
|    | 1.5E-01      | 0.00 | -17.84     | 0.00 | -9.354E-01 | 0.00 | -9.44      |
|    | 9.3E-01      | 0.00 | -9.70      | 0.00 | -9.354E-01 | 0.00 | -1.08      |
|    | 1.72         | 0.00 | -3.07      | 0.00 | -9.354E-01 | 0.00 | 3.07       |

|    |              |      |           |      |            |      |            |
|----|--------------|------|-----------|------|------------|------|------------|
|    | 2.50         | 0.00 | 1.93      | 0.00 | -9.354E-01 | 0.00 | -2.47      |
|    | 3.28         | 0.00 | 6.92      | 0.00 | -9.354E-01 | 0.00 | -17.00     |
| 35 | ENVOLVIG MAX |      |           |      |            |      |            |
|    | 1.5E-01      | 0.00 | -8.17     | 0.00 | 6.112E-01  | 0.00 | -9.086E-01 |
|    | 1.04         | 0.00 | -2.51     | 0.00 | 6.112E-01  | 0.00 | 4.46       |
|    | 1.93         | 0.00 | 3.23      | 0.00 | 6.112E-01  | 0.00 | 7.51       |
|    | 2.81         | 0.00 | 12.32     | 0.00 | 6.112E-01  | 0.00 | 4.17       |
|    | 3.70         | 0.00 | 24.39     | 0.00 | 6.112E-01  | 0.00 | -1.27      |
| 35 | ENVOLVIG MIN |      |           |      |            |      |            |
|    | 1.5E-01      | 0.00 | -23.89    | 0.00 | 5.379E-02  | 0.00 | -15.48     |
|    | 1.04         | 0.00 | -11.91    | 0.00 | 5.379E-02  | 0.00 | -1.53      |
|    | 1.93         | 0.00 | -2.93     | 0.00 | 5.379E-02  | 0.00 | 3.52       |
|    | 2.81         | 0.00 | 2.74      | 0.00 | 5.379E-02  | 0.00 | -1.78      |
|    | 3.70         | 0.00 | 8.40      | 0.00 | 5.379E-02  | 0.00 | -16.19     |
| 36 | ENVOLVIG MAX |      |           |      |            |      |            |
|    | 1.5E-01      | 0.00 | -8.36     | 0.00 | -7.911E-01 | 0.00 | -8.816E-01 |
|    | 1.03         | 0.00 | -2.77     | 0.00 | -7.911E-01 | 0.00 | 4.73       |
|    | 1.90         | 0.00 | 2.81      | 0.00 | -7.911E-01 | 0.00 | 9.14       |
|    | 2.78         | 0.00 | 11.34     | 0.00 | -7.911E-01 | 0.00 | 7.64       |
|    | 3.65         | 0.00 | 22.08     | 0.00 | -7.911E-01 | 0.00 | 2.87       |
| 36 | ENVOLVIG MIN |      |           |      |            |      |            |
|    | 1.5E-01      | 0.00 | -25.52    | 0.00 | -2.27      | 0.00 | -17.17     |
|    | 1.03         | 0.00 | -13.92    | 0.00 | -2.27      | 0.00 | -1.84      |
|    | 1.90         | 0.00 | -4.99     | 0.00 | -2.27      | 0.00 | 3.97       |
|    | 2.78         | 0.00 | 9.988E-01 | 0.00 | -2.27      | 0.00 | -9.380E-01 |
|    | 3.65         | 0.00 | 6.58      | 0.00 | -2.27      | 0.00 | -13.31     |

### 5.4.9.1.2 Calculo de Refuerzo.

CONCRETE DESIGN OUTPUT (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |        |        |        |       |    |
|------------|---------------|---------------|---------------------------------|--------|--------|--------|-------|----|
|            |               |               | TOP                             | COMBO  | BOTTOM | COMBO  |       |    |
| 1          | 20X30         | 15.000        | 1.667                           | VIGAS1 | 1.135  | VIGAS1 | 0.015 | CU |
| 1          | 20X30         | 93.250        | 1.013                           | VIGAS1 | 0.560  | VIGAS1 | 0.015 | CU |
| 1          | 20X30         | 171.500       | 0.449                           | VIGAS1 | 0.449  | VIGAS1 | 0.015 | CU |
| 1          | 20X30         | 249.750       | 0.572                           | VIGAS1 | 0.593  | VIGAS1 | 0.015 | CU |
| 1          | 20X30         | 328.000       | 1.147                           | VIGAS1 | 1.410  | VIGAS1 | 0.015 | CU |
| 2          | 20X30         | 15.000        | 1.103                           | VIGAS1 | 1.152  | VIGAS1 | 0.010 | CU |
| 2          | 20X30         | 93.250        | 0.522                           | VIGAS1 | 0.574  | VIGAS1 | 0.010 | CU |
| 2          | 20X30         | 171.500       | 0.295                           | VIGAS1 | 0.295  | VIGAS1 | 0.010 | CU |
| 2          | 20X30         | 249.750       | 0.558                           | VIGAS1 | 0.617  | VIGAS1 | 0.010 | CU |
| 2          | 20X30         | 328.000       | 1.136                           | VIGAS1 | 1.200  | VIGAS1 | 0.010 | CU |
| 3          | 20X30         | 15.000        | 1.161                           | VIGAS1 | 0.963  | VIGAS1 | 0.010 | CU |
| 3          | 20X30         | 103.750       | 0.572                           | VIGAS1 | 0.486  | VIGAS1 | 0.010 | CU |
| 3          | 20X30         | 192.500       | 0.288                           | VIGAS1 | 0.288  | VIGAS1 | 0.010 | CU |
| 3          | 20X30         | 281.250       | 0.453                           | VIGAS1 | 0.583  | VIGAS1 | 0.010 | CU |
| 3          | 20X30         | 370.000       | 0.930                           | VIGAS1 | 1.172  | VIGAS1 | 0.010 | CU |
| 4          | 20X30         | 15.000        | 1.132                           | VIGAS1 | 1.312  | VIGAS1 | 0.013 | CU |
| 4          | 20X30         | 102.500       | 0.577                           | VIGAS1 | 0.547  | VIGAS1 | 0.013 | CU |
| 4          | 20X30         | 190.000       | 0.423                           | VIGAS1 | 0.423  | VIGAS1 | 0.013 | CU |

|    |       |         |       |        |       |        |       |        |
|----|-------|---------|-------|--------|-------|--------|-------|--------|
| 4  | 20X30 | 277.500 | 0.956 | VIGAS1 | 0.509 | VIGAS1 | 0.013 | CU     |
| 4  | 20X30 | 365.000 | 1.667 | VIGAS1 | 1.063 | VIGAS1 | 0.013 | CU     |
| 5  | 20X30 | 15.000  | 1.667 | VIGAS1 | 1.321 | VIGAS2 | 0.021 | CU     |
| 5  | 20X30 | 73.366  | 0.928 | VIGAS1 | 0.686 | VIGAS2 | 0.021 | CU     |
| 5  | 20X30 | 131.731 | 0.407 | VIGAS1 | 0.407 | VIGAS1 | 0.021 | CU     |
| 5  | 20X30 | 190.097 | 0.503 | VIGAS1 | 0.515 | VIGAS1 | 0.021 | CU     |
| 5  | 20X30 | 248.462 | 1.000 | VIGAS1 | 1.242 | VIGAS1 | 0.021 | CU     |
| 6  | 20X30 | 15.000  | 2.143 | VIGAS2 | 1.589 | VIGAS4 | 0.015 | CU     |
| 6  | 20X30 | 107.500 | 1.485 | VIGAS1 | 0.540 | VIGAS1 | 0.015 | CU     |
| 6  | 20X30 | 200.000 | 0.964 | CU     | 0.540 | VIGAS1 | 0.015 | CU     |
| 6  | 20X30 | 292.500 | 1.245 | VIGAS1 | 0.540 | VIGAS1 | 0.015 | CU     |
| 6  | 20X30 | 385.000 | 1.805 | VIGAS2 | 1.204 | VIGAS2 | 0.015 | CU     |
| 7  | 20X30 | 15.000  | 1.765 | VIGAS2 | 1.256 | VIGAS2 | 0.013 | CU     |
| 7  | 20X30 | 107.500 | 1.214 | VIGAS1 | 0.495 | VIGAS1 | 0.013 | CU     |
| 7  | 20X30 | 200.000 | 0.836 | CU     | 0.495 | VIGAS1 | 0.013 | CU     |
| 7  | 20X30 | 292.500 | 1.320 | VIGAS1 | 0.495 | VIGAS1 | 0.013 | CU     |
| 7  | 20X30 | 385.000 | 1.933 | VIGAS2 | 1.414 | VIGAS4 | 0.013 | CU     |
| 8  | 20X30 | 15.000  | 1.719 | VIGAS2 | 0.931 | VIGAS1 | 0.012 | CU     |
| 8  | 20X30 | 107.500 | 1.279 | VIGAS1 | 0.484 | VIGAS1 | 0.012 | CU     |
| 8  | 20X30 | 200.000 | 0.905 | CU     | 0.484 | VIGAS1 | 0.012 | CU     |
| 8  | 20X30 | 292.500 | 1.325 | VIGAS1 | 0.484 | VIGAS1 | 0.012 | CU     |
| 8  | 20X30 | 385.000 | 1.791 | VIGAS2 | 0.977 | VIGAS1 | 0.012 | CU     |
| 9  | 20X30 | 15.000  | 1.607 | VIGAS1 | 1.271 | VIGAS4 | 0.011 | CU     |
| 9  | 20X30 | 107.500 | 0.953 | VIGAS1 | 0.531 | VIGAS4 | 0.011 | CU     |
| 9  | 20X30 | 200.000 | 0.418 | CU     | 0.393 | VIGAS1 | 0.011 | CU     |
| 9  | 20X30 | 292.500 | 0.927 | VIGAS1 | 0.539 | VIGAS4 | 0.011 | CU     |
| 9  | 20X30 | 385.000 | 1.555 | VIGAS1 | 1.286 | VIGAS4 | 0.011 | CU     |
| 10 | 20X30 | 15.000  | 0.854 | VIGAS3 | 1.595 | VIGAS1 | 0.028 | CU     |
| 10 | 20X30 | 73.366  | 0.535 | VIGAS1 | 0.640 | VIGAS1 | 0.028 | CU     |
| 10 | 20X30 | 131.731 | 0.535 | VIGAS1 | 0.535 | VIGAS1 | 0.028 | CU     |
| 10 | 20X30 | 190.097 | 1.230 | VIGAS1 | 0.535 | VIGAS1 | 0.028 | CU     |
| 10 | 20X30 | 248.462 | 1.738 | VIGAS2 | 1.081 | VIGAS1 | 0.028 | CU     |
| 11 | 20X30 | 15.000  | 1.662 | VIGAS1 | 0.819 | VIGAS1 | 0.015 | CU     |
| 11 | 20X30 | 93.250  | 0.937 | VIGAS1 | 0.406 | VIGAS1 | 0.015 | CU     |
| 11 | 20X30 | 171.500 | 0.406 | VIGAS1 | 0.406 | VIGAS1 | 0.015 | CU     |
| 11 | 20X30 | 249.750 | 0.501 | VIGAS1 | 0.471 | VIGAS1 | 0.015 | CU     |
| 11 | 20X30 | 328.000 | 0.891 | VIGAS1 | 1.183 | VIGAS1 | 0.015 | CU     |
| 12 | 20X30 | 15.000  | 0.749 | VIGAS1 | 0.920 | VIGAS1 | 0.007 | CU     |
| 12 | 20X30 | 103.750 | 0.348 | VIGAS1 | 0.477 | VIGAS1 | 0.007 | CU     |
| 12 | 20X30 | 192.500 | 0.227 | VIGAS1 | 0.227 | VIGAS1 | 0.007 | CU     |
| 12 | 20X30 | 281.250 | 0.395 | VIGAS1 | 0.443 | VIGAS1 | 0.007 | CU     |
| 12 | 20X30 | 370.000 | 0.837 | VIGAS1 | 0.844 | VIGAS1 | 0.007 | CU     |
| 13 | 20X30 | 15.000  | 0.888 | VIGAS1 | 1.098 | VIGAS1 | 0.011 | CU     |
| 13 | 20X30 | 102.500 | 0.456 | VIGAS1 | 0.460 | VIGAS1 | 0.011 | CU     |
| 13 | 20X30 | 190.000 | 0.354 | VIGAS1 | 0.354 | VIGAS1 | 0.011 | CU     |
| 13 | 20X30 | 277.500 | 0.797 | VIGAS1 | 0.393 | VIGAS1 | 0.011 | CU     |
| 13 | 20X30 | 365.000 | 1.444 | VIGAS1 | 0.824 | VIGAS1 | 0.011 | CU     |
| 24 | 25X25 | 15.000  | 2.001 | VIGAS1 | 1.303 | VIGAS1 | 0.018 | VIGAS2 |
| 24 | 25X25 | 93.250  | 0.734 | CU     | 1.750 | VIGAS1 | 0.018 | VIGAS2 |
| 24 | 25X25 | 171.500 | 0.734 | CU     | 1.750 | CU     | 0.018 | VIGAS2 |
| 24 | 25X25 | 249.750 | 0.734 | CU     | 1.017 | VIGAS1 | 0.018 | VIGAS2 |
| 24 | 25X25 | 328.000 | 2.814 | VIGAS1 | 1.486 | CU     | 0.018 | VIGAS2 |
| 25 | 25X25 | 15.000  | 2.524 | VIGAS1 | 1.322 | CU     | 0.019 | VIGAS2 |
| 25 | 25X25 | 93.250  | 0.679 | CU     | 0.930 | VIGAS1 | 0.019 | VIGAS2 |
| 25 | 25X25 | 171.500 | 0.679 | CU     | 1.417 | CU     | 0.019 | VIGAS2 |
| 25 | 25X25 | 249.750 | 0.679 | CU     | 0.913 | VIGAS1 | 0.019 | VIGAS2 |
| 25 | 25X25 | 328.000 | 2.605 | VIGAS1 | 1.374 | CU     | 0.019 | VIGAS2 |
| 26 | 25X25 | 15.000  | 2.788 | VIGAS1 | 1.607 | CU     | 0.018 | VIGAS2 |
| 26 | 25X25 | 103.750 | 0.874 | CU     | 0.874 | CU     | 0.018 | VIGAS2 |



|    |       |         |       |        |       |        |       |        |
|----|-------|---------|-------|--------|-------|--------|-------|--------|
| 26 | 25X25 | 192.500 | 0.874 | CU     | 1.750 | CU     | 0.018 | VIGAS2 |
| 26 | 25X25 | 281.250 | 0.874 | CU     | 0.874 | CU     | 0.018 | VIGAS2 |
| 26 | 25X25 | 370.000 | 2.993 | VIGAS1 | 1.750 | CU     | 0.020 | CU     |
| 27 | 25X25 | 15.000  | 3.275 | VIGAS1 | 1.750 | CU     | 0.022 | CU     |
| 27 | 25X25 | 102.500 | 0.936 | CU     | 0.936 | CU     | 0.019 | VIGAS2 |
| 27 | 25X25 | 190.000 | 0.936 | CU     | 1.750 | CU     | 0.019 | VIGAS2 |
| 27 | 25X25 | 277.500 | 0.936 | CU     | 1.381 | CU     | 0.019 | VIGAS2 |
| 27 | 25X25 | 365.000 | 2.306 | VIGAS1 | 1.495 | VIGAS1 | 0.019 | VIGAS2 |
| 28 | 25X25 | 15.000  | 1.530 | VIGAS1 | 1.750 | VIGAS4 | 0.035 | VIGAS4 |
| 28 | 25X25 | 73.366  | 0.874 | CU     | 1.937 | VIGAS2 | 0.030 | VIGAS4 |
| 28 | 25X25 | 131.731 | 0.874 | CU     | 1.750 | CU     | 0.032 | VIGAS4 |
| 28 | 25X25 | 190.097 | 0.874 | CU     | 0.874 | CU     | 0.037 | VIGAS4 |
| 28 | 25X25 | 248.462 | 3.219 | VIGAS2 | 1.750 | CU     | 0.043 | CU     |
| 29 | 25X25 | 15.000  | 8.093 | CU     | 3.604 | CU     | 0.163 | CU     |
| 29 | 25X25 | 107.500 | 1.889 | CU     | 4.306 | CU     | 0.068 | CU     |
| 29 | 25X25 | 200.000 | 1.889 | CU     | 8.055 | CU     | 0.039 | VIGAS2 |
| 29 | 25X25 | 292.500 | 1.889 | CU     | 2.742 | VIGAS2 | 0.075 | CU     |
| 29 | 25X25 | 385.000 | 8.918 | CU     | 3.971 | CU     | 0.135 | CU     |
| 30 | 25X25 | 15.000  | 4.572 | VIGAS2 | 2.156 | VIGAS2 | 0.069 | CU     |
| 30 | 25X25 | 107.500 | 1.365 | CU     | 2.477 | VIGAS2 | 0.025 | VIGAS2 |
| 30 | 25X25 | 200.000 | 1.365 | CU     | 4.618 | CU     | 0.025 | VIGAS2 |
| 30 | 25X25 | 292.500 | 1.365 | CU     | 2.357 | VIGAS2 | 0.026 | CU     |
| 30 | 25X25 | 385.000 | 4.885 | VIGAS2 | 2.293 | VIGAS2 | 0.072 | CU     |
| 31 | 25X25 | 15.000  | 5.519 | VIGAS2 | 2.566 | VIGAS2 | 0.096 | CU     |
| 31 | 25X25 | 107.500 | 1.685 | CU     | 2.724 | CU     | 0.039 | CU     |
| 31 | 25X25 | 200.000 | 1.685 | CU     | 5.694 | CU     | 0.028 | VIGAS2 |
| 31 | 25X25 | 292.500 | 1.685 | CU     | 2.615 | CU     | 0.039 | CU     |
| 31 | 25X25 | 385.000 | 5.621 | CU     | 2.609 | CU     | 0.095 | CU     |
| 32 | 25X25 | 15.000  | 2.542 | VIGAS2 | 1.644 | VIGAS2 | 0.016 | VIGAS2 |
| 32 | 25X25 | 107.500 | 0.810 | VIGAS2 | 1.361 | CU     | 0.016 | VIGAS2 |
| 32 | 25X25 | 200.000 | 0.810 | VIGAS2 | 1.993 | CU     | 0.016 | VIGAS2 |
| 32 | 25X25 | 292.500 | 0.810 | VIGAS2 | 1.390 | CU     | 0.016 | VIGAS2 |
| 32 | 25X25 | 385.000 | 2.507 | VIGAS2 | 1.622 | VIGAS2 | 0.016 | VIGAS2 |
| 33 | 25X25 | 15.000  | 2.665 | VIGAS2 | 1.450 | CU     | 0.041 | VIGAS4 |
| 33 | 25X25 | 73.366  | 0.716 | CU     | 0.716 | CU     | 0.038 | VIGAS4 |
| 33 | 25X25 | 131.731 | 0.716 | CU     | 1.452 | CU     | 0.035 | VIGAS4 |
| 33 | 25X25 | 190.097 | 0.716 | CU     | 1.877 | VIGAS2 | 0.033 | VIGAS4 |
| 33 | 25X25 | 248.462 | 0.497 | VIGAS3 | 2.669 | VIGAS2 | 0.032 | VIGAS4 |
| 34 | 25X25 | 15.000  | 1.657 | VIGAS1 | 0.817 | VIGAS1 | 0.014 | VIGAS2 |
| 34 | 25X25 | 93.250  | 0.605 | CU     | 1.138 | CU     | 0.014 | VIGAS2 |
| 34 | 25X25 | 171.500 | 0.605 | CU     | 1.398 | CU     | 0.014 | VIGAS2 |
| 34 | 25X25 | 249.750 | 0.605 | CU     | 0.605 | CU     | 0.014 | VIGAS2 |
| 34 | 25X25 | 328.000 | 2.292 | VIGAS1 | 1.223 | CU     | 0.014 | VIGAS2 |
| 35 | 25X25 | 15.000  | 2.077 | VIGAS1 | 1.172 | CU     | 0.014 | VIGAS2 |
| 35 | 25X25 | 103.750 | 0.619 | CU     | 0.619 | CU     | 0.014 | VIGAS2 |
| 35 | 25X25 | 192.500 | 0.619 | CU     | 1.310 | CU     | 0.014 | VIGAS2 |
| 35 | 25X25 | 281.250 | 0.619 | CU     | 0.619 | CU     | 0.014 | VIGAS2 |
| 35 | 25X25 | 370.000 | 2.178 | VIGAS1 | 1.251 | CU     | 0.014 | VIGAS2 |
| 36 | 25X25 | 15.000  | 2.317 | VIGAS1 | 1.281 | CU     | 0.014 | VIGAS2 |
| 36 | 25X25 | 102.500 | 0.633 | CU     | 0.633 | CU     | 0.014 | VIGAS2 |
| 36 | 25X25 | 190.000 | 0.633 | CU     | 1.602 | CU     | 0.014 | VIGAS2 |
| 36 | 25X25 | 277.500 | 0.633 | CU     | 1.333 | VIGAS1 | 0.014 | VIGAS2 |
| 36 | 25X25 | 365.000 | 1.773 | VIGAS1 | 1.157 | VIGAS1 | 0.014 | VIGAS2 |

## 5.4.9.2 Diseño de Columnas.

### 5.4.9.2.1 Análisis Dinámico.

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CONSTRAINT COORDINATES AND MASSES

CONS DIAPH1 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER
GLOBAL      U1      U2      U3      R1      R2      R3
X      1.000000      .000000      .000000      1.000000      .000000      .000000
Y      .000000      1.000000      .000000      .000000      1.000000      .000000
Z      .000000      .000000      1.000000      .000000      .000000      1.000000

TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA
GLOBAL      U1      U2      U3      R1      R2      R3
          5.175282      5.175282      .000000      .000000      .000000      27.700535

CENTER OF MASS
GLOBAL      U1      U2      U3
X      6.790437      6.790437      7.213182
Y      1.489645      1.489645      1.763636
Z      3.150000      3.150000      3.150000

DISPLACEMENT DEGREES OF FREEDOM

(A) = Active DOF, equilibrium equation
(-) = Restrained DOF, reaction computed
(+) = Constrained DOF
( ) = Null DOF

JOINTS      UX      UY      UZ      RX      RY      RZ
1 TO      10      -      -      -      A      A      A
11 TO     15      +      +      A      A      A      +
16      +      +      A      A      A      +
17 TO     21      +      +      A      A      A      +

CONSTRAINTS      U1      U2      U3      R1      R2      R3
DIAPH1      A      A      A      A

ASSEMBLED JOINT MASSES
IN GLOBAL COORDINATES
JOINT      UX      UY      UZ      RX      RY      RZ
1      0.079227      0.079227      0.079227      .000000      .000000      .000000
2      0.114439      0.114439      0.114439      .000000      .000000      .000000
3      0.117523      0.117523      0.117523      .000000      .000000      .000000
4      0.120240      0.120240      0.120240      .000000      .000000      .000000
5      0.091970      0.091970      0.091970      .000000      .000000      .000000
6      0.073386      0.073386      0.073386      .000000      .000000      .000000
7      0.108598      0.108598      0.108598      .000000      .000000      .000000
8      0.117523      0.117523      0.117523      .000000      .000000      .000000
9      0.120240      0.120240      0.120240      .000000      .000000      .000000
10     0.091970      0.091970      0.091970      .000000      .000000      .000000
11     0.081082      0.081082      0.081082      .000000      .000000      .000000
12     0.117761      0.117761      0.117761      .000000      .000000      .000000
13     0.120974      0.120974      0.120974      .000000      .000000      .000000
14     0.123804      0.123804      0.123804      .000000      .000000      .000000
15     0.094356      0.094356      0.094356      .000000      .000000      .000000
16     4.111495      4.111495      .000000      .000000      .000000      .000000
17     0.074999      0.074999      0.074999      .000000      .000000      .000000
18     0.111678      0.111678      0.111678      .000000      .000000      .000000
19     0.120974      0.120974      0.120974      .000000      .000000      .000000

```

|    |          |          |          |         |         |         |
|----|----------|----------|----------|---------|---------|---------|
| 20 | 0.123804 | 0.123804 | 0.123804 | .000000 | .000000 | .000000 |
| 21 | 0.094356 | 0.094356 | 0.094356 | .000000 | .000000 | .000000 |

TOTAL ASSEMBLED JOINT MASSES

IN GLOBAL COORDINATES

|       | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| TOTAL | 6.210396 | 6.210396 | 2.098901 | .000000 | .000000 | .000000 |

TOTAL ACCELERATED MASS AND LOCATION

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

|       | UX       | UY       | UZ       |
|-------|----------|----------|----------|
| MASS  | 5.175282 | 5.175282 | 1.063787 |
| X-LOC | 6.790437 | 6.790437 | 7.487821 |
| Y-LOC | 1.489645 | 1.489645 | 1.836121 |
| Z-LOC | 3.150000 | 3.150000 | 3.150000 |

MODAL PERIODS AND FREQUENCIES

| MODE | PERIOD (TIME) | FREQUENCY (CYC/TIME) | FREQUENCY (RAD/TIME) | EIGENVALUE (RAD/TIME)**2 |
|------|---------------|----------------------|----------------------|--------------------------|
| 1    | 0.373403      | 2.678073             | 16.826828            | 283.142129               |
| 2    | 0.303847      | 3.291135             | 20.678809            | 427.613133               |
| 3    | 0.145736      | 6.861729             | 43.113513            | 1858.775                 |

MODAL PARTICIPATION FACTORS

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

| MODE | PERIOD   | UX        | UY        | UZ       |
|------|----------|-----------|-----------|----------|
| 1    | 0.373403 | 1.020040  | -2.025879 | 8.99E-06 |
| 2    | 0.303847 | -2.016702 | -1.032949 | 3.60E-05 |
| 3    | 0.145736 | -0.260210 | 0.064081  | 3.33E-05 |

MODAL PARTICIPATING MASS RATIOS

| MODE | PERIOD   | INDIVIDUAL MODE (PERCENT) |         |        | CUMULATIVE SUM (PERCENT) |         |        |
|------|----------|---------------------------|---------|--------|--------------------------|---------|--------|
|      |          | UX                        | UY      | UZ     | UX                       | UY      | UZ     |
| 1    | 0.373403 | 20.1048                   | 79.3036 | 0.0000 | 20.1048                  | 79.3036 | 0.0000 |
| 2    | 0.303847 | 78.5868                   | 20.6169 | 0.0000 | 98.6916                  | 99.9205 | 0.0000 |
| 3    | 0.145736 | 1.3083                    | 0.0793  | 0.0000 | 99.9999                  | 99.9999 | 0.0000 |

MODAL LOAD PARTICIPATION RATIOS

| LOAD, ACC, OR NLLINK/DEF (TYPE) | STATIC (NAME) | STATIC (PERCENT) | DYNAMIC (PERCENT)        | EFFECTIVE PERIOD |
|---------------------------------|---------------|------------------|--------------------------|------------------|
| LOAD                            | MUERTA        | 0.0265           | -> 0.0000<- (*) SEE NOTE | 0.006319         |
| LOAD                            | VIVA          | 0.8474           | -> 0.0000<- (*) SEE NOTE | 0.027782         |
| ACC                             | UX            | 100.0000         | 99.9999                  | 0.324375         |
| ACC                             | UY            | 100.0000         | 99.9999                  | 0.364001         |
| ACC                             | UZ            | 0.0002           | 0.0000                   | 0.009303         |

(\*) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

R E S P O N S E   S P E C T R U M   A C C E L E R A T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC   SPECX -----

| MODE | PERIOD   | DAMP-RATIO | U1       | U2      | U3      |
|------|----------|------------|----------|---------|---------|
| 1    | 0.373403 | 0.050000   | 9.380250 | .000000 | .000000 |
| 2    | 0.303847 | 0.050000   | 9.380250 | .000000 | .000000 |
| 3    | 0.145736 | 0.050000   | 9.380250 | .000000 | .000000 |

SPEC   SPECY -----

| MODE | PERIOD   | DAMP-RATIO | U1      | U2       | U3      |
|------|----------|------------|---------|----------|---------|
| 1    | 0.373403 | 0.050000   | .000000 | 9.380250 | .000000 |
| 2    | 0.303847 | 0.050000   | .000000 | 9.380250 | .000000 |
| 3    | 0.145736 | 0.050000   | .000000 | 9.380250 | .000000 |

R E S P O N S E   S P E C T R U M   M O D A L   A M P L I T U D E S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC   SPECX -----

| MODE | PERIOD   | U1        | U2      | U3      |
|------|----------|-----------|---------|---------|
| 1    | 0.373403 | 0.033793  | .000000 | .000000 |
| 2    | 0.303847 | -0.044239 | .000000 | .000000 |
| 3    | 0.145736 | -0.001313 | .000000 | .000000 |

SPEC   SPECY -----

| MODE | PERIOD   | U1      | U2        | U3      |
|------|----------|---------|-----------|---------|
| 1    | 0.373403 | .000000 | -0.067116 | .000000 |
| 2    | 0.303847 | .000000 | -0.022659 | .000000 |
| 3    | 0.145736 | .000000 | 0.000323  | .000000 |

R E S P O N S E   S P E C T R U M   M O D A L   C O R R E L A T I O N S

PARTIAL MATRIX SHOWING CORRELATION FACTORS BETWEEN NEARBY MODES

SPEC   SPECX -----

| MODE I | PERIOD   | I     | I+1   | I+2   | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|
| 1      | 0.373403 | 1.000 | 0.189 | 0.009 |     |     |     |     |     |     |     |
| 2      | 0.303847 | 1.000 | 0.016 |       |     |     |     |     |     |     |     |
| 3      | 0.145736 | 1.000 |       |       |     |     |     |     |     |     |     |

SPEC   SPECY -----

| MODE I | PERIOD   | I     | I+1   | I+2   | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|--------|----------|-------|-------|-------|-----|-----|-----|-----|-----|-----|-----|
| 1      | 0.373403 | 1.000 | 0.189 | 0.009 |     |     |     |     |     |     |     |
| 2      | 0.303847 | 1.000 | 0.016 |       |     |     |     |     |     |     |     |
| 3      | 0.145736 | 1.000 |       |       |     |     |     |     |     |     |     |

R E S P O N S E   S P E C T R U M   B A S E   R E A C T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC   SPECX -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U1:

| MODE | F1        | F2         | F3        | M1         | M2         | M3          |
|------|-----------|------------|-----------|------------|------------|-------------|
| 1    | 9.759981  | -19.384076 | 8.60E-05  | 61.077800  | 30.751264  | -142.303997 |
| 2    | 38.150305 | 19.540481  | -0.000680 | -61.578641 | 120.218820 | 84.715231   |

```

3      0.635130   -0.156412   -8.14E-05    0.493497    2.004000   -14.726702

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

          F1          F2          F3          M1          M2          M3
SPEC    41.142757   24.787302    0.000676    78.108108   129.646921  151.942713

SPEC   SPECY -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U2:

MODE     F1          F2          F3          M1          M2          M3
1    -19.384076   38.498274   -0.000171  -121.305232  -61.074387  282.626740
2     19.540481   10.008580   -0.000348   -31.540410   61.575747   43.390907
3     -0.156412    0.038519    2.00E-05   -0.121532   -0.493521    3.626715

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

          F1          F2          F3          M1          M2          M3
SPEC    24.787302   41.568564    0.000416   130.981203   78.104093   293.994193

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### 5.4.6.2.2 Control de Derivas.

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DISEÑO BAÑOS LICEO U DE NAR

#### JOINT DISPLACEMENTS

| JOINT | LOAD  | U1     | U2     | U3        | R1        | R2        | R3        |
|-------|-------|--------|--------|-----------|-----------|-----------|-----------|
| 11    | SPECX | 2.1048 | 1.6379 | 9.502E-03 | 4.566E-03 | 4.581E-03 | 1.003E-03 |
| 11    | SPECY | 1.5878 | 3.3363 | 5.958E-03 | 9.135E-03 | 4.459E-03 | 9.881E-04 |
| 12    | SPECX | 2.1048 | 1.5055 | 3.729E-03 | 3.686E-03 | 3.585E-03 | 1.003E-03 |
| 12    | SPECY | 1.5878 | 3.0353 | 7.623E-03 | 7.424E-03 | 2.643E-03 | 9.881E-04 |
| 13    | SPECX | 2.1048 | 1.4446 | 3.279E-03 | 3.479E-03 | 3.756E-03 | 1.003E-03 |
| 13    | SPECY | 1.5878 | 2.7430 | 6.678E-03 | 6.605E-03 | 2.829E-03 | 9.881E-04 |
| 14    | SPECX | 2.1048 | 1.4721 | 3.689E-03 | 3.541E-03 | 3.766E-03 | 1.003E-03 |
| 14    | SPECY | 1.5878 | 2.4295 | 5.158E-03 | 5.845E-03 | 2.837E-03 | 9.881E-04 |
| 15    | SPECX | 2.1048 | 1.5932 | 4.011E-03 | 3.818E-03 | 5.059E-03 | 1.003E-03 |
| 15    | SPECY | 1.5878 | 2.1414 | 7.440E-03 | 5.175E-03 | 3.808E-03 | 9.881E-04 |
| 16    | SPECX | 1.9707 | 1.4464 | 0.0000    | 0.0000    | 0.0000    | 1.003E-03 |
| 16    | SPECY | 1.4536 | 2.7640 | 0.0000    | 0.0000    | 0.0000    | 9.881E-04 |
| 17    | SPECX | 1.9135 | 1.5637 | 8.537E-04 | 3.954E-03 | 5.064E-03 | 1.003E-03 |
| 17    | SPECY | 1.3963 | 3.1848 | 1.710E-03 | 7.692E-03 | 5.718E-03 | 9.881E-04 |
| 18    | SPECX | 1.7242 | 1.5055 | 7.503E-03 | 3.125E-03 | 3.648E-03 | 1.003E-03 |
| 18    | SPECY | 1.2068 | 3.0353 | 0.0153    | 6.388E-03 | 3.399E-03 | 9.881E-04 |
| 19    | SPECX | 1.7242 | 1.4446 | 3.320E-03 | 3.446E-03 | 3.058E-03 | 1.003E-03 |
| 19    | SPECY | 1.2068 | 2.7430 | 5.028E-03 | 6.558E-03 | 2.082E-03 | 9.881E-04 |
| 20    | SPECX | 1.7242 | 1.4721 | 3.166E-03 | 3.539E-03 | 3.118E-03 | 1.003E-03 |
| 20    | SPECY | 1.2068 | 2.4295 | 5.855E-03 | 5.843E-03 | 2.191E-03 | 9.881E-04 |
| 21    | SPECX | 1.7242 | 1.5932 | 6.613E-03 | 3.818E-03 | 4.203E-03 | 1.003E-03 |
| 21    | SPECY | 1.2068 | 2.1414 | 4.210E-03 | 5.175E-03 | 2.952E-03 | 9.881E-04 |

GROUP JOINT FORCE SUMMATION

| GROUP                                   | LOAD  | F-X     | F-Y     | F-Z       | M-X        | M-Y        | M-Z       |
|---|-------|---------|---------|-----------|------------|------------|-----------|
| CIMENTACION (Sum at X=727.35 Y=180 Z=0) |       |         |         |           |            |            |           |
|   | SPECX | 403.473 | 243.080 | 6.688E-03 | 76597.681  | 127136.045 | 24153.989 |
|   | SPECY | 243.080 | 407.648 | 3.567E-03 | 128450.134 | 76594.128  | 31214.422 |

5.4.9.2.3 Fuerzas.

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DISEÑO BAÑOS LICEO U DE NAR

LOAD COMBINATION MULTIPLIERS

| COMBO     | TYPE | CASE   | FACTOR | TYPE         | TITLE                     |
|-----------|------|--------|--------|--------------|---------------------------|
| CU        | ADD  | MUERTA | 1.4000 | STATIC(DEAD) | COMB1                     |
|           |      | VIVA   | 1.7000 | STATIC(LIVE) |                           |
|           |      |        |        |              |                           |
| COLUMNNA1 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|           |      | SISMOX | 1.2000 | COMBO        |                           |
|           |      | SISMOY | 0.3600 | COMBO        |                           |
|           |      |        |        |              |                           |
| COLUMNNA2 | ADD  | CU     | 0.7500 | COMBO        | Combinación para Columnas |
|           |      | SISMOX | 0.3600 | COMBO        |                           |
|           |      | SISMOY | 1.2000 | COMBO        |                           |
|           |      |        |        |              |                           |
| COLUMNNA3 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|           |      | SISMOX | 1.2000 | COMBO        |                           |
|           |      | SISMOY | 0.3600 | COMBO        |                           |
|           |      |        |        |              |                           |
| COLUMNNA4 | ADD  | MUERTA | 0.9000 | STATIC(DEAD) | Combinación para Columnas |
|           |      | SISMOX | 0.3600 | COMBO        |                           |
|           |      | SISMOY | 1.2000 | COMBO        |                           |
|           |      |        |        |              |                           |

FRAME ELEMENT FORCES

| FRAME | LOAD          | LOC     | P      | V2        | V3    | T          | M2         | M3         |
|-------|---------------|---------|--------|-----------|-------|------------|------------|------------|
| 14    | CU            | 1.5E-01 | -80.48 | -7.08     | -3.45 | -1.739E-01 | -4.207E-01 | -4.18      |
|       |               | 1.59    | -76.21 | -7.08     | -3.45 | -1.739E-01 | 4.54       | 6.00       |
|       |               | 3.03    | -71.95 | -7.08     | -3.45 | -1.739E-01 | 9.50       | 16.18      |
|       |               |         |        |           |       |            |            |            |
| 14    | COLUMNNA1 MAX | 1.5E-01 | -49.60 | 3.73      | 2.97  | 4.476E-01  | 8.11       | 10.41      |
|       |               | 1.59    | -46.40 | 3.73      | 2.97  | 4.476E-01  | 3.87       | 5.06       |
|       |               | 3.03    | -43.19 | 3.73      | 2.97  | 4.476E-01  | 14.67      | 24.60      |
|       |               |         |        |           |       |            |            |            |
| 14    | COLUMNNA1 MIN | 1.5E-01 | -71.13 | -14.36    | -8.14 | -7.085E-01 | -8.74      | -16.68     |
|       |               | 1.59    | -67.93 | -14.36    | -8.14 | -7.085E-01 | 2.94       | 3.94       |
|       |               | 3.03    | -64.73 | -14.36    | -8.14 | -7.085E-01 | -4.223E-01 | -3.307E-01 |
|       |               |         |        |           |       |            |            |            |
| 14    | COLUMNNA2 MAX | 1.5E-01 | -51.96 | 9.654E-01 | 4.39  | 4.430E-01  | 10.37      | 6.27       |
|       |               |         |        |           |       |            |            |            |

|    |             |         |           |           |            |            |            |
|----|-------------|---------|-----------|-----------|------------|------------|------------|
|    | 1.59        | -48.76  | 9.654E-01 | 4.39      | 4.430E-01  | 4.07       | 4.93       |
|    | 3.03        | -45.56  | 9.654E-01 | 4.39      | 4.430E-01  | 16.51      | 20.78      |
| 14 | COLUMN2 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -68.76  | -11.59    | -9.57     | -7.039E-01 | -11.00     | -12.54     |
|    | 1.59        | -65.56  | -11.59    | -9.57     | -7.039E-01 | 2.74       | 4.07       |
|    | 3.03        | -62.36  | -11.59    | -9.57     | -7.039E-01 | -2.25      | 3.49       |
| 14 | COLUMN3 MAX |         |           |           |            |            |            |
|    | 1.5E-01     | -16.71  | 6.26      | 5.06      | 5.552E-01  | 8.14       | 11.98      |
|    | 1.59        | -13.96  | 6.26      | 5.06      | 5.552E-01  | 9.063E-01  | 2.99       |
|    | 3.03        | -11.22  | 6.26      | 5.06      | 5.552E-01  | 8.70       | 18.90      |
| 14 | COLUMN3 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -38.24  | -11.83    | -6.06     | -6.009E-01 | -8.71      | -15.11     |
|    | 1.59        | -35.50  | -11.83    | -6.06     | -6.009E-01 | -3.323E-02 | 1.87       |
|    | 3.03        | -32.75  | -11.83    | -6.06     | -6.009E-01 | -6.39      | -6.03      |
| 14 | COLUMN4 MAX |         |           |           |            |            |            |
|    | 1.5E-01     | -19.07  | 3.49      | 6.48      | 5.506E-01  | 10.40      | 7.84       |
|    | 1.59        | -16.33  | 3.49      | 6.48      | 5.506E-01  | 1.10       | 2.86       |
|    | 3.03        | -13.59  | 3.49      | 6.48      | 5.506E-01  | 10.53      | 15.08      |
| 14 | COLUMN4 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -35.87  | -9.06     | -7.48     | -5.964E-01 | -10.97     | -10.98     |
|    | 1.59        | -33.13  | -9.06     | -7.48     | -5.964E-01 | -2.311E-01 | 2.00       |
|    | 3.03        | -30.39  | -9.06     | -7.48     | -5.964E-01 | -8.22      | -2.21      |
| 15 | CU          |         |           |           |            |            |            |
|    | 1.5E-01     | -214.55 | 1.146E-01 | -23.69    | -1.809E-01 | -6.73      | -6.483E-01 |
|    | 1.59        | -210.28 | 1.146E-01 | -23.69    | -1.809E-01 | 27.32      | -8.129E-01 |
|    | 3.03        | -206.02 | 1.146E-01 | -23.69    | -1.809E-01 | 61.37      | -9.776E-01 |
| 15 | COLUMN1 MAX |         |           |           |            |            |            |
|    | 1.5E-01     | -155.18 | 13.25     | -11.01    | 4.655E-01  | 5.33       | 19.13      |
|    | 1.59        | -151.98 | 13.25     | -11.01    | 4.655E-01  | 21.15      | 8.794E-02  |
|    | 3.03        | -148.77 | 13.25     | -11.01    | 4.655E-01  | 55.08      | 17.49      |
| 15 | COLUMN1 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -166.65 | -13.07    | -24.52    | -7.368E-01 | -15.42     | -20.10     |
|    | 1.59        | -163.45 | -13.07    | -24.52    | -7.368E-01 | 19.83      | -1.31      |
|    | 3.03        | -160.25 | -13.07    | -24.52    | -7.368E-01 | 36.97      | -18.95     |
| 15 | COLUMN2 MAX |         |           |           |            |            |            |
|    | 1.5E-01     | -152.58 | 11.61     | -7.99     | 4.607E-01  | 9.96       | 16.72      |
|    | 1.59        | -149.38 | 11.61     | -7.99     | 4.607E-01  | 21.45      | 2.444E-02  |
|    | 3.03        | -146.18 | 11.61     | -7.99     | 4.607E-01  | 59.12      | 15.21      |
| 15 | COLUMN2 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -169.25 | -11.44    | -27.54    | -7.320E-01 | -20.05     | -17.69     |
|    | 1.59        | -166.05 | -11.44    | -27.54    | -7.320E-01 | 19.53      | -1.24      |
|    | 3.03        | -162.85 | -11.44    | -27.54    | -7.320E-01 | 32.93      | -16.67     |
| 15 | COLUMN3 MAX |         |           |           |            |            |            |
|    | 1.5E-01     | -67.46  | 13.29     | 8.128E-01 | 5.773E-01  | 8.68       | 19.46      |
|    | 1.59        | -64.71  | 13.29     | 8.128E-01 | 5.773E-01  | 7.51       | 3.598E-01  |
|    | 3.03        | -61.97  | 13.29     | 8.128E-01 | 5.773E-01  | 24.45      | 17.70      |
| 15 | COLUMN3 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -78.93  | -13.03    | -12.70    | -6.249E-01 | -12.06     | -19.77     |
|    | 1.59        | -76.19  | -13.03    | -12.70    | -6.249E-01 | 6.19       | -1.04      |
|    | 3.03        | -73.44  | -13.03    | -12.70    | -6.249E-01 | 6.34       | -18.74     |
| 15 | COLUMN4 MAX |         |           |           |            |            |            |
|    | 1.5E-01     | -64.86  | 11.66     | 3.83      | 5.726E-01  | 13.31      | 17.05      |
|    | 1.59        | -62.12  | 11.66     | 3.83      | 5.726E-01  | 7.81       | 2.963E-01  |
|    | 3.03        | -59.37  | 11.66     | 3.83      | 5.726E-01  | 28.49      | 15.42      |
| 15 | COLUMN4 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -81.53  | -11.40    | -15.72    | -6.202E-01 | -16.70     | -17.36     |
|    | 1.59        | -78.79  | -11.40    | -15.72    | -6.202E-01 | 5.90       | -9.720E-01 |
|    | 3.03        | -76.04  | -11.40    | -15.72    | -6.202E-01 | 2.31       | -16.46     |
| 16 | CU          |         |           |           |            |            |            |
|    | 1.5E-01     | -150.38 | -1.38     | -14.49    | -1.790E-01 | -1.96      | -1.21      |
|    | 1.59        | -146.11 | -1.38     | -14.49    | -1.790E-01 | 18.87      | 7.700E-01  |
|    | 3.03        | -141.84 | -1.38     | -14.49    | -1.790E-01 | 39.70      | 2.75       |
| 16 | COLUMN1 MAX |         |           |           |            |            |            |
|    | 1.5E-01     | -107.75 | 11.24     | -4.20     | 4.607E-01  | 8.76       | 17.34      |
|    | 1.59        | -104.55 | 11.24     | -4.20     | 4.607E-01  | 14.80      | 1.18       |
|    | 3.03        | -101.34 | 11.24     | -4.20     | 4.607E-01  | 38.72      | 19.10      |
| 16 | COLUMN1 MIN |         |           |           |            |            |            |
|    | 1.5E-01     | -117.82 | -13.31    | -17.53    | -7.292E-01 | -11.70     | -19.16     |

|    |             |         |            |           |            |        |            |
|----|-------------|---------|------------|-----------|------------|--------|------------|
|    | 1.59        | -114.62 | -13.31     | -17.53    | -7.292E-01 | 13.51  | -2.853E-02 |
|    | 3.03        | -111.42 | -13.31     | -17.53    | -7.292E-01 | 20.84  | -14.97     |
| 16 | COLUMN2 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -105.48 | 9.51       | -1.52     | 4.560E-01  | 12.87  | 14.76      |
|    | 1.59        | -102.28 | 9.51       | -1.52     | 4.560E-01  | 15.06  | 1.09       |
|    | 3.03        | -99.08  | 9.51       | -1.52     | 4.560E-01  | 42.30  | 16.71      |
| 16 | COLUMN2 MIN |         |            |           |            |        |            |
|    | 1.5E-01     | -120.09 | -11.58     | -20.21    | -7.245E-01 | -15.80 | -16.57     |
|    | 1.59        | -116.89 | -11.58     | -20.21    | -7.245E-01 | 13.25  | 6.628E-02  |
|    | 3.03        | -113.69 | -11.58     | -20.21    | -7.245E-01 | 17.25  | -12.58     |
| 16 | COLUMN3 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -68.72  | 11.65      | 2.470E-01 | 5.714E-01  | 8.89   | 17.78      |
|    | 1.59        | -65.98  | 11.65      | 2.470E-01 | 5.714E-01  | 8.53   | 1.04       |
|    | 3.03        | -63.24  | 11.65      | 2.470E-01 | 5.714E-01  | 26.05  | 18.37      |
| 16 | COLUMN3 MIN |         |            |           |            |        |            |
|    | 1.5E-01     | -78.80  | -12.90     | -13.09    | -6.185E-01 | -11.58 | -18.71     |
|    | 1.59        | -76.05  | -12.90     | -13.09    | -6.185E-01 | 7.24   | -1.700E-01 |
|    | 3.03        | -73.31  | -12.90     | -13.09    | -6.185E-01 | 8.18   | -15.70     |
| 16 | COLUMN4 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -66.45  | 9.91       | 2.92      | 5.667E-01  | 12.99  | 15.20      |
|    | 1.59        | -63.71  | 9.91       | 2.92      | 5.667E-01  | 8.79   | 9.473E-01  |
|    | 3.03        | -60.97  | 9.91       | 2.92      | 5.667E-01  | 29.64  | 15.98      |
| 16 | COLUMN4 MIN |         |            |           |            |        |            |
|    | 1.5E-01     | -81.07  | -11.17     | -15.76    | -6.138E-01 | -15.68 | -16.13     |
|    | 1.59        | -78.32  | -11.17     | -15.76    | -6.138E-01 | 6.98   | -7.518E-02 |
|    | 3.03        | -75.58  | -11.17     | -15.76    | -6.138E-01 | 4.59   | -13.30     |
| 17 | CU          |         |            |           |            |        |            |
|    | 1.5E-01     | -176.17 | -6.267E-01 | -17.31    | -1.799E-01 | -4.04  | -1.405E-01 |
|    | 1.59        | -171.90 | -6.267E-01 | -17.31    | -1.799E-01 | 20.84  | 7.603E-01  |
|    | 3.03        | -167.63 | -6.267E-01 | -17.31    | -1.799E-01 | 45.72  | 1.66       |
| 17 | COLUMN1 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -127.13 | 11.95      | -6.49     | 4.630E-01  | 6.93   | 18.45      |
|    | 1.59        | -123.93 | 11.95      | -6.49     | 4.630E-01  | 16.26  | 1.27       |
|    | 3.03        | -120.73 | 11.95      | -6.49     | 4.630E-01  | 42.99  | 18.41      |
| 17 | COLUMN1 MIN |         |            |           |            |        |            |
|    | 1.5E-01     | -137.12 | -12.89     | -19.47    | -7.329E-01 | -12.99 | -18.66     |
|    | 1.59        | -133.92 | -12.89     | -19.47    | -7.329E-01 | 15.00  | -1.270E-01 |
|    | 3.03        | -130.72 | -12.89     | -19.47    | -7.329E-01 | 25.58  | -15.91     |
| 17 | COLUMN2 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -126.15 | 10.22      | -4.51     | 4.583E-01  | 9.96   | 15.86      |
|    | 1.59        | -122.95 | 10.22      | -4.51     | 4.583E-01  | 16.45  | 1.17       |
|    | 3.03        | -119.75 | 10.22      | -4.51     | 4.583E-01  | 45.64  | 16.01      |
| 17 | COLUMN2 MIN |         |            |           |            |        |            |
|    | 1.5E-01     | -138.10 | -11.16     | -21.45    | -7.282E-01 | -16.02 | -16.07     |
|    | 1.59        | -134.90 | -11.16     | -21.45    | -7.282E-01 | 14.81  | -2.919E-02 |
|    | 3.03        | -131.70 | -11.16     | -21.45    | -7.282E-01 | 22.94  | -13.52     |
| 17 | COLUMN3 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -80.38  | 12.23      | -1.20     | 5.743E-01  | 8.02   | 18.67      |
|    | 1.59        | -77.63  | 12.23      | -1.20     | 5.743E-01  | 9.75   | 1.09       |
|    | 3.03        | -74.89  | 12.23      | -1.20     | 5.743E-01  | 28.89  | 17.83      |
| 17 | COLUMN3 MIN |         |            |           |            |        |            |
|    | 1.5E-01     | -90.36  | -12.62     | -14.19    | -6.217E-01 | -11.90 | -18.44     |
|    | 1.59        | -87.62  | -12.62     | -14.19    | -6.217E-01 | 8.50   | -3.032E-01 |
|    | 3.03        | -84.88  | -12.62     | -14.19    | -6.217E-01 | 11.48  | -16.49     |
| 17 | COLUMN4 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -79.40  | 10.49      | 7.729E-01 | 5.696E-01  | 11.06  | 16.08      |
|    | 1.59        | -76.65  | 10.49      | 7.729E-01 | 5.696E-01  | 9.95   | 9.934E-01  |
|    | 3.03        | -73.91  | 10.49      | 7.729E-01 | 5.696E-01  | 31.54  | 15.44      |
| 17 | COLUMN4 MIN |         |            |           |            |        |            |
|    | 1.5E-01     | -91.34  | -10.88     | -16.16    | -6.169E-01 | -14.93 | -15.85     |
|    | 1.59        | -88.60  | -10.88     | -16.16    | -6.169E-01 | 8.31   | -2.055E-01 |
|    | 3.03        | -85.86  | -10.88     | -16.16    | -6.169E-01 | 8.83   | -14.09     |
| 18 | CU          |         |            |           |            |        |            |
|    | 1.5E-01     | -75.50  | 6.13       | -7.28     | -1.650E-01 | -1.34  | 2.24       |
|    | 1.59        | -71.23  | 6.13       | -7.28     | -1.650E-01 | 9.12   | -6.58      |
|    | 3.03        | -66.97  | 6.13       | -7.28     | -1.650E-01 | 19.59  | -15.39     |
| 18 | COLUMN1 MAX |         |            |           |            |        |            |
|    | 1.5E-01     | -50.67  | 12.06      | 1.15      | 4.246E-01  | 9.13   | 13.05      |
|    | 1.59        | -47.47  | 12.06      | 1.15      | 4.246E-01  | 7.48   | -4.28      |



|    |             |         |           |        |            |            |            |
|----|-------------|---------|-----------|--------|------------|------------|------------|
|    | 3.03        | -44.27  | 12.06     | 1.15   | 4.246E-01  | 23.56      | -1.47      |
| 18 | COLUMN1 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -62.58  | -2.86     | -12.07 | -6.721E-01 | -11.14     | -9.69      |
|    | 1.59        | -59.38  | -2.86     | -12.07 | -6.721E-01 | 6.21       | -5.58      |
|    | 3.03        | -56.18  | -2.86     | -12.07 | -6.721E-01 | 5.82       | -21.62     |
| 18 | COLUMN2 MAX |         |           |        |            |            |            |
|    | 1.5E-01     | -48.38  | 11.03     | 2.23   | 4.203E-01  | 10.80      | 11.48      |
|    | 1.59        | -45.18  | 11.03     | 2.23   | 4.203E-01  | 7.60       | -4.38      |
|    | 3.03        | -41.98  | 11.03     | 2.23   | 4.203E-01  | 24.98      | -2.86      |
| 18 | COLUMN2 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -64.87  | -1.83     | -13.14 | -6.678E-01 | -12.81     | -8.11      |
|    | 1.59        | -61.67  | -1.83     | -13.14 | -6.678E-01 | 6.09       | -5.49      |
|    | 3.03        | -58.47  | -1.83     | -13.14 | -6.678E-01 | 4.40       | -20.23     |
| 18 | COLUMN3 MAX |         |           |        |            |            |            |
|    | 1.5E-01     | -32.56  | 10.72     | 3.31   | 5.266E-01  | 9.57       | 12.67      |
|    | 1.59        | -29.82  | 10.72     | 3.31   | 5.266E-01  | 4.82       | -2.74      |
|    | 3.03        | -27.07  | 10.72     | 3.31   | 5.266E-01  | 17.81      | 1.99       |
| 18 | COLUMN3 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -44.47  | -4.20     | -9.92  | -5.701E-01 | -10.71     | -10.08     |
|    | 1.59        | -41.72  | -4.20     | -9.92  | -5.701E-01 | 3.55       | -4.04      |
|    | 3.03        | -38.98  | -4.20     | -9.92  | -5.701E-01 | 6.555E-02  | -18.15     |
| 18 | COLUMN4 MAX |         |           |        |            |            |            |
|    | 1.5E-01     | -30.27  | 9.69      | 4.38   | 5.223E-01  | 11.23      | 11.09      |
|    | 1.59        | -27.53  | 9.69      | 4.38   | 5.223E-01  | 4.94       | -2.84      |
|    | 3.03        | -24.79  | 9.69      | 4.38   | 5.223E-01  | 19.23      | 6.027E-01  |
| 18 | COLUMN4 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -46.76  | -3.17     | -10.99 | -5.657E-01 | -12.37     | -8.50      |
|    | 1.59        | -44.01  | -3.17     | -10.99 | -5.657E-01 | 3.43       | -3.95      |
|    | 3.03        | -41.27  | -3.17     | -10.99 | -5.657E-01 | -1.36      | -16.76     |
| 19 | CU          |         |           |        |            |            |            |
|    | 1.5E-01     | -92.22  | -1.44     | 3.14   | -1.790E-01 | 4.42       | 8.000E-01  |
|    | 1.59        | -87.95  | -1.44     | 3.14   | -1.790E-01 | -1.009E-01 | 2.87       |
|    | 3.03        | -83.69  | -1.44     | 3.14   | -1.790E-01 | -4.62      | 4.94       |
| 19 | COLUMN1 MAX |         |           |        |            |            |            |
|    | 1.5E-01     | -67.86  | 4.021E-02 | 14.53  | 4.606E-01  | 21.28      | 2.32       |
|    | 1.59        | -64.66  | 4.021E-02 | 14.53  | 4.606E-01  | 3.921E-01  | 2.28       |
|    | 3.03        | -61.46  | 4.021E-02 | 14.53  | 4.606E-01  | 13.57      | 5.21       |
| 19 | COLUMN1 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -70.47  | -2.20     | -9.82  | -7.292E-01 | -14.66     | -1.12      |
|    | 1.59        | -67.27  | -2.20     | -9.82  | -7.292E-01 | -5.435E-01 | 2.03       |
|    | 3.03        | -64.07  | -2.20     | -9.82  | -7.292E-01 | -20.50     | 2.21       |
| 19 | COLUMN2 MAX |         |           |        |            |            |            |
|    | 1.5E-01     | -67.29  | 5.261E-01 | 16.03  | 4.559E-01  | 23.51      | 3.08       |
|    | 1.59        | -64.09  | 5.261E-01 | 16.03  | 4.559E-01  | 4.682E-01  | 2.33       |
|    | 3.03        | -60.89  | 5.261E-01 | 16.03  | 4.559E-01  | 15.64      | 5.85       |
| 19 | COLUMN2 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -71.04  | -2.69     | -11.31 | -7.245E-01 | -16.88     | -1.88      |
|    | 1.59        | -67.84  | -2.69     | -11.31 | -7.245E-01 | -6.196E-01 | 1.98       |
|    | 3.03        | -64.64  | -2.69     | -11.31 | -7.245E-01 | -22.57     | 1.57       |
| 19 | COLUMN3 MAX |         |           |        |            |            |            |
|    | 1.5E-01     | -21.14  | 6.933E-01 | 12.51  | 5.714E-01  | 18.57      | 2.09       |
|    | 1.59        | -18.39  | 6.933E-01 | 12.51  | 5.714E-01  | 5.867E-01  | 1.11       |
|    | 3.03        | -15.65  | 6.933E-01 | 12.51  | 5.714E-01  | 16.67      | 3.10       |
| 19 | COLUMN3 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -23.74  | -1.55     | -11.84 | -6.184E-01 | -17.37     | -1.35      |
|    | 1.59        | -21.00  | -1.55     | -11.84 | -6.184E-01 | -3.489E-01 | 8.608E-01  |
|    | 3.03        | -18.26  | -1.55     | -11.84 | -6.184E-01 | -17.40     | 9.987E-02  |
| 19 | COLUMN4 MAX |         |           |        |            |            |            |
|    | 1.5E-01     | -20.56  | 1.18      | 14.00  | 5.667E-01  | 20.79      | 2.85       |
|    | 1.59        | -17.82  | 1.18      | 14.00  | 5.667E-01  | 6.628E-01  | 1.16       |
|    | 3.03        | -15.08  | 1.18      | 14.00  | 5.667E-01  | 18.74      | 3.74       |
| 19 | COLUMN4 MIN |         |           |        |            |            |            |
|    | 1.5E-01     | -24.31  | -2.03     | -13.33 | -6.138E-01 | -19.59     | -2.11      |
|    | 1.59        | -21.57  | -2.03     | -13.33 | -6.138E-01 | -4.250E-01 | 8.085E-01  |
|    | 3.03        | -18.83  | -2.03     | -13.33 | -6.138E-01 | -19.47     | -5.390E-01 |
| 20 | CU          |         |           |        |            |            |            |
|    | 1.5E-01     | -136.57 | -3.45     | 22.36  | -1.842E-01 | 10.91      | 1.39       |
|    | 1.59        | -132.31 | -3.45     | 22.36  | -1.842E-01 | -21.24     | 6.35       |
|    | 3.03        | -128.04 | -3.45     | 22.36  | -1.842E-01 | -53.39     | 11.32      |

|    |             |         |            |            |            |            |            |
|----|-------------|---------|------------|------------|------------|------------|------------|
| 20 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -90.90  | 5.28       | 26.74      | 4.739E-01  | 23.14      | 12.83      |
|    | 1.59        | -87.70  | 5.28       | 26.74      | 4.739E-01  | -15.28     | 5.30       |
|    | 3.03        | -84.50  | 5.28       | 26.74      | 4.739E-01  | -26.35     | 19.33      |
| 20 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -113.96 | -10.46     | 6.81       | -7.502E-01 | -6.77      | -10.75     |
|    | 1.59        | -110.76 | -10.46     | 6.81       | -7.502E-01 | -16.58     | 4.23       |
|    | 3.03        | -107.56 | -10.46     | 6.81       | -7.502E-01 | -53.73     | -2.35      |
| 20 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -85.70  | 2.86       | 30.44      | 4.691E-01  | 28.76      | 9.22       |
|    | 1.59        | -82.50  | 2.86       | 30.44      | 4.691E-01  | -14.99     | 5.24       |
|    | 3.03        | -79.30  | 2.86       | 30.44      | 4.691E-01  | -21.33     | 16.00      |
| 20 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -119.16 | -8.04      | 3.11       | -7.454E-01 | -12.40     | -7.13      |
|    | 1.59        | -115.95 | -8.04      | 3.11       | -7.454E-01 | -16.87     | 4.29       |
|    | 3.03        | -112.75 | -8.04      | 3.11       | -7.454E-01 | -58.76     | 9.745E-01  |
| 20 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -33.04  | 6.19       | 15.66      | 5.878E-01  | 17.36      | 11.62      |
|    | 1.59        | -30.29  | 6.19       | 15.66      | 5.878E-01  | -5.13      | 2.79       |
|    | 3.03        | -27.55  | 6.19       | 15.66      | 5.878E-01  | -2.737E-01 | 15.52      |
| 20 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -56.10  | -9.55      | -4.27      | -6.363E-01 | -12.55     | -11.96     |
|    | 1.59        | -53.35  | -9.55      | -4.27      | -6.363E-01 | -6.43      | 1.72       |
|    | 3.03        | -50.61  | -9.55      | -4.27      | -6.363E-01 | -27.66     | -6.17      |
| 20 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -27.84  | 3.77       | 19.36      | 5.830E-01  | 22.99      | 8.01       |
|    | 1.59        | -25.10  | 3.77       | 19.36      | 5.830E-01  | -4.84      | 2.73       |
|    | 3.03        | -22.35  | 3.77       | 19.36      | 5.830E-01  | 4.75       | 12.19      |
| 20 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -61.29  | -7.14      | -7.97      | -6.315E-01 | -18.18     | -8.34      |
|    | 1.59        | -58.55  | -7.14      | -7.97      | -6.315E-01 | -6.72      | 1.78       |
|    | 3.03        | -55.81  | -7.14      | -7.97      | -6.315E-01 | -32.68     | -2.84      |
| 21 | CU          |         |            |            |            |            |            |
|    | 1.5E-01     | -135.60 | -2.746E-02 | 15.88      | -1.784E-01 | 4.34       | -6.176E-01 |
|    | 1.59        | -131.33 | -2.746E-02 | 15.88      | -1.784E-01 | -18.50     | -5.781E-01 |
|    | 3.03        | -127.06 | -2.746E-02 | 15.88      | -1.784E-01 | -41.33     | -5.386E-01 |
| 21 | COLUMN1 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -97.09  | 10.15      | 18.70      | 4.591E-01  | 13.65      | 14.71      |
|    | 1.59        | -93.89  | 10.15      | 18.70      | 4.591E-01  | -13.24     | 1.175E-01  |
|    | 3.03        | -90.69  | 10.15      | 18.70      | 4.591E-01  | -21.87     | 13.67      |
| 21 | COLUMN1 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -106.30 | -10.19     | 5.12       | -7.267E-01 | -7.14      | -15.63     |
|    | 1.59        | -103.10 | -10.19     | 5.12       | -7.267E-01 | -14.51     | -9.847E-01 |
|    | 3.03        | -99.90  | -10.19     | 5.12       | -7.267E-01 | -40.13     | -14.47     |
| 21 | COLUMN2 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -95.95  | 8.56       | 21.40      | 4.544E-01  | 17.78      | 12.34      |
|    | 1.59        | -92.75  | 8.56       | 21.40      | 4.544E-01  | -12.98     | 3.924E-02  |
|    | 3.03        | -89.55  | 8.56       | 21.40      | 4.544E-01  | -18.25     | 11.46      |
| 21 | COLUMN2 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -107.44 | -8.60      | 2.42       | -7.220E-01 | -11.28     | -13.27     |
|    | 1.59        | -104.24 | -8.60      | 2.42       | -7.220E-01 | -14.76     | -9.064E-01 |
|    | 3.03        | -101.04 | -8.60      | 2.42       | -7.220E-01 | -43.75     | -12.26     |
| 21 | COLUMN3 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -58.21  | 9.98       | 13.43      | 5.694E-01  | 12.05      | 14.77      |
|    | 1.59        | -55.47  | 9.98       | 13.43      | 5.694E-01  | -7.25      | 4.295E-01  |
|    | 3.03        | -52.72  | 9.98       | 13.43      | 5.694E-01  | -8.30      | 14.22      |
| 21 | COLUMN3 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -67.42  | -10.36     | -1.526E-01 | -6.164E-01 | -8.74      | -15.57     |
|    | 1.59        | -64.68  | -10.36     | -1.526E-01 | -6.164E-01 | -8.52      | -6.727E-01 |
|    | 3.03        | -61.93  | -10.36     | -1.526E-01 | -6.164E-01 | -26.55     | -13.92     |
| 21 | COLUMN4 MAX |         |            |            |            |            |            |
|    | 1.5E-01     | -57.07  | 8.39       | 16.13      | 5.648E-01  | 16.19      | 12.41      |
|    | 1.59        | -54.33  | 8.39       | 16.13      | 5.648E-01  | -7.00      | 3.512E-01  |
|    | 3.03        | -51.58  | 8.39       | 16.13      | 5.648E-01  | -4.68      | 12.01      |
| 21 | COLUMN4 MIN |         |            |            |            |            |            |
|    | 1.5E-01     | -68.56  | -8.77      | -2.85      | -6.117E-01 | -12.87     | -13.20     |
|    | 1.59        | -65.82  | -8.77      | -2.85      | -6.117E-01 | -8.78      | -5.944E-01 |
|    | 3.03        | -63.07  | -8.77      | -2.85      | -6.117E-01 | -30.18     | -11.71     |
| 22 | CU          |         |            |            |            |            |            |
|    | 1.5E-01     | -152.29 | 2.152E-01  | 17.80      | -1.801E-01 | 4.87       | 1.10       |
|    | 1.59        | -148.02 | 2.152E-01  | 17.80      | -1.801E-01 | -20.71     | 7.942E-01  |

|    |             |         |           |            |            |           |            |
|----|-------------|---------|-----------|------------|------------|-----------|------------|
| 22 | 3.03        | -143.75 | 2.152E-01 | 17.80      | -1.801E-01 | -46.29    | 4.848E-01  |
|    | COLUMN1 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -109.52 | 10.09     | 19.84      | 4.633E-01  | 13.62     | 15.67      |
|    | 1.59        | -106.32 | 10.09     | 19.84      | 4.633E-01  | -14.91    | 1.17       |
|    | 3.03        | -103.12 | 10.09     | 19.84      | 4.633E-01  | -26.01    | 14.06      |
| 22 | COLUMN1 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -118.91 | -9.77     | 6.85       | -7.334E-01 | -6.31     | -14.01     |
|    | 1.59        | -115.71 | -9.77     | 6.85       | -7.334E-01 | -16.16    | 2.323E-02  |
|    | 3.03        | -112.51 | -9.77     | 6.85       | -7.334E-01 | -43.43    | -13.33     |
| 22 | COLUMN2 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -107.73 | 8.34      | 21.82      | 4.586E-01  | 16.65     | 13.05      |
|    | 1.59        | -104.52 | 8.34      | 21.82      | 4.586E-01  | -14.72    | 1.07       |
|    | 3.03        | -101.32 | 8.34      | 21.82      | 4.586E-01  | -23.36    | 11.65      |
| 22 | COLUMN2 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -120.70 | -8.02     | 4.87       | -7.287E-01 | -9.34     | -11.40     |
|    | 1.59        | -117.50 | -8.02     | 4.87       | -7.287E-01 | -16.35    | 1.253E-01  |
|    | 3.03        | -114.30 | -8.02     | 4.87       | -7.287E-01 | -46.08    | -10.92     |
| 22 | COLUMN3 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -65.95  | 9.87      | 14.25      | 5.747E-01  | 11.97     | 15.11      |
|    | 1.59        | -63.21  | 9.87      | 14.25      | 5.747E-01  | -8.51     | 9.174E-01  |
|    | 3.03        | -60.47  | 9.87      | 14.25      | 5.747E-01  | -11.57    | 14.12      |
| 22 | COLUMN3 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -75.34  | -9.98     | 1.26       | -6.220E-01 | -7.96     | -14.57     |
|    | 1.59        | -72.60  | -9.98     | 1.26       | -6.220E-01 | -9.76     | -2.275E-01 |
|    | 3.03        | -69.86  | -9.98     | 1.26       | -6.220E-01 | -29.00    | -13.28     |
| 22 | COLUMN4 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -64.16  | 8.12      | 16.23      | 5.699E-01  | 15.01     | 12.49      |
|    | 1.59        | -61.42  | 8.12      | 16.23      | 5.699E-01  | -8.32     | 8.153E-01  |
|    | 3.03        | -58.67  | 8.12      | 16.23      | 5.699E-01  | -8.92     | 11.71      |
| 22 | COLUMN4 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -77.14  | -8.23     | -7.185E-01 | -6.173E-01 | -10.99    | -11.96     |
|    | 1.59        | -74.39  | -8.23     | -7.185E-01 | -6.173E-01 | -9.96     | -1.254E-01 |
|    | 3.03        | -71.65  | -8.23     | -7.185E-01 | -6.173E-01 | -31.65    | -10.86     |
| 23 | CU          |         |           |            |            |           |            |
|    | 1.5E-01     | -65.72  | 4.90      | 6.93       | -1.650E-01 | 8.001E-01 | 2.16       |
|    | 1.59        | -61.45  | 4.90      | 6.93       | -1.650E-01 | -9.16     | -4.89      |
|    | 3.03        | -57.18  | 4.90      | 6.93       | -1.650E-01 | -19.12    | -11.94     |
| 23 | COLUMN1 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -41.78  | 9.54      | 11.81      | 4.245E-01  | 10.74     | 10.61      |
|    | 1.59        | -38.58  | 9.54      | 11.81      | 4.245E-01  | -6.23     | -3.11      |
|    | 3.03        | -35.38  | 9.54      | 11.81      | 4.245E-01  | -5.47     | -1.08      |
| 23 | COLUMN1 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -56.80  | -2.19     | -1.42      | -6.720E-01 | -9.54     | -7.38      |
|    | 1.59        | -53.60  | -2.19     | -1.42      | -6.720E-01 | -7.50     | -4.23      |
|    | 3.03        | -50.40  | -2.19     | -1.42      | -6.720E-01 | -23.21    | -16.83     |
| 23 | COLUMN2 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -43.38  | 8.51      | 12.88      | 4.202E-01  | 12.40     | 9.04       |
|    | 1.59        | -40.18  | 8.51      | 12.88      | 4.202E-01  | -6.11     | -3.20      |
|    | 3.03        | -36.98  | 8.51      | 12.88      | 4.202E-01  | -4.04     | -2.47      |
| 23 | COLUMN2 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -55.19  | -1.16     | -2.49      | -6.677E-01 | -11.20    | -5.80      |
|    | 1.59        | -51.99  | -1.16     | -2.49      | -6.677E-01 | -7.62     | -4.13      |
|    | 3.03        | -48.79  | -1.16     | -2.49      | -6.677E-01 | -24.63    | -15.44     |
| 23 | COLUMN3 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -24.64  | 8.08      | 9.85       | 5.266E-01  | 10.59     | 9.87       |
|    | 1.59        | -21.89  | 8.08      | 9.85       | 5.266E-01  | -3.57     | -1.75      |
|    | 3.03        | -19.15  | 8.08      | 9.85       | 5.266E-01  | 8.881E-03 | 2.38       |
| 23 | COLUMN3 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -39.66  | -3.65     | -3.37      | -5.700E-01 | -9.68     | -8.13      |
|    | 1.59        | -36.92  | -3.65     | -3.37      | -5.700E-01 | -4.84     | -2.87      |
|    | 3.03        | -34.17  | -3.65     | -3.37      | -5.700E-01 | -17.73    | -13.37     |
| 23 | COLUMN4 MAX |         |           |            |            |           |            |
|    | 1.5E-01     | -26.24  | 7.05      | 10.93      | 5.222E-01  | 12.26     | 8.29       |
|    | 1.59        | -23.50  | 7.05      | 10.93      | 5.222E-01  | -3.45     | -1.84      |
|    | 3.03        | -20.75  | 7.05      | 10.93      | 5.222E-01  | 1.43      | 9.903E-01  |
| 23 | COLUMN4 MIN |         |           |            |            |           |            |
|    | 1.5E-01     | -38.05  | -2.62     | -4.45      | -5.656E-01 | -11.35    | -6.55      |
|    | 1.59        | -35.31  | -2.62     | -4.45      | -5.656E-01 | -4.96     | -2.78      |
|    | 3.03        | -32.57  | -2.62     | -4.45      | -5.656E-01 | -19.15    | -11.98     |

### 5.4.9.2.4 Cálculo del Refuerzo.

L O A D C O M B I N A T I O N

C O N C R E T E D E S I G N O U T P U T (ACI 318-95)

BIAXIAL P-M INTERACTION AND SHEAR DESIGN OF COLUMN-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | -----REQUIRED REINFORCING-----> |          |         |          |         |          |
|------------|---------------|---------------|---------------------------------|----------|---------|----------|---------|----------|
|            |               |               | LONGITUDINAL                    | COMBO    | SHEAR22 | COMBO    | SHEAR33 | COMBO    |
| 14         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.016   | CU       | 0.016   | CU       |
| 14         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.015   | CU       | 0.015   | CU       |
| 14         | 30X30         | 302.500       | 9.000                           | COLUMNA4 | 0.015   | CU       | 0.015   | CU       |
| 15         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.015   | COLUMNA4 | 0.017   | COLUMNA4 |
| 15         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.015   | COLUMNA4 | 0.017   | COLUMNA4 |
| 15         | 30X30         | 302.500       | 14.872                          | COLUMNA2 | 0.015   | COLUMNA4 | 0.017   | COLUMNA4 |
| 16         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.016   | COLUMNA4 | 0.017   | COLUMNA4 |
| 16         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.016   | COLUMNA4 | 0.017   | COLUMNA4 |
| 16         | 30X30         | 302.500       | 9.612                           | COLUMNA2 | 0.015   | COLUMNA4 | 0.017   | COLUMNA4 |
| 17         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.000   | COLUMNA4 | 0.000   | COLUMNA4 |
| 17         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.00    | COLUMNA4 | 0.000   | COLUMNA4 |
| 17         | 30X30         | 302.500       | 10.561                          | COLUMNA2 | 0.000   | COLUMNA4 | 0.000   | COLUMNA4 |
| 18         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.015   | CU       | 0.015   | CU       |
| 18         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.015   | CU       | 0.015   | CU       |
| 18         | 30X30         | 302.500       | 9.000                           | COLUMNA4 | 0.014   | CU       | 0.014   | CU       |
| 19         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.017   | CU       | 0.018   | COLUMNA2 |
| 19         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.016   | CU       | 0.018   | COLUMNA2 |
| 19         | 30X30         | 302.500       | 9.000                           | COLUMNA4 | 0.016   | CU       | 0.018   | COLUMNA2 |
| 20         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.016   | COLUMNA1 | 0.033   | COLUMNA2 |
| 20         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.016   | COLUMNA1 | 0.033   | COLUMNA2 |
| 20         | 30X30         | 302.500       | 14.679                          | COLUMNA2 | 0.016   | COLUMNA1 | 0.033   | COLUMNA2 |
| 21         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.000   | COLUMNA4 | 0.000   | COLUMNA4 |
| 21         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.000   | COLUMNA4 | 0.000   | COLUMNA4 |
| 21         | 30X30         | 302.500       | 9.940                           | COLUMNA2 | 0.000   | COLUMNA4 | 0.000   | COLUMNA4 |
| 22         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.015   | COLUMNA4 | 0.018   | COLUMNA4 |
| 22         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.015   | COLUMNA4 | 0.018   | COLUMNA4 |
| 22         | 30X30         | 302.500       | 10.407                          | COLUMNA2 | 0.015   | COLUMNA4 | 0.018   | COLUMNA4 |
| 23         | 30X30         | 15.000        | 9.000                           | COLUMNA4 | 0.014   | CU       | 0.014   | CU       |
| 23         | 30X30         | 158.750       | 9.000                           | COLUMNA4 | 0.014   | CU       | 0.014   | COLUMNA2 |
| 23         | 30X30         | 302.500       | 9.000m                          | COLUMNA4 | 0.013   | CU       | 0.014   | COLUMNA2 |

### 5.4.10 Diseño de Cimentación.

#### 5.4.10.1 Envoltente Cimentación.

L O A D C O M B I N A T I O N M U L T I P L I E R S

| COMBO    | TYPE | CASE     | FACTOR | TYPE  | TITLE                       |
|----------|------|----------|--------|-------|-----------------------------|
| ENVOLCIM | ENVE |          |        |       | Envoltente para Cimentación |
|          |      | CIMENTAX | 1.0000 | COMBO |                             |
|          |      | CIMENTAY | 1.0000 | COMBO |                             |

J O I N T R E A C T I O N S

| JOINT | LOAD         | F1       | F2       | F3       | M1     | M2     | M3     |
|-------|--------------|----------|----------|----------|--------|--------|--------|
| 1     | ENVOLCIM MAX | 46.7487  | 33.6604  | 154.2263 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MIN | -37.2541 | -29.5146 | -43.9867 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MAX | 56.2205  | 59.7540  | 224.6407 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MIN | -56.3752 | -29.5533 | 56.2769  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MAX | 53.8904  | 52.0732  | 174.4559 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MIN | -51.9877 | -32.4993 | 32.1101  | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MAX | 53.9508  | 49.4069  | 174.6123 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MIN | -53.1042 | -26.0373 | 64.2311  | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MAX | 28.2503  | 37.4824  | 132.7717 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MIN | -36.6935 | -27.5753 | -26.5427 | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MAX | 35.2980  | 43.7927  | 74.9758  | 0.0000 | 0.0000 | 0.0000 |
| 6     | ENVOLCIM MIN | -36.7000 | -47.8066 | 32.4245  | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MAX | 37.4831  | 47.3040  | 255.5231 | 0.0000 | 0.0000 | 0.0000 |
| 7     | ENVOLCIM MIN | -32.8462 | -75.8426 | -67.0651 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MAX | 43.5156  | 32.2982  | 144.6511 | 0.0000 | 0.0000 | 0.0000 |
| 8     | ENVOLCIM MIN | -43.4430 | -53.5824 | 38.1131  | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MAX | 42.6501  | 25.7462  | 166.8191 | 0.0000 | 0.0000 | 0.0000 |
| 9     | ENVOLCIM MIN | -42.9157 | -49.7340 | 39.7706  | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MAX | 21.6064  | 27.8439  | 116.6594 | 0.0000 | 0.0000 | 0.0000 |
| 10    | ENVOLCIM MIN | -28.2945 | -37.2164 | -24.8370 | 0.0000 | 0.0000 | 0.0000 |

**5.4.10.2 Refuerzo Cimentación.**

DISEÑO ZAPATAS CUADRADAS

INFORMACION GENERAL

| Dato | Concepto                                    |       |
|------|---|-------|
| 1    | Resistencia del Concreto F'c <kg/cm2> =     | 210   |
| 2    | Limite Fluencia Acero Princip Fy <kg/cm2> = | 4200  |
| 3    | Recubrimiento d' <cm> =                     | 5     |
| 4    | Capacidad Admisible Suelo <kg/cm2> =        | 1.276 |
| 5    | No. de Zapatas Cuadradas Diseñadas =        | 7     |

INFORMACION DE LAS ZAPATAS

| Zap | Nombre | H col<br><cm> | B col<br><cm> | Carga P<br><t> | Carga Pu<br><t> |
|-----|--------|---------------|---------------|----------------|-----------------|
| 1   | Z1A    | 30            | 30            | 15.40          | 8.04            |
| 2   | Z2A    | 30            | 30            | 22.40          | 21.40           |
| 3   | Z3A    | 30            | 30            | 17.40          | 15.03           |
| 4   | Z4A    | 30            | 30            | 17.40          | 17.60           |
| 5   | Z5A    | 30            | 30            | 13.27          | 7.55            |
| 6   | Z1A'   | 30            | 30            | 7.50           | 9.22            |
| 7   | Z3B    | 30            | 30            | 14.46          | 13.56           |

R E S U L T A D O S

| Referencia | Nudo | Longitud   | Lados <cm> | Espesor Min | ARMADURA (Sep: cm) |            |
|------------|------|------------|------------|-------------|--------------------|------------|
| Apoyo      | #    | Paralelo H | Paralelo B | <cm>        | Paralelo H         | Paralelo B |
| Z1A        |      | 110        | 110        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| Z2A        |      | 132        | 132        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| Z3A        |      | 117        | 117        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| Z4A        |      | 117        | 117        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| Z5A        |      | 102        | 102        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| Z1A'       |      | 77         | 77         | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |
| Z3B        |      | 106        | 106        | 30.0        | 1 # 4 a 30         | 1 # 4 a 30 |

DISEÑO ZAPATAS EXCENTRICAS

INFORMACION GENERAL

| Dato | Concepto                         |                  |
|------|----------------------------------|------------------|
| 1    | Resistencia del Concreto F'c     | <kg/cm2> = 210   |
| 2    | Límite Fluencia Acero Princip Fy | <kg/cm2> = 4200  |
| 3    | Recubrimiento al Centroides d'   | <cm> = 5         |
| 4    | Número de Ramas del Estribo      | = 2              |
| 5    | # del Diametro del Estribo       | = 3              |
| 6    | Límite Fluencia Acero Estrib Fy  | <kg/cm2> = 4200  |
| 7    | Capacidad Admisible Suelo Qa     | <kg/cm2> = 1.276 |
| 8    | No. de Zapatas Diseñadas         | = 3              |

INFORMACION DE LA GEOMETRIA DE LAS ZAPATAS

| Zap Ref | Sep Col (m) | B ColExt (m) | H ColExt (m) | Ancho Adop Zap Ext(m) | Distanc (m) Borde - Eje | Viga Trabe (m) |        |
|---------|-------------|--------------|--------------|-----------------------|-------------------------|----------------|--------|
|         |             |              |              |                       |                         | B Inic         | H Inic |
| Z1      | 2.65        | .3           | .3           | 1.2                   | .15                     | .25            | .3     |
| Z2      | 4           | .3           | .3           | .8                    | .15                     | .25            | .3     |
| Z3      | 4           | .3           | .3           | .8                    | .15                     | .25            | .3     |

INFORMACION DE LAS SOLICITACIONES DE LAS ZAPATAS

| Zap Ref | Pserv (t) |           | Pult (t)  |           |
|---------|-----------|-----------|-----------|-----------|
|         | Zapat EXT | Zapat INT | Zapat EXT | Zapat INT |
| Z1      | 25.55     | 14.46     | 13.66     | 13.56     |
| Z2      | 16.7      | 17.8      | 15.22     | 17.82     |
| Z3      | 11.66     | 13.54     | 6.57      | 7.87      |

R E S U L T A D O S D E L D I S E N O

| Zap Ref | Largo L | Ancho B | Zapata Espes T (cm) | EXTERIOR As Paralelo L | As Paralelo B | Zapata INT Lado L (cm) |
|---------|---------|---------|---------------------|------------------------|---------------|------------------------|
| Z1      | 201     | 120     | 45                  | 1 # 4 a 24             | 1 # 3 a 25    | 97                     |
| Z2      | 175     | 80      | 44                  | 1 # 5 a 17             | 1 # 3 a 25    | 103                    |
| Z3      | 122     | 80      | 38                  | 1 # 4 a 46             | 1 # 3 a 25    | 113                    |

VIGA TRABE O DE ENLACE

| Zap Ref | B M <sub>in</sub> (cm) | H M <sub>in</sub> (cm) | Mu M <sub>x</sub> (t-m) | As M <sub>x</sub> imo SUP (cm <sup>2</sup> ) | Extr EXT INF (cm <sup>2</sup> ) | Vu M <sub>x</sub> (t) | Separac Flejes Extremo EXT |
|---------|------------------------|------------------------|-------------------------|--|---------------------------------|-----------------------|----------------------------|
| Z1      | 25.0                   | 30.0                   | 4.14                    | 7.64   | 0.00                            | 17.90                 | 1FL# 3 de 2 rams c/ 6.3    |
| Z2      | 25.0                   | 30.0                   | 2.92                    | 4.19   | 0.00                            | 23.05                 | 1FL# 3 de 2 rams c/ 6.3    |
| Z3      | 25.0                   | 35.0                   | 0.64                    | 2.08   | 0.00                            | 13.77                 | 1FL# 3 de 2 rams c/ 9.8    |

## 5.5 DISEÑO ESTRUCTURAL DE PORTERIA

NORMA NSR-98

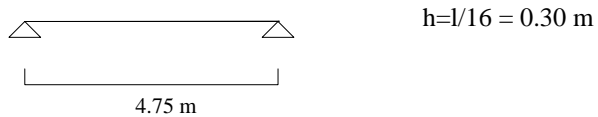
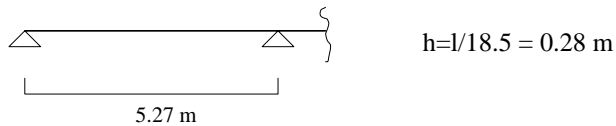
5.5.1. Materiales: Generales.

5.5.2. Predimensionamiento y Secciones Definitivas.

Sistema Estructural: Sistema de Pórtico.

5.5.2.1 Vigas aéreas.

5.5.2.1.1 Evaluación de peraltes: Tabla C.9-1(b).



Nota: Se selecciona la tabla C.9-1(b) debido a que las vigas no soportan muros ni particiones frágiles.

Peralte seleccionado 30 cm

#### 5.5.2.1.2 Ancho de Alma:

$b_w \geq 0.25 \text{ mt}$  C.21.3.1(d)

Ancho seleccionado = 0.25 mt

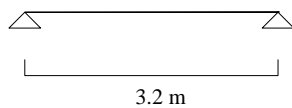
#### 5.5.2.2 Losa de Cubierta.

5.5.2.2.1 Tipo de Losa: Maciza

5.5.2.2.2 Materiales: Generales

#### 5.5.2.2.3 Predimensionamiento.

5.5.2.2.3.1 Evaluación de Peralte. tabla C.9-1(b)



$$h = l/20 = 0.16 \text{ m}$$

Peralte escogido 16 cm

#### 5.5.2.2.4 Analisis de cargas.

$$\text{Carga de placa} = 24 * 0.16 = 3.84 \text{ KNw/m}^2$$

#### 5.5.2.3 Columnas.

Como la estructura es sencilla no vale la pena hacer un predimensionamiento analítico de las columnas.

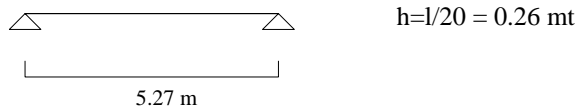


Rectangulares 30 x 30 cm C.21.4.1(b)

Circulares  $\phi = 35$  cm; donde  $A_g > 900 \text{ cm}^2$  C.21.4.1(b)

#### 5.5.2.4 Vigas de cimentación.

##### 5.5.2.4.1 Evaluación de peralte. (como viga de amarre) C.15.13.3



Peralte seleccionado 30 cm

##### 5.5.2.4.2 Ancho del Alma. (como viga de amarre)

La selección de la viga de amarre debe ser capaz de soportar una fuerza de compresión o tensión de 0.25 veces la carga vertical total del elemento que tenga la mayor carga entre los que interconecta, por tanto.

$$P = 0.25 F_{vmax} \quad \text{A.3.6.4.2}$$

$$\text{Si escogemos un ancho de 25 cm } A_g \approx 0.3 * 0.25 = 0.075 \text{ m}^2$$

$$P_{max} = 0.1 f_c A_g \quad \text{C.21.3.1(a)}$$

$$F_{vmax} = \frac{0.1 f_c A_g}{0.25} = \frac{0.1 * 21 * 0.075}{0.25} = 0.63 \text{ MNw} = 630 \text{ KNw}$$

##### 5.5.2.5 Recubrimientos: Generales

### 5.5.3 Evaluacion de Carga Permanente.

#### 5.5.3.1 Carga Muerta: (B.3)

◆ Peso propio de los elementos estructurales

- Longitud de vigas de sección 25 \* 30 = 23.61 m

Total peso propio de vigas =  $23.61 * 0.25 * 0.30 * 24 = 42 \text{ KNw}$

- Area de la placa =  $(7.94 + 4.75) * 3.2 / 2 = 20.30 \text{ m}^2$

Total peso propio de losa =  $20.30 * 3.84 = 78 \text{ KNw}$

- Longitud de columnas de sección 30 \* 30 =  $2.45 * 3 = 7.35 \text{ m}$

Longitud de columnas de  $\phi 35 \text{ cm} = 2.45 * 2 = 4.9 \text{ m}$

Total peso propio de columnas referido a la losa de cubierta en la evaluación de la carga

permanente para efectos sismicos. =  $0.233(0.3^2 * 7.35 + \pi / 4 * 0.35^2 * 4.9) * 24 = 6 \text{ KNw}$

◆ Mamposteria:

|                           |   |                         |
|---------------------------|---|-------------------------|
| Altura de muro            | : | 2.45 m                  |
| Espesor del muro          | : | 0.12 m                  |
| Peso unitario de ladrillo |   |                         |
| Farol                     | : | 13 KNw/m <sup>3</sup>   |
| Peso unitario de repello  | : | 21 KNw/m <sup>3</sup>   |
| Carga de repello (4 cm)   | : | 0.84 KNw/m <sup>2</sup> |
| Carga de mampostería      | : | 1.56 KNw/m <sup>2</sup> |
| Carga total por longitud  | = | 5.88 KNw/m              |

Total peso de Mamposteria =  $5.88 * 10.9 = 64 \text{ KNw}$

Carga por area de placa =  $64 / 20.3 = 3.15 \text{ KNw/m}^2$

Total peso propio de mamposteria referido a la losa de cubierta en la evaluación de la carga permanente para efectos sismicos =  $0.233 * 64 = 15 \text{ KNw}$

◆ Acabados:  $1.5 \text{ KNw/m}^2$

Total peso de acabados =  $1.5 * 20.30 = 30 \text{ KN}$

◆ Muro Culata:

Altura de muro : 1.5 m

Espesor del muro : 0.12 m

Peso unitario de ladrillo

Farol :  $13 \text{ KNw/m}^3$

Peso unitario de repello :  $21 \text{ KNw/m}^3$

Carga de repello (4 cm) :  $0.84 \text{ KNw/m}^2$

Carga de mampostería :  $1.56 \text{ KNw/m}^2$

Carga de Cinta de amarre

Secc  $0.12 * 0.15 \text{ mt}$  :  $0.432 \text{ KNw/m}$

Carga total sin viga de culata =  $2.4 \text{ KNw/m}^2$

Carga total por longitud =  $4.03 \text{ KNw/m}$

Total peso de Culata =  $4.03 * 8.24 = 33 \text{ KNw}$

◆ Total Carga Muerta =  $204 \text{ KNw}$

### 5.5.3.2 Carga Viva: (B.4)

◆ 1.8 KNw/m<sup>2</sup>

### 5.5.3.3 Carga Permanente en la estructura: (Wp)

100 % : Carga Muerta

25 % : Carga Viva

Area de losa : 20.30 m<sup>2</sup>

Total Carga Permanente = 204 + 0.25\*20.30\*1.8 = 213 KNw

Total Carga Permanente = 213 KNw

### 5.5.3.4 Transferencia de cargas a pórticos.

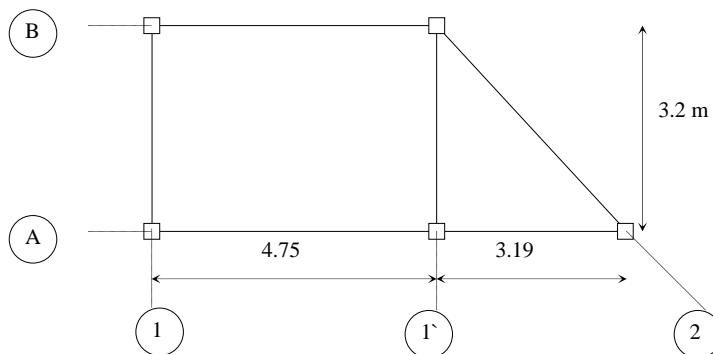
#### 5.5.3.4.1 Cargas sobre las Nervaduras.

Cargas Distribuidas (Aferencia 1 mt)

| Tramo | CM<br>KNw/m | CV <sub>1</sub><br>KNw/m |
|-------|-------------|--------------------------|
| A - B | 5.34*       | -                        |
| A - B | -           | 1.8                      |

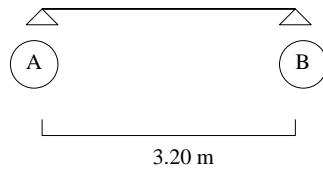
(\*) Las cargas no incluyen el peso propio de vigas, columnas ni muro culata, por estar analizados directamente sobre los pórticos.

#### 5.5.3.4.2 Disposición de los Ejes.



Para el análisis de la losa se ha dispuesto del siguiente elemento:

Sección de 1m \* 0.16m



Condiciones de carga:

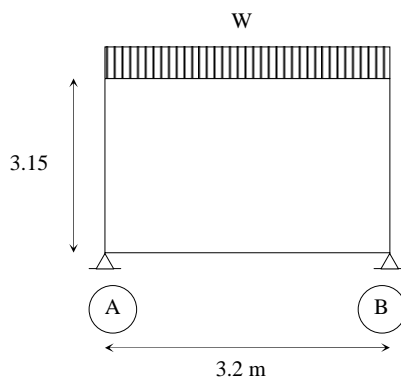
Comb (1) : CM con CV (1.4CM + 1.7 CV)

#### 5.5.3.4.3 Reacciones.

| Carga | REACCION EN APOYOS (KNw) |      |
|-------|--------------------------|------|
|       | A                        | B    |
| CM    | 8.54                     | 8.54 |
| CV    | 2.88                     | 2.88 |

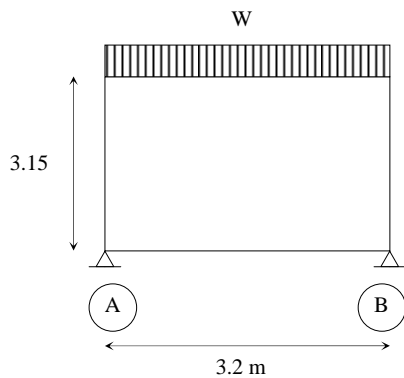
#### 5.5.3.4.4 Cargas en Pórticos: Aferencia de 1 m.

##### Pórtico 1



| CARGA  | W (KNw/m) |
|--------|-----------|
| Muerta | 5.34*     |
| Viva   | 1.8*      |

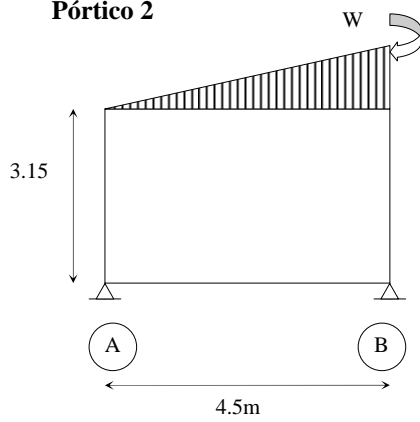
### Pórtico 1'



| CARGA  | W (KNw/m) |
|--------|-----------|
| Muerta | 5.34*     |
| Viva   | 1.8*      |

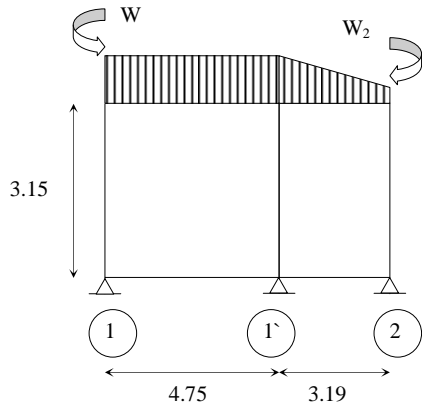
(\*) Valores que incluyen el comportamiento de pórtico riostra, con carga del doble de adherencia de un elemento tipo. C.13.3.2.2

### Pórtico 2



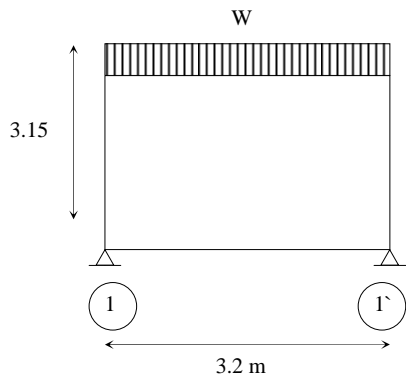
| CARGA  | W (KNw/m) |
|--------|-----------|
| Muerta | 8.54      |
| Viva   | 2.88      |

**Pórtico A**



| CARGA  | W <sub>1</sub> (KNw/m) | W <sub>2</sub> (KNw/m) |
|--------|------------------------|------------------------|
| Muerta | 12.57                  | 4.03                   |
| Viva   | 2.88                   | 0                      |

**Pórtico B**



| CARGA  | W (KNw/m) |
|--------|-----------|
| Muerta | 8.54      |
| Viva   | 2.88      |

(\*) Valores que incluyen el comportamiento de pórtico riostra, con carga del doble de referencia de un elemento tipo. C.13.3.2.2

Las cargas sobre los pórticos están evaluadas sin peso propio. El peso propio de todos los elementos estructurales es evaluado directamente sobre el programa de diseño estructural SAP2000, además el programa evalúa las masas aferentes para cada nudo con dichos elementos, por esta razón la carga permanente incluida en el análisis es reducida en la masa de estos elementos.

#### 5.5.4. Fuerzas Sísmicas.

##### 5.5.4.1 Método de análisis para evaluación de carga sísmica.

Se utiliza el Análisis Dinámico Elástico y se realiza una comparación con el método de Fuerza Horizontal Equivalente, utilizando diafragma rígido

##### 5.5.4.2 Centro de Masa.

| CM                     | CARGAS |      | TOTAL |
|------------------------|--------|------|-------|
|                        | MUERTA | VIVA |       |
| $\bar{X}_{CM}$         | 3.24   | 3.24 | 3.24  |
| $\bar{Y}_{CM}$         | 1.2    | 1.47 | 1.21  |
| <b>Peso Total(KNw)</b> | 204    | 9.0  | 213   |

Nota: El centro de masas fué evaluado con las características de la carga permanente.

##### 5.5.4.3 Zona de Amenaza Sísmica. Alta ( $A_a = 0.3$ )

##### 5.5.4.4 Efectos Locales.

Perfil del suelo tipo : S3

Coefficiente de Sitio : 1.5



#### 5.5.4.5 Coeficiente de Importancia.

Estructura de ocupación especial : (Grupo II)

Coeficiente de Importancia : 1.1

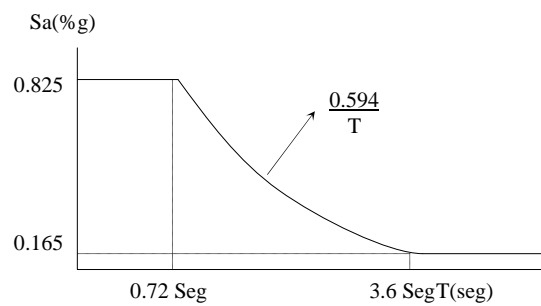
#### 5.5.4.6 Espectro de Diseño.

$$S_{a_{\max}} = 2.5 A_a I = 0.825 \%g$$

$$S_{a_{\min}} = A_a I/2 = 0.165 \%g$$

$$T_c = 0.48 \text{ S} = 0.72 \text{ Seg}$$

$$T_L = 2.4 \text{ S} = 3.6 \text{ Seg}$$



#### 5.5.4.7 Período Fundamental Aproximado ( $T_a$ ).

$$T_a = 0.08 * 2.75^{3/4} = 0.17 \text{ Seg}$$

#### 5.5.4.8 Cortante Sísmico en la Base ( $V_s$ )

$$V_s = S_a W_p$$

$$V_s = 0.825 * 213 = 176 \text{ KNw}$$

#### **5.5.4.9 Análisis Dinámico Elástico.**

##### **5.5.4.9.1 Modelo Matemático a emplear.**

Modelo Tridimensional con diafragma rígido.

Se tiene en cuenta los siguientes puntos:

- Efectos directos en la dirección bajo estudio.
- Torsión Natural.
- Torsión accidental (Tomando el 5% en la dirección perpendicular a la de estudio)
- Efectos direccionales (Tomando 30% de incidencia en la dirección perpendicular a la de estudio).

##### **5.5.4.9.2 Masa de la Edificación.**

Por tratarse de una estructura de un solo piso tenemos una carga permanente aplicada en la losa superior.

$$W_p = 213 \text{ KNw}$$

$$\text{Masa concentrada} = 213/9.81 = 21.71 \text{ KNw Seg}^2/\text{m}$$

##### **5.5.4.9.3 Representación de los Movimientos Sísmicos.**

Procedimiento espectral (NSR-98)

#### **5.5.4.10 Metodología de Análisis.**

##### **5.5.4.10.1 Modos de Vibración.**

El número de modos empleados es de 2 tal que por lo menos 90 % de la masa participe en el cálculo de la respuesta sísmica, esto equivale a que participen mas de 19541 Kgm.. Después de el análisis, con los tres modos de vibración se obtiene un 99.86 % de participación en el sentido X y de 99.58 % en el sentido Y.

##### **5.5.4.10.2 Respuesta Espectral Modal.**

La respuesta máxima espectral se obtiene utilizando las ordenadas del espectro de diseño para el período de cada modo de vibración.

##### **5.5.4.10.3 Respuesta Total.**

Todas las respuestas del análisis se combinan de acuerdo a las características de todos los modos de vibración. Los métodos empleados son:

- Combinación Cuadrática Completa (CQC): Con una razón de amortiguamiento del 5%.

Para el caso este es el método más apropiado por las características de la estructura.

- Raíz Cuadrada de la Suma de los Cuadrados (SRSS)

##### **5.5.4.10.4 Comparación con Fuerza Horizontal Equivalente.**

Por ser una estructura irregular  $V_t \geq V_s$  A.5.4.5(a)

$156 < 176 \Rightarrow$  No Cumple.

Como resultado del análisis dinámico tenemos que el cortante basal modal ( $V_t$ ) es inferior al cortante sísmico en la base ( $V_s$ ) entonces hay la necesidad de modificar los factores de amplificación para carga sísmica en  $176/156 = 1.13$

#### 5.5.4.10.5 Evaluación de las Derivas.

Se verifica las derivas para cada modo de vibración que no exceda 0.01 hpi

| Dirección | Deriva (cm) | 0.01hpi (cm) | Obsevación |
|-----------|-------------|--------------|------------|
| <b>X</b>  | 1.55        | 3.15         | Cumple     |
| <b>Y</b>  | 1.69        | 3.15         |            |

#### 5.5.4.10.6 Fuerzas de Diseño de los Elementos.

Las fuerzas combinadas de los modos en el análisis dinámico son reducidas por el coeficiente de disipación de energía.

### 5.5.5. Combinaciones de las Diferentes Solicitaciones: Generales

#### 5.5.5.1 Coeficiente de Capacidad de Disipación de Energia (R)

$$R = R_o \phi_a \phi_p$$

$$R_o = 7 \quad \text{Tabla A.3-3}$$

$$\phi_a = 1$$

$$\phi_p = 0.9 ; \text{ Tipo 5P Tabla A.3-6}$$

$$R = 6.3$$

Debido a que es necesario preservar el concepto de columna fuerte y viga debil, se ha considerado un coeficiente de capacidad de disipación de energía de 5.25 para columnas.

### 5.5.6. Evaluación del Índice de Estabilidad (Qi).

$$Q_i = \frac{P_i \Delta_{cm}}{V_i h_{pi}} \quad A.6-3$$

#### Índice de Estabilidad (Sentido X)

| Piso | P (KNw) |    | Vx<br>(KNw) | hp<br>(m) | Δcm<br>(m) | Qi   | Observación      |
|------|---------|----|-------------|-----------|------------|------|------------------|
|      | Pm      | Pv |             |           |            |      |                  |
| 1    | 204     | 9  | 176.5       | 3.15      | 0.0155     | 0.01 | Piso arriostrado |

#### Índice de Estabilidad (Sentido Y)

| Piso | P (KNw) |    | Vy<br>(KNw) | hp<br>(m) | Δcm<br>(m) | Qi   | Observación      |
|------|---------|----|-------------|-----------|------------|------|------------------|
|      | Pm      | Pv |             |           |            |      |                  |
| 1    | 204     | 9  | 175.9       | 3.15      | 0.0169     | 0.01 | Piso arriostrado |

### 5.5.7 Efectos Locales ( Pandeo Local).

$$\frac{Klu}{r} \leq 34 - 12 \frac{M_1}{M_2} \quad C.10-8$$

| Nivel | Columna | Klu/r | M <sub>1</sub><br>(KNw-m) | M <sub>2</sub><br>(KNw-m) | 34-12M <sub>1</sub> /M <sub>2</sub> | Observación  |
|-------|---------|-------|---------------------------|---------------------------|-------------------------------------|--|
| 1     | 1A      | 35    | -3.19                     | 28.68                     | 35.33                               | No es necesario considerar los efectos locales de esbeltez |
|       | 1'A     |       | -5.49                     | 16.81                     | 37.92                               |  |
|       | 2A      | -1.26 | 7.68                      | 35.97                     |                                     |  |
|       | 1B      | 36    | -4.87                     | 25.07                     | 36.33                               |  |
|       | 2B      |       | -5.87                     | 18.09                     | 37.89                               |  |

Nota: Los efectos locales han sido evaluados para todas las combinaciones de carga y se presentan en la tabla los resultados más críticos

### 5.5.8. Diseño de la Losa de Cubierta.

$L = 3.2 \text{ m}; h = 16 \text{ cm}; d = 13 \text{ cm}$

Carga Muerta =  $3.84 \text{ KNw/m}^2$

Carga Viva =  $1.8 \text{ KNw/m}^2$

Estado Cu =  $8.44 \text{ KNw/m}^2$

$W_u = 8.44 \text{ Kn/m}^2 * 1 \text{ m} = 8.44 \text{ KNw/m}$

$M_{u_{Luz}} = W_u L^2 / 8 = 8.44 * 3.2^2 / 8 = 10.8 \text{ KNw-m}$

$A_s = 2.1/42 * (0.85 - \sqrt{(0.85^2 - 10.8 / (0.59 * 0.9 * 2.1 * 13^2)}) * 100 * 13$

$A_s = \rho_{min} b d = 0.002 * 100 * 13 = 2.6 \text{ cm}^2$

Refuerzo N3

$S = 0.71/2.6 * 100 \approx 20 \text{ cm}$

$M_{apoyo} = 0.4 W_u L^2 / 10 = 0.4 * 8.44 * 3.2^2 / 10 = 3.46 \text{ KNw-m}$

$A_s = \rho_{min} b d = 0.002 * 100 * 13 = 2.6 \text{ cm}^2$

Refuerzo N3

$S = 0.71/2.6 * 100 \approx 20 \text{ cm}$

### 5.5.9. Diseño de Elementos Estructurales.

#### 5.5.9.1 Diseño de Vigas.

##### 5.5.9.1.1 Envoltente de Diseño.

| LOAD COMBINATION MULTIPLIERS |      |        |        |       |                       |
|------------------------------|------|--------|--------|-------|-----------------------|
| COMBO                        | TYPE | CASE   | FACTOR | TYPE  | TITLE                 |
| ENVOLVIG                     | ENVE |        |        |       | Envoltente para Vigas |
|                              |      | CU     | 1.0000 | COMBO |                       |
|                              |      | VIGAS1 | 1.0000 | COMBO |                       |
|                              |      | VIGAS2 | 1.0000 | COMBO |                       |
|                              |      | VIGAS3 | 1.0000 | COMBO |                       |
|                              |      | VIGAS4 | 1.0000 | COMBO |                       |

FRAME ELEMENT FORCES

| FRAME | LOAD         | LOC | P    | V2    | V3         | T          | M2         | M3         |
|-------|--------------|-----|------|-------|------------|------------|------------|------------|
| 1     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 2.39  | 5.773E-02  | 1.664E-01  | 1.437E-01  | 4.66       |
|       | 1.26         |     | 0.00 | 2.39  | 5.773E-02  | 1.664E-01  | 7.951E-02  | 2.00       |
|       | 2.38         |     | 0.00 | 2.39  | 5.773E-02  | 1.664E-01  | 1.529E-02  | -6.582E-01 |
|       | 3.49         |     | 0.00 | 2.39  | 5.773E-02  | 1.664E-01  | 2.614E-02  | 1.93       |
|       | 4.60         |     | 0.00 | 2.39  | 5.773E-02  | 1.664E-01  | 6.045E-02  | 5.72       |
| 1     | ENVOLVIG MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -3.62 | -3.084E-02 | -1.697E-01 | -7.678E-02 | -10.52     |
|       | 1.26         |     | 0.00 | -3.62 | -3.084E-02 | -1.697E-01 | -4.247E-02 | -6.49      |
|       | 2.38         |     | 0.00 | -3.62 | -3.084E-02 | -1.697E-01 | -8.165E-03 | -2.47      |
|       | 3.49         |     | 0.00 | -3.62 | -3.084E-02 | -1.697E-01 | -4.894E-02 | -3.68      |
|       | 4.60         |     | 0.00 | -3.62 | -3.084E-02 | -1.697E-01 | -1.132E-01 | -6.10      |
| 2     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 8.51  | 1.454E-01  | 5.719E-01  | 1.809E-01  | 12.44      |
|       | 8.7E-01      |     | 0.00 | 8.51  | 1.454E-01  | 5.719E-01  | 7.581E-02  | 6.30       |
|       | 1.60         |     | 0.00 | 8.51  | 1.454E-01  | 5.719E-01  | 1.564E-02  | 1.19       |
|       | 2.32         |     | 0.00 | 8.51  | 1.454E-01  | 5.719E-01  | 7.177E-02  | 3.56       |
|       | 3.04         |     | 0.00 | 8.51  | 1.454E-01  | 5.719E-01  | 1.279E-01  | 6.28       |
| 2     | ENVOLVIG MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -3.77 | -7.769E-02 | -9.739E-01 | -9.663E-02 | -4.64      |
|       | 8.7E-01      |     | 0.00 | -3.77 | -7.769E-02 | -9.739E-01 | -4.049E-02 | -1.91      |
|       | 1.60         |     | 0.00 | -3.77 | -7.769E-02 | -9.739E-01 | -2.928E-02 | -2.262E-01 |
|       | 2.32         |     | 0.00 | -3.77 | -7.769E-02 | -9.739E-01 | -1.344E-01 | -6.01      |
|       | 3.04         |     | 0.00 | -3.77 | -7.769E-02 | -9.739E-01 | -2.394E-01 | -12.16     |
| 3     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 6.15  | 2.150E-01  | 2.809E-01  | 2.938E-01  | 8.07       |
|       | 8.7E-01      |     | 0.00 | 6.15  | 2.150E-01  | 2.809E-01  | 1.393E-01  | 3.65       |
|       | 1.59         |     | 0.00 | 6.15  | 2.150E-01  | 2.809E-01  | 8.136E-03  | -7.122E-01 |
|       | 2.31         |     | 0.00 | 6.15  | 2.150E-01  | 2.809E-01  | 9.067E-02  | 3.88       |
|       | 3.03         |     | 0.00 | 6.15  | 2.150E-01  | 2.809E-01  | 1.732E-01  | 8.48       |
| 3     | ENVOLVIG MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -6.45 | -1.148E-01 | -1.195E-01 | -1.569E-01 | -10.38     |
|       | 8.7E-01      |     | 0.00 | -6.45 | -1.148E-01 | -1.195E-01 | -7.440E-02 | -5.74      |
|       | 1.59         |     | 0.00 | -6.45 | -1.148E-01 | -1.195E-01 | -1.523E-02 | -1.50      |
|       | 2.31         |     | 0.00 | -6.45 | -1.148E-01 | -1.195E-01 | -1.697E-01 | -5.53      |
|       | 3.03         |     | 0.00 | -6.45 | -1.148E-01 | -1.195E-01 | -3.242E-01 | -9.91      |
| 4     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | 8.23  | 1.267E-01  | 4.988E-01  | 1.632E-01  | 10.57      |
|       | 8.7E-01      |     | 0.00 | 8.23  | 1.267E-01  | 4.988E-01  | 7.219E-02  | 4.89       |
|       | 1.59         |     | 0.00 | 8.23  | 1.267E-01  | 4.988E-01  | 1.006E-02  | -7.341E-01 |
|       | 2.31         |     | 0.00 | 8.23  | 1.267E-01  | 4.988E-01  | 5.869E-02  | 3.46       |
|       | 3.03         |     | 0.00 | 8.23  | 1.267E-01  | 4.988E-01  | 1.073E-01  | 8.29       |
| 4     | ENVOLVIG MIN |     |      |       |            |            |            |            |
|       | 1.5E-01      |     | 0.00 | -6.72 | -6.765E-02 | -1.500E-01 | -8.719E-02 | -11.14     |
|       | 8.7E-01      |     | 0.00 | -6.72 | -6.765E-02 | -1.500E-01 | -3.857E-02 | -6.54      |
|       | 1.59         |     | 0.00 | -6.72 | -6.765E-02 | -1.500E-01 | -1.884E-02 | -2.20      |
|       | 2.31         |     | 0.00 | -6.72 | -6.765E-02 | -1.500E-01 | -1.099E-01 | -7.28      |
|       | 3.03         |     | 0.00 | -6.72 | -6.765E-02 | -1.500E-01 | -2.009E-01 | -13.19     |
| 5     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.8E-01      |     | 0.00 | 3.37  | 9.005E-02  | 1.11       | 1.815E-01  | 6.44       |
|       | 1.22         |     | 0.00 | 3.37  | 9.005E-02  | 1.11       | 8.709E-02  | 2.99       |
|       | 2.27         |     | 0.00 | 3.37  | 9.005E-02  | 1.11       | 3.905E-03  | 5.356E-01  |
|       | 3.32         |     | 0.00 | 3.37  | 9.005E-02  | 1.11       | 5.433E-02  | 2.84       |
|       | 4.37         |     | 0.00 | 3.37  | 9.005E-02  | 1.11       | 1.048E-01  | 5.26       |
| 5     | ENVOLVIG MIN |     |      |       |            |            |            |            |
|       | 1.8E-01      |     | 0.00 | -2.31 | -4.810E-02 | -8.076E-02 | -9.695E-02 | -4.47      |
|       | 1.22         |     | 0.00 | -2.31 | -4.810E-02 | -8.076E-02 | -4.652E-02 | -2.12      |
|       | 2.27         |     | 0.00 | -2.31 | -4.810E-02 | -8.076E-02 | -7.309E-03 | -7.715E-01 |
|       | 3.32         |     | 0.00 | -2.31 | -4.810E-02 | -8.076E-02 | -1.017E-01 | -4.18      |
|       | 4.37         |     | 0.00 | -2.31 | -4.810E-02 | -8.076E-02 | -1.961E-01 | -7.70      |
| 6     | ENVOLVIG MAX |     |      |       |            |            |            |            |
|       | 1.8E-01      |     | 0.00 | 3.02  | 9.114E-02  | 9.743E-03  | 2.138E-01  | 5.51       |

|    |              |      |            |            |            |            |            |
|----|--------------|------|------------|------------|------------|------------|------------|
|    | 1.28         | 0.00 | 3.02       | 9.114E-02  | 9.743E-03  | 1.136E-01  | 2.19       |
|    | 2.38         | 0.00 | 3.02       | 9.114E-02  | 9.743E-03  | 1.334E-02  | -1.03      |
|    | 3.48         | 0.00 | 3.02       | 9.114E-02  | 9.743E-03  | 4.643E-02  | 2.24       |
|    | 4.58         | 0.00 | 3.02       | 9.114E-02  | 9.743E-03  | 9.998E-02  | 5.94       |
| 6  | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.8E-01      | 0.00 | -3.47      | -4.869E-02 | -3.486E-01 | -1.142E-01 | -9.85      |
|    | 1.28         | 0.00 | -3.47      | -4.869E-02 | -3.486E-01 | -6.068E-02 | -6.04      |
|    | 2.38         | 0.00 | -3.47      | -4.869E-02 | -3.486E-01 | -7.127E-03 | -2.72      |
|    | 3.48         | 0.00 | -3.47      | -4.869E-02 | -3.486E-01 | -8.691E-02 | -5.09      |
|    | 4.58         | 0.00 | -3.47      | -4.869E-02 | -3.486E-01 | -1.872E-01 | -8.30      |
| 12 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -23.70     | 0.00       | 7.026E-02  | 0.00       | -5.00      |
|    | 1.26         | 0.00 | -9.35      | 0.00       | 7.026E-02  | 0.00       | 18.58      |
|    | 2.38         | 0.00 | 5.94       | 0.00       | 7.026E-02  | 0.00       | 29.54      |
|    | 3.49         | 0.00 | 31.81      | 0.00       | 7.026E-02  | 0.00       | 9.85       |
|    | 4.60         | 0.00 | 59.59      | 0.00       | 7.026E-02  | 0.00       | -15.51     |
| 12 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -51.52     | 0.00       | -3.224E-01 | 0.00       | -24.52     |
|    | 1.26         | 0.00 | -23.74     | 0.00       | -3.224E-01 | 0.00       | 5.74       |
|    | 2.38         | 0.00 | -8.117E-01 | 0.00       | -3.224E-01 | 0.00       | 14.63      |
|    | 3.49         | 0.00 | 13.54      | 0.00       | -3.224E-01 | 0.00       | 2.25       |
|    | 4.60         | 0.00 | 27.90      | 0.00       | -3.224E-01 | 0.00       | -41.24     |
| 13 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -14.18     | 0.00       | 7.118E-01  | 0.00       | -6.37      |
|    | 8.7E-01      | 0.00 | -5.75      | 0.00       | 7.118E-01  | 0.00       | 7.662E-01  |
|    | 1.60         | 0.00 | 1.42       | 0.00       | 7.118E-01  | 0.00       | 4.66       |
|    | 2.32         | 0.00 | 7.55       | 0.00       | 7.118E-01  | 0.00       | 9.42       |
|    | 3.04         | 0.00 | 13.41      | 0.00       | 7.118E-01  | 0.00       | 9.89       |
| 13 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -37.47     | 0.00       | -7.396E-01 | 0.00       | -27.90     |
|    | 8.7E-01      | 0.00 | -21.69     | 0.00       | -7.396E-01 | 0.00       | -8.00      |
|    | 1.60         | 0.00 | -11.69     | 0.00       | -7.396E-01 | 0.00       | 2.09       |
|    | 2.32         | 0.00 | -3.97      | 0.00       | -7.396E-01 | 0.00       | -1.01      |
|    | 3.04         | 0.00 | 6.920E-01  | 0.00       | -7.396E-01 | 0.00       | -8.07      |
| 14 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -3.13      | 0.00       | -3.978E-01 | 0.00       | 6.43       |
|    | 8.7E-01      | 0.00 | 1.47       | 0.00       | -3.978E-01 | 0.00       | 8.38       |
|    | 1.59         | 0.00 | 6.07       | 0.00       | -3.978E-01 | 0.00       | 8.84       |
|    | 2.31         | 0.00 | 12.99      | 0.00       | -3.978E-01 | 0.00       | 8.82       |
|    | 3.03         | 0.00 | 20.00      | 0.00       | -3.978E-01 | 0.00       | 7.00       |
| 14 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -20.54     | 0.00       | -9.351E-01 | 0.00       | -12.78     |
|    | 8.7E-01      | 0.00 | -13.52     | 0.00       | -9.351E-01 | 0.00       | -1.89      |
|    | 1.59         | 0.00 | -6.51      | 0.00       | -9.351E-01 | 0.00       | 4.32       |
|    | 2.31         | 0.00 | -1.82      | 0.00       | -9.351E-01 | 0.00       | -1.69      |
|    | 3.03         | 0.00 | 2.77       | 0.00       | -9.351E-01 | 0.00       | -12.07     |
| 15 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -2.79      | 0.00       | 1.835E-01  | 0.00       | 8.15       |
|    | 8.7E-01      | 0.00 | 1.80       | 0.00       | 1.835E-01  | 0.00       | 10.08      |
|    | 1.59         | 0.00 | 6.40       | 0.00       | 1.835E-01  | 0.00       | 10.68      |
|    | 2.31         | 0.00 | 12.99      | 0.00       | 1.835E-01  | 0.00       | 11.36      |
|    | 3.03         | 0.00 | 20.01      | 0.00       | 1.835E-01  | 0.00       | 10.08      |
| 15 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -22.59     | 0.00       | -5.135E-01 | 0.00       | -14.67     |
|    | 8.7E-01      | 0.00 | -15.58     | 0.00       | -5.135E-01 | 0.00       | -2.52      |
|    | 1.59         | 0.00 | -8.56      | 0.00       | -5.135E-01 | 0.00       | 4.92       |
|    | 2.31         | 0.00 | -3.54      | 0.00       | -5.135E-01 | 0.00       | -7.062E-01 |
|    | 3.03         | 0.00 | 1.05       | 0.00       | -5.135E-01 | 0.00       | -10.39     |
| 16 | ENVOLVIG MAX |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -7.23      | 0.00       | -5.979E-01 | 0.00       | -3.74      |
|    | 1.20         | 0.00 | -4.36      | 0.00       | -5.979E-01 | 0.00       | 2.57       |
|    | 2.25         | 0.00 | 3.747E-01  | 0.00       | -5.979E-01 | 0.00       | 10.28      |
|    | 3.30         | 0.00 | 9.10       | 0.00       | -5.979E-01 | 0.00       | 9.91       |
|    | 4.34         | 0.00 | 26.02      | 0.00       | -5.979E-01 | 0.00       | 1.80       |
| 16 | ENVOLVIG MIN |      |            |            |            |            |            |
|    | 1.5E-01      | 0.00 | -19.49     | 0.00       | -2.28      | 0.00       | -18.91     |



|         |              |        |      |           |      |        |
|---------|--------------|--------|------|-----------|------|--------|
| 1.20    | 0.00         | -14.26 | 0.00 | -2.28     | 0.00 | -2.58  |
| 2.25    | 0.00         | -6.42  | 0.00 | -2.28     | 0.00 | 4.60   |
| 3.30    | 0.00         | 1.53   | 0.00 | -2.28     | 0.00 | 1.03   |
| 4.34    | 0.00         | 10.01  | 0.00 | -2.28     | 0.00 | -12.90 |
| 17      | ENVOLVIG MAX |        |      |           |      |        |
| 1.8E-01 | 0.00         | -16.11 | 0.00 | 5.250E-01 | 0.00 | -1.44  |
| 1.28    | 0.00         | -5.90  | 0.00 | 5.250E-01 | 0.00 | 14.52  |
| 2.38    | 0.00         | 4.85   | 0.00 | 5.250E-01 | 0.00 | 23.70  |
| 3.48    | 0.00         | 23.46  | 0.00 | 5.250E-01 | 0.00 | 10.54  |
| 4.58    | 0.00         | 44.72  | 0.00 | 5.250E-01 | 0.00 | -6.65  |
| 17      | ENVOLVIG MIN |        |      |           |      |        |
| 1.8E-01 | 0.00         | -40.31 | 0.00 | 1.067E-01 | 0.00 | -20.86 |
| 1.28    | 0.00         | -19.05 | 0.00 | 1.067E-01 | 0.00 | 3.29   |
| 2.38    | 0.00         | -2.09  | 0.00 | 1.067E-01 | 0.00 | 11.10  |
| 3.48    | 0.00         | 8.12   | 0.00 | 1.067E-01 | 0.00 | 1.19   |
| 4.58    | 0.00         | 18.32  | 0.00 | 1.067E-01 | 0.00 | -27.92 |

### 5.5.9.1.2 Cálculo de Refuerzo.

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Portería (Liceo U de Nar)

C O N C R E T E D E S I G N O U T P U T (ACI 318-95)

FLEXURAL AND SHEAR DESIGN OF BEAM-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | REQUIRED REINFORCING |        |        |        | SHEAR | COMBO |
|------------|---------------|---------------|----------------------|--------|--------|--------|-------|-------|
|            |               |               | TOP                  | COMBO  | BOTTOM | COMBO  |       |       |
| 1          | 25X30CIM      | 15.000        | 1.540                | VIGAS1 | 0.761  | VIGAS1 | 0.009 | CU    |
| 1          | 25X30CIM      | 126.250       | 0.942                | VIGAS1 | 0.379  | VIGAS1 | 0.009 | CU    |
| 1          | 25X30CIM      | 237.500       | 0.356                | CU     | 0.379  | VIGAS1 | 0.009 | CU    |
| 1          | 25X30CIM      | 348.750       | 0.531                | VIGAS1 | 0.379  | VIGAS1 | 0.009 | CU    |
| 1          | 25X30CIM      | 460.000       | 0.884                | VIGAS1 | 0.813  | VIGAS1 | 0.009 | CU    |
| 2          | 25X30CIM      | 15.000        | 0.670                | VIGAS3 | 1.829  | VIGAS1 | 0.022 | CU    |
| 2          | 25X30CIM      | 87.250        | 0.448                | VIGAS1 | 0.914  | VIGAS1 | 0.022 | CU    |
| 2          | 25X30CIM      | 159.500       | 0.448                | VIGAS1 | 0.448  | VIGAS1 | 0.022 | CU    |
| 2          | 25X30CIM      | 231.750       | 0.872                | VIGAS1 | 0.450  | VIGAS1 | 0.022 | CU    |
| 2          | 25X30CIM      | 304.000       | 1.786                | VIGAS1 | 0.882  | VIGAS1 | 0.022 | CU    |
| 3          | 25X30CIM      | 15.000        | 1.148                | VIGAS1 | 1.105  | VIGAS2 | 0.014 | CU    |
| 3          | 25X30CIM      | 86.875        | 0.650                | VIGAS1 | 0.464  | VIGAS2 | 0.014 | CU    |
| 3          | 25X30CIM      | 158.750       | 0.374                | VIGAS2 | 0.283  | VIGAS1 | 0.014 | CU    |
| 3          | 25X30CIM      | 230.625       | 0.617                | VIGAS1 | 0.510  | VIGAS2 | 0.014 | CU    |
| 3          | 25X30CIM      | 302.500       | 1.449                | VIGAS2 | 1.191  | VIGAS2 | 0.014 | CU    |
| 4          | 25X30CIM      | 15.000        | 1.633                | VIGAS2 | 1.533  | VIGAS2 | 0.019 | CU    |
| 4          | 25X30CIM      | 86.875        | 0.716                | VIGAS1 | 0.659  | VIGAS2 | 0.019 | CU    |
| 4          | 25X30CIM      | 158.750       | 0.475                | VIGAS2 | 0.369  | VIGAS1 | 0.019 | CU    |
| 4          | 25X30CIM      | 230.625       | 0.850                | VIGAS1 | 0.499  | VIGAS4 | 0.019 | CU    |
| 4          | 25X30CIM      | 302.500       | 1.501                | VIGAS1 | 1.057  | VIGAS2 | 0.019 | CU    |
| 5          | 25X30CIM      | 17.500        | 0.558                | VIGAS1 | 0.909  | VIGAS1 | 0.008 | CU    |
| 5          | 25X30CIM      | 122.335       | 0.275                | VIGAS1 | 0.430  | VIGAS1 | 0.008 | CU    |
| 5          | 25X30CIM      | 227.171       | 0.249                | VIGAS1 | 0.249  | VIGAS1 | 0.008 | CU    |
| 5          | 25X30CIM      | 332.006       | 0.528                | VIGAS1 | 0.409  | VIGAS4 | 0.008 | CU    |
| 5          | 25X30CIM      | 436.842       | 1.008                | VIGAS1 | 0.581  | VIGAS1 | 0.008 | CU    |
| 6          | 25X30CIM      | 17.500        | 1.441                | VIGAS1 | 0.713  | VIGAS1 | 0.008 | CU    |
| 6          | 25X30CIM      | 127.500       | 0.876                | VIGAS1 | 0.355  | VIGAS1 | 0.008 | CU    |
| 6          | 25X30CIM      | 237.500       | 0.392                | CU     | 0.355  | VIGAS1 | 0.008 | CU    |
| 6          | 25X30CIM      | 347.500       | 0.737                | VIGAS1 | 0.355  | VIGAS1 | 0.008 | CU    |

|    |          |         |       |        |       |        |       |        |
|----|----------|---------|-------|--------|-------|--------|-------|--------|
| 6  | 25X30CIM | 457.500 | 1.210 | VIGAS1 | 0.786 | VIGAS1 | 0.008 | CU     |
| 12 | 25X30    | 15.000  | 2.661 | VIGAS1 | 1.640 | CU     | 0.030 | CU     |
| 12 | 25X30    | 126.250 | 1.449 | CU     | 2.167 | CU     | 0.019 | VIGAS2 |
| 12 | 25X30    | 237.500 | 1.449 | CU     | 3.242 | CU     | 0.019 | VIGAS2 |
| 12 | 25X30    | 348.750 | 1.449 | CU     | 1.449 | CU     | 0.019 | VIGAS2 |
| 12 | 25X30    | 460.000 | 4.652 | CU     | 2.219 | CU     | 0.039 | CU     |
| 13 | 25X30    | 15.000  | 3.050 | VIGAS1 | 1.902 | CU     | 0.021 | VIGAS2 |
| 13 | 25X30    | 87.250  | 0.938 | CU     | 0.938 | CU     | 0.021 | VIGAS2 |
| 13 | 25X30    | 159.500 | 0.938 | CU     | 0.938 | CU     | 0.021 | VIGAS2 |
| 13 | 25X30    | 231.750 | 0.938 | CU     | 1.321 | VIGAS1 | 0.021 | VIGAS2 |
| 13 | 25X30    | 304.000 | 1.029 | VIGAS1 | 1.388 | VIGAS1 | 0.021 | VIGAS2 |
| 14 | 25X30    | 15.000  | 1.447 | VIGAS1 | 0.716 | VIGAS1 | 0.024 | VIGAS4 |
| 14 | 25X30    | 86.875  | 0.356 | VIGAS1 | 0.997 | VIGAS1 | 0.019 | VIGAS4 |
| 14 | 25X30    | 158.750 | 0.356 | VIGAS1 | 1.239 | CU     | 0.014 | VIGAS4 |
| 14 | 25X30    | 230.625 | 0.356 | VIGAS1 | 1.235 | VIGAS2 | 0.019 | VIGAS4 |
| 14 | 25X30    | 302.500 | 1.342 | VIGAS1 | 0.977 | VIGAS4 | 0.024 | VIGAS4 |
| 15 | 25X30    | 15.000  | 1.631 | VIGAS1 | 1.140 | VIGAS4 | 0.028 | VIGAS4 |
| 15 | 25X30    | 86.875  | 0.401 | VIGAS1 | 1.189 | VIGAS1 | 0.023 | VIGAS4 |
| 15 | 25X30    | 158.750 | 0.401 | VIGAS1 | 1.501 | CU     | 0.018 | VIGAS4 |
| 15 | 25X30    | 230.625 | 0.401 | VIGAS1 | 1.600 | VIGAS2 | 0.021 | VIGAS4 |
| 15 | 25X30    | 302.500 | 1.460 | VIGAS2 | 1.397 | VIGAS2 | 0.026 | VIGAS4 |
| 16 | 25X30    | 15.000  | 2.167 | CU     | 1.274 | CU     | 0.011 | VIGAS2 |
| 16 | 25X30    | 119.835 | 0.632 | CU     | 0.632 | CU     | 0.011 | VIGAS2 |
| 16 | 25X30    | 224.671 | 0.632 | CU     | 1.444 | CU     | 0.011 | VIGAS2 |
| 16 | 25X30    | 329.506 | 0.632 | CU     | 1.228 | CU     | 0.011 | VIGAS2 |
| 16 | 25X30    | 434.342 | 1.713 | VIGAS1 | 0.846 | VIGAS1 | 0.011 | VIGAS2 |
| 17 | 25X30    | 17.500  | 2.246 | VIGAS1 | 1.276 | CU     | 0.014 | VIGAS2 |
| 17 | 25X30    | 127.500 | 0.974 | CU     | 2.045 | CU     | 0.014 | VIGAS2 |
| 17 | 25X30    | 237.500 | 0.974 | CU     | 2.568 | CU     | 0.014 | VIGAS2 |
| 17 | 25X30    | 347.500 | 0.974 | CU     | 1.345 | CU     | 0.014 | VIGAS2 |
| 17 | 25X30    | 457.500 | 3.053 | CU     | 1.976 | CU     | 0.018 | CU     |

## 5.5.9.2 Diseño de Columnas.

### 5.5.9.2.1 Análisis Dinámico.

C O N S T R A I N T C O O R D I N A T E S A N D M A S S E S

CONS DIAPH1 ===== TYPE = DIAPH, NORMAL DIRECTION = U3

| LOCAL COORDINATE SYSTEM FOR CONSTRAINT MASTER |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|
| GLOBAL  | U1       | U2       | U3       | R1       | R2       | R3       |
| X   | 1.000000 | .000000  | .000000  | 1.000000 | .000000  | .000000  |
| Y   | .000000  | 1.000000 | .000000  | .000000  | 1.000000 | .000000  |
| Z   | .000000  | .000000  | 1.000000 | .000000  | .000000  | 1.000000 |

| TRANSLATIONAL MASS AND MASS MOMENTS OF INERTIA |          |          |         |         |         |          |
|--|----------|----------|---------|---------|---------|----------|
|  | U1       | U2       | U3      | R1      | R2      | R3       |
|  | 2.243296 | 2.243296 | .000000 | .000000 | .000000 | 6.814915 |

| CENTER OF MASS |          |          |          |
|----------------|----------|----------|----------|
| GLOBAL         | U1       | U2       | U3       |
| X              | 3.340662 | 3.340662 | 3.446667 |
| Y              | 1.253246 | 1.253246 | 1.268333 |
| Z              | 3.150000 | 3.150000 | 3.150000 |

D I S P L A C E M E N T   D E G R E E S   O F   F R E E D O M

(A) = Active DOF, equilibrium equation  
 (-) = Restrained DOF, reaction computed  
 (+) = Constrained DOF  
 ( ) = Null DOF

| JOINTS |    | UX | UY | UZ | RX | RY | RZ |
|--------|----|----|----|----|----|----|----|
| 1 TO   | 5  | -  | -  | -  | A  | A  | A  |
| 6 TO   | 8  | +  | +  | A  | A  | A  | +  |
| 9      |    | +  | +  | A  |    |    | +  |
| 10 TO  | 11 | +  | +  | A  | A  | A  | +  |

| CONSTRAINTS |  | U1 | U2 | U3 | R1 | R2 | R3 |
|-------------|--|----|----|----|----|----|----|
| DIAPH1      |  | A  | A  |    |    |    | A  |

A S S E M B L E D   J O I N T   M A S S E S

IN GLOBAL COORDINATES

| JOINT | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| 1     | 0.107683 | 0.107683 | 0.107683 | .000000 | .000000 | .000000 |
| 2     | 0.136967 | 0.136967 | 0.136967 | .000000 | .000000 | .000000 |
| 3     | 0.105465 | 0.105465 | 0.105465 | .000000 | .000000 | .000000 |
| 4     | 0.110078 | 0.110078 | 0.110078 | .000000 | .000000 | .000000 |
| 5     | 0.151557 | 0.151557 | 0.151557 | .000000 | .000000 | .000000 |
| 6     | 0.107683 | 0.107683 | 0.107683 | .000000 | .000000 | .000000 |
| 7     | 0.136967 | 0.136967 | 0.136967 | .000000 | .000000 | .000000 |
| 8     | 0.105465 | 0.105465 | 0.105465 | .000000 | .000000 | .000000 |
| 9     | 1.631546 | 1.631546 | .000000  | .000000 | .000000 | .000000 |
| 10    | 0.110078 | 0.110078 | 0.110078 | .000000 | .000000 | .000000 |
| 11    | 0.151557 | 0.151557 | 0.151557 | .000000 | .000000 | .000000 |

T O T A L   A S S E M B L E D   J O I N T   M A S S E S

IN GLOBAL COORDINATES

|       | UX       | UY       | UZ       | RX      | RY      | RZ      |
|-------|----------|----------|----------|---------|---------|---------|
| TOTAL | 2.855047 | 2.855047 | 1.223501 | .000000 | .000000 | .000000 |

T O T A L   A C C E L E R A T E D   M A S S   A N D   L O C A T I O N

TOTAL MASS ACTIVATED BY ACCELERATION LOADS, IN GLOBAL COORDINATES

|       | UX       | UY       | UZ       |
|-------|----------|----------|----------|
| MASS  | 2.243296 | 2.243296 | 0.611750 |
| X-LOC | 3.340662 | 3.340662 | 3.609128 |
| Y-LOC | 1.253246 | 1.253246 | 1.368584 |
| Z-LOC | 3.150000 | 3.150000 | 3.150000 |

M O D A L   P E R I O D S   A N D   F R E Q U E N C I E S

| MODE | PERIOD<br>(TIME) | FREQUENCY<br>(CYC/TIME) | FREQUENCY<br>(RAD/TIME) | EIGENVALUE<br>(RAD/TIME)**2 |
|------|------------------|-------------------------|-------------------------|-----------------------------|
| 1    | 0.296676         | 3.370678                | 21.178597               | 448.532982                  |
| 2    | 0.267575         | 3.737273                | 23.481981               | 551.403431                  |

MODAL PARTICIPATION FACTORS

FOR UNIT ACCELERATION LOADS IN GLOBAL COORDINATES

| MODE | PERIOD   | UX        | UY        | UZ       |
|------|----------|-----------|-----------|----------|
| 1    | 0.296676 | -0.855684 | -1.224191 | 2.25E-05 |
| 2    | 0.267575 | 1.227960  | -0.857513 | 2.65E-05 |

MODAL PARTICIPATING MASS RATIOS

| MODE | PERIOD   | INDIVIDUAL MODE (PERCENT) |         |        | CUMULATIVE SUM (PERCENT) |         |        |
|------|----------|---------------------------|---------|--------|--------------------------|---------|--------|
|      |          | UX                        | UY      | UZ     | UX                       | UY      | UZ     |
| 1    | 0.296676 | 32.6393                   | 66.8054 | 0.0000 | 32.6393                  | 66.8054 | 0.0000 |
| 2    | 0.267575 | 67.2174                   | 32.7789 | 0.0000 | 99.8566                  | 99.5844 | 0.0000 |

MODAL LOAD PARTICIPATION RATIOS

| LOAD, ACC, OR NLLINK/DEF<br>(TYPE) | STATIC<br>(NAME) | STATIC<br>(PERCENT) | DYNAMIC<br>(PERCENT)     | EFFECTIVE<br>PERIOD |
|------------------------------------|------------------|---------------------|--------------------------|---------------------|
| LOAD                               | MUERTA           | 0.6172              | -> 0.0000<- (*) SEE NOTE | 0.023035            |
| LOAD                               | VIVA             | 0.5985              | -> 0.0000<- (*) SEE NOTE | 0.023033            |
| ACC                                | UX               | 99.9630             | 99.8566                  | 0.278770            |
| ACC                                | UY               | 99.8999             | 99.5844                  | 0.288564            |
| ACC                                | UZ               | 0.0002              | 0.0000                   | 0.009791            |

(\*) NOTE: DYNAMIC LOAD PARTICIPATION RATIO EXCLUDES LOAD APPLIED TO NON-MASS DEGREES OF FREEDOM

RESPONSE SPECTRUM ACCELERATIONS

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | DAMP-RATIO | U1       | U2      | U3      |
|------|----------|------------|----------|---------|---------|
| 1    | 0.296676 | 0.050000   | 9.141000 | .000000 | .000000 |
| 2    | 0.267575 | 0.050000   | 9.141000 | .000000 | .000000 |

SPEC SPECY -----

| MODE | PERIOD   | DAMP-RATIO | U1      | U2       | U3      |
|------|----------|------------|---------|----------|---------|
| 1    | 0.296676 | 0.050000   | .000000 | 9.141000 | .000000 |
| 2    | 0.267575 | 0.050000   | .000000 | 9.141000 | .000000 |

RESPONSE SPECTRUM MODAL AMPLITUDES

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC SPECX -----

| MODE | PERIOD   | U1        | U2      | U3      |
|------|----------|-----------|---------|---------|
| 1    | 0.296676 | -0.017439 | .000000 | .000000 |
| 2    | 0.267575 | 0.020357  | .000000 | .000000 |

SPEC SPECY -----

| MODE | PERIOD   | U1      | U2        | U3      |
|------|----------|---------|-----------|---------|
| 1    | 0.296676 | .000000 | -0.024949 | .000000 |
| 2    | 0.267575 | .000000 | -0.014216 | .000000 |

R E S P O N S E   S P E C T R U M   M O D A L   C O R R E L A T I O N S

PARTIAL MATRIX SHOWING CORRELATION FACTORS BETWEEN NEARBY MODES

SPEC    SPECX -----

| MODE | I | PERIOD   | I     | I+1   | I+2 | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|------|---|----------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1    |   | 0.296676 | 1.000 | 0.483 |     |     |     |     |     |     |     |     |
| 2    |   | 0.267575 | 1.000 |       |     |     |     |     |     |     |     |     |

SPEC    SPECY -----

| MODE | I | PERIOD   | I     | I+1   | I+2 | I+3 | I+4 | I+5 | I+6 | I+7 | I+8 | I+9 |
|------|---|----------|-------|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 1    |   | 0.296676 | 1.000 | 0.483 |     |     |     |     |     |     |     |     |
| 2    |   | 0.267575 | 1.000 |       |     |     |     |     |     |     |     |     |

R E S P O N S E   S P E C T R U M   B A S E   R E A C T I O N S

IN RESPONSE-SPECTRUM LOCAL COORDINATES

SPEC    SPECX -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U1:

| MODE | F1        | F2        | F3        | M1         | M2        | M3         |
|------|-----------|-----------|-----------|------------|-----------|------------|
| 1    | 6.692996  | 9.575388  | -0.000176 | -30.180013 | 21.093889 | 25.118884  |
| 2    | 13.783575 | -9.625395 | 0.000298  | 30.339109  | 43.441119 | -49.601435 |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC      | F1       | F2       | F3        | M1        | M2        | M3 |
|-----------|----------|----------|-----------|-----------|-----------|----|
| 17.998172 | 9.760576 | 0.000262 | 30.764453 | 56.723979 | 43.442226 |    |

SPEC    SPECY -----

FOR EACH MODE, DUE TO SPECTRAL ACCELERATION IN DIRECTION U2:

| MODE | F1        | F2        | F3        | M1         | M2         | M3        |
|------|-----------|-----------|-----------|------------|------------|-----------|
| 1    | 9.575388  | 13.699104 | -0.000252 | -43.177274 | 30.178139  | 35.936529 |
| 2    | -9.625395 | 6.721641  | -0.000208 | -21.186515 | -30.335957 | 34.637851 |

COMBINED FOR ALL MODES AND ALL DIRECTIONS OF SPECTRAL ACCELERATION:

| SPEC     | F1        | F2       | F3        | M1        | M2        | M3 |
|----------|-----------|----------|-----------|-----------|-----------|----|
| 9.760576 | 17.939616 | 0.000397 | 56.543422 | 30.761893 | 60.779267 |    |

### 5.5.9.2.2 Control de Derivas.

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Portería (Liceo U de Nar)

J O I N T   D I S P L A C E M E N T S

| JOINT | LOAD  | U1     | U2     | U3        | R1        | R2        | R3        |
|-------|-------|--------|--------|-----------|-----------|-----------|-----------|
| 6     | SPECX | 1.5931 | 0.7871 | 4.561E-03 | 1.381E-03 | 3.457E-03 | 4.778E-04 |
| 6     | SPECY | 0.9509 | 1.4574 | 7.718E-03 | 2.560E-03 | 2.056E-03 | 7.289E-04 |
| 7     | SPECX | 1.5931 | 0.9408 | 5.762E-03 | 1.722E-03 | 1.997E-03 | 4.778E-04 |
| 7     | SPECY | 0.9509 | 1.7921 | 9.637E-03 | 3.278E-03 | 1.158E-03 | 7.289E-04 |

|    |       |        |        |           |           |           |           |
|----|-------|--------|--------|-----------|-----------|-----------|-----------|
| 8  | SPECX | 1.5931 | 1.0588 | 7.711E-03 | 2.850E-03 | 2.636E-03 | 4.778E-04 |
| 8  | SPECY | 0.9509 | 2.0191 | 4.038E-03 | 5.309E-03 | 1.954E-03 | 7.289E-04 |
| 9  | SPECX | 1.5508 | 0.8885 | 0.0000    | 0.0000    | 0.0000    | 4.778E-04 |
| 9  | SPECY | 0.8939 | 1.6852 | 0.0000    | 0.0000    | 0.0000    | 7.289E-04 |
| 10 | SPECX | 1.4837 | 0.7871 | 4.937E-03 | 1.439E-03 | 3.221E-03 | 4.778E-04 |
| 10 | SPECY | 0.8123 | 1.4574 | 5.885E-03 | 2.671E-03 | 1.751E-03 | 7.289E-04 |
| 11 | SPECX | 1.4837 | 0.9408 | 5.769E-03 | 1.529E-03 | 2.730E-03 | 4.778E-04 |
| 11 | SPECY | 0.8123 | 1.7921 | 0.0106    | 2.873E-03 | 1.747E-03 | 7.289E-04 |

G R O U P   J O I N T   F O R C E   S U M M A T I O N

| GROUP                                  | LOAD  | F-X     | F-Y     | F-Z       | M-X       | M-Y       | M-Z      |
|--|-------|---------|---------|-----------|-----------|-----------|----------|
| CIMENTACION (Sum at X=348.8 Y=128 Z=0) |       |         |         |           |           |           |          |
|  | SPECX | 176.502 | 95.719  | 2.520E-03 | 30169.318 | 55627.739 | 1737.235 |
|  | SPECY | 95.719  | 175.928 | 3.818E-03 | 55449.661 | 30167.042 | 977.187  |

### 5.5.9.2.3 Fuerzas.

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Portería (Liceo U de Nar)

L O A D   C O M B I N A T I O N   M U L T I P L I E R S

| COMBO     | TYPE | CASE   | FACTOR | TYPE         | TITLE                     |
|-----------|------|--------|--------|--------------|---------------------------|
| CU        | ADD  |        |        |              | COMB1                     |
|           |      | MUERTA | 1.4000 | STATIC(DEAD) |                           |
|           |      | VIVA   | 1.7000 | STATIC(LIVE) |                           |
| COLUMNNA1 | ADD  |        |        |              | Combinación para Columnas |
|           |      | CU     | 0.7500 | COMBO        |                           |
|           |      | SISMOX | 1.2000 | COMBO        |                           |
|           |      | SISMOY | 0.3600 | COMBO        |                           |
| COLUMNNA2 | ADD  |        |        |              | Combinación para Columnas |
|           |      | CU     | 0.7500 | COMBO        |                           |
|           |      | SISMOX | 0.3600 | COMBO        |                           |
|           |      | SISMOY | 1.2000 | COMBO        |                           |
| COLUMNNA3 | ADD  |        |        |              | Combinación para Columnas |
|           |      | MUERTA | 0.9000 | STATIC(DEAD) |                           |
|           |      | SISMOX | 1.2000 | COMBO        |                           |
|           |      | SISMOY | 0.3600 | COMBO        |                           |
| COLUMNNA4 | ADD  |        |        |              | Combinación para Columnas |
|           |      | MUERTA | 0.9000 | STATIC(DEAD) |                           |
|           |      | SISMOX | 0.3600 | COMBO        |                           |
|           |      | SISMOY | 1.2000 | COMBO        |                           |

FRAME ELEMENT FORCES

| FRAME | LOAD        | LOC | P       | V2        | V3     | T          | M2         | M3         |
|-------|-------------|-----|---------|-----------|--------|------------|------------|------------|
| 7     | CU          |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -85.18  | -11.18    | -3.24  | 1.804E-01  | -1.41      | -3.19      |
|       | 1.58        |     | -80.95  | -11.18    | -3.24  | 1.804E-01  | 3.21       | 12.74      |
|       | 3.00        |     | -76.72  | -11.18    | -3.24  | 1.804E-01  | 7.83       | 28.68      |
| 7     | COLUMN1 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -57.32  | -2.60     | 2.94   | 4.641E-01  | 6.62       | 5.85       |
|       | 1.58        |     | -54.15  | -2.60     | 2.94   | 4.641E-01  | 2.43       | 9.56       |
|       | 3.00        |     | -50.98  | -2.60     | 2.94   | 4.641E-01  | 13.51      | 29.76      |
| 7     | COLUMN1 MIN |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -70.44  | -14.17    | -7.80  | -1.934E-01 | -8.73      | -10.63     |
|       | 1.58        |     | -67.27  | -14.17    | -7.80  | -1.934E-01 | 2.39       | 9.55       |
|       | 3.00        |     | -64.09  | -14.17    | -7.80  | -1.934E-01 | -1.76      | 13.26      |
| 7     | COLUMN2 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -55.22  | -3.97     | 5.00   | 5.470E-01  | 9.55       | 3.90       |
|       | 1.58        |     | -52.04  | -3.97     | 5.00   | 5.470E-01  | 2.44       | 9.56       |
|       | 3.00        |     | -48.87  | -3.97     | 5.00   | 5.470E-01  | 16.43      | 27.81      |
| 7     | COLUMN2 MIN |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -72.55  | -12.80    | -9.86  | -2.764E-01 | -11.67     | -8.68      |
|       | 1.58        |     | -69.37  | -12.80    | -9.86  | -2.764E-01 | 2.38       | 9.55       |
|       | 3.00        |     | -66.20  | -12.80    | -9.86  | -2.764E-01 | -4.68      | 15.21      |
| 7     | COLUMN3 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -38.05  | 2.038E-02 | 3.78   | 4.163E-01  | 6.98       | 6.55       |
|       | 1.58        |     | -35.33  | 2.038E-02 | 3.78   | 4.163E-01  | 1.60       | 6.54       |
|       | 3.00        |     | -32.61  | 2.038E-02 | 3.78   | 4.163E-01  | 11.49      | 23.00      |
| 7     | COLUMN3 MIN |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -51.16  | -11.55    | -6.97  | -2.412E-01 | -8.38      | -9.93      |
|       | 1.58        |     | -48.44  | -11.55    | -6.97  | -2.412E-01 | 1.56       | 6.53       |
|       | 3.00        |     | -45.72  | -11.55    | -6.97  | -2.412E-01 | -3.79      | 6.50       |
| 7     | COLUMN4 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -35.94  | -1.35     | 5.83   | 4.993E-01  | 9.91       | 4.60       |
|       | 1.58        |     | -33.22  | -1.35     | 5.83   | 4.993E-01  | 1.60       | 6.54       |
|       | 3.00        |     | -30.50  | -1.35     | 5.83   | 4.993E-01  | 14.41      | 21.05      |
| 7     | COLUMN4 MIN |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -53.27  | -10.18    | -9.02  | -3.242E-01 | -11.31     | -7.98      |
|       | 1.58        |     | -50.55  | -10.18    | -9.02  | -3.242E-01 | 1.55       | 6.53       |
|       | 3.00        |     | -47.83  | -10.18    | -9.02  | -3.242E-01 | -6.70      | 8.45       |
| 8     | CU          |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -135.77 | 7.82      | -2.81  | 1.911E-01  | -1.602E-01 | 5.49       |
|       | 1.58        |     | -131.54 | 7.82      | -2.81  | 1.911E-01  | 3.84       | -5.66      |
|       | 3.00        |     | -127.31 | 7.82      | -2.81  | 1.911E-01  | 7.85       | -16.81     |
| 8     | COLUMN1 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -93.58  | 17.01     | 4.05   | 4.916E-01  | 8.67       | 20.01      |
|       | 1.58        |     | -90.40  | 17.01     | 4.05   | 4.916E-01  | 2.91       | -4.23      |
|       | 3.00        |     | -87.23  | 17.01     | 4.05   | 4.916E-01  | 14.63      | 3.26       |
| 8     | COLUMN1 MIN |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -110.08 | -5.28     | -8.26  | -2.049E-01 | -8.92      | -11.78     |
|       | 1.58        |     | -106.91 | -5.28     | -8.26  | -2.049E-01 | 2.86       | -4.26      |
|       | 3.00        |     | -103.74 | -5.28     | -8.26  | -2.049E-01 | -2.86      | -28.47     |
| 8     | COLUMN2 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -90.99  | 14.44     | 6.53   | 5.794E-01  | 12.23      | 16.34      |
|       | 1.58        |     | -87.82  | 14.44     | 6.53   | 5.794E-01  | 2.92       | -4.23      |
|       | 3.00        |     | -84.64  | 14.44     | 6.53   | 5.794E-01  | 18.16      | -4.117E-01 |
| 8     | COLUMN2 MIN |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -112.67 | -2.70     | -10.75 | -2.928E-01 | -12.47     | -8.11      |
|       | 1.58        |     | -109.49 | -2.70     | -10.75 | -2.928E-01 | 2.85       | -4.26      |
|       | 3.00        |     | -106.32 | -2.70     | -10.75 | -2.928E-01 | -6.39      | -24.80     |
| 8     | COLUMN3 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -62.99  | 15.08     | 4.76   | 4.409E-01  | 8.70       | 18.67      |
|       | 1.58        |     | -60.27  | 15.08     | 4.76   | 4.409E-01  | 1.92       | -2.83      |
|       | 3.00        |     | -57.55  | 15.08     | 4.76   | 4.409E-01  | 12.62      | 7.41       |
| 8     | COLUMN3 MIN |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -79.49  | -7.21     | -7.55  | -2.555E-01 | -8.89      | -13.13     |
|       | 1.58        |     | -76.77  | -7.21     | -7.55  | -2.555E-01 | 1.86       | -2.86      |
|       | 3.00        |     | -74.05  | -7.21     | -7.55  | -2.555E-01 | -4.87      | -24.32     |
| 8     | COLUMN4 MAX |     |         |           |        |            |            |            |
|       | 1.5E-01     |     | -60.40  | 12.51     | 7.25   | 5.288E-01  | 12.26      | 14.99      |

|    |             |        |        |        |            |            |        |
|----|-------------|--------|--------|--------|------------|------------|--------|
|    | 1.58        | -57.68 | 12.51  | 7.25   | 5.288E-01  | 1.93       | -2.83  |
|    | 3.00        | -54.96 | 12.51  | 7.25   | 5.288E-01  | 16.15      | 3.74   |
| 8  | COLUMN4 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -82.08 | -4.63  | -10.03 | -3.434E-01 | -12.44     | -9.46  |
|    | 1.58        | -79.36 | -4.63  | -10.03 | -3.434E-01 | 1.85       | -2.86  |
|    | 3.00        | -76.64 | -4.63  | -10.03 | -3.434E-01 | -8.40      | -20.65 |
| 9  | CU          |        |        |        |            |            |        |
|    | 1.5E-01     | -49.87 | 5.53   | -3.14  | 1.776E-01  | -1.26      | 5.24   |
|    | 1.58        | -45.64 | 5.53   | -3.14  | 1.776E-01  | 3.21       | -2.63  |
|    | 3.00        | -41.41 | 5.53   | -3.14  | 1.776E-01  | 7.68       | -10.50 |
| 9  | COLUMN1 MAX |        |        |        |            |            |        |
|    | 1.5E-01     | -28.89 | 12.96  | 1.10   | 4.568E-01  | 3.98       | 16.52  |
|    | 1.58        | -25.72 | 12.96  | 1.10   | 4.568E-01  | 2.41       | -1.95  |
|    | 3.00        | -22.55 | 12.96  | 1.10   | 4.568E-01  | 10.68      | 4.67   |
| 9  | COLUMN1 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -45.91 | -4.67  | -5.81  | -1.904E-01 | -5.88      | -8.65  |
|    | 1.58        | -42.74 | -4.67  | -5.81  | -1.904E-01 | 2.40       | -2.00  |
|    | 3.00        | -39.57 | -4.67  | -5.81  | -1.904E-01 | 8.352E-01  | -20.42 |
| 9  | COLUMN2 MAX |        |        |        |            |            |        |
|    | 1.5E-01     | -31.34 | 10.43  | 1.90   | 5.384E-01  | 5.11       | 12.90  |
|    | 1.58        | -28.17 | 10.43  | 1.90   | 5.384E-01  | 2.42       | -1.95  |
|    | 3.00        | -25.00 | 10.43  | 1.90   | 5.384E-01  | 11.81      | 1.06   |
| 9  | COLUMN2 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -43.46 | -2.14  | -6.60  | -2.720E-01 | -7.01      | -5.03  |
|    | 1.58        | -40.29 | -2.14  | -6.60  | -2.720E-01 | 2.39       | -2.00  |
|    | 3.00        | -37.11 | -2.14  | -6.60  | -2.720E-01 | -2.871E-01 | -16.81 |
| 9  | COLUMN3 MAX |        |        |        |            |            |        |
|    | 1.5E-01     | -18.71 | 11.71  | 1.91   | 4.097E-01  | 4.29       | 15.29  |
|    | 1.58        | -15.99 | 11.71  | 1.91   | 4.097E-01  | 1.58       | -1.40  |
|    | 3.00        | -13.27 | 11.71  | 1.91   | 4.097E-01  | 8.70       | 6.99   |
| 9  | COLUMN3 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -35.72 | -5.92  | -5.01  | -2.374E-01 | -5.56      | -9.88  |
|    | 1.58        | -33.01 | -5.92  | -5.01  | -2.374E-01 | 1.56       | -1.45  |
|    | 3.00        | -30.29 | -5.92  | -5.01  | -2.374E-01 | -1.15      | -18.09 |
| 9  | COLUMN4 MAX |        |        |        |            |            |        |
|    | 1.5E-01     | -21.16 | 9.18   | 2.70   | 4.914E-01  | 5.43       | 11.67  |
|    | 1.58        | -18.44 | 9.18   | 2.70   | 4.914E-01  | 1.58       | -1.40  |
|    | 3.00        | -15.72 | 9.18   | 2.70   | 4.914E-01  | 9.82       | 3.39   |
| 9  | COLUMN4 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -33.27 | -3.39  | -5.80  | -3.191E-01 | -6.70      | -6.26  |
|    | 1.58        | -30.55 | -3.39  | -5.80  | -3.191E-01 | 1.56       | -1.45  |
|    | 3.00        | -27.83 | -3.39  | -5.80  | -3.191E-01 | -2.27      | -14.48 |
| 10 | CU          |        |        |        |            |            |        |
|    | 1.5E-01     | -73.84 | -9.52  | 2.81   | 2.231E-01  | 4.177E-01  | -2.07  |
|    | 1.58        | -69.32 | -9.52  | 2.81   | 2.231E-01  | -3.58      | 11.50  |
|    | 3.00        | -64.79 | -9.52  | 2.81   | 2.231E-01  | -7.58      | 25.07  |
| 10 | COLUMN1 MAX |        |        |        |            |            |        |
|    | 1.5E-01     | -48.55 | -1.30  | 7.67   | 5.739E-01  | 8.27       | 6.78   |
|    | 1.58        | -45.15 | -1.30  | 7.67   | 5.739E-01  | -2.67      | 8.63   |
|    | 3.00        | -41.76 | -1.30  | 7.67   | 5.739E-01  | 2.23       | 27.12  |
| 10 | COLUMN1 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -62.21 | -12.98 | -3.46  | -2.392E-01 | -7.64      | -9.88  |
|    | 1.58        | -58.82 | -12.98 | -3.46  | -2.392E-01 | -2.71      | 8.62   |
|    | 3.00        | -55.43 | -12.98 | -3.46  | -2.392E-01 | -13.60     | 10.48  |
| 10 | COLUMN2 MAX |        |        |        |            |            |        |
|    | 1.5E-01     | -47.87 | -2.85  | 9.79   | 6.765E-01  | 11.29      | 4.57   |
|    | 1.58        | -44.48 | -2.85  | 9.79   | 6.765E-01  | -2.66      | 8.63   |
|    | 3.00        | -41.09 | -2.85  | 9.79   | 6.765E-01  | 5.24       | 24.91  |
| 10 | COLUMN2 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -62.89 | -11.43 | -5.58  | -3.418E-01 | -10.67     | -7.67  |
|    | 1.58        | -59.50 | -11.43 | -5.58  | -3.418E-01 | -2.72      | 8.62   |
|    | 3.00        | -56.10 | -11.43 | -5.58  | -3.418E-01 | -16.61     | 12.69  |
| 10 | COLUMN3 MAX |        |        |        |            |            |        |
|    | 1.5E-01     | -30.35 | 1.27   | 6.95   | 5.148E-01  | 8.15       | 7.38   |
|    | 1.58        | -27.44 | 1.27   | 6.95   | 5.148E-01  | -1.75      | 5.56   |
|    | 3.00        | -24.54 | 1.27   | 6.95   | 5.148E-01  | 4.18       | 20.38  |
| 10 | COLUMN3 MIN |        |        |        |            |            |        |
|    | 1.5E-01     | -44.02 | -10.41 | -4.19  | -2.983E-01 | -7.76      | -9.28  |
|    | 1.58        | -41.11 | -10.41 | -4.19  | -2.983E-01 | -1.79      | 5.55   |



|    |             |        |            |       |            |            |            |
|----|-------------|--------|------------|-------|------------|------------|------------|
|    | 3.00        | -38.20 | -10.41     | -4.19 | -2.983E-01 | -11.64     | 3.74       |
| 10 | COLUMN4 MAX |        |            |       |            |            |            |
|    | 1.5E-01     | -29.67 | -2.743E-01 | 9.06  | 6.174E-01  | 11.18      | 5.17       |
|    | 1.58        | -26.77 | -2.743E-01 | 9.06  | 6.174E-01  | -1.74      | 5.56       |
|    | 3.00        | -23.86 | -2.743E-01 | 9.06  | 6.174E-01  | 7.19       | 18.18      |
| 10 | COLUMN4 MIN |        |            |       |            |            |            |
|    | 1.5E-01     | -44.69 | -8.86      | -6.31 | -4.009E-01 | -10.78     | -7.07      |
|    | 1.58        | -41.79 | -8.86      | -6.31 | -4.009E-01 | -1.80      | 5.55       |
|    | 3.00        | -38.88 | -8.86      | -6.31 | -4.009E-01 | -14.65     | 5.95       |
| 11 | CU          |        |            |       |            |            |            |
|    | 1.5E-01     | -96.78 | 7.35       | 6.38  | 2.351E-01  | 2.83       | 2.87       |
|    | 1.58        | -92.26 | 7.35       | 6.38  | 2.351E-01  | -6.27      | -7.61      |
|    | 3.00        | -87.74 | 7.35       | 6.38  | 2.351E-01  | -15.36     | -18.09     |
| 11 | COLUMN1 MAX |        |            |       |            |            |            |
|    | 1.5E-01     | -63.45 | 13.42      | 12.88 | 6.047E-01  | 13.69      | 13.44      |
|    | 1.58        | -60.06 | 13.42      | 12.88 | 6.047E-01  | -4.67      | -5.69      |
|    | 3.00        | -56.67 | 13.42      | 12.88 | 6.047E-01  | -1.484E-02 | -2.31      |
| 11 | COLUMN1 MIN |        |            |       |            |            |            |
|    | 1.5E-01     | -81.72 | -2.39      | -3.31 | -2.521E-01 | -9.45      | -9.13      |
|    | 1.58        | -78.33 | -2.39      | -3.31 | -2.521E-01 | -4.73      | -5.72      |
|    | 3.00        | -74.94 | -2.39      | -3.31 | -2.521E-01 | -23.03     | -24.82     |
| 11 | COLUMN2 MAX |        |            |       |            |            |            |
|    | 1.5E-01     | -59.98 | 11.22      | 15.93 | 7.128E-01  | 18.04      | 10.29      |
|    | 1.58        | -56.59 | 11.22      | 15.93 | 7.128E-01  | -4.65      | -5.69      |
|    | 3.00        | -53.20 | 11.22      | 15.93 | 7.128E-01  | 4.31       | -5.44      |
| 11 | COLUMN2 MIN |        |            |       |            |            |            |
|    | 1.5E-01     | -85.20 | -1.911E-01 | -6.35 | -3.602E-01 | -13.80     | -5.99      |
|    | 1.58        | -81.80 | -1.911E-01 | -6.35 | -3.602E-01 | -4.75      | -5.72      |
|    | 3.00        | -78.41 | -1.911E-01 | -6.35 | -3.602E-01 | -27.35     | -21.68     |
| 11 | COLUMN3 MAX |        |            |       |            |            |            |
|    | 1.5E-01     | -39.79 | 11.41      | 11.26 | 5.425E-01  | 12.96      | 12.66      |
|    | 1.58        | -36.88 | 11.41      | 11.26 | 5.425E-01  | -3.08      | -3.60      |
|    | 3.00        | -33.97 | 11.41      | 11.26 | 5.425E-01  | 3.89       | 2.65       |
| 11 | COLUMN3 MIN |        |            |       |            |            |            |
|    | 1.5E-01     | -58.05 | -4.41      | -4.94 | -3.143E-01 | -10.18     | -9.91      |
|    | 1.58        | -55.15 | -4.41      | -4.94 | -3.143E-01 | -3.15      | -3.63      |
|    | 3.00        | -52.24 | -4.41      | -4.94 | -3.143E-01 | -19.12     | -19.86     |
| 11 | COLUMN4 MAX |        |            |       |            |            |            |
|    | 1.5E-01     | -36.31 | 9.21       | 14.30 | 6.506E-01  | 17.31      | 9.52       |
|    | 1.58        | -33.40 | 9.21       | 14.30 | 6.506E-01  | -3.06      | -3.60      |
|    | 3.00        | -30.50 | 9.21       | 14.30 | 6.506E-01  | 8.22       | -4.831E-01 |
| 11 | COLUMN4 MIN |        |            |       |            |            |            |
|    | 1.5E-01     | -61.53 | -2.20      | -7.98 | -4.224E-01 | -14.53     | -6.77      |
|    | 1.58        | -58.62 | -2.20      | -7.98 | -4.224E-01 | -3.16      | -3.63      |
|    | 3.00        | -55.71 | -2.20      | -7.98 | -4.224E-01 | -23.44     | -16.72     |

### 5.5.9.2.1 Cálculo de Refuerzo.

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Portería (Liceo U de Nar)

C O N C R E T E D E S I G N O U T P U T (ACI 318-95)

BIAXIAL P-M INTERACTION AND SHEAR DESIGN OF COLUMN-TYPE ELEMENTS

| ELEM<br>ID | SECTION<br>ID | STATION<br>ID | <-----REQUIRED REINFORCING-----> |         |         |       |         |       |
|------------|---------------|---------------|----------------------------------|---------|---------|-------|---------|-------|
|            |               |               | LONGITUDINAL                     | COMBO   | SHEAR22 | COMBO | SHEAR33 | COMBO |
| 7          | 30X30         | 15.000        | 9.000                            | COLUMN4 | 0.016   | CU    | 0.016   | CU    |
| 7          | 30X30         | 157.500       | 9.000                            | COLUMN4 | 0.016   | CU    | 0.016   | CU    |
| 7          | 30X30         | 300.000       | 9.000                            | COLUMN4 | 0.016   | CU    | 0.016   | CU    |

|    |        |         |       |         |       |         |       |         |
|----|--------|---------|-------|---------|-------|---------|-------|---------|
| 8  | 30X30  | 15.000  | 9.000 | COLUMN4 | 0.017 | COLUMN2 | 0.017 | COLUMN2 |
| 8  | 30X30  | 157.500 | 9.000 | COLUMN4 | 0.017 | COLUMN1 | 0.017 | COLUMN1 |
| 8  | 30X30  | 300.000 | 9.000 | COLUMN4 | 0.017 | COLUMN1 | 0.017 | COLUMN1 |
| 9  | 30X30  | 15.000  | 9.000 | COLUMN4 | 0.013 | CU      | 0.013 | CU      |
| 9  | 30X30  | 157.500 | 9.000 | COLUMN4 | 0.012 | CU      | 0.012 | CU      |
| 9  | 30X30  | 300.000 | 9.000 | COLUMN4 | 0.012 | CU      | 0.012 | CU      |
| 10 | DIAM35 | 15.000  | 9.621 | COLUMN4 | 0.014 | CU      | 0.014 | CU      |
| 10 | DIAM35 | 157.500 | 9.621 | COLUMN4 | 0.014 | CU      | 0.014 | CU      |
| 10 | DIAM35 | 300.000 | 9.621 | COLUMN4 | 0.013 | CU      | 0.013 | CU      |
| 11 | DIAM35 | 15.000  | 9.621 | COLUMN4 | 0.016 | CU      | 0.016 | CU      |
| 11 | DIAM35 | 157.500 | 9.621 | COLUMN4 | 0.015 | CU      | 0.015 | CU      |
| 11 | DIAM35 | 300.000 | 9.621 | COLUMN4 | 0.015 | CU      | 0.015 | CU      |

## 5.5.10. Diseño de Cimentación.

### 5.5.10.1 Envoltente De Diseño.

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Portería (Liceo U de Nar)

#### LOAD COMBINATION MULTIPLIERS

| COMBO    | TYPE | CASE     | FACTOR | TYPE  | TITLE                       |
|----------|------|----------|--------|-------|-----------------------------|
| ENVOLCIM | ENVE |          |        |       | Envoltente para Cimentación |
|          |      | CIMENTAX | 1.0000 | COMBO |                             |
|          |      | CIMENTAY | 1.0000 | COMBO |                             |

#### JOINT REACTIONS

| JOINT | LOAD         | F1       | F2       | F3       | M1     | M2     | M3     |
|-------|--------------|----------|----------|----------|--------|--------|--------|
| 1     | ENVOLCIM MAX | 33.7933  | 35.5801  | 137.3565 | 0.0000 | 0.0000 | 0.0000 |
| 1     | ENVOLCIM MIN | -18.4891 | -31.1101 | -17.3492 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MAX | 44.3092  | 40.8254  | 186.9645 | 0.0000 | 0.0000 | 0.0000 |
| 2     | ENVOLCIM MIN | -55.1221 | -36.9288 | -6.8326  | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MAX | 36.2680  | 21.3379  | 115.5347 | 0.0000 | 0.0000 | 0.0000 |
| 3     | ENVOLCIM MIN | -43.9366 | -17.1469 | -39.2275 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MAX | 32.4583  | 32.4801  | 114.2279 | 0.0000 | 0.0000 | 0.0000 |
| 4     | ENVOLCIM MIN | -19.3553 | -36.2761 | -11.9337 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MAX | 30.5302  | 45.9835  | 180.9908 | 0.0000 | 0.0000 | 0.0000 |
| 5     | ENVOLCIM MIN | -40.4558 | -54.7450 | -47.2546 | 0.0000 | 0.0000 | 0.0000 |

### 5.5.10.2 Cálculo del Refuerzo.

#### DISEÑO DE ZAPATAS AISLADAS CUADRADAS

##### INFORMACION GENERAL

| Dato | Concepto                                    |       |
|------|---|-------|
| 1    | Resistencia del Concreto F'c <kg/cm2> =     | 210   |
| 2    | Limite Fluencia Acero Princip Fy <kg/cm2> = | 4200  |
| 3    | Recubrimiento d' <cm> =                     | 5     |
| 4    | Capacidad Admisible Suelo <kg/cm2> =        | 1.276 |
| 5    | No. de Zapatas Cuadradas Diseñadas =        | 2     |

##### INFORMACION DE LAS ZAPATAS

| Zap | Nombre | H col <cm> | B col <cm> | Carga P <t> | Carga Pu <t> |
|-----|--------|------------|------------|-------------|--------------|
| 1   | Z1A    | 30         | 30         | 13.73       | 8.51         |
| 2   | Z1'A   | 30         | 30         | 18.69       | 13.57        |

#### R E S U L T A D O S

| Referencia | Nudo # | Longitud Paralelo H | Lados <cm> Paralelo B | Espesor Min <cm> | ARMADURA (Sep: cm) Paralelo H |
|------------|--------|---------------------|-----------------------|------------------|-------------------------------|
| Z1A        |        | 104                 | 104                   | 30.0             | 1 # 4 a 30 1 # 4 a 30         |
| Z1'A       |        | 121                 | 121                   | 30.0             | 1 # 4 a 30 1 # 4 a 30         |

#### DISEÑO ZAPATAS EXCENTRICAS

##### INFORMACION GENERAL

| Dato | Concepto                                    |       |
|------|---|-------|
| 1    | Resistencia del Concreto F'c <kg/cm2> =     | 210   |
| 2    | Limite Fluencia Acero Princip Fy <kg/cm2> = | 4200  |
| 3    | Recubrimiento al Centroides d' <cm> =       | 5     |
| 4    | Número de Ramas del Estribo =               | 2     |
| 5    | # del Diametro del Estribo =                | 3     |
| 6    | Limite Fluencia Acero Estrib Fy <kg/cm2> =  | 4200  |
| 7    | Capacidad Admisible Suelo Qa <kg/cm2> =     | 1.276 |
| 8    | No. de Zapatas Diseñadas =                  | 3     |

##### INFORMACION DE LA GEOMETRIA DE LAS ZAPATAS

| Zap Ref | Sep Col (m) | B ColExt (m) | H ColExt (m) | Ancho Adop Zap Ext(m) | Distanc (m) Borde - Eje | Viga Trabe (m) B Inic H Inic |    |
|---------|-------------|--------------|--------------|-----------------------|-------------------------|------------------------------|----|
| 1P      | 4.75        | .35          | .35          | .8                    | .175                    | .25                          | .3 |
| 2P      | 3.2         | .35          | .35          | 1                     | .175                    | .25                          | .3 |
| 3P      | 3.19        | .3           | .3           | .8                    | .15                     | .25                          | .3 |

INFORMACION DE LAS SOLICITACIONES DE LAS ZAPATAS

| Zap Ref | Pserv (t)<br>Zapat EXT | Pult (t)<br>Zapat EXT | Pserv (t)<br>Zapat INT | Pult (t)<br>Zapat INT |
|---------|------------------------|-----------------------|------------------------|-----------------------|
| 1P      | 11.65                  | 7.59                  | 18.09                  | 9.67                  |
| 2P      | 18.09                  | 9.67                  | 19.06                  | 13.28                 |
| 3P      | 11.55                  | 5.52                  | 19.06                  | 13.28                 |

R E S U L T A D O S      D E L      D I S E N O

| Zap Ref | Largo L | Ancho B | Zapata Espes T (cm) | EXTERIOR<br>As Paralelo L | As Paralelo B | Zapata INT<br>Lado L (cm) |
|---------|---------|---------|---------------------|---------------------------|---------------|---------------------------|
| 1P      | 120     | 80      | 37                  | 1 # 4 a 41                | 1 # 3 a 25    | 118                       |
| 2P      | 158     | 100     | 41                  | 1 # 4 a 36                | 1 # 3 a 25    | 117                       |
| 3P      | 123     | 80      | 38                  | 1 # 4 a 52                | 1 # 3 a 25    | 120                       |

VIGA TRABE O DE ENLACE

| Zap Ref | B M;n (cm) | H M;n (cm) | Mu M x (t-m) | As M ximo SUP(cm2) | Extr EXT INF(cm2) | Vu M x (t) | Separac<br>Extremo | Flejes<br>EXT |
|---------|------------|------------|--------------|--------------------|-------------------|------------|--------------------|---------------|
| 1P      | 25.0       | 30.0       | 0.71         | 2.08               | 0.00              | 19.92      | 1FL# 3 de 2 rams   | c/ 12.5       |
| 2P      | 25.0       | 30.0       | 1.19         | 3.57               | 0.00              | 16.93      | 1FL# 3 de 2 rams   | c/ 12.5       |
| 3P      | 25.0       | 30.0       | 0.45         | 2.08               | 0.00              | 9.71       | 1FL# 3 de 2 rams   | c/12.5        |



## **6. DISEÑO DE LAS INSTALACIONES HIDRAULICAS Y SANITARIAS**

### **6.1 DISEÑO DEL SISTEMA DE ABASTECIMIENTO**

El diseño del sistema de abastecimiento se realiza teniendo en cuenta como principal objetivo, que todos los aparatos deben ser abastecidos con suficiente cantidad de agua, adecuada presión y sin desperdicio de agua.

#### **6.1.1. Generalidades.**

Bloque para baños.

1 Baño para damas con 3 lavamanos y 5 sanitarios.

1 Baño para hombres 3 lavamanos, 4 sanitarios, 3 orinales y un grifo para traperos.

5 Laboratorios , 3 con 5 grifos y 2 con 6 grifos.

1 Cafetería con 2 lavaplatos.

5 grifos exteriores para usos varios (patios , corredores).

2. Artefactos en el liceo.

Bloque para baños      6 lavamanos

                                 9 inodoros

                                 3 orinales

                                 1 grifo

Laboratorios            27 grifos

|           |              |
|-----------|--------------|
| Cafetería | 2 lavaplatos |
| Varios    | 5 grifos     |

**6.1.2 Cálculo del Caudal Máximo Posible QMP.** El cálculo del caudal máximo posible se realiza calculando las unidades de consumo en una tabla que posteriormente se presenta en los anexos y luego el cálculo del caudal .

#### UNIDADES DE CONSUMO POR APARATOS SANITARIOS

| APARATO    | USO     | TIPO DE SUMINISTRO | UNIDAD CONSUMO |
|------------|---------|--------------------|----------------|
| INODORO    | PUBLICO | TANQUE             | 5              |
| ORINAL     | PUBLICO | TANQUE O LLAVE     | 3              |
| LAVAMANOS  | PUBLICO | LLAVE              | 2              |
| LAVAPLATOS | PUBLICO | LLAVE              | 4              |
| GRIFO      | PUBLICO | LLAVE              | 2              |

#### BLOQUE PARA BAÑOS

| ARTEFACTO | UC | No. APARATOS | TOTAL UC |
|-----------|----|--------------|----------|
| LAVAMANOS | 2  | 6            | 12       |
| INODORO   | 5  | 9            | 45       |
| ORINAL    | 3  | 3            | 9        |
| GRIFO     | 2  | 1            | 2        |
| TOTAL     |    |              | 68       |

#### LABORATORIOS

| ARTEFACTO | UC | No. APARATOS | TOTAL UC |
|-----------|----|--------------|----------|
| GRIFO     | 2  | 27           | 54       |
| TOTAL     |    |              | 54       |

### CAFETERIA

| ARTEFACTO  | UC | No. APARATOS | TOTAL UC |
|------------|----|--------------|----------|
| LAVAPLATOS | 4  | 2            | 8        |
| TOTAL      |    |              | 8        |

### VARIOS

| ARTEFACTO | UC | No. | TOTAL UC |
|-----------|----|-----|----------|
| GRIFOS    | 2  | 5   | 10       |
| TOTAL     |    |     | 10       |

Total unidades de consumo 140.

El diseño para la red de abastecimiento se realiza para tubería pvc, por lo tanto hay que multiplicarlas por 0.7

Total uc para el liceo =  $140 * 0.7 = 98$  uc

Con el total de uc se realiza el cálculo de caudal máximo probable en el diagrama de Hunter.

QMP = 120 LPM (DIAGRAMA DE HUNTER)

QMP = 2.0 LPS

Caudal para llenar tanques de reserva = 2000 LPS

= 0.55 LPS

Caudal de entrada total = 2.55 LPS



### 6.1.3 Diseño de la Acometida.

|                               |   |          |
|-------------------------------|---|----------|
| Presión en la red             | = | 30 m.c.a |
| Presión de diseño (80% P.red) | = | 24 m.c.a |
| Aparato critico               | = | Grifo    |
| Presión de servicio           | = | 2 m.c.a  |
| Longitud de tubería           | = | 110 m    |
| Unidades de consumo           | = | 98       |
| Caudal total de entrada       | = | 2,55 LPS |

Debido a que la presión en la red es de 30 m.c.a. se puede alimentar directamente la edificación.

Diámetro del medidor.

Según la tabla y utilizando el QMP = 120 LPM

| DIAMETRO        | CAUDAL MINIMO | CAUDAL MAXIMO |
|-----------------|---------------|---------------|
| $\frac{3}{4}$   | 8             | 130           |
| 1               | 11            | 200           |
| $1 \frac{1}{2}$ | 20            | 375           |
| 2               | 30            | 600           |

$$20 + 375 / 2 = 197,5 \text{ LPM}$$

El diámetro del medidor =  $1 \frac{1}{2}$ "

#### 6.1.3.1 Calculo de Perdidas en el Medidor.

Para QMP = 120 LPM

Diámetro de medidor =  $1 \frac{1}{2}$ "

$$hm = 0,2 \text{ Kg/cm}^2 = 2 \text{ m.c.a}$$

### 6.1.3.2 Cálculo de Pérdidas por Fricción y Accesorios.

$$H_f = p_d - H_e - h_m - p_s$$

$$p_d = \text{Presión de diseño} = 24 \text{ m.c.a}$$

$$H_e = \text{Altura estática} = 3.0 \text{ m.c.a}$$

$$h_m = \text{Pérdidas por medidor} = 2.0 \text{ m.c.a}$$

$$p_s = \text{Presión de servicio} = 2.0 \text{ m.c.a}$$

$$H_f = \text{Pérdidas por fricción y accesorios}$$

$$H_f = 24 - 3.0 - 2.0 - 2.0 = 17 \text{ m}$$

### 6.1.3.3 Cálculo de Pérdidas Unitarias $j$

$$j_c = H_f / LE$$

LE = Longitud de tubería equivalente

$$LE = L + LA$$

L = Longitud por tubería recta

LA = Longitud por accesorios (está entre 50% - 100%)

$$LE = 110 + (0.8 * 110) = 198$$

$$j_c = 17 / 198 = 0.0858 \text{ m}$$

Para  $Q = 2.55 \text{ LPS}$  y  $C = 150$  y diámetro de la acometida  $1\frac{1}{2}$ "

$$J = 0.0634 \text{ m/m} ; V = 1.736 \text{ m/seg}$$

#### 6.1.4 Red de Distribución.

Los diámetros de la red de distribución se calculan utilizando el método basado en las pérdidas de carga teniendo en cuenta aportaciones de caudal por tramo, se realiza un predimensionamiento de las redes interiores, controlando su velocidad.

Los datos más importantes lo constituyen los de presión que se obtengan respecto a la red de abastecimiento.

Una vez calculadas las presiones se confirman que el Liceo de la Universidad de Nariño se puede abastecer mediante alimentación directa.

#### APORTE DE CAUDALES POR TRAMO

| TRAMO | APARATO | UC | TOTAL UC     | LPM | LPS   | φ<br>PULGADAS    |
|-------|---------|----|--------------|-----|-------|------------------|
| AB    | 30 G    | 2  | 60           |     |       |                  |
|       | 9WC     | 5  | 45           |     |       |                  |
|       | 3 OR    | 3  | 9            |     |       |                  |
|       | 6 LM    | 2  | 12           |     |       |                  |
|       | 2 LP    | 4  | 8            |     |       |                  |
|       |         |    | 134*0.7=93.8 | 120 | 2     | 1 <sup>1/4</sup> |
| BC    | 1 G     | 2  | 2*0.7=1.4    |     |       | 1/2              |
| BD    | 3 OR    | 3  | 9            |     |       |                  |
|       | 9 WC    | 3  | 45           |     |       |                  |
|       | 6 LM    | 2  | 12           |     |       |                  |
|       |         |    | 66*0.7=46.2  | 65  | 1.083 | 3/4              |
| DE    | 3 OR    | 3  | 9            |     |       |                  |
|       | 9 WC    | 5  | 45           |     |       |                  |
|       | 6 LM    | 2  | 12           |     |       |                  |
|       |         |    | 57*0.7=39.9  | 60  | 1     | 3/4              |
| EF    | 3 LM    | 2  | 6            |     |       |                  |
|       | 5 WC    | 5  | 25           |     |       |                  |
|       |         |    | 31*0.7=21.7  | 40  | 0.667 | 3/4              |
| FG    | 5 WC    | 5  | 25           |     |       |                  |
|       |         |    | 25*0.7=17.5  | 30  | 0.5   | 3/4              |
| BH    | 29 G    | 2  | 58           |     |       |                  |
|       | 2 LP    | 4  | 8            |     |       |                  |
|       |         |    | 66*0.7=46.2  | 65  | 1.083 | 1                |
| HI    | 27 G    | 2  | 54           |     |       |                  |

|    |      |   |              |    |        |     |
|----|------|---|--------------|----|--------|-----|
|    | 2 LP | 4 | 8            |    |        |     |
|    |      |   | 62*0.7=43.4  | 64 | 1.0667 | 1   |
| IJ | 23 G | 2 | 46           |    |        |     |
|    | 1 LP | 4 | 4            |    |        |     |
|    |      |   | 52*0.7=36.64 | 55 | 0.917  | 3/4 |
| JK | 11 G | 2 | 22*0.7=15.4  | 28 | 0.47   | 3/4 |
| KL | 8 G  | 2 | 16*0.7=11.2  | 24 | 0.4    | 3/4 |
| LM | 5 G  | 2 | 10*0.7=7     | 18 | 0.3    | 1/2 |
| MN | 2 G  | 2 |              |    |        | 1/2 |

CUADRO DE PRESIONES

| Tram | UC | LPM | LPS   | Veloc<br>m/seg | Pérdi<br>das<br>m/m | Diám.<br>$\phi$ | Long.<br>recta | Long<br>aprox | Long<br>real | Long<br>aprox<br>total | Long<br>real<br>total | Pérdi<br>das<br>reales | Presi-<br>ón<br>final |
|------|----|-----|-------|----------------|---------------------|-----------------|----------------|---------------|--------------|------------------------|-----------------------|------------------------|-----------------------|
| AB   | 77 | 120 | 2     | 1.4            | 0.053               | 1 1/4           |                | 0.25          | 1.25         | 0.70                   | 1.70                  | 0.08                   | 2.08                  |
| BC   | 1  | 1   | 0.01  | 0.23           | 0.003               | 1/2             | 0.50           | 0.25          | 0.50         | 0.75                   | 0.75                  | 0.01                   | 2.09                  |
| BD   | 29 | 65  | 1.083 | 1.93           | 0.171               | 3/4             | 1.20           | 0.60          | 0.60         | 1.8                    | 1.80                  | 0.30                   | 2.39                  |
| DE   | 21 | 60  | 1     | 1.483          | 0.104               | 3/4             | 4.50           | 2.25          | 2.85         | 6.75                   | 7.35                  | 0.76                   | 3.15                  |
| EF   | 13 | 40  | 0.667 | 1.141          | 0.064               | 3/4             | 2.50           | 1.25          | 2.80         | 3.65                   | 5.3                   | 0.33                   | 3.48                  |
| FG   | 11 | 30  | 0.5   | 0.91           | 0.04                | 3/4             | 5.00           | 2.5           | 2.60         | 7.5                    | 7.60                  | 0.304                  | 3.78                  |
| GG'  | 13 | 33  | 0.55  | 1.141          | 0.064               | 3/4             | 3.60           | 1.8           | 2.90         | 5.4                    | 6.5                   | 0.040                  | 3.738                 |
| BH   | 48 | 65  | 1.083 | 1.536          | 0.003               | 1               | 4.50           | 2.25          | 3.20         | 6.77                   | 7.7                   | 0.023                  | 2.103                 |
| HI   | 46 | 64  | 1.067 | 1.53           | 0.003               | 1               | 5.60           | 2.8           | 2.90         | 8.4                    | 8.5                   | 0.025                  | 2.132                 |
| IJ   | 36 | 55  | 0.917 | 0.876          | 0.024               | 3/4             | 18.1           | 9.05          | 2.80         | 27.06                  | 20.9                  | 0.501                  | 2.188                 |
| JK   | 27 | 28  | 0.47  | 0.97           | 0.036               | 3/4             | 5.00           | 2.5           | 1.00         | 7.5                    | 6.00                  | 0.216                  | 2.210                 |
| KL   | 18 | 24  | 0.4   | 1.36           | 0.08                | 3/4             | 2.80           | 1.4           | 2.00         | 4.2                    | 4.80                  | 0.384                  | 2.248                 |
| LM   | 6  | 18  | 0.3   | 0.75           | 0.06                | 1/2             | 4.50           | 2.25          | 1.00         | 6.75                   | 5.5                   | 0.388                  | 2.578                 |
| MN   | 5  | 16  | 0.266 | 0.74           | 0.05                | 1/2             | 2.70           | 1.35          | 1.53         | 4.05                   | 4.23                  | 0.211                  | 2.790                 |

En los anexos se observa la red de distribución con los respectivos diámetros y el plano isométrico

## 6.2 SISTEMA DE DESAGÜE Y VENTILACION.

El sistema de evacuación de aguas negras no consta de bajantes , porque , se encuentran ubicadas las instalaciones sanitarias en el primer piso, por lo tanto , se descargan directamente en cajillas las cuales a su vez sirven de ventilación.

Existen además 25 sifones en el Liceo de la Universidad de Nariño cada uno con diámetro de 2 pulgadas; estos se encuentran ubicados así :

2 sifones de piso para baño de damas

2 sifones de piso para baño de hombres

3 sifones por cada uno de los laboratorios

3 sifones de piso para el patio

2 sifones para cocinas de cafetería

1 sifón cerca de las escaleras

#### CAJAS DE INSPECCION

Estas cajas de inspección tienen como objetivo recibir las aguas negras provenientes del Liceo del Universidad de Nariño y sirve para la revisión periódica .

Normalmente se construyen en ladrillo común para una tapa de concreto reforzado.

### **6.3 DISEÑO DEL SISTEMAS DE AGUAS LLUVIAS**

El sistema de alcantarillado que está previsto es separado, por lo tanto la disposición de las aguas lluvias se hará directamente a cajas de inspección diferentes a las de aguas sanitarias.

Con una pendiente del 1% y un régimen de lluvia = 10 cm/hora

#### BLOQUE PARA AULAS

BALL 1,2,3,4,5,6,13,14,15,17

Diámetro ball = 3"

OFICINAS  
BALL 8,9,10,11  
Diámetro Ball = 3"

PORTERIA  
BALL 7  
Diámetro Ball= 3"

CAFETERIA  
BALL 16,18,19,20  
Diámetro Ball= 3"

BAÑOS  
BALL 12,21  
Diámetro Ball = 3"

#### **6.4 SISTEMA DE PROTECCION CONTRA INCENDIOS**

El sistema se realizará en tubería de hierro galvanizado, alimentado por un sistema de bombas a cada uno de los gabinetes ubicados 1 en cada piso del bloque para aulas, 1 en las oficinas y 1 en los gabinetes en la cafetería la capacidad de reserva se le determinara para un gusto continuo en un tiempo estimado por 30 minutos.

La cantidad de agua necesaria para una construcción mediana (clase II ) es de 100 GPM = 6.31 LPS con una presión de 65 psi = 45 m.c.a

##### **6.4.1 Dimensión del Tanque Contra Incendios.**

Volumen = Q \* T

$$V = 6.31 \text{ LPS } 3060 = 11358 \text{ litros} = 12\text{m}^3$$

Para ese volumen asumimos una sección del tanque de 25\* 2.5 y calculamos la altura

h = volumen/sección

$$h = 12\text{m}^3 / (2.5 * 2.5 \text{ m}) = 1.9 \text{ m}$$

Borde libre = 30 cm

Profundidad total del tanque = 2.2 m

Pendiente hacia el desagüe = 2%

#### **6.4.2 Equipos para Incendios.**

##### **GABINETES DE INCENDIOS**

Los gabinetes se colocarán a una altura de 1.20 m en el primer piso del bloque para aulas y 1.20 en el segundo piso del bloque para aulas y estarán situados frentes a las escaleras.

En la cafetería el gabinete también se ubicara a 1.20 del piso y lo mismo para las oficinas.

Cada gabinete se equipara con pequeñas mangueras de diámetro de 1 1/2" y un extintor tipo manual

##### **MANGUERAS**

Mangueras de 1 1/2" con boquillas de 1/2" y 5/8" la longitud máxima de las mangueras será de 30 m.

##### **TUBERIAS**

Debido a que el Nuevo Liceo de la Universidad de Nariño tiene una altura menor de 30 m, el diámetro de las tuberías es de 2"

##### **SIAMESA**

Se ubica en la facha del liceo a nivel del anden, para que una vez llegados los bomberos puedan por medios de ellos conectar las motobombas a la red de incendio del liceo.

Después de la siamesa se coloca una válvula cheque para evitar que el agua se regrese al conectar las mangueras.

#### POTENCIA DE LA BOMBA

$$P = (p_e * q * p_d) / (76 * \eta)$$

$$P_e = 1000 \text{ kg/cm}^3 \text{ ( peso específico del agua)}$$

$$Q = 0.0066 \text{ m}^3/\text{sg} \text{ ( caudal de diseño)}$$

$$P_d = 6 \text{ m} \text{ ( presión de diseño)}$$

$$\eta = 65\% \text{ ( eficiencia)}$$

$$p = (1000 \text{ Kg/cm}^3 * 0.0066 \text{ cm}^3/\text{sg} * 60.0\text{m}) / (76 * 0.65)$$

$$p = 8.00 \text{ HP}$$

#### POTENCIA DEL MOTOR

$$P = 1.15 * 8.00 \text{ HP} = 9 \text{ HP}$$



## GLOSARIO

**ANÁLISIS DINÁMICO:** procedimiento matemático por medio del cual se resuelven las ecuaciones de equilibrio dinámico, con el fin de obtener las deformaciones y esfuerzos de la estructura al ser sometida a una excitación que varía en el tiempo.

**ANTEPECHO:** muro de altura inferior a la de piso que configura la parte inferior de una ventana, de un balcón.

**BARRA CORRUGADA:** barra con un núcleo de sección circular en cuya superficie existen resaltes que tienen por objeto aumentar la adherencia entre el concreto y el acero, que cumple con las normas NTC 2289 (ASTM A706) y NTC 248 (ASTM A615).

**BASE:** es el nivel en el que los movimientos sísmicos son transmitidos a la estructura o el nivel en el que la estructura, considerada como un oscilador, está apoyada.

**CAPACIDAD DE DISIPACIÓN DE ENERGÍA:** es la capacidad que tiene un sistema estructural, un elemento estructural, o una sección de un elemento estructural, de trabajar dentro del rango inelástico de respuesta sin perder su resistencia. Se cuantifica por medio de la energía de deformación que el sistema, elemento o sección es capaz de disipar en ciclos histeréticos consecutivos. Cuando hace referencia al sistema de resistencia sísmica de la edificación como un todo, se define por medio del coeficiente de capacidad de

disipación de energía básico  $R_o$ , el cual después se afecta debido a irregularidades de la estructura, para obtener el coeficiente de disipación de energía  $R$  ( $R = \phi_a \phi_p R_o$ ). El grado de capacidad de disipación de energía se clasifica como especial (DES), moderado (DMO) y mínimo (DMI).

**CARGA DE SERVICIO:** la carga muerta mas la carga viva sin estar afectadas por ningún coeficiente de carga.

**CARGA MUERTA:** la constituida por el peso propio de la estructura más los materiales de construcción y demás elementos que vayan a actuar en forma no interrumpida durante la vida útil de la construcción.

**CARGA MAYORADA:** es una carga que se obtiene como el producto de una carga nominal por un coeficiente de carga. Las fuerzas sísmicas correspondientes a las fuerzas mayoradas, pues ya han sido afectadas por el coeficiente de carga, el cual va incluido en la probabilidad de ocurrencia del sismo de diseño.

**CARGA VIVA:** es la carga debida al uso de la estructura, sin incluir la carga muerta, fuerza de viento o sismo.

**CERCHA O ARMADURA ESTRUCTURAL:** ensamblaje de elementos de concreto estructural que trabajan primordialmente bajo cargas axiales.

**CIMENTACIÓN:** conjunto de los elementos estructurales destinados a transmitir las cargas de una estructura al suelo o roca de apoyo.

**COLUMNA:** elemento estructural cuya sollicitación principal es la carga axial de compresión, acompañada o no de momentos flectores, torsión o esfuerzos cortantes y con una relación de longitud a su menor dimensión de la sección de 3 o más. Para efectos de las dimensiones mínimas permitidas para su sección y las relaciones límites entre ellas.

**CONCRETO:** mezcla homogénea de material cementante, agregados inertes y agua, con o sin aditivos.

**CUANTIA:** relación entre el área transversal del refuerzo y el área bruta de la sección considerada.

**CULATA:** parte del muro que configura el espacio entre la cubierta y los dinteles y que remata con la pendiente de la cubierta. También se denomina cuchilla.

**DEFLEXIÓN:** la ordenada de la línea elástica, o deformación transversal del elemento estructural.

**DERIVA:** diferencia entre los desplazamientos o deflexiones horizontales de dos pisos consecutivos.

**DIAFRAGMA:** elemento estructural que reparte las fuerzas inerciales laterales a los elementos verticales del sistema de resistencia sísmica o sea a los muros.

**DIAFRAGMAS ESTRUCTURALES:** son conjuntos de elementos estructurales, tales como las losas de entrepiso o de cubierta, que transmiten las fuerzas inerciales a los elementos del sistema de resistencia sísmica.

**EFFECTOS SISMICOS:** las sollicitaciones de flexión, torsión, fuerzas cortantes, cargas axiales y deformaciones ocasionadas por la acción de un temblor en una estructura cualquiera a los elementos estructurales.

**ENCOFRADOS:** moldes con la forma y las dimensiones de los elementos, estructurales en los cuales se coloca el refuerzo y se vierte el concreto fresco.

**ESPECTRO:** es la colección de valores máximos, ya sea de aceleración, velocidad o desplazamiento, que tienen los sistemas de un grado de libertad durante un sismo.

**ESTRIBO:** elementos que corresponden a una forma de refuerzo transversal, utilizados para resistir esfuerzos cortantes, de torsión y para proveer confinamiento al elemento, consistentes en barras corrugadas barras lisas, alambres o malla electrosoldada, de una o varias ramas, doblados en forma de L. U. C. O rectangular y colocadas perpendicularmente al refuerzo longitudinal o formando un ángulo con él. En elementos que llevan carga de compresión, como en las columnas, el estribo debe abrazar el refuerzo longitudinal para evitar que este falle por pandeo y no puede ser fabricado con alambre o con malla

electrosoldada. En este caso puede ser también una barra continua que se enrolla alrededor del refuerzo longitudinal formando círculos, rectángulos o cualquier otra forma poligonal sin tener esquinas hacia adentro de la sección. Cuando cumple ciertos límites de cuantía volumétrica se denomina refuerzo en espiral.

**FUERZAS SÍSMICAS ESPECIFICADAS:** son las fuerzas sísmicas horizontales correspondientes a la distribución en la altura de la edificación del cortante sísmico en la base.

**FUERZAS MAYORADAS:** son las fuerzas que han sido multiplicadas por sus respectivos coeficientes de carga.

**JUNTA DE CONSTRUCCIÓN:** interrupción de la colocación del concreto, ya sea temporal de construcción, o permanente.

**LOSA:** elemento estructural horizontal o aproximadamente horizontal, macizo o con nervaduras, que trabaja en una o dos direcciones, de espesor pequeño en relación con sus otras dos dimensiones.

**LOSETA DE CONTRAPISO:** es el elemento de concreto con agregado fino menor o igual a 12.5 mm o mortero hecho con arena gruesa, fundido directamente sobre relleno compactado y que hace las veces de piso acabado en el primer nivel.

**MODULO DE ELASTICIDAD:** relación entre el esfuerzo de tracción o de compresión y la deformación unitaria producida por aquel, para esfuerzos inferiores al límite proporcional del material.

**MURO DE CARGA:** es un muro estructural, continuo hasta la cimentación, que soporta principalmente cargas verticales.

**MURO ESTRUCTURAL:** es un muro, de carga o no, que se diseña para resistir fuerzas horizontales, de sismo o de viento, paralelas al plano del muro.

**MUROS CONFINADOS:** son muros de mampostería enmarcados por vigas y columnas de amarre.

**PAÑETE:** mortero de acabado para la superficie de un muro. También se denomina mortero de alisado, revoque, etc.

**PARAPETO:** es el amarre del muro por encima de la cubierta.

**PORTICO:** conjunto estructural constituido por vigas y columnas unidas rígidamente.

**RECEBO:** material granular seleccionado de relleno, que se coloca entre el suelo natural y el contrapiso. Este material debe ser compactado en forma adecuada.

**REFUERZO:** acero en una de las tres formas siguientes, colocado para absorber esfuerzos de tracción, de compresión, de corte o de torsión en conjunto con el concreto:

- a. Grupo de barras de acero corrugado que cumple las normas NTC 2289 (ASTM A706) O NTC 248 (ASTM A615) o barras lisas que cumple la norma NTC 161 (ASTM A615), de forma recta, dobladas o sin ganchos, o en forma de estribos.
- b. Mallas electrosoldadas
- c. Alambres o cables de alta resistencia destinados principalmente al concreto preesforzado.

**RIOSTRA:** es un elemento de un diafragma estructural que se utiliza para proveer continuidad alrededor de una abertura en el diafragma.

**TRABA:** intersección continua y traslapada de dos muros.

**VIGA DE AMARRE:** es un elemento de concreto reforzado de no menos de 150 mm de altura que sirve para amarrar diferentes niveles los muros de una edificación. La viga de amarre puede estar embebida dentro de la losa de entrepiso cuando ésta es de concreto reforzado, y en este caso puede tener el mismo espesor del entrepiso.

**VIGUETA O NERVADURA:** elemento estructural que forma parte de una losa nervada, el cual trabaja principalmente a flexión.

