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Facultad de Arquitectura e Ingenierías Civil y del Ambiente

Escuela Profesional de Ingeniería Civil

Evaluación de respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual bajo el efecto bidireccional y ángulo de incidencia sísmica en la ciudad de Arequipa

Tesis presentada por:

Aroquipa Mestas, Anthony Kevin

ORCID: 0009-0007-7821-5529

Rojas Chura, Brian Airton

ORCID: 0009-0002-0450-6300

para optar el Título Profesional de Ingeniero Civil

Asesor:

Mg. Rosas Espinoza, Jorge

ORCID: 0000-0003-3583-6812

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Evaluación de respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual bajo el efecto bidireccional y ángulo de incidencia sísmica en la ciudad

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DEDICATORIA

Dedico este trabajo principalmente a Dios por guiar mis pasos, darme fortaleza en los momentos difíciles y permitirme culminar esta etapa de mi vida. Y a mis padres, por su amor incondicional, su sacrificio permanente y su apoyo constante, que hicieron posible alcanzar este objetivo y los cuales fueron la base de mi formación profesional y personal.

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RESUMEN

En el presente trabajo de investigación se plantea analizar respuestas lineales en edificaciones de concreto armado con sistema dual bajo solicitaciones sísmicas. Debido al conocimiento previo de investigaciones realizadas con respecto al tema del análisis bidireccional y el efecto que puede tener en estructuras principalmente en aquellas que presentan irregularidad en planta y altura, se busca que en la norma peruana de diseño sismorresistente se consideré el efecto bidireccional y ángulo de incidencia; ya que como es sabido, solo se analiza una estructura de forma unidireccional.

Para el desarrollo del trabajo de investigación se plantea el modelamiento de edificaciones con diferentes parámetros que cumplan la norma peruana E.020 (Cargas) y E.030 (Diseño Sismorresistente), las cuales sirven como edificaciones teóricas que tienen variaciones de acuerdo con los parámetros planteados en el trabajo de investigación como rigidez relativa, excentricidades, irregularidades en planta y altura; del mismo modo se usan 8 registros acelerográficos para el análisis de dichos edificios teóricos. La metodología por usar consiste en someter a todos los casos de edificios teóricos al análisis tiempo historia lineal y el análisis modal espectral, para finalmente en base a estadística se hará la comparación de respuestas lineales bajo los efectos bidireccionales y ángulos de incidencia de las edificaciones teóricas frente a los sismos planteados en la investigación.

PALABRAS CLAVE: Sistema dual, ángulo de incidencia sísmica, efecto bidireccional.

ABSTRACT

In this research work we propose to analyze linear responses in reinforced concrete buildings with a dual system under seismic stresses. Due to the previous knowledge of research on the subject of bidirectional analysis and the effect it can have on structures, mainly in those with irregularity in plan and height, the Peruvian standard of seismic-resistant design seeks to consider the bidirectional effect and angle of incidence; since, as is known, only one structure is analyzed in a unidirectional way.

For the development of the research work, the modeling of buildings with different parameters that comply with the Peruvian standard E.020 (Loads), E.030 (Seismic Resistant Design) and E. 060 (Reinforced Concrete) is proposed, which serve as theoretical buildings that have variations according to the parameters proposed in the research work such as relative stiffness, eccentricities, irregularities in plan and height; in the same way, 8 accelerographic records are used for the analysis of these theoretical buildings. The methodology to be used consists of submitting all the cases of theoretical buildings to the linear time-history analysis and the spectral modal analysis, and finally, based on statistics, the comparison of linear responses under the bidirectional effects and angles of incidence of the theoretical buildings against the earthquakes proposed in the research will be made.

KEY WORDS: Dual system, seismic incidence angle, bidirectional effect.

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INTRODUCCION

El territorio peruano se caracteriza por una elevada actividad sísmica como consecuencia de la interacción permanente entre la placa tectónica de Nazca y la placa Sudamericana, fenómeno que ha dado lugar, a lo largo del tiempo, a eventos sísmicos de diversa magnitud y características. Esta condición geodinámica convierte al diseño y análisis sismorresistente en un componente esencial dentro de la ingeniería civil, particularmente en ciudades del sur del país como Arequipa, donde la recurrencia de movimientos telúricos representa una amenaza constante para la seguridad de las edificaciones y la población que las ocupa.

A pesar de los avances alcanzados en materia de normativa y criterios de diseño estructural, los daños observados en edificaciones durante sismos recientes han puesto en evidencia que no todas las respuestas estructurales son adecuadamente capturadas por los procedimientos tradicionales de análisis. En muchos casos, los colapsos parciales o totales de estructuras no se deben exclusivamente a deficiencias constructivas o errores de diseño, sino a la simplificación inherente de los métodos de análisis sísmico empleados, los cuales suelen considerar la acción sísmica aplicada únicamente en las direcciones principales de la edificación, ignorando la naturaleza tridimensional del movimiento sísmico.

La Norma Técnica Peruana E.030 “Diseño Sismorresistente” establece lineamientos claros para el análisis dinámico de edificaciones, incluyendo el uso del análisis modal espectral y, de manera complementaria, el análisis tiempo historia. No obstante, dichos procedimientos se aplican generalmente de forma unidireccional, evaluando de manera independiente las respuestas estructurales en los ejes ortogonales principales. Esta aproximación, si bien resulta práctica y eficiente para fines de diseño, no siempre representa con precisión el

comportamiento real de una estructura sometida a un sismo, ya que la dirección de incidencia de las ondas sísmicas puede variar de forma arbitraria durante un evento sísmico.

Diversos estudios han demostrado que la consideración del efecto bidireccional del sismo y la variación del ángulo de incidencia sísmica puede generar incrementos significativos en la demanda estructural, particularmente en edificaciones que presentan irregularidades geométricas en planta o en altura, excentricidades entre el centro de masa y el centro de rigidez, o diferencias notables de rigidez lateral entre las direcciones principales. En estas condiciones, las máximas respuestas en términos de desplazamientos, derivas, fuerzas internas y cortantes basales no necesariamente se producen cuando el sismo actúa alineado con los ejes estructurales, sino en direcciones oblicuas que pueden representar estados críticos no contemplados en el diseño convencional.

Dentro de este marco, los sistemas estructurales de concreto armado con sistema dual —compuestos por pórticos resistentes a momento y muros estructurales— constituyen una solución ampliamente utilizada en edificaciones de uso común, tales como viviendas multifamiliares, edificios administrativos y comerciales. Este sistema combina la ductilidad propia de los pórticos con la elevada rigidez y capacidad de disipación de energía de los muros, ofreciendo un comportamiento sísmico favorable frente a solicitaciones severas. Sin embargo, a pesar de su uso extendido, el comportamiento dinámico de edificaciones con sistema dual bajo la acción simultánea de solicitaciones sísmicas bidireccionales y distintos ángulos de incidencia no ha sido suficientemente estudiado en el contexto normativo peruano.

La ciudad de Arequipa, debido a su ubicación geográfica y a las características de su peligrosidad sísmica, representa un escenario particularmente relevante para el análisis de este tipo de problemáticas. La presencia de suelos con diferentes condiciones geotécnicas, sumada al crecimiento urbano acelerado y a la proliferación de edificaciones de mediana y gran altura,

hace indispensable evaluar con mayor precisión la respuesta sísmica de las estructuras, considerando escenarios de carga más realistas y representativos de los eventos sísmicos que podrían afectar la región.

En este contexto, la presente investigación tiene como finalidad analizar y comparar las respuestas sísmicas obtenidas mediante el análisis tiempo historia lineal y el análisis modal espectral en edificaciones de concreto armado con sistema dual, incorporando explícitamente el efecto bidireccional del sismo y la variación del ángulo de incidencia sísmica. Para ello, se desarrollan modelos estructurales teóricos que cumplen con los requisitos establecidos en la normativa vigente, los cuales presentan variaciones en parámetros clave como la relación de rigidez lateral, las excentricidades y la presencia de irregularidades en planta y en altura.

Estos modelos son sometidos a un conjunto de registros acelerográficos representativos de la actividad sísmica del Perú, los cuales son debidamente corregidos y escalados en función del espectro de diseño correspondiente a la ciudad de Arequipa. A través de la aplicación sistemática de ángulos de incidencia sísmica variables, se busca identificar las condiciones bajo las cuales se producen las respuestas estructurales más críticas y evaluar el grado de diferencia existente entre los resultados obtenidos por ambos métodos de análisis dinámico.

Finalmente, los resultados de la investigación pretenden contribuir al entendimiento del comportamiento sísmico de edificaciones con sistema dual bajo condiciones de carga más realistas, así como proporcionar información técnica que sirva de base para futuras investigaciones y para la eventual mejora de los criterios de análisis y diseño establecidos en la normativa sismorresistente peruana. De este modo, se busca aportar al desarrollo de edificaciones más seguras, resilientes y acordes con la realidad sísmica del país.

Para el desarrollo del presente trabajo se divide en seis capítulos, los cuales se detallan de la siguiente manera, para el Capítulo I: Se describe en general el planteamiento del

problema, se detalla el problema de la investigación, justificación, objetivos, alcance, delimitación e hipótesis de la investigación.

Para el Capítulo II: Fundamentos Teóricos, donde se resumen las investigaciones nacionales e internacionales que guardan relación con la presente investigación.

Luego, el Capítulo III: Marco Teórico, se define los principales conceptos de cada uno de los componentes necesarios para el desarrollo de la presente investigación.

Además, el Capítulo IV: Marco Legal, se enumera las normativas vigentes que son necesarias para el desarrollo de la investigación.

En el Capítulo V: Metodología Propuesta, se describe el tipo de investigación, el diseño de investigación, métodos de investigación y variables. En este punto se detalla los modelos teóricos, los registros sísmicos usados y los resultados de los análisis modal espectral y tiempo historia.

En el capítulo VI: Análisis y Resultados, en este capítulo se desarrolla el análisis comparativo de los resultados de cada uno de los análisis y las relaciones que guardan dichos resultados con los parámetros variados en los modelos teóricos.

Por último, se desarrolla las Conclusiones, Recomendaciones, Referencias Bibliográficas y anexos.

CAPITULO I

1 PLANTEAMIENTO DEL PROBLEMA:

1.1 Problemática de la Investigación

Hasta la actualidad se puede ver que para analizar sísmicamente a una edificación se ha tomado lo indicado en la norma E.030, que propone un análisis y diseño estructural independiente tomando solo los ejes principales X o Y sin considerar los efectos del ángulo de incidencia o un análisis bidireccional.

Según (Sobrado Ortega & Yaranga Huamaní, R., 2020), a lo largo de la historia acontecieron un sinfín de eventos sísmicos que ocasionaron muchas pérdidas económicas y humanas, además mencionan que en algunas ocasiones el colapso de estructuras como edificios no fue debido a un mal diseño o por problemas entre la interacción suelo-estructura, sino que se percibieron mayores respuestas sísmicas en direcciones diferentes a las de los ejes principales.

Debido al comportamiento aleatorio de un sismo es que se debe prever que una edificación pueda recibir mayores afectaciones provenientes de direcciones variables determinadas por un ángulo de incidencia, principalmente en aquellas estructuras que puedan presentar irregularidades. De acuerdo con lo mencionado en la investigación de (Sobrado Ortega & Yaranga Huamaní, R., 2020), al realizar un análisis unidireccional no se determina en su totalidad la respuesta máxima posible que recibirá la edificación y este aumento en la respuesta sísmica considerando un análisis bidireccional se ve reflejado principalmente en casos que presenten irregularidades dentro de su configuración, llegando a variar entre 50% y 72% para casos de esquina entrante y piso blando.

Además, con la investigación de (Ceballos Carter, 2006), se confirma que en una estructura asimétrica en su configuración pueden generarse respuestas mayores con ángulos críticos variables diferentes a los de los ejes principales a diferencia de una estructura regular, sin importar el tipo de solicitación (unidireccional o bidireccional).

Pero la presencia de irregularidades no es la única razón por la cual se puede visualizar este incremento en la respuesta, ya que según (Moscoso Alcantara & Quiroz Torres, 2018), la diferencia entre rigideces en las direcciones principales y la presencia de excentricidad en planta muestra que el ángulo de incidencia también afecta en la amplificación de la respuesta sísmica en edificaciones que son regulares.

El desarrollo de esta investigación tiene como punto de partida el análisis de edificaciones teóricas mediante un sistema estructural de concreto armado con sistema dual, se opta por este tipo de edificaciones debido a que este tipo de estructuras se encuentran frecuentemente en edificaciones de viviendas multifamiliares, centros comerciales, entre otros. Por lo que, al momento de analizar las estructuras ante un sismo de variada magnitud bajo el efecto de bidireccionalidad y ángulo de incidencia, se busca evaluar y considerar dicho efecto al momento de análisis y diseño de edificaciones reales.

De acuerdo con la norma peruana E.030, donde se ve que no se toma en cuenta una solución o un alcance a este problema del ángulo de incidencia, el cual debería ser considerado puesto que como ya se mencionó los colapsos no siempre se dan por un mal proceso constructivo sino porque el diseño no considero la máxima respuesta sísmica por efecto de sismos de mayor magnitud.

1.2 Pregunta de la Investigación

Considerando todo lo escrito anteriormente, se plantea la siguiente pregunta: ¿Cuál es la relación de Respuestas del Análisis Tiempo Historia y Modal Espectral para Edificaciones de Concreto Armado con Sistema Dual bajo el Efecto Bidireccional y Ángulo de Incidencia Sísmica en la Ciudad de Arequipa?

1.3 Justificación de la Investigación

La finalidad de la presente investigación consiste en realizar una evaluación de respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual bajo el efecto bidireccional y ángulo de incidencia sísmica en la ciudad de Arequipa.

1.3.1 Justificación Social:

Esta investigación se justifica de forma social debido a que, en el Perú se pronostica el acontecimiento de un movimiento sísmico de gran magnitud. Este pronóstico se basa principalmente en que el Perú se encuentra en el Círculo de Fuego del Océano Pacífico donde se producen movimientos a gran velocidad de las placas tectónicas provocando en esta zona una acumulación de tensiones que deben liberarse, por lo tanto, es frecuente la presencia de sismos de baja a mediana intensidad.

Teniendo en cuenta que la ciudad de Arequipa se encuentra en un país sísmico donde ya se tienen antecedentes de movimientos telúricos de magnitudes bajas y altas. Estos sismos son los causantes tanto de pérdidas materiales como también de vidas humanas, por ello se debe fomentar en las personas una mentalidad de comprensión sobre lo peligroso que puede llegar a ser un sismo. Y, por ende, se debe considerar este análisis bidireccional y ángulo de incidencia sísmica para edificaciones.

1.3.2 Justificación Ambiental- Ecológica:

La ciudad de Arequipa, situada en una zona altamente sísmica del sur del Perú, enfrenta constantes amenazas sísmicas debido a su proximidad con la zona de subducción entre las placas de Nazca y Sudamericana. Esta condición geológica hace indispensable el desarrollo de estructuras que no solo sean seguras, sino también resilientes desde una perspectiva ambiental y ecológica.

La presente investigación, enfocada en el análisis sísmico bidireccional en estructuras con sistema dual (columnas y placas), busca se considere dicho análisis para que minimicen los impactos negativos frente a eventos sísmicos. Desde una perspectiva ecológica, esto se traduce en la reducción del consumo de recursos naturales, la disminución de residuos de construcción y demolición post-sismo, y el uso eficiente de materiales, gracias a un diseño estructural optimizado que considera la respuesta dinámica real de las edificaciones en ambas direcciones.

La elección de un sistema dual permite mejorar la disipación de energía sísmica, reduciendo así los daños estructurales y no estructurales en un evento sísmico. Esta mejora no solo incrementa la seguridad de los ocupantes, sino que también prolonga la vida útil de las edificaciones, evitando su pronta demolición y la necesidad de reconstrucción, que conllevan altos costos ambientales en términos de emisiones de CO_2, extracción de materiales y consumo energético.

Además, en el contexto de Arequipa, donde existen edificaciones históricas y un entorno urbano en crecimiento, diseñar estructuras modernas y eficientes desde el punto de vista sísmico contribuye a una planificación urbana sostenible, respetuosa con el entorno natural y cultural. Al considerar el análisis bidireccional, se mejora significativamente la capacidad de la estructura para resistir movimientos sísmicos complejos, característicos de la región, lo que minimiza riesgos de colapsos y desastres ambientales secundarios, como incendios o contaminación por escombros.

1.3.3 Justificación Tecnológica:

El análisis bidireccional no es tomado en cuenta en la norma peruana E.030 “Diseño Sismorresistente”, por lo que se debe considerar a la hora de realizar el diseño y/o reforzamiento

de edificaciones para que soporten de la mejor manera un sismo, principalmente para aquellas estructuras que poseen una configuración irregular en planta y/o altura.

Existe hasta la actualidad algunas investigaciones sobre el tema de la bidireccionalidad que contemplan que existe un ángulo de incidencia crítico en el cual es mayor la respuesta sísmica y al no ser considerado, es que se pueden producir daños estructurales debido a movimientos sísmicos de gran magnitud.

En base a la investigación de (Florez Ttito, 2012) en la cual se enuncia que este tipo de análisis bidireccional es necesario porque se podría conocer mejor la demanda real de las edificaciones frente a un sismo.

Por lo tanto, la presente investigación tiene como fin realizar el mismo análisis bidireccional para poder evaluar respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual bajo el efecto bidireccional y ángulo de incidencia sísmica en la ciudad de Arequipa.

1.4 Aporte

Existen algunas investigaciones con respecto al efecto del ángulo de incidencia sísmica en edificaciones; sin embargo, siempre se centran en realizar estudios considerando sistemas estructurales de tipo aporticado y/o muros estructurales dejando de lado a sistemas estructurales como el sistema dual de concreto armado, que será analizada en la presente investigación.

Por lo cual, se desea encontrar respuestas diferentes al que realizaron en otras investigaciones.

1.5 Objetivos

1.5.1 Objetivo General:

Evaluar las Respuestas del Análisis Tiempo Historia y Modal Espectral para Edificaciones de Concreto Armado con Sistema Dual bajo el Efecto Bidireccional y Ángulo de Incidencia Sísmica en la Ciudad de Arequipa

1.5.2 Objetivos Específicos:

- Generar un grupo de modelos de edificaciones de 4, 8 y 12 pisos con sistema estructural dual en función a parámetros (relación de rigidez, excentricidades, irregularidad en planta y altura).
- Seleccionar, corregir y escalar ocho registros acelerográficos de sismos ocurridos cerca de la ciudad de Arequipa en base al espectro de diseño que indica la norma peruana E. 030 “Diseño Sismorresistente”.
- Determinar la respuesta sísmica que tendrá cada uno de los casos de edificaciones teóricas luego de realizado el análisis modal espectral considerando parámetro de zonificación Z_3, condición suelo S_2 y factor de uso de edificaciones comunes.
- Determinar la respuesta sísmica que tendrá cada uno de los casos de edificaciones teóricas luego de realizado el análisis tiempo- historia lineal aplicando los ángulos de incidencia con incremento de cada 10° desde 0° a 350°.
- Evaluar comparando estadísticamente los resultados obtenidos del análisis tiempo-historia lineal con los resultados del análisis modal espectral.

1.6 Alcances y Delimitación

1.6.1 Alcances

Para realizar la investigación se plantea realizar modelamientos estructurales teóricos regulares variando las rigideces relativas y las excentricidades y otros modelos teóricos irregulares en planta y altura.

Se utilizará la metodología del análisis tiempo-historia lineal para determinar la respuesta sísmica con los diferentes ángulos de incidencia, tomando en cuenta ocho registros acelerográficos de sismos producidos tanto en la ciudad de Arequipa como en todo el Perú. También se realizará el análisis modal espectral para poder realizar la evaluación.

1.6.2 Delimitación

Para los modelamientos estructurales teóricos se tomará en cuenta los requisitos de rigidez, resistencia y ductilidad acorde a la norma actual referente a diseño sismorresistente (E030), en la cual se mencionan algunas restricciones al tratarse de desplazamientos máximos.

En el análisis modal espectral se realizará especificando los siguientes parámetros para la elaboración del espectro de diseño: parámetro de zonificación Z_3, condición suelo S_2 y factor de uso de edificaciones comunes U=1.

Dentro del análisis tiempo-historia lineal se trabajará con una variación de los ángulos de incidencia cada 10° entre 0° y 350°.

El cálculo se limitará a evaluar las respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual bajo el efecto bidireccional y ángulo de incidencia sísmica.

1.7 Hipótesis

Para el presente desarrollo de la investigación se plantea una hipótesis que consideré el análisis bidireccional que muestre respuestas sísmicas más reales que tomen en cuenta los efectos de un ángulo de incidencia del sismo.

Por la tanto es probable que se pueda evaluar las respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual bajo el efecto bidireccional y ángulo de incidencia sísmica en la ciudad de Arequipa.

CAPITULO II

2 FUNDAMENTO TEÓRICO

2.1 Antecedentes de la Investigación

2.1.1 Investigaciones Nacionales:

En la tesis del ingeniero (Lopez Saucedo, 2018) para optar el grado de Magíster en Ingeniería Civil, cuyo tema de investigación es **"Efecto del ángulo de incidencia sísmica en la respuesta no-lineal de edificaciones de concreto armado con sistema dual"**, en la cual indica que se debe tomar en cuenta un análisis de diseño que considere los efectos del ángulo de incidencia porque en varios países donde existe una alta sismicidad se producen daños estructurales provocados por no haber sido evaluados considerando que la máxima respuesta no está presente en los ejes principales de la estructura sino en un ángulo crítico. Para esto el análisis tiempo-historia fue fundamental porque pudo comparar las respuestas sísmicas en condiciones donde se presentaba el ángulo crítico de incidencia y la máxima amplificación. En donde el autor planteo modelos con una configuración similar en cinco niveles, donde uso pórticos y muros de corte como se muestra en la Figura 2.1.1, donde varia las dimensiones como E1, E2, lon1, long2, long3, long4, además de las dimensiones de columnas (C1, C2, C3, C4) y muros de corte (L1, L2). Donde en los resultados se mostró que existe un aumento de la respuesta llegando a ser aproximadamente 50% mayor; por ello si se cumple con ciertos parámetros se podría obtener una distribución de fuerza más uniforme y con menor demanda en ductilidad en los elementos centrales.

Según la investigación de (Moscoso Alcantara & Quiroz Torres, 2018) para optar el grado de Magíster en Ingeniería Civil, cuyo tema es **"Efecto de la bidireccionalidad y ángulo de incidencia del sismo en la respuesta de estructuras de concreto armado"**, donde se recalca que no existe en la norma peruana para diseño sismorresistente un método que tome en cuenta la bidireccionalidad y el ángulo de incidencia de un sismo, para esto analizó 11

edificaciones que tenían una diferencia en la relación de rigidez lateral entre X e Y al igual que las excentricidades en ambas direcciones X e Y como se muestra en la Figura 2.1.2. El análisis requirió de un total de 20 registros acelerográficos y con variaciones de ángulo de incidencia cada 10 grados empleando el análisis tiempo-historia lineal al igual que el análisis modal espectral y llegó a obtener reglas para determinar factores de amplificación que si consideren el ángulo de incidencia dentro del diseño de estructuras y que debería ser incorporada a la norma peruana E.030.

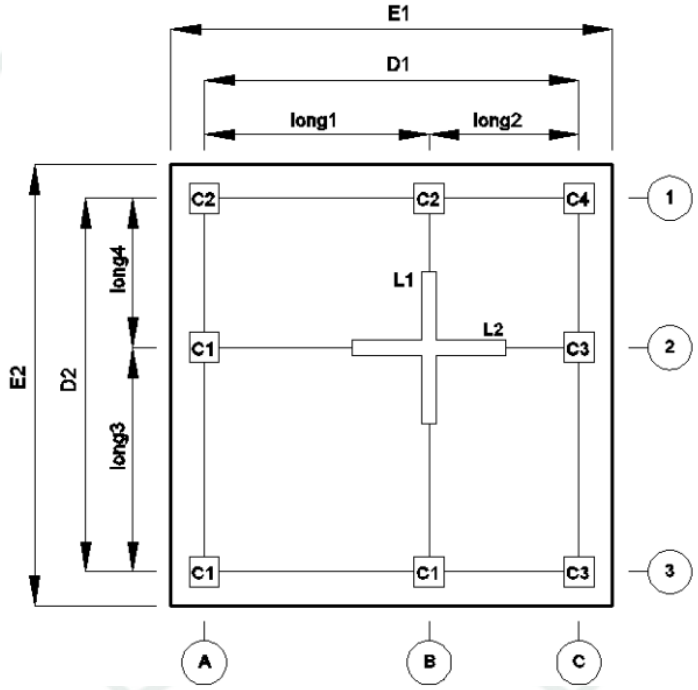


Figura 2.1.1. Modelo propuesto vista en planta. (Lopez Saucedo, 2018)

Además, en la investigación de (Sobrado Ortega & Yaranga Huamaní, R., 2020) para optar el grado de bachiller en Ingeniería Civil, cuyo tema es **"Análisis de la Bidireccionalidad Sísmica en la Respuesta de Estructuras de Concreto Armado con Irregularidades de Esquina Entrante y de Piso Blando",** donde mencionan que el sismo posee un comportamiento aleatorio que es contundente si se habla de edificaciones con configuración irregular, por ende en la investigación analizaron dos irregularidades conocidas como esquina entrante y piso blando; respectivamente se analizaron ambas estructuras con variaciones de

ángulo de incidencia de 10° empleando la misma metodología del análisis tiempo-historia lineal y determinando unos incrementos en la respuesta sísmicas de las edificaciones estudiadas con oscilaciones entre 50% hasta del 72%.

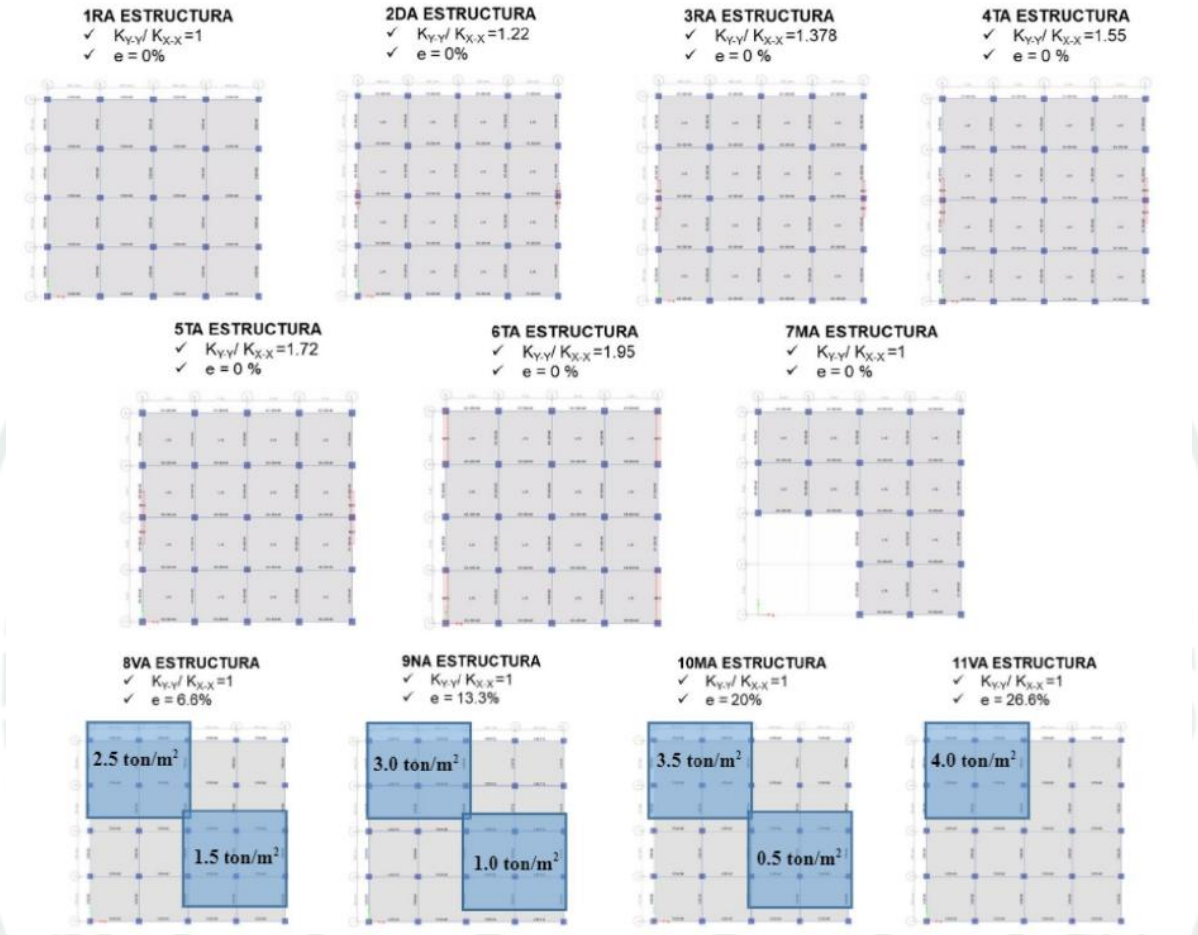


Figura 2.1.2. Modelos propuestos vista en planta (Moscoso Alcántara, 2018)

2.1.2 Investigaciones Internacionales:

En el artículo presentado por (Skoulidou & Romão, X., 2017), cuyo tema es **"Análisis de la orientación crítica de la carga sísmica en edificios 3D: resultados preliminares para fuerzas laterales constantes"**, al igual como se menciona en otras investigaciones el tema del ángulo de incidencia es bastante importante puesto que según este artículo es un factor usado para realizar el análisis del comportamiento 3D de edificios. Considerando ciertas características estructurales planteó determinar una expresión analítica "(…) para definir el

ángulo crítico para el caso de edificios de una sola planta y una categoría especial de edificios de varios pisos bajo fuerzas laterales constantes asumiendo un comportamiento elástico lineal de las estructuras" (Skoulidou & Romão, X., 2017). Considerando que en otras investigaciones se obtuvieron ángulos críticos diferentes; para realizar el análisis propuso un enfoque que examine los desplazamientos de piso, el cual consideró adecuado puesto que se podía describir el rendimiento de la estructura. Previamente se consideraron para el análisis los casos de estudio de una planta y otra de 3 plantas, a lo que se concluyó que la aplicabilidad de la propuesta es sencilla puesto que depende solo de las características geométricas y de los materiales e independiente de fuerzas estáticas externas, además como ventaja extra la metodología propuesta permite la consideración de excentricidades accidentales, por lo tanto gracias a esta metodología pudo determinar directamente el ángulo de incidencia crítico, pero al igual que cualquier metodología su aplicación se encuentra limitada por la existencia de un eje elástico real y fuerzas laterales constantes. Además, para resultados precisos la metodología planteada conduce a estructuras con periodos principales en las direcciones principales.

En el artículo presentado por (Cantagallo, Camata, G., & Spacone, E., 2015), cuyo tema es **"Influencia de los métodos de selección del movimiento del suelo en los efectos de direccionalidad sísmica"**, en el cual el estudio pretende evaluar "(…) el impacto del ángulo de incidencia del terremoto en la demanda estructural y la influencia de la selección del movimiento del suelo y los métodos de escala en los efectos de direccionalidad sísmica" (Cantagallo, Camata, G., & Spacone, E., 2015). Para la realización de la investigación evaluaron 4 estructuras de hormigón armado considerando registros escalonados y no escalonados diferentes a lo largo de ángulos que varían cada 22.5° entre los 0° y los 180°, todo implementando el análisis tiempo historia no lineal, donde obtuvieron resultados demostraban que aplicando los registros acelerográficos en los ejes principales, estos subestiman la predicción de la demanda estructural principalmente en planta con irregularidad geométrica,

pero usando registros escalados compatibles con el espectro, se tiene efectos menores, no obstante en ambos casos es necesario considerar primeramente un análisis pushover para determinar la dirección estructural más débil y después el análisis tiempo historia no lineal para los diferentes ángulos de incidencia. Como dato adicional recalcan que, para tener respuestas más realistas, es importante controlar los factores de escala usados en los registros compatibles con el registro.

En la investigación realizada por (Valenzuela Beltrán, Reyes Salazar, A., De León Escobedo, D., Bojórquez Mora, E., & López Barraza, A., 2015), presentada en la Revista de Ingeniería Sísmica No. 92 65-94 en el 2015 cuyo título es **"Reglas de combinación de los efectos de las tres componentes de terremotos y respuesta crítica"**, en la cual analizaron las reglas de combinación del SRSS y del 30% para evaluar su precisión, además consideraron el análisis de varios ángulos de incidencia a modo de obtener la orientación crítica, para lograr este objetivo consideraron modelos estructurales que sean representantes de edificios de pequeña a mediana altura; obteniendo resultados donde "(…) las reglas subestiman la carga axial en columnas, pero sobreestiman razonablemente los cortantes de entrepiso" (Valenzuela Beltrán, Reyes Salazar, A., De León Escobedo, D., Bojórquez Mora, E., & López Barraza, A., 2015). Demostrando además que estas reglas de combinación son bastante conservadores y mucho más precisas cuando los modelos se analizan por las tres componentes. Las variaciones encontradas fueron de 1.3 y 1.1 veces mayor que la respuesta sísmica en los ejes principales tanto para carga axial como para cortante de entrepiso respectivamente.

CAPITULO III

3 MARCO TEÓRICO

3.1 Modelamiento Estructural

Dentro del modelamiento estructural se realiza diferentes tipos de edificaciones teóricas con un sistema dual de concreto armado, donde se tiene modelos similares variando los parámetros como la excentricidad y la rigidez relativa, otros modelos que presentan irregularidades en planta y altura.

3.1.1 Configuración en Planta

Dentro de la investigación se consideran modelos estructurales los cuales se usarán conjuntamente con los parámetros (excentricidad, rigidez relativa, rigidez torsional, etc), y para ello se considera modelos con planta de configuración cuadrada y/o rectangular como se muestra en la Figura 3.1.1, además de modelos que presenten irregularidades en planta y altura.

Cada uno de los modelos se considera una losa maciza para permitir la transmisión de fuerzas a los muros y columnas de manera más uniforme. Con respecto a las columnas, vigas y los muros de concreto armado se seguirán las pautas de requisitos de estructuración que se mencionan en la norma de E.060 “Concreto Armado” y del mismo modo se realiza todas las verificaciones correspondientes de la norma de E.030 “Diseño Sismorresistente” para asegurar que los modelos estructurales nos proporcionarán resultados más exactos.

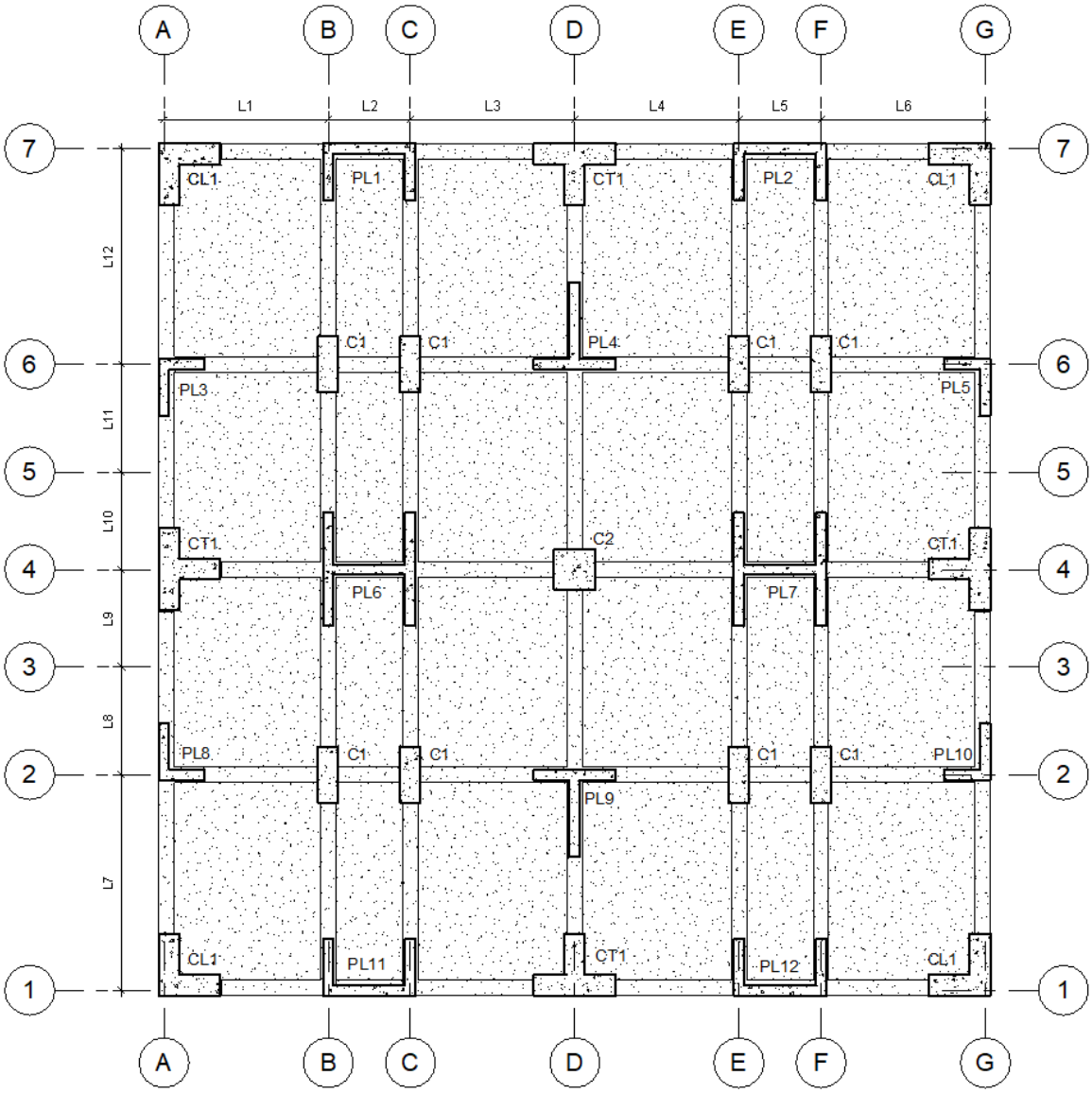


Figura 3.1.1. Configuración en planta para modelos teóricos (Elaboración propia)

3.1.2 Configuración en Altura

Con respecto a la configuración en altura tenemos que cada nivel será de planta típica y serán planteadas con un promedio de 4, 8 y 12 pisos para cada una de las configuraciones que se mencionan en el apartado anterior. Además, se especifica que cada piso cuente con una altura típica para todos los niveles de 2.8 metros como se muestra en la Figura 3.1.2.

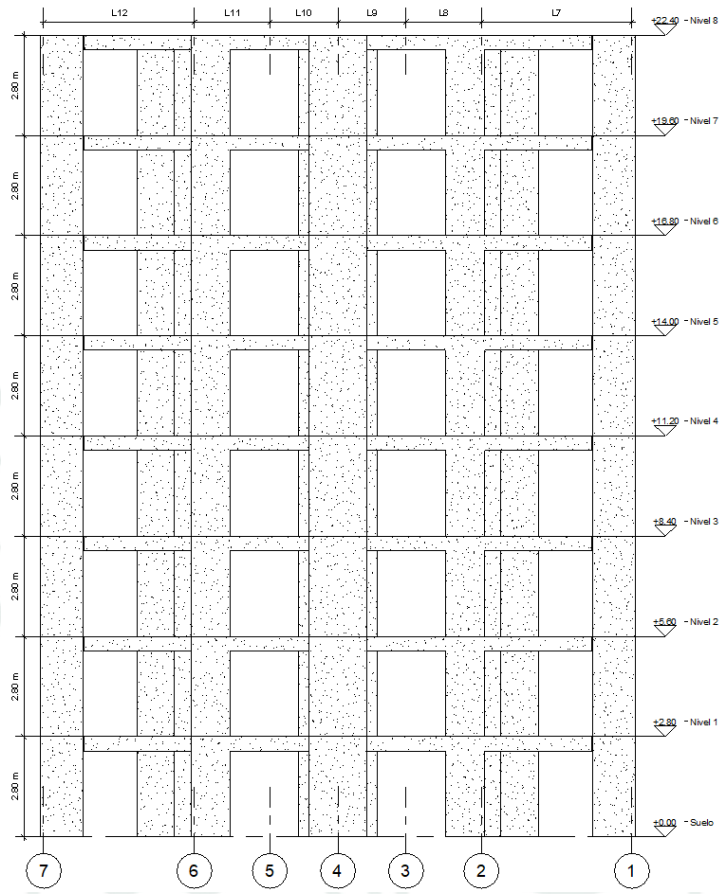


Figura 3.1.2. Configuración en altura para modelos teóricos (Elaboración propia)

3.2 Parámetros Elásticos del Sistema

Para obtener una cierta diferencia en el análisis en las edificaciones de planta regular que fueron inicialmente mencionadas, se varía los parámetros como la excentricidad y la razón de rigidez lateral con los cuales se podrá determinar los diferentes casos de estudio que se analizarán.

3.2.1 Periodo Fundamental del Sistema (T)

Según se menciona en la investigación de (Huapaya Huertas, 2017), el periodo fundamental de vibración es el mayor periodo que determina el tiempo que toma la oscilación de un ciclo, además este periodo aparecerá debido a que el movimiento de suelo (sismo) generará desplazamiento en la estructura el cual se dará con un determinado ritmo. Para tal

motivo se usa la ecuación de movimiento de vibración libre sin amortiguamiento o vibración armónica simple que se muestra a continuación:

$$[K][\emptyset] - \omega^2[M][\emptyset] = 0 \qquad Ec.(3.2.1.1)$$

Esta ecuación es conocida por el problema de eigen valores y eigen vectores, para determinar el periodo fundamental de la estructura, se determina con la siguiente ecuación:

$$T = \frac{2\pi}{\omega} = 2\pi\sqrt{\frac{M}{K}} \qquad Ec.(3.2.1.2)$$

Según la norma E.030, el periodo fundamental de vibración se estima con la siguiente expresión:

$$T = \frac{h_n}{C_T} \qquad Ec.(3.2.1.3)$$

3.2.2 Modos de Vibración

Los modos de vibración son las formas distintas de movimiento o vibración que un edificio puede mostrar bajo un sismo. Según (Agnew, Alfè, D., Allen, R.M., & Anderson, J.G., 2015) los modos de vibración se pueden expresar como una cadena vertical lineal de puntos iguales con masa “m”, separados simétricamente por una distancia “L” y unidos por resortes de Hooke, en los que la relación entre la fuerza lateral “F” y el desplazamiento “u” por dicha fuerza da una constante “k” que sería la rigidez de la cadena, se expresa como:

$$F = k * U \qquad Ec.(3.2.2)$$

Por otro parte se puede determinar los diferentes modos de vibración a partir de la Ec. 3.2.1.1, al resolver el problema de eigen valores y eigen vectores, se determinar la matriz modal “ϕ” que representa los diferentes modos de vibración.

3.2.3 Relación de Rigideces Laterales (Ky/Kx)

Esta razón de Ky/Kx se da al dividir la rigidez en la dirección vertical “X” entre la rigidez de la dirección horizontal “Y”. A su vez ambas rigideces han sido calculadas debido a las fuerzas horizontales considerando que se presenta traslación pura, lo que significa que el centro de masa y el centro de rigidez se encuentran en el mismo punto por lo tanto no se produce ningún giro.

Como ya se sabe la obtención de esta rigidez lateral es calculada simplemente realizando una división entre la fuerza cortante basal de la edificación y el desplazamiento del último nivel.

3.2.4 Excentricidades (ex, ey)

En lo que respecta a las excentricidades se han calculado para la dirección (X), esta se determina considerando la diferencia que existe entre el centro de masa con respecto al centro de rigidez o también la excentricidad se definirá como la división entre el momento generado y la fuerza perpendicular a la dirección de la excentricidad a determinar.

Según la norma E.030 del se toma adicionalmente la excentricidad accidental para determinar la excentricidad reglamentaria.

$$er = e \pm ea \qquad Ec.\ (3.2.4)$$

3.3 Materiales de Construcción

3.3.1 Concreto (F’c = 210 Kg/cm2)

Dentro de los elementos que participan en un muro de concreto armado con sistema dual, se tiene que los elementos de confinamiento que rodean el muro tanto vigas como columnas están compuestos por concreto que según la norma considera que la mínima resistencia para este concreto debe ser de 175 kg/cm2, pero considerando un punto de vista de seguridad se considerará concreto 210 kg/cm2.

3.3.2 Acero (Fy = 4200 Kg/cm2)

Los elementos de confinamiento están compuestos tanto de concreto como acero corrugado de grado 60 con una resistencia a la fluencia de 4200 kg/cm2, la cual servirá para el refuerzo longitudinal o transversal de las vigas o columnas, al igual que el refuerzo horizontal en el muro si es que se requiere.

3.4 Elementos Estructurales

3.4.1 Muros de Concreto

Las dimensiones de los muros de concreto serán predimensionadas de acuerdo a las indicaciones de la normativa vigente. Se plantea que todos los muros sean considerados con un espesor de 20 cm, que usará concreto 210 kg/cm2.

3.4.2 Columna

Las dimensiones de las columnas serán predimensionadas de acuerdo a las indicaciones de la normativa vigente. Se considera columnas de sección cuadrada, rectangular, tipo “L”, tipo “T”, que usará concreto 210 kg/cm2.

3.4.3 Viga

Con respecto a las vigas se respetará el predimensionamiento establecido en la normativa vigente, para lo cual, se plantea considerar vigas peraltadas de 30 x 40 cm, que usará concreto 210 kg/cm2.

3.4.4 Losa

De acuerdo con lo planteado en la configuración en planta se tendrá una losa maciza de 20 cm de espesor, que usará concreto 210 kg/cm2.

3.5 Solicitaciones Sísmicas

3.5.1 Peligro Sísmico en el Perú

En base a estudios previos se sabe que el Perú se encuentra dentro de una zona de alta sismicidad, por lo que está expuesto a un peligro que puede traer consigo pérdidas tanto materiales como humanas. Dentro de las investigaciones realizadas por (Castillo Aedo & Alva Hurtado, J., 1993), llegan a la conclusión de que si nos basamos en la subducción de Nazca bajo el Continente Sudamericano que producen cambios en la corteza terrestre como consecuencia de una interacción y morfología alcanzada por el aparato andino, los cuales son los principales que afectan la sismicidad en el país.

Dentro de su análisis para evaluar la peligrosidad sísmica se basaron en la teoría de Cornell determinando de este modo que la concentración de aceleraciones es más alta en todo el litoral del Perú y va reduciéndose a medida que se dirige hacia el Este.

La norma peruana de sismorresistencia muestra una fórmula para realizar el cálculo respectivo de las aceleraciones máximas en un cierto lugar, con una probabilidad del 105 en 50 años. Además, se sabe que se tiene diferentes niveles de peligro que dependen desde el tipo de suelo, la importancia de la estructura y la ubicación geográfica de este. Según la investigación sobre la peligrosidad sísmica en la ciudad de Arequipa por (Instituto Geofisico del Perú, 2014), se sabe que se obtuvieron valores de aceleración de 340 a 360 cm/s2, lo que es suficiente para producir daños tanto estructurales como funcionales, además de la posibilidad de generar licuación de suelos. En la siguiente imagen se puede mostrar el peligro sísmico presente en la región sur del Perú.

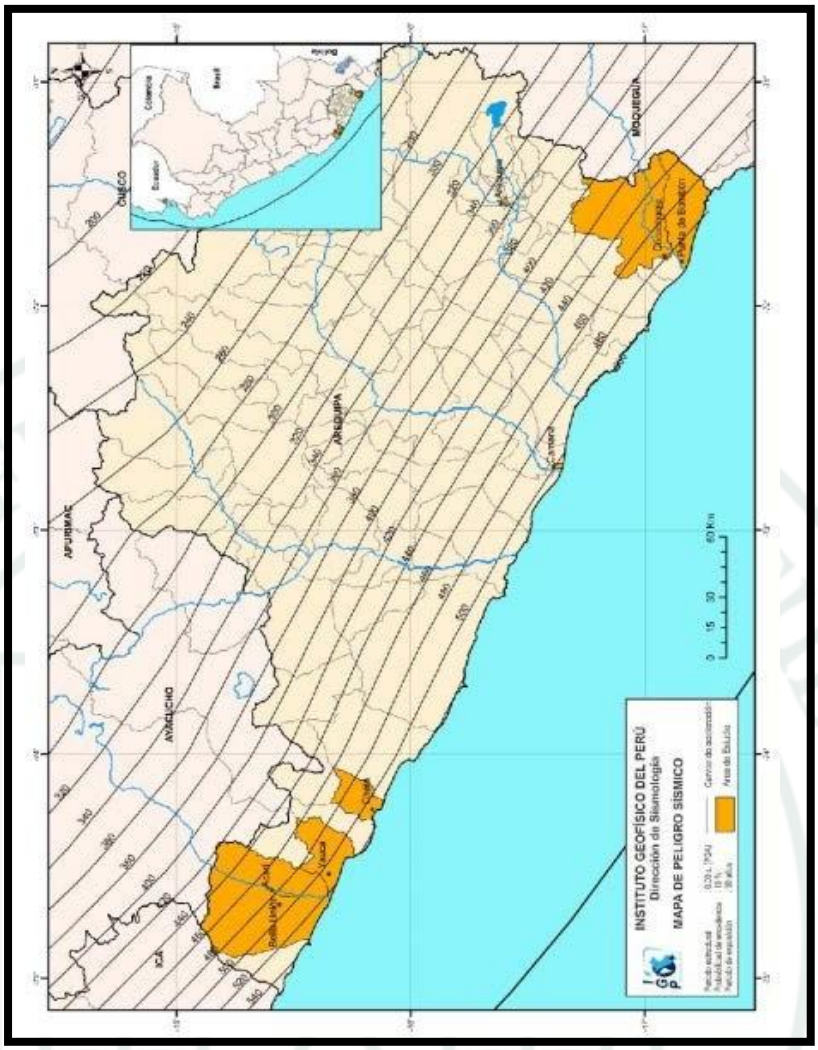


Figura 3.5.1. Peligro sísmico de la región sur del Perú correspondiente a un periodo de retorno de 50 años con el 10% de excedencia (IGP,2014)

3.5.2 Eventos Sísmicos Elegidos

Para la elección de los registros sísmico se usará la base de datos proporcionada por el IGP (Instituto Geofísico del Perú) y el CISMID (Centro Peruano Japonés de Investigaciones Sísmicas y Mitigación de Desastres).

Para tener una mejor variabilidad de los registros se escogerán sismos que no solamente hayan ocurrido en la ciudad de Arequipa o en el Perú en general.

3.6 Registros Acelerográficos

Según (Rascón, Chavez, M., Alonso, & Palencia, 1976) la lectura de acelerogramas se representa un trazo continuo de un registro de puntos, cada punto tiene el tiempo medido desde el inicio del registro en el eje horizontal y la aceleración medida desde la línea neutra en el eje vertical. Esto siempre debe estar marcado al lado de cada sección, eliminando los efectos del movimiento lateral. Hay dos tipos de errores que ocurren al usar acelerómetros:

- Los que ocurren al registrar terremotos, están relacionado con errores en el acelerómetro y la influencia de la estructura en la que está instalado el acelerómetro.
- Los que ocurren al procesar acelerómetros, ocurre al digitalizar el acelerógrafo y se corrige la línea de base.

3.6.1 Procedimiento de Corrección

3.6.1.1 Corrección por Línea Base

Según la investigación de (Brady, 1966) para la corrección de los registros acelerográficos por línea base se aplica un ajuste por una parábola al diseño de aceleración que minimizó el valor medio de las velocidades resultantes. Por lo cual en el método estadístico se expresa la aceleración sin corregir a(t), esta se traza como una línea entre los puntos de datos. Así como, la velocidad v(t) debida a la entrada es una serie de arcos paralelos, mientras que el desplazamiento y(t) debido a la entrada es una serie de arcos cúbicos.

Gran parte del componente a(t) y los resultados de esta integración se muestran en la Figura 3.6.1. Suponiendo que las condiciones iniciales para v(t) e y(t) son 0, la fórmula recursiva de Berg y Housner se puede utilizar para calcular v(t) e y(t) a partir de a(t):

$$v(t_{i+1}) = v_{i+1} = v_i + \frac{1}{2}\Delta t_i(a_i + a_{i+1}) \qquad Ec.\,(3.6.1.1.1)$$

$$y(t_{i+1}) = y_{i+1} = y_i + v_i\Delta t_i + \frac{1}{6}(\Delta t_i)^2(2a_i + a_{i+1}) \qquad Ec.\,(3.6.1.1.2)$$

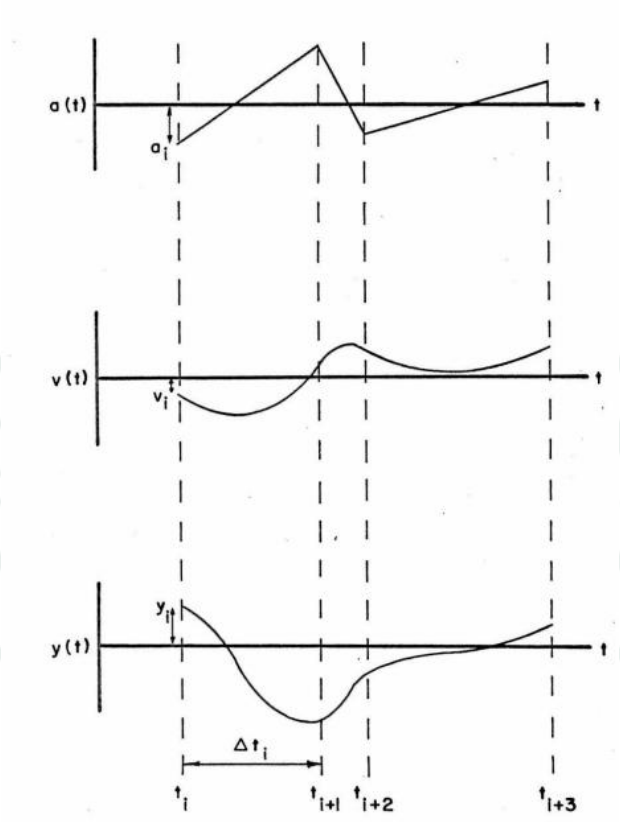


Figura 3.6.1. Grafio típico de a(t), v(t) y y(t) (Brady, A., 1966)

3.6.1.2 Corrección por Filtración de Butterworth

El filtro Butterworth es un tipo de filtro digital utilizado para corrección de señales según el ámbito de la frecuencia. Se usan comúnmente en sistemas de control, destacándose por tener una respuesta en frecuencia suave y una disminución progresiva de las frecuencias indeseadas. Su función principal es eliminar ruidos o frecuencias no deseadas en una señal, mientras se centra en conservar su respuesta en frecuencia plana dentro de la banda de paso, es decir que no causa oscilaciones ni deformaciones notables en las frecuencias que se quieren mantener.

Según (Ellis, 2012) los filtros Butterworth se conocen como filtros de máxima uniformidad debido a que, se distingue por su orden, que influye en la inclinación de su frecuencia. Un orden más alto produce una disminución más acentuada de las frecuencias no

deseadas, aunque requiere un tiempo de procesamiento mayor. Sin embargo, es crucial señalar que un orden excesivamente elevado puede generar distorsión en la señal por la influencia de la fase.

3.6.2 Procedimiento de Escalamiento

Para un mejor análisis es necesario el procedimiento de escalamiento, puesto que gracias a la obtención de factores de escala se podrá aproximar los registros sísmicos seleccionados para que lleguen a ser semejantes al espectro de diseño de la norma E030.

Como lo menciona (Mazzoni, Hachem, M., & Sinclair, M., 2012) todas las características individuales de cada registro se mantienen luego del escalamiento sin modificar ni el periodo ni el contenido energético de cada registro, además otro beneficio del escalamiento es que nos lleva a resultados más realistas en el análisis.

Según la norma E.030, recomienda el escalonamiento de los registros acelerográficos dentro del rango de períodos entre 0,2 T y 1,5 T.

3.7 Espectro de Diseño (Norma E030)

Para la determinación del espectro de diseño se usan parámetros de zonificación (Z3) igual 0.35, factor de uso (U) igual a 1 por tratarse de viviendas, factor de suelo (S2) igual a 1.15 y un factor de reducción (Ro) igual a 1, es decir se usa un espectro de diseño elástico. Esto para obtener las respuestas máximas en el rango elástico de los modelos.

$$S_a = \frac{ZUCS}{R} g \qquad Ec. (3.7)$$

De este modo obtenemos los dos siguientes espectros de diseño elástico:

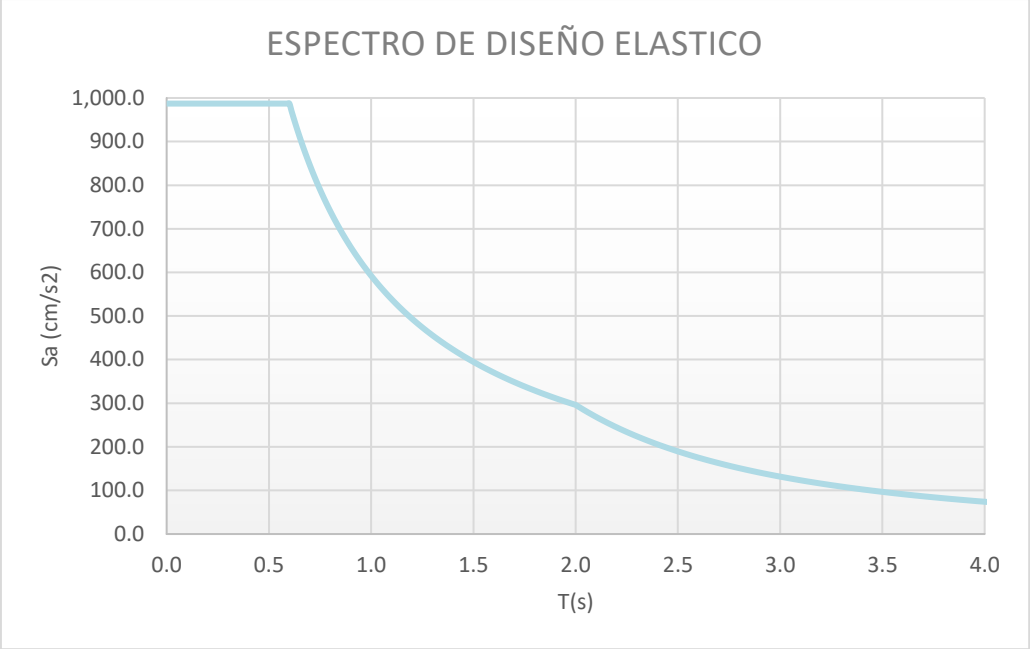


Figura 3.7.1. Espectro de diseño elástico

3.8 Análisis Sísmico

3.8.1 Generación de los Casos de Edificaciones teóricas

Para la generación de los casos de estudio se tendrá en consideración una variación de las edificaciones de planta cuadrada y rectangular que se han mencionado inicialmente, modificando los parámetros de excentricidad y variando la relación de rigideces laterales (Ky/Kx) para hacer que estas edificaciones regulares presenten en cierto grado irregularidad debido a estas variaciones. Con respecto a los edificios irregulares no se realizará ninguna modificación de los parámetros de excentricidad y relación de rigideces laterales (Ky/Kx) puesto que ya se presenta irregularidad.

3.8.1.1 Cargas de Gravedad

Para las cargas de gravedad se tomará tanto la carga muerta procedente del peso de la edificación como el de la carga viva que en base a la norma E.020 de cargas, se considerará una sobrecarga de 200 kg/cm2 al tratarse de viviendas y se usará para todos los pisos excepto

el techo que contará con una sobrecarga de 100 kg/cm2, además de considerar el peso de los tabiques con 100 kg/cm2 , el peso de piso terminado y/o acabados con 100 kg/cm2 y para los casos de excentricidad se considera un peso adicional para generar dicha excentricidad.

3.8.1.2 Cargas de Sismo

Respecto a las cargas sísmicas se aplicarán mediante el uso del espectro de diseño planteado según la norma E.030 el cual será usado para el análisis modal espectral y en el caso del análisis tiempo historia se emplearán cada uno de los sismos escalonados para ambas direcciones puesto que se determinará la influencia del sismo bajo diferentes ángulos de incidencia.

3.8.1.3 Verificación de sistema dual

Para el predimensionamiento de los muros de concreto armado con sistema dual se emplea recomendaciones de la norma E.060, con la cual se determinan primeramente las debidas verificaciones de comportamiento de la estructura, la norma E.030 (Sismorresistente) nos indica que para considerar un sistema dual la fuerza cortante en los muros debe ser mayor al 20% y menor al 70% en la base de la estructura.

3.8.2 Análisis Tiempo Historia Lineal

3.8.2.1 Procedimiento de Análisis

El análisis tiempo historia será utilizado para determinar la respuesta dinámica de una estructura bajo una fuerza arbitraria. Las ecuaciones de equilibrio dinámico a ser resueltas están dadas por:

$$Ku(t) + C\dot{u}(t) + M\ddot{u}(t) = P(t) \qquad Ec.\,(3.8.2.1)$$

Donde:

- K: matriz de rigidez,
- C: matriz de amortiguamiento,
- M: la matriz de masa,
- u, $\dot{u}$, $\ddot{u}$: desplazamientos, velocidades y aceleraciones de la estructura respectivamente.
- P: las fuerzas aplicadas.

Si la carga incluye aceleración del suelo, los desplazamientos, velocidades y aceleraciones son relativos a este movimiento del suelo.

3.8.2.2 Modelado y Análisis en el Programa ETABS

Para la realización del modelamiento de cada una de las estructuras teóricas a estudiar se empleará el programa ETABS donde se puede hacer el análisis de tiempo-historia lineal mediante la superposición modal y haciendo las variaciones de ángulos de incidencia. Además, como nos menciona (Quezada Ramos & Serrano Arone, Y., 2020) dentro de la metodología para realizar este análisis se emplea una aproximación de la ecuación modal mediante un polinomio de Taylor en pequeños intervalos de tiempo con aceleraciones de suelo con una variación de forma lineal. Luego de resuelta la ecuación se podrá obtener valores de desplazamiento, velocidad y aceleración para cada intervalo de tiempo. Debido a esto el programa es capaz de efectuar la superposición modal para poder generar una historia de las respuestas en el tiempo para una señal sísmica.

3.8.2.3 Ángulos de Incidencia

Los ángulos de incidencia se basan básicamente en la rotación de los ejes principales del sismo, esto para observar cómo responde la estructura cuando los ejes del sismo actúan en dirección diferente a los ejes principales de la estructura.

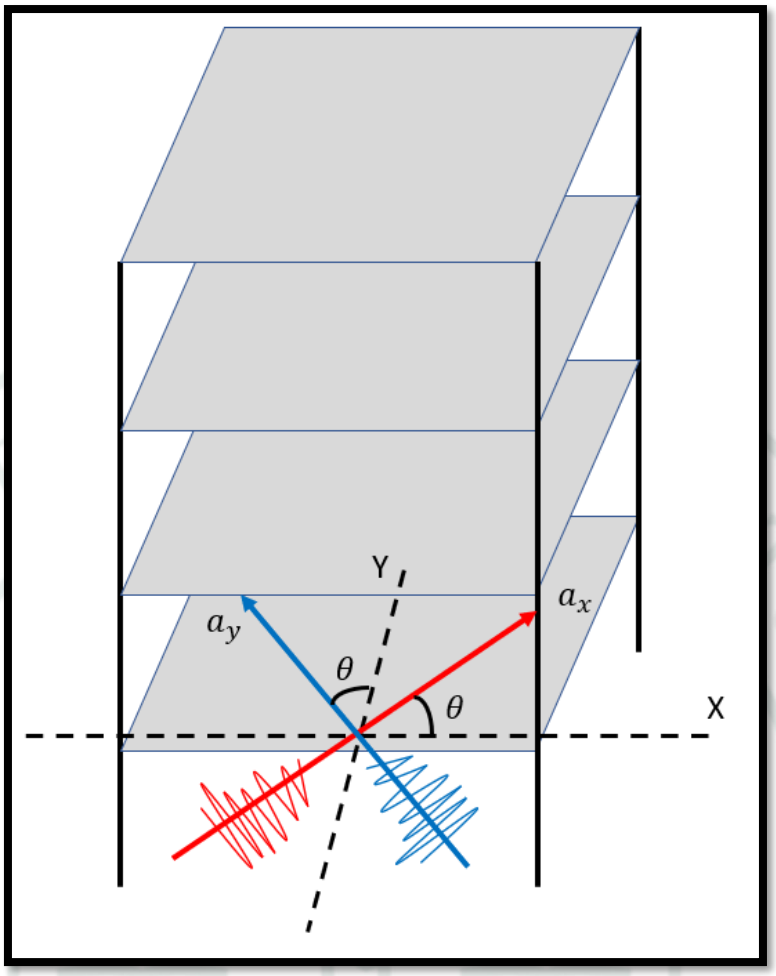


Figura 3.8.1 Efecto de bidireccionalidad y ángulo de incidencia en la estructura

Tomando la ecuación 3.8.2.1, ecuación de movimiento, descomponiendo el vector de fuerzas aplicas en aceleraciones considerando la bidireccionalidad, se tiene la siguiente ecuación:

$$Ku(t) + C\dot{u}(t) + M\ddot{u}(t) = -M(a_x\ddot{U}_{gx} + a_y\ddot{U}_{gy}) \qquad Ec.\,(3.8.2.3.1)$$

Descomponiendo la ecuación 3.8.2.3.1 en funciones del ángulo de incidencia, la ecuación seria la siguiente:

$$Ku(t) + C\dot{u}(t) + M\ddot{u}(t)$$
$$= -M\left[(v_x cos\theta + v_y sen\theta)\ddot{U}_{gx} + (-v_x sen\theta + v_y cos\theta)\ddot{U}_{gy}\right] Ec.\,(3.8.2.3.2)$$

Siendo Vx y Vy vectores para los componentes en la dirección X e Y respectivamente; y Θ es el ángulo de incidencia.

En esta investigación se ha buscado plantear una variación sistemática en los ángulos de incidencia para las respuestas de desplazamientos lateral, derivas de entrepiso, fuerza cortante basal y momento de volteo. Cada modelo contará con ángulos de incidencia que incrementan cada 10° desde 0° a 350°.

Los ángulos de incidencia de cada respuesta no son necesariamente los mismos, esto con fin de obtener diferentes tipos de respuestas en cuanto desplazamientos, fuerzas y momentos. Donde en algunos casos se obtendrá valores mayores a los de diseño ofrecidos por la norma.

Los ángulos de incidencia que son críticos son aquellos que producen repuestas máximas (fuerzas, desplazamientos, etc.). Mediante la integración de la respuesta tiempo historia (ATH), se calculan estos ángulos y las reacciones críticas. Esto según (López & Torres, 1997), que también nos proporciona la siguiente ecuación para determinar los ángulos críticos:

$$\theta_{cr} = \frac{1}{2}\tan^{-1}\left\{\frac{2(R_{2xy} - R_{1xy})}{(R^2{}_{1y} - R^2{}_{1x}) - (R^2{}_{2y} - R^2{}_{2x})}\right\} \qquad Ec.\,(3.8.2.3)$$

3.8.3 Análisis Modal Espectral

3.8.3.1 Procedimiento de Análisis

Para el análisis modal espectral su procedimiento consiste en determinar los modos de vibración que dependen de características de rigidez y de la distribución de masas.

Como se menciona en la norma E 030 del (Ministerio de Vivienda Construcción y Saneamiento, 2018) se debe considerar los modos de vibración que por lo menos contenga el 90% de la masa total. Además, se emplea lo que es el espectro de diseño el cual es determinado previamente, adicionalmente en la norma se menciona que para el análisis en la dirección

vertical (Z) puede usarse un espectro con valores iguales a los 0.67 del espectro empleado para la dirección horizontal (X, Y).

Luego de obtenidos los modos de vibración se realiza la combinación bajo ciertos criterios mencionados en la norma, para de este modo obtener la respuesta máxima elástica tanto de las fuerzas globales de la estructura como la internas. Dentro de las combinaciones que se puede usar, la más usada y recomendada por la norma E.030 es la combinación cuadrática completa, como se muestra en la siguiente fórmula:

$$r = \sqrt{\sum\sum r_i \rho_{ij} r_j} \qquad Ec.\,(3.8.3.1)$$

3.8.3.2 Análisis con el Programa ETABS

La modelación de edificios en el programa ETABS es una herramienta muy útil en el análisis y diseño de las estructuras ya que facilita la obtención de resultados siempre y cuando se entienda a cabalidad la información que se ingresa al modelo. En este caso, se analizará los modelos planteados en esta tesis en base a un espectro de diseño definido por la norma E.030, que sería realizar un análisis dinámico a las estructuras.

En el programa ETABS requiere de información de un espectro de respuesta y el caso de Carga para lo cual se definen para eje principal un propio espectro de respuesta, esto debido al diferente sistema estructural que pueda existir en la estructura.

Finalmente, este análisis sería un caso de más a lo que es la carga muerta, por ejemplo, con el fin de obtener respuestas de fuerzas, momentos, desplazamientos verdaderos en la estructura.

3.8.3.3 Regla 100 – 30

Es un método complementario de combinación de carga del análisis modal espectral, propuesto por la American Society of Civil Engineers (ASCE), donde el método considera para la respuesta de la dirección ortogonal analizada, adicionar un 30% de la respuesta en la otra dirección ortogonal. El método se puede expresar en la siguiente ecuación:

$$R_x = R_{xx} + 0.30R_{xy} \qquad (Ec.\ 3.8.3.3.1)$$

$$R_y = R_{yy} + 0.30R_{yx} \qquad (Ec.\ 3.8.3.3.2)$$

Donde:

Rx, Ry: Respuesta en cada componente X e Y considerando la regla 100 – 30

Rxx: Respuesta en la componente X, por análisis modal espectral en X

Rxy: Respuesta en la componente X, por análisis modal espectral en Y

Ryy: Respuesta en la componente Y, por análisis modal espectral en Y

Ryx: Respuesta en la componente Y, por análisis modal espectral en X

CAPITULO IV

4 MARCO LEGAL

- Norma vigente E.020 “CARGAS”
- Norma vigente E.030 “DISEÑO SISMORRESISTENTE”
- Norma vigente E.060 “CONCRETO ARMADO”

CAPITULO V

5 METODOLOGÍA PROPUESTA

5.1 Tipo y Nivel de Investigación

5.1.1 Correlacional

Para poder evaluar las respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual bajo el efecto bidireccional y ángulo de incidencia sísmica, se debe relacionar las variables presentes en la investigación.

5.1.2 Estudio De Casos

Para obtener resultados en esta investigación, se recurrirá a idealizar modelos teóricos de edificios de concreto armado con sistema dual, variando los diferentes parámetros definidos en la presente investigación.

5.1.3 Transversal

Se puede decir que esta investigación es transversal por la evaluación de resultados para los análisis modal – espectral y análisis tiempo – historia en los diferentes modelos idealizados, para luego ser comparados y sacar conclusiones.

5.1.4 Experimental

Para la correcta evaluación de las variables y obtención de resultados, se recurrirá a programas computacionales como: ETABS, SAP2000, etc.

5.2 Diseño de la Investigación

Se realizó un diseño experimental donde se analiza:

- El efecto bidireccional y ángulo de incidencia frente a diferentes parámetros que se presentan en los modelos teóricos idealizados de edificaciones de concreto armado con sistema dual.

- Evaluación comparativa de respuestas del análisis tiempo historia y modal espectral para la consideración del problema del efecto de ángulo de incidencia al análisis y diseño estructural de un edificio según la norma E.030 en la ciudad de Arequipa.

5.3 Métodos de la Investigación

5.3.1 Planteamiento del Problema

Para empezar nuestra investigación, recurrimos a otras investigaciones previas en donde se analicen temas similares a nuestro tema de investigación de interés. Primeramente, empezamos con la problemática de la investigación, en algunas ocasiones se presentaron mayores respuestas sísmicas en direcciones diferentes a las de los ejes principales, lo que ocasiono el colapso de estructuras, esto debido al efecto del ángulo de incidencia. La norma peruana E.030 no da detalles frente al problema de ángulo de incidencia, este problema podría generar esfuerzos mayores a los que se determinar con la norma.

5.3.2 Modelamiento de los Casos Teóricos

Para el modelamiento de casos teóricos, estos modelos serán idealizados sin ningún plano de detalle, los modelos estarán netamente conformados con un sistema estructural de concreto armado con sistema dual, que contarán con un total de 4, 8 y 12 pisos, la altura de entrepiso es de 2.80m como ya se mencionó en los capítulos anterior.

Como primer modelo consideramos una estructura regular con una relación de rigideces igual a 1 y sin excentricidad, como se muestra en la Figura 5.3.1

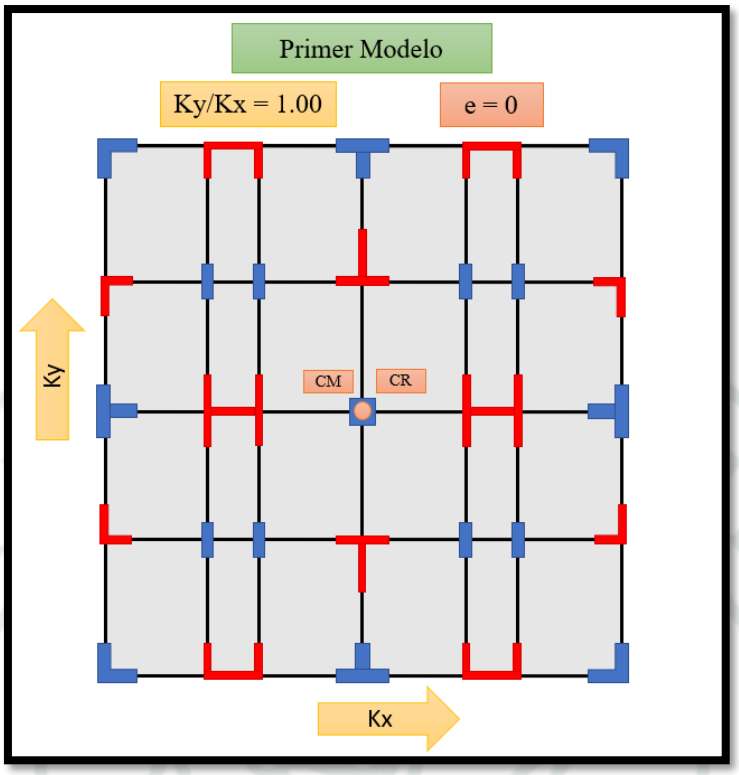


Figura 5.3.1 Primer modelo (Ky/Kx=1, e=0)

Luego se hace 4 modelos variando solo la relación de rigidez manteniendo la excentricidad en 0 como el primer modelo, como se muestra en la Figura 5.3.2: (a) Segundo modelo (Ky/Kx=1.20, e=0), (b) Tercer modelo (Ky/Kx=1.30, e=0), (c) Cuarto modelo (Ky/Kx=1.50, e=0), (d) Quinto modelo (Ky/Kx=1.80, e=0).

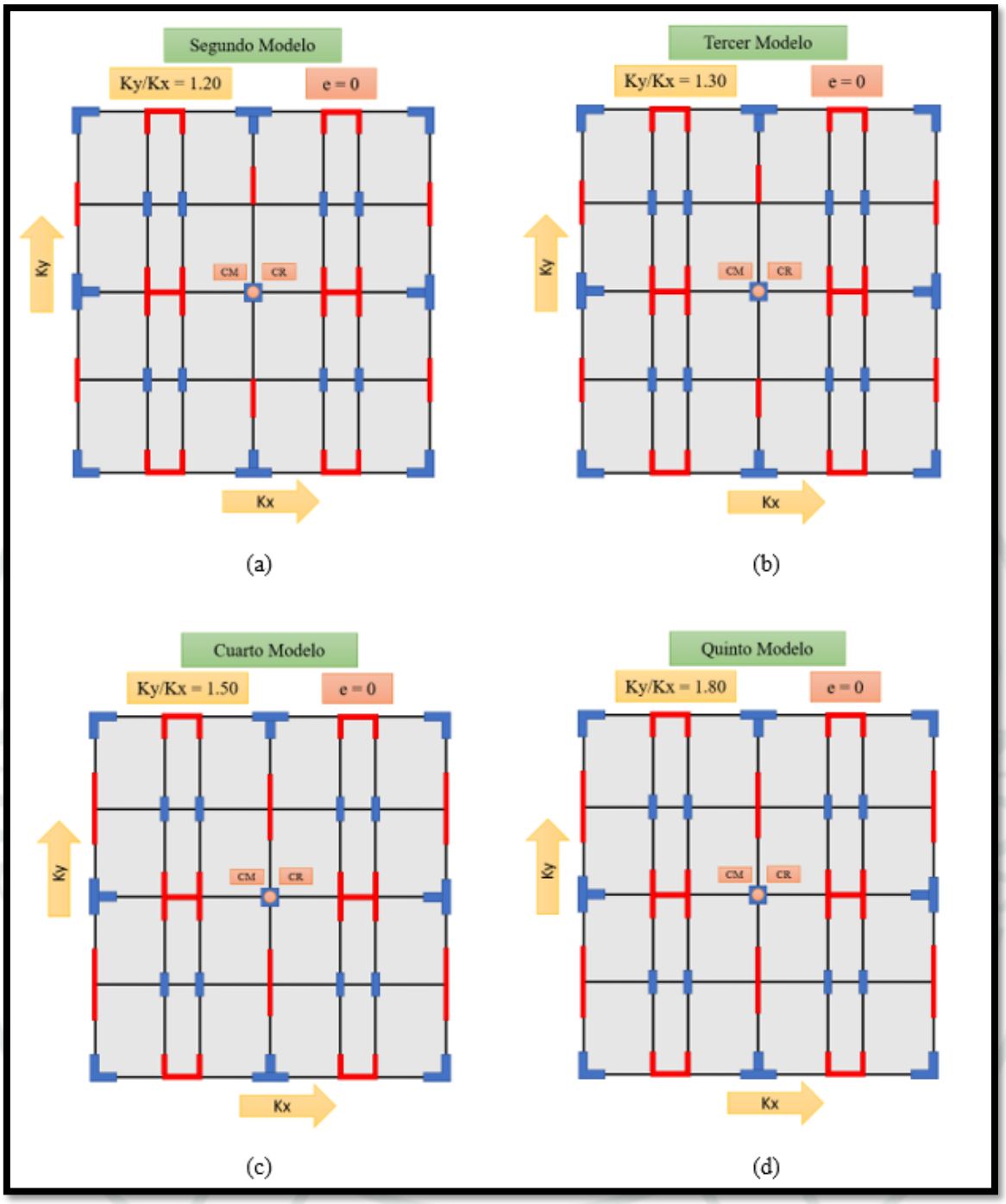


Figura 5.3.2 Modelos variando la relación de rigidez (Ky/Kx)

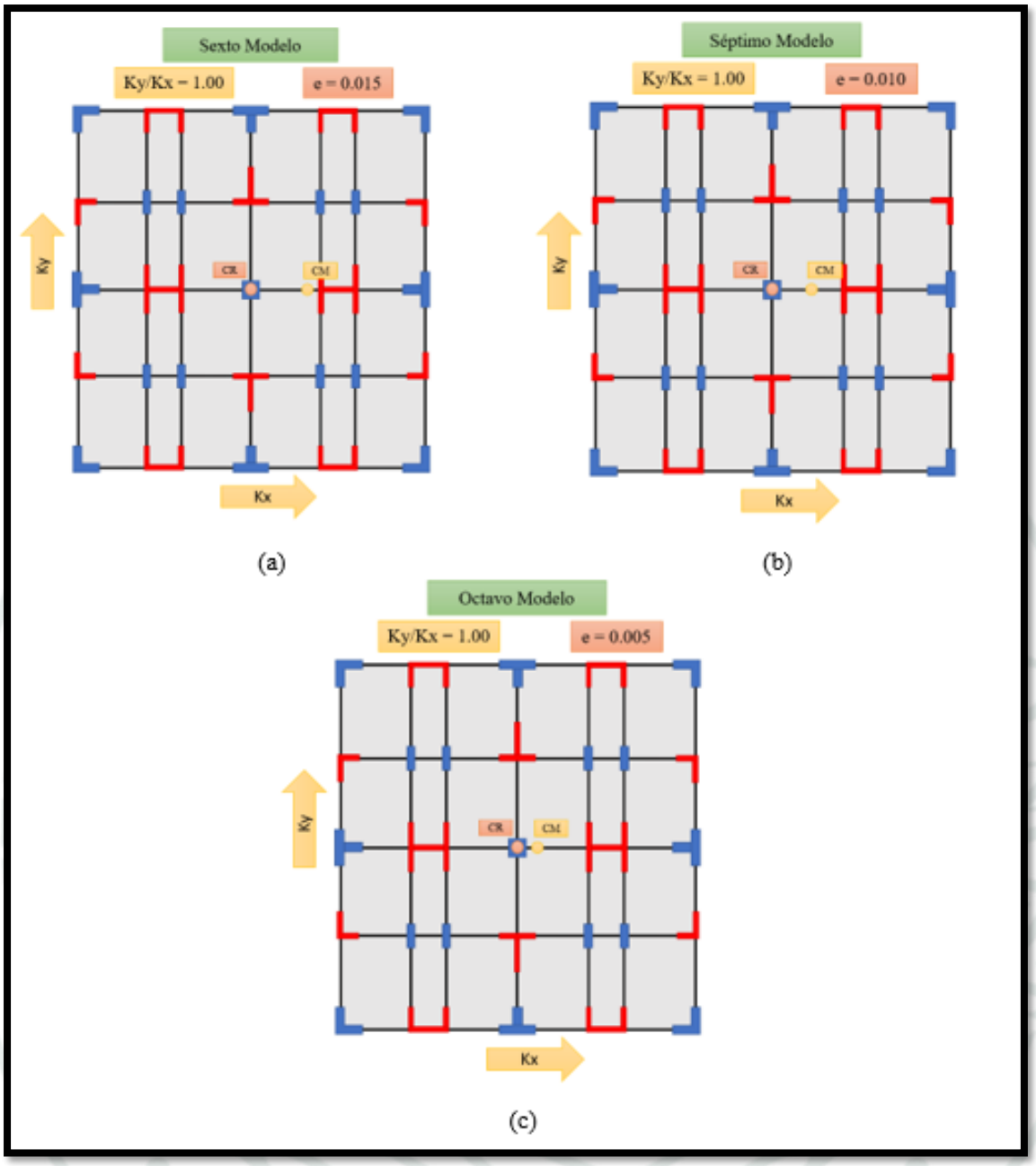


Figura 5.3.3 Modelos variando la excentricidad en el eje X (ex)

Por otro lado, se realiza modelos con diferentes excentricidades excentricidad con respecto al eje “X”, como se muestra la Figura 5.3.3: (a) Sexto modelo (Ky/Kx=1, e=0.015), (b) Séptimo modelo (Ky/Kx=1, e=0.010), (c) Octavo modelo (Ky/Kx=1, e=0.005).

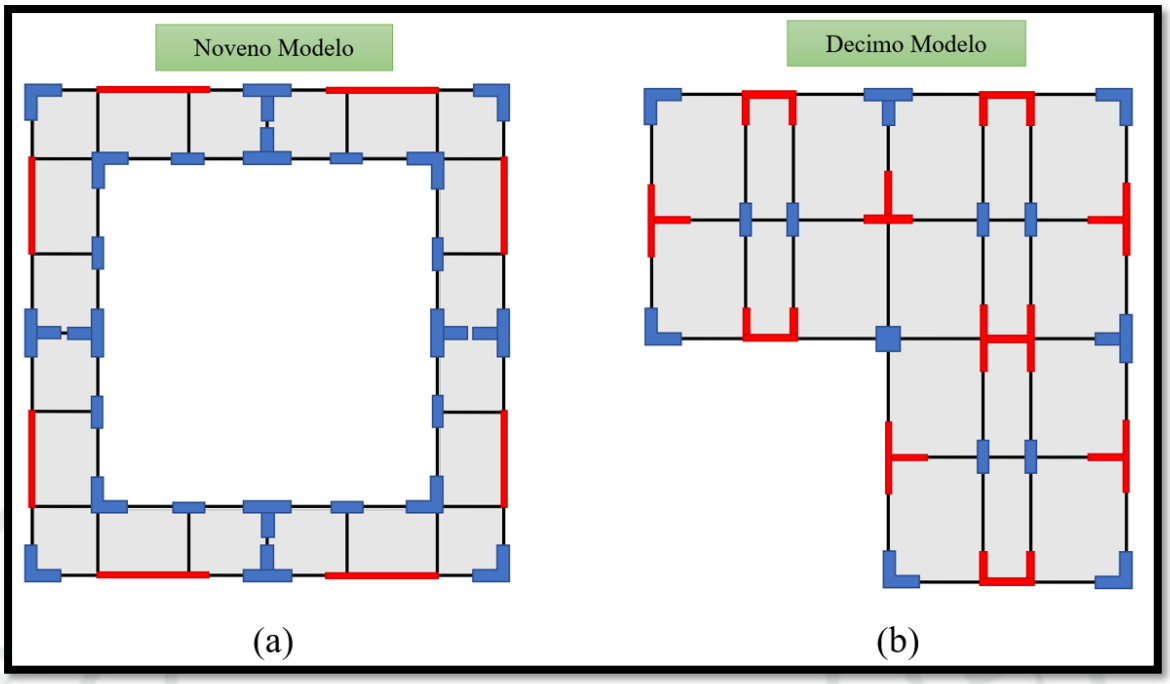


Figura 5.3.4 Modelos con irregularidad en planta

Además, se desarrolla 2 modelos con irregularidad en planta, como se muestra en la Figura 5.3.4: (a) Modelo con irregularidad de diafragma discontinuo y (b) Modelo con irregularidad de esquinas entrantes, cabe mencionar que en estos modelos no se busca controlar la relación de rigidices y la excentricidad como en los anteriores modelos.

Por último, se elabora 2 modelos con irregularidad en altura, como se muestra en la Figura 5.3.5: (a) Modelo con irregularidad de geometría vertical (planta típica de primeros niveles), (b) Modelo con irregularidad de geometría vertical (planta para últimos dos niveles) y (c) Modelo con irregularidad de masa o peso (en los últimos niveles se reduce el peso), de igual manera que en los modelos de irregularidad en planta, no se considera los parámetros de relación de rigideces y la excentricidad.

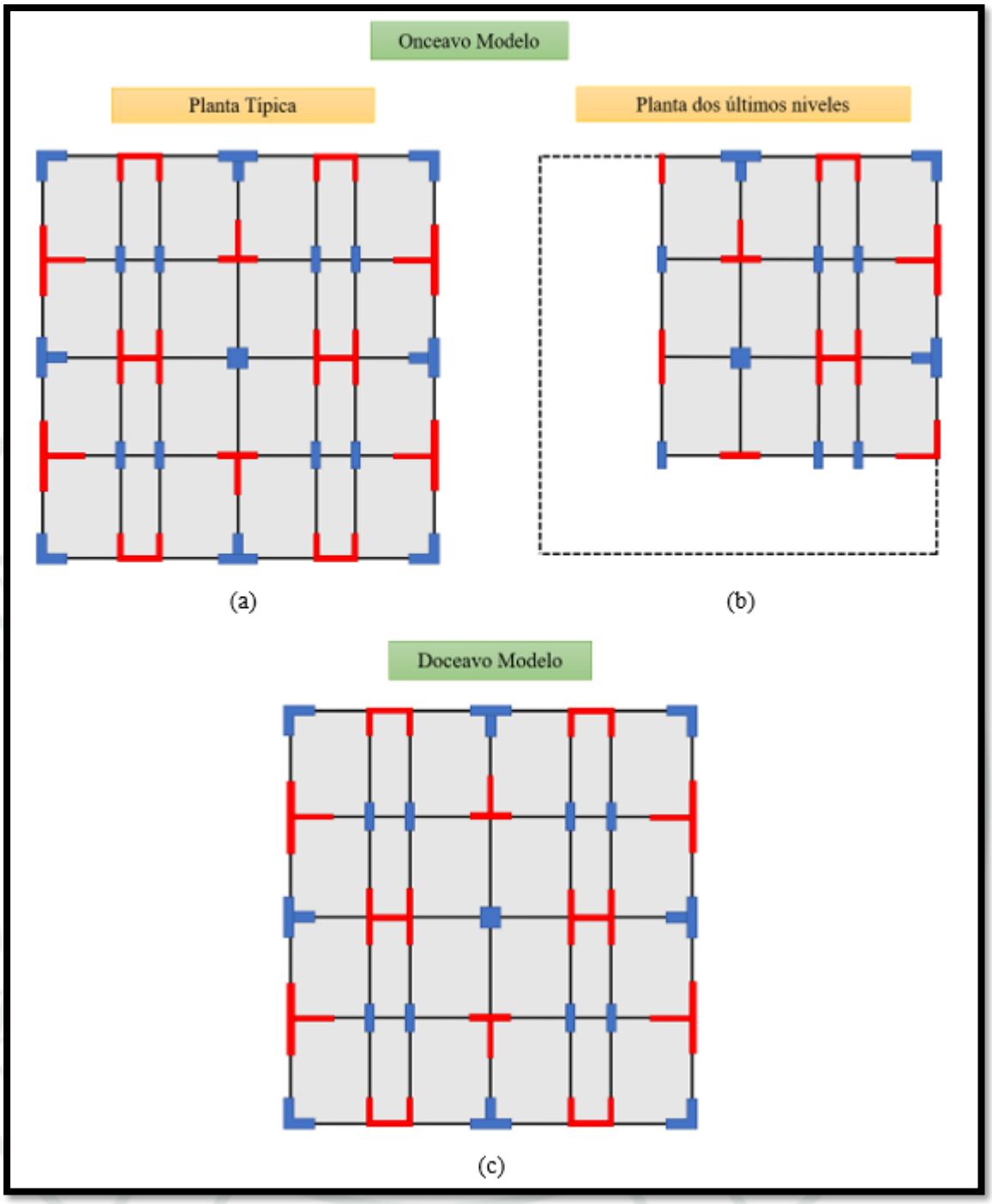


Figura 5.3.5 Modelos con irregularidad en altura

En total se tiene 12 modelos teóricos para nuestra investigación, donde los primeros 8 modelos son estructuras regulares y los últimos 4 son estructuras irregulares. Para estos modelos se realizaron verificaciones de cumplimiento con la norma E.030, como son los modos de vibración, derivas, etc. Cabe mencionar que estas verificaciones se realizaron mediante un

análisis modal espectral usando un espectro de diseño inelástico. Estos resultados se encuentran en el Anexo A, además de las dimensiones de las secciones de columnas y placas, para el caso de vigas se tiene una misma sección para todos los modelos siendo de 30 x 40 cm y del mismo modo para las losas se considera macizas con un espesor de 20 cm para todos los modelos, como se mencionó en los anteriores capítulos.

5.3.3 Selección de Registros Acelerográficos

En este punto, primeramente, se recolecta datos de sísmicos ocurridos en la ciudad de Arequipa o cercanos (estos sismos serán obtenidos del CISMID o IGP), que sean los más recientes, para luego ser corregidos y escalonados a espectro de diseño ofrecido por la norma E.030, con el objetivo de hacer lo más realista a los sismos obtenidos de la recolección.

Para clasificar los sismos seleccionados tomaremos el mismo criterio de la investigación de (Moscoso Alcantara & Quiroz Torres, 2018) que clasifico los sismos de la siguiente manera:

- Los sismos SEVEROS tienen un PGA mayor o igual a 200 cm/s2.
- Los sismos MODERADOS tienen un PGA entre 50 cm/s2 y 200 cm/s2.
- Los sismos LEVES tienen un PGA menor o igual a los 50 cm/s2.

Como se puede apreciar en la Tabla 5.3-1. Se ha elegido solamente 1 sismo leve y 2 sismos moderados registrados en la ciudad de Arequipa, esto debido a que la mayoría de sismos registrados en la ciudad de Arequipa fueron leves, por eso se recurrió a registros otros lugares, como 2 sismos moderados y 2 sismos severos de la ciudad de Lima, y 1 sismo severo en la ciudad de Moquegua, este último fue el más significativo en la ciudad de Arequipa, ya que ocasiono daños significativos en la región.

Tabla 5.3-1 Resumen de registros acelerográficos seleccionados

Código	Fecha	Estación	Magnitud	PGA (cm/s^2)		Clasificación
				E-W	N-S	
Sismo 1	28-12-2022	Estación UNSA - Arequipa	5.4 mb	33.67	35.77	Leve
Sismo 2	07-07-2001	Estación UNSA - Arequipa	6.5 mb	123.21	120.52	Moderado
Sismo 3	13-06-2005	Estación Characato - Arequipa	7.2 ml	138.50	125.43	Moderado
Sismo 4	05-01-1974	Estación Zarate - Lima	6.1 mb	138.94	156.30	Moderado
Sismo 5	31-05-1970	Parque de la Reserva- Lima	6.6 mb	105.05	97.81	Moderado
Sismo 6	03-10-1974	Estación Surco- Lima	6.2 mb	191.89	207.35	Severo
Sismo 7	17-10-1966	Parque de la Reserva- Lima	8.1 mw	180.56	268.24	Severo
Sismo 8	23-06-2001	Cesar Vizcarra Vargas - Moquegua	6.9 mb	295.15	219.99	Severo

5.3.4 Corrección de los Registros Acelerográficos

5.3.4.1 Corrección por Línea Base

Para la corrección por línea base se usó el programa MATLAB R2021a, utilizando funciones básicas del programa, se corrige por línea base los sismos detallados en la Tabla 5.3-1. A continuación, se presentan los resultados obtenidos del sismo 1.

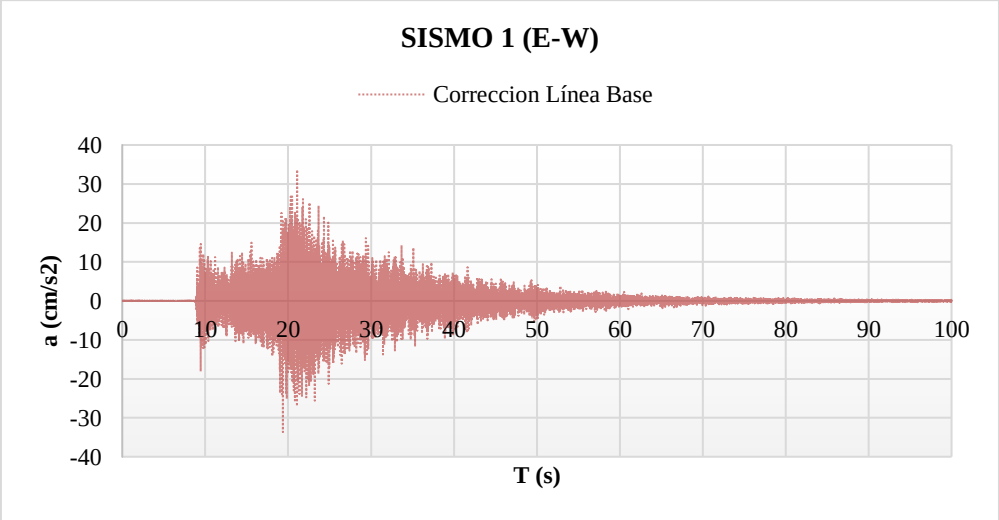


Figura 5.3.6 Gráfico del registro corregido por línea base del sismo 1 (E-W)

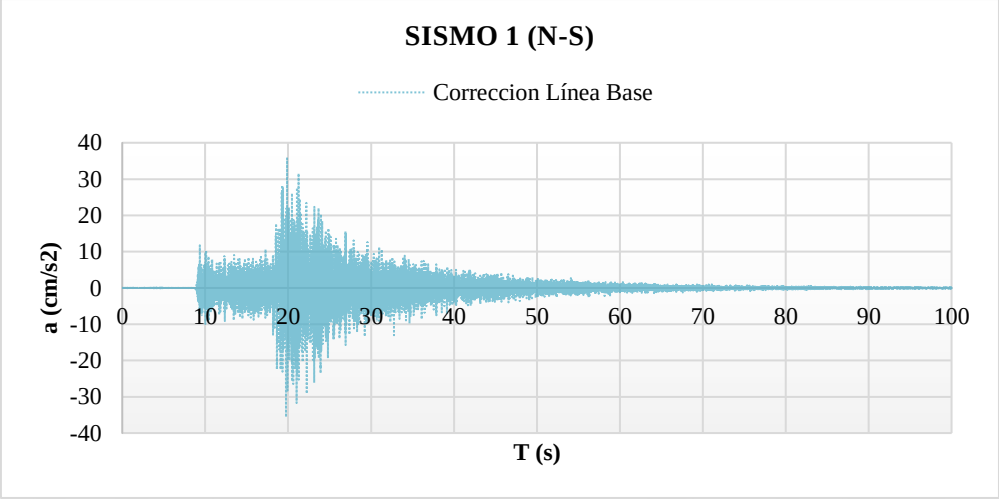


Figura 5.3.7 Gráfico del registro corregido por línea base del sismo 1 (N-S)

El resto de los registros corregidos por línea base se encuentran en el Anexo B.

5.3.4.2 Corrección por Filtración de Butterworth

Una vez haber realizado la corrección por Línea Base se procede a la corrección por Filtración de Butterworth, para lo cual se vuelve a usar el programa MATLAB R2021a, utilizando funciones básicas y una función de filtro analógico que es la función "butter" de tipo bandpass nos ayuda a limpiar los registros sísmicos del sonido o ruido. Se presentan la corrección por filtración del sismo 1, y el resto de resultados se encuentran en el Anexo B.

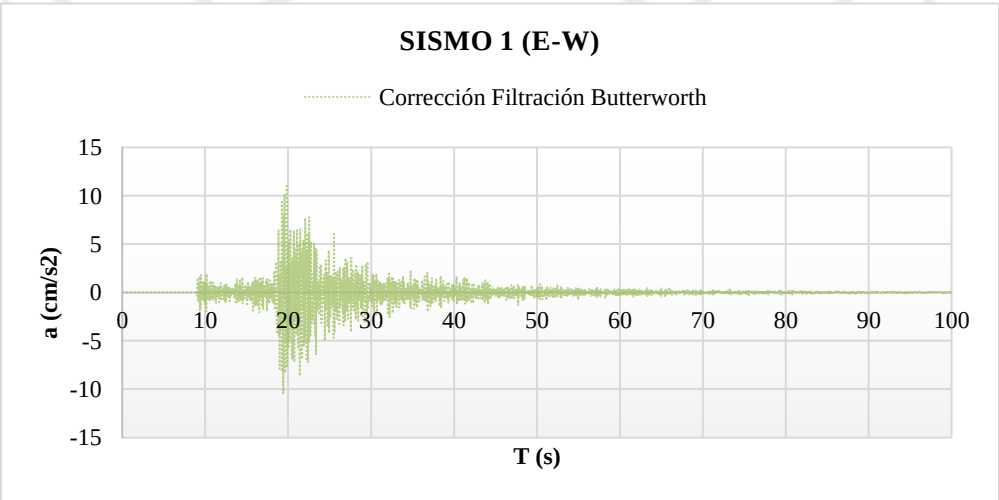


Figura 5.3.8 Gráfico del registro corregido por filtración del sismo 1 (E-W)

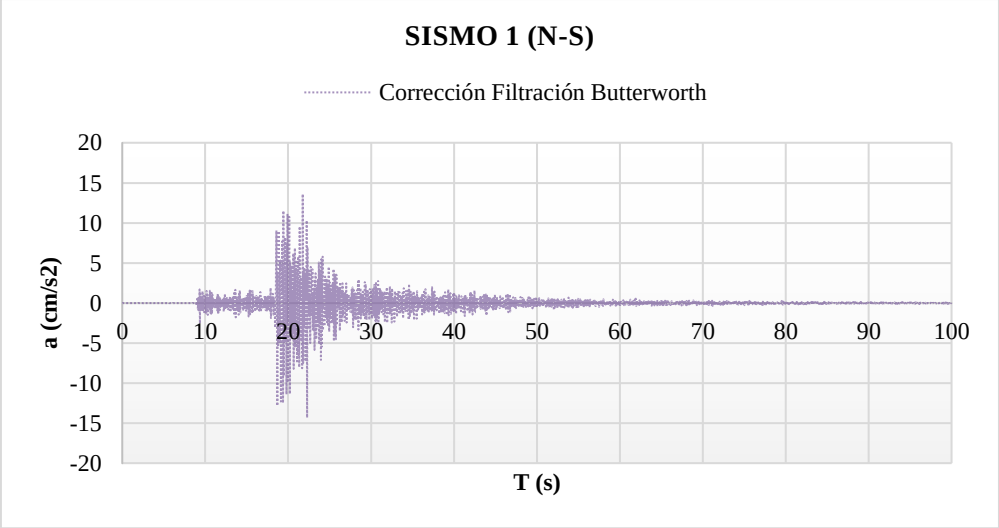


Figura 5.3.9 Gráfico del registro corregido por filtración del sismo 1 (N-S)

5.3.5 Escalamiento de los Registros Acelerográficos

Para escalar los registros acelerográficos corregidos al espectro de diseño elástico (R=1) como lo menciona la norma E.030, se usó el programa SEISMO MATCH.

Primeramente, se determina el periodo fundamental (T) de los modelos teóricos, esto para poder definir el rango para escalonar los registros sísmicos, donde el rango es de 0.2T y 1.5T según la norma E.030. Como se menciona en ítem 5.3.2 de los modelos teóricos, se tiene modelos de 4, 8 y 12 pisos, cada uno con diferente periodo fundamental, por lo que habrá diferentes rangos de escalonamiento para cada piso como se muestra en la siguiente Tabla 5.3-2.

Tabla 5.3-2 Calculo de rango de escalamiento según el número de pisos

N° pisos	T	0.2T	1.5T
4	0.187	0.037	0.280
8	0.373	0.075	0.560
12	0.560	0.112	0.840

Luego de definir los valores del rango de escalamiento para cada modelo teórico según su número de pisos se define en el espectro de diseño elástico, en el programa Seismo Match.

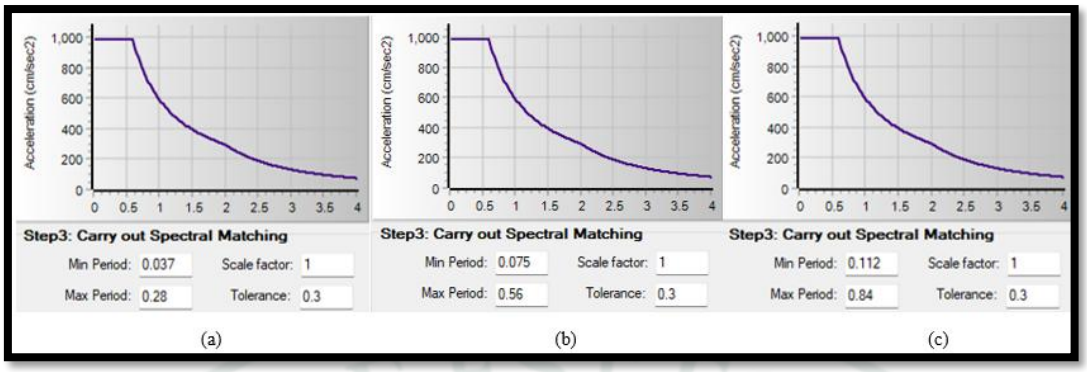


Figura 5.3.10 Definición de rango de escala para: 4 pisos (a), 8 pisos (b), 12 pisos (c)

Una vez definidos los parámetros de escalamiento para los registros sísmicos corregidos, procedemos a escalarlos, como se muestra en las siguientes figuras.

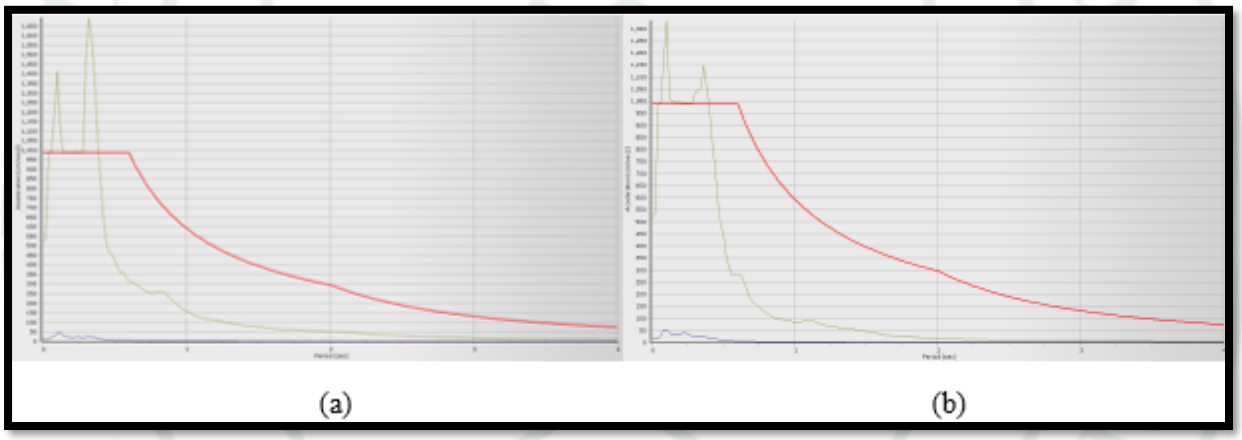


Figura 5.3.11 Escalamiento de Sismo 1 para modelo de 4 pisos, E-W (a) y N-S (b)

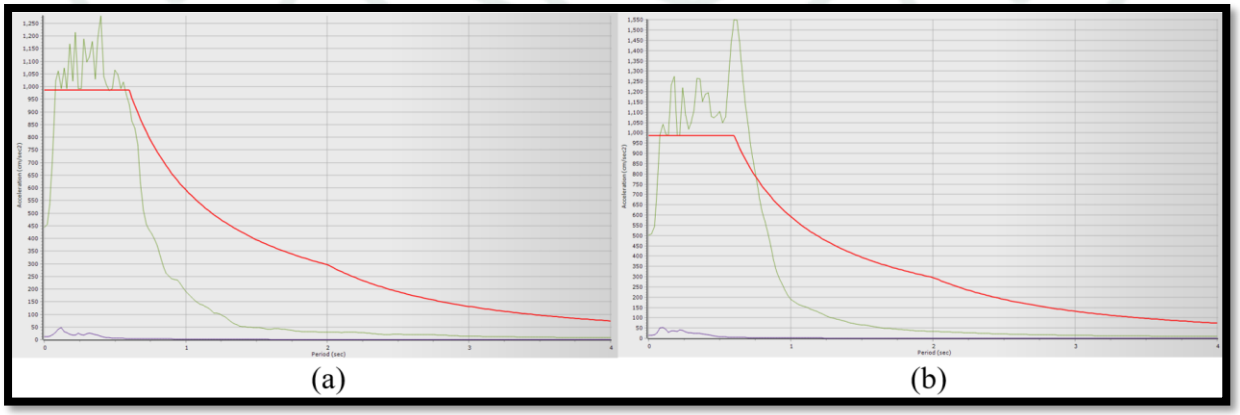
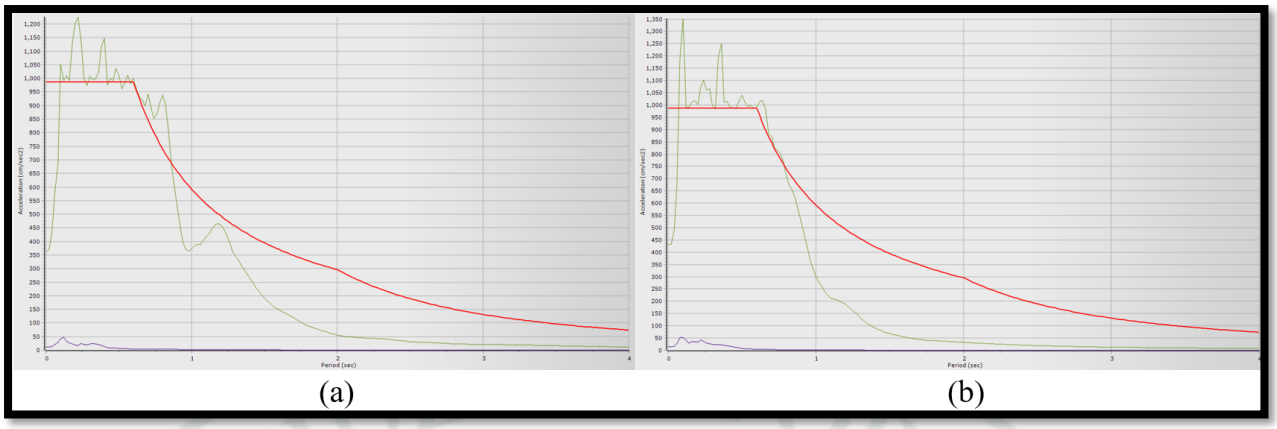


Figura 5.3.12 Escalamiento de Sismo 1 para modelo de 8 pisos, E-W (a) y N-S (b)



(a) (b)

Figura 5.3.13 Escalamiento de Sismo 1 para modelo de 12 pisos, E-W (a) y N-S (b)

Los otros escalamientos se encuentran en el Anexo B.

5.3.6 Análisis Tiempo Historia

Con los registros acelerográficos escalonados obtenidos anteriormente, se procederá a realizar el análisis tiempo historia a los modelos de casos teóricos, variando los ángulos cada 10° la dirección de efecto de los sismos escalonados.

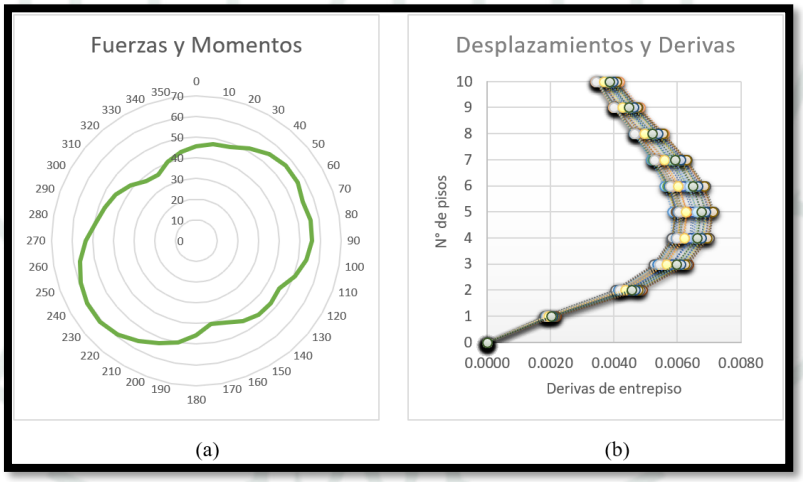


Figura 5.3.14 Gráficos para respuestas del análisis tiempo historia

De esto se obtiene respuestas locales (columnas y placas) y globales (toda la estructura) en Fuerzas, Momentos, Desplazamientos, Derivas, etc. Como se muestra en la Figura 5.3.14

las fuerzas y momentos se muestran en un gráfico tipo radial (a), y los desplazamientos y derivas en un gráfico tipo dispersión (b).

5.3.7 Análisis Modal Espectral

Para el análisis modal espectral se realiza según la norma E.030, un análisis unidireccional para el eje "X" y otro para el eje "Y", luego se compara con el análisis tiempo historia.

Del mismo modo que el anterior análisis se obtendrá resultados en Fuerzas, Momentos, Desplazamientos y Derivas, para cada modelo teórico. Los resultados de este análisis como son las fuerzas y derivas permitidas por la norma E.030.

5.3.8 Comparación de Resultados

Para este punto con los resultados obtenidos, se procederá a realizar estadísticas en los cuales se puedan hacer comparaciones tanto numéricas como gráficas de los dos diferentes análisis realizados para cada modelo de caso teórico.

GRAFICA N°1: ESQUEMA METODOLÓGICO DE LA INVESTIGACIÓN



Fuente: *Elaboración Propia*

5.4 Variables:

5.4.1 Variable Independiente:

La variable independiente hace referencia al efecto del ángulo de incidencia sísmica, dentro la cual encontramos dimensiones como la rigidez relativa, excentricidad e irregularidades de la estructura, las cuales forman parte del análisis para el modelamiento de diferentes casos teóricos y tener una vista más amplia de los efectos del ángulo crítico, como última dimensión se plantea la variación de los ángulos planteados cada 10° entre 0° y 350°.

5.4.2 Variable Dependiente:

La variable dependiente es la evaluación de respuestas del análisis tiempo historia y modal espectral para edificaciones de concreto armado con sistema dual que presentara las siguientes dimensiones como el fuerzas cortantes, momentos flectores y derivas.

CAPITULO VI

6 ANALISIS Y RESULTADOS

6.1 Análisis modal espectral

Se realiza el análisis modal espectral a los 12 modelos mencionados anteriormente, usando un espectro inelástico como indica la norma E.030. En las siguientes tablas se muestra un resumen de los resultados por este análisis.

Tabla 6.1-1 Respuestas del AME para modelos variados en relación de rigideces

MODELO	RESPUESTAS	EJE	UND	4 PISOS	8 PISOS	12 PISOS
1	DERIVAS	X-X		0.0064	0.0201	0.0232
		Y-Y		0.0070	0.0211	0.0239
	CORTANTE BASAL	X-X	Ton	1030.05	2052.00	1948.26
		Y-Y	Ton	1026.72	2045.73	1951.46
2	DERIVAS	X-X		0.0073	0.0222	0.0256
		Y-Y		0.0069	0.0209	0.0237
	CORTANTE BASAL	X-X	Ton	1035.99	1911.42	1803.80
		Y-Y	Ton	1032.72	2084.76	1994.15
3	DERIVAS	X-X		0.0072	0.0221	0.0255
		Y-Y		0.0063	0.0193	0.0228
	CORTANTE BASAL	X-X	Ton	1041.29	1923.94	1814.49
		Y-Y	Ton	1037.33	2097.10	2074.13
4	DERIVAS	X-X		0.0070	0.0218	0.0252
		Y-Y		0.0053	0.0164	0.0210
	CORTANTE BASAL	X-X	Ton	1042.14	1935.48	1827.88
		Y-Y	Ton	1036.40	2086.58	2206.96
5	DERIVAS	X-X		0.0070	0.0218	0.0252
		Y-Y		0.0042	0.0131	0.0188
	CORTANTE BASAL	X-X	Ton	1063.19	1973.88	1863.71
		Y-Y	Ton	1058.12	2122.68	2462.40

Tabla 6.1-2 Respuestas del AME para modelos variados en la excentricidad

MODELO	RESPUESTAS	EJE	UND	4 PISOS	8 PISOS	12 PISOS
1	DERIVAS	X-X		0.0064	0.0201	0.0232
		Y-Y		0.0070	0.0211	0.0239
	CORTANTE BASAL	X-X	Ton	1030.05	2052.00	1948.26
		Y-Y	Ton	1026.72	2045.73	1951.46
6	DERIVAS	X-X		0.0068	0.0209	0.0239
		Y-Y		0.0081	0.0233	0.0264
	CORTANTE BASAL	X-X	Ton	1095.91	2131.73	2017.19

		Y-Y	Ton	1086.46	2098.95	2008.65
7	DERIVAS	X-X		0.0067	0.0207	0.0237
		Y-Y		0.0077	0.0226	0.0256
	CORTANTE BASAL	X-X	Ton	1073.95	2108.27	1993.43
		Y-Y	Ton	1067.73	2084.86	1992.60
8	DERIVAS	X-X		0.0065	0.0204	0.0234
		Y-Y		0.0074	0.0219	0.0247
	CORTANTE BASAL	X-X	Ton	1052.00	2084.29	1969.23
		Y-Y	Ton	1047.88	2067.33	1973.53

Tabla 6.1-3 Respuestas del AME para modelos irregulares

MODELO	RESPUESTAS	EJE	UND	4 PISOS	8 PISOS	12 PISOS
9	DERIVAS	X-X		0.0033	0.0105	0.0169
		Y-Y		0.0033	0.0106	0.0169
	CORTANTE BASAL	X-X	Ton	765.22	1558.56	2023.34
		Y-Y	Ton	765.03	1557.62	2013.33
10	DERIVAS	X-X		0.0051	0.0162	0.0209
		Y-Y		0.0047	0.0152	0.0230
	CORTANTE BASAL	X-X	Ton	849.84	1703.04	1780.53
		Y-Y	Ton	804.08	1578.61	1868.03
11	DERIVAS	X-X		0.0065	0.0161	0.0228
		Y-Y		0.0061	0.0155	0.0227
	CORTANTE BASAL	X-X	Ton	669.48	1763.31	2147.99
		Y-Y	Ton	665.13	1736.03	2189.87
12	DERIVAS	X-X		0.0047	0.0177	0.0230
		Y-Y		0.0047	0.0172	0.0227
	CORTANTE BASAL	X-X	Ton	1143.10	2555.02	2632.58
		Y-Y	Ton	1129.85	2553.31	2703.00

6.2 Análisis tiempo historia

Para el caso del análisis tiempo historia, se realiza considerando la bidireccionalidad variando el ángulo de incidencia cada 10° considerando desde 0° hasta los 350° para los modelos presentados anteriormente; se presenta las respuestas de Cortante Basal y Derivas para el PRIMER MODELO de 4 pisos para cada registro sísmico mencionado en los anteriores capítulos. Las respuestas de los otros modelos se encuentran en el Anexo C.

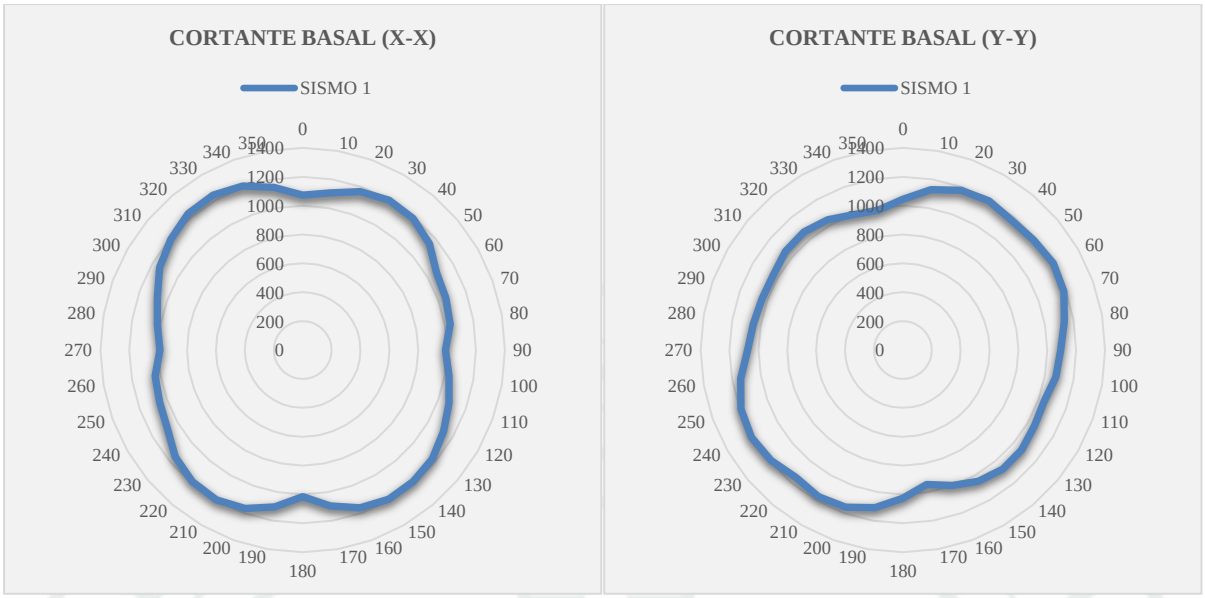


Figura 6.2.1 Cortante Basal - Sismo 1 (Primer modelo - 4 pisos)

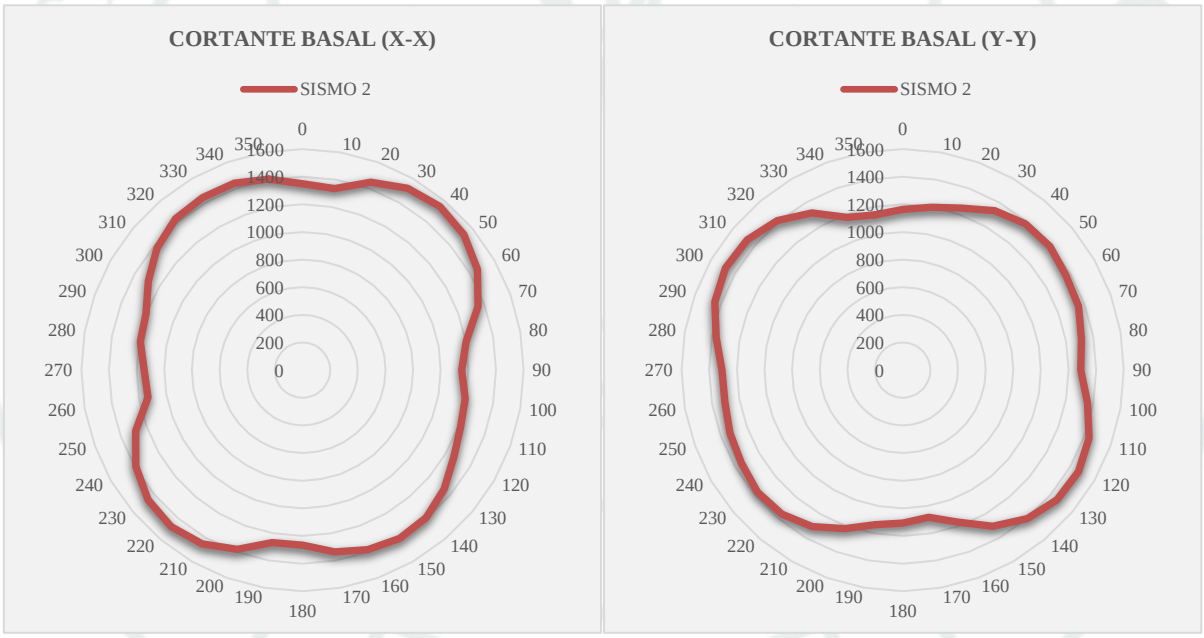


Figura 6.2.2 Cortante Basal - Sismo 2 (Primer modelo - 4 pisos)

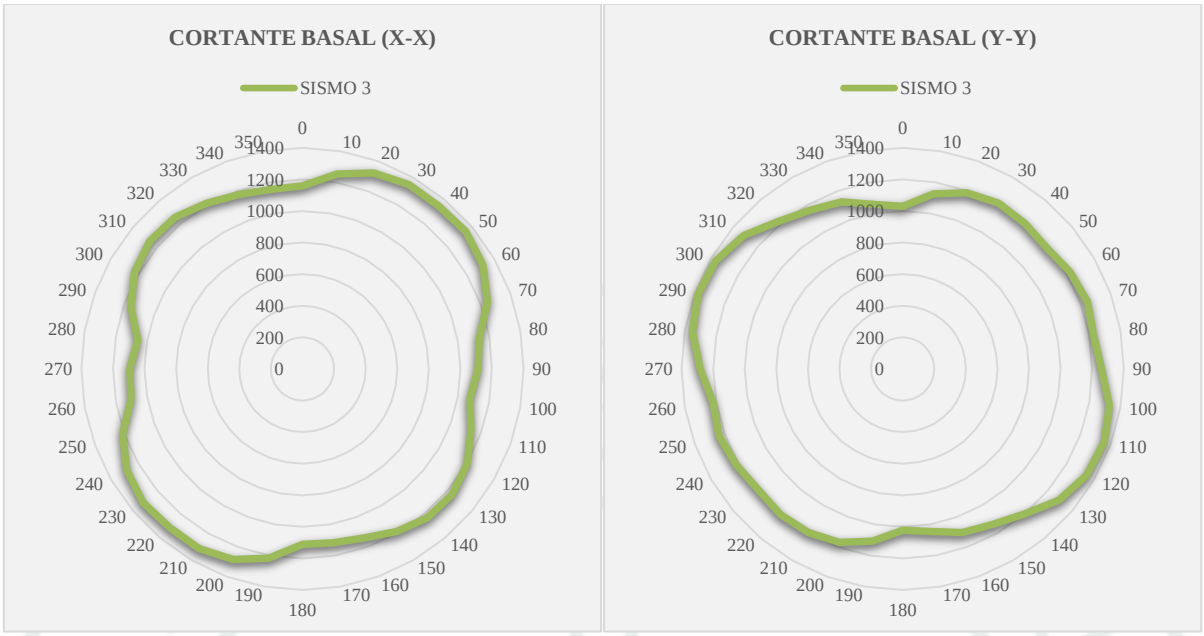


Figura 6.2.3 Cortante Basal - Sismo 3 (Primer modelo - 4 pisos)

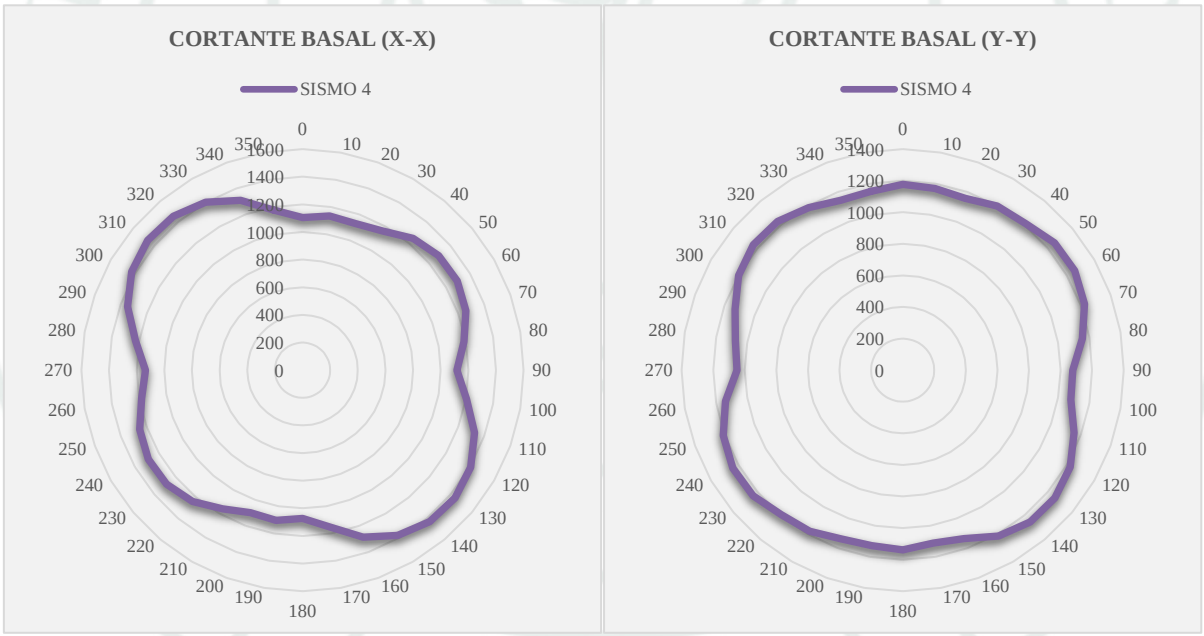


Figura 6.2.4 Cortante Basal - Sismo 4 (Primer modelo - 4 pisos)

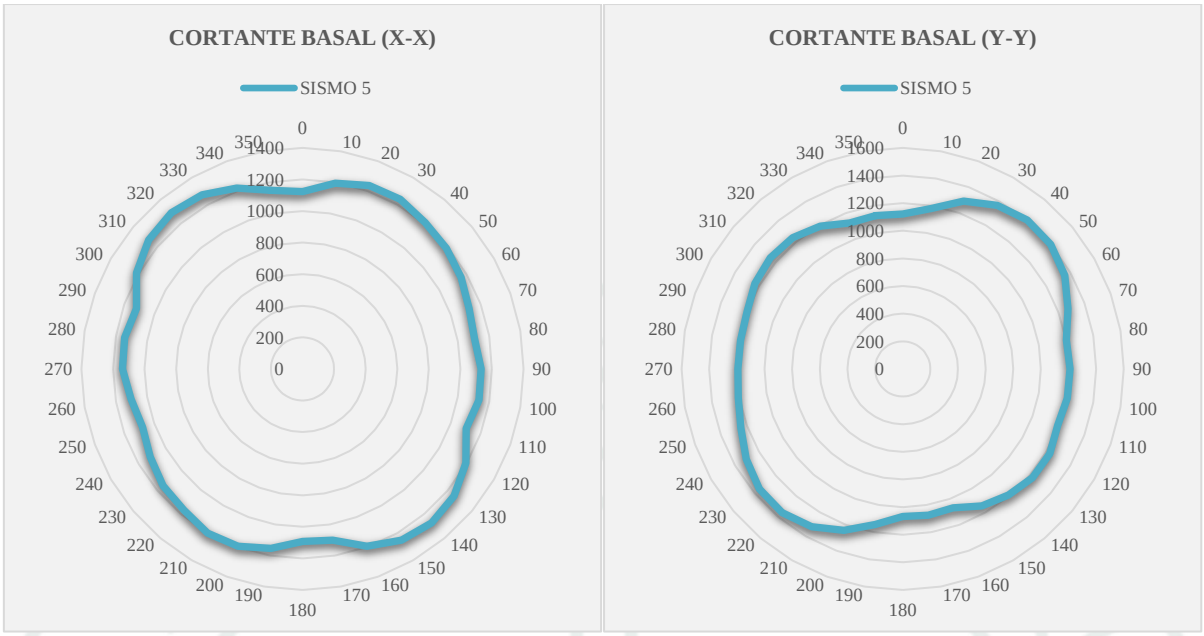


Figura 6.2.5 Cortante Basal - Sismo 5 (Primer modelo - 4 pisos)

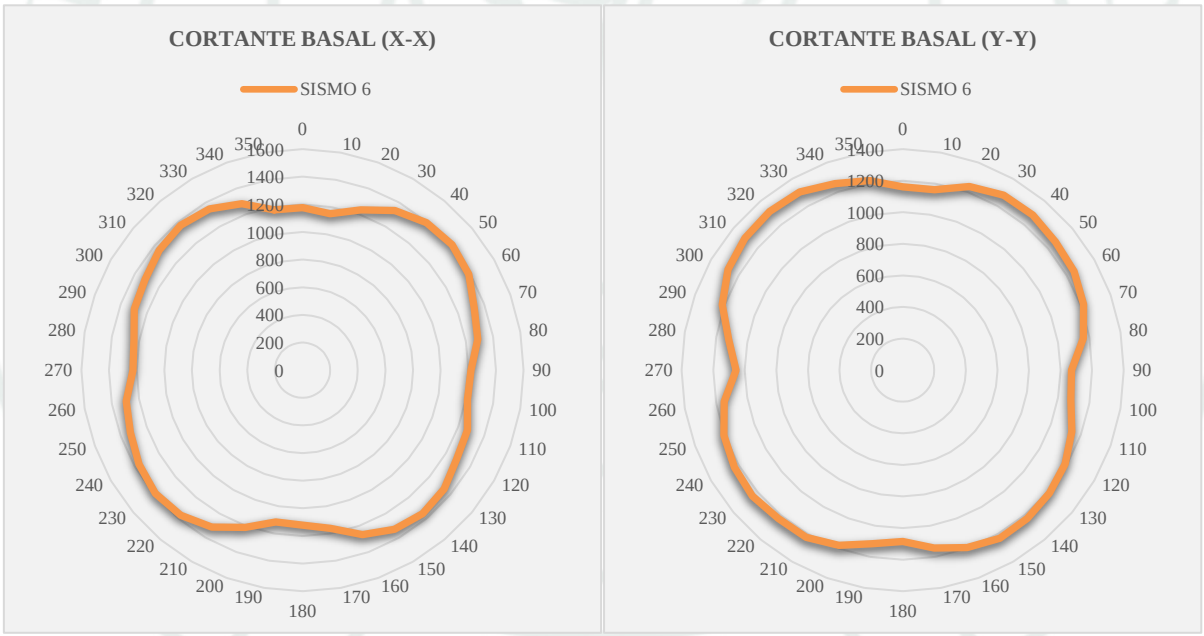


Figura 6.2.6 Cortante Basal - Sismo 6 (Primer modelo - 4 pisos)

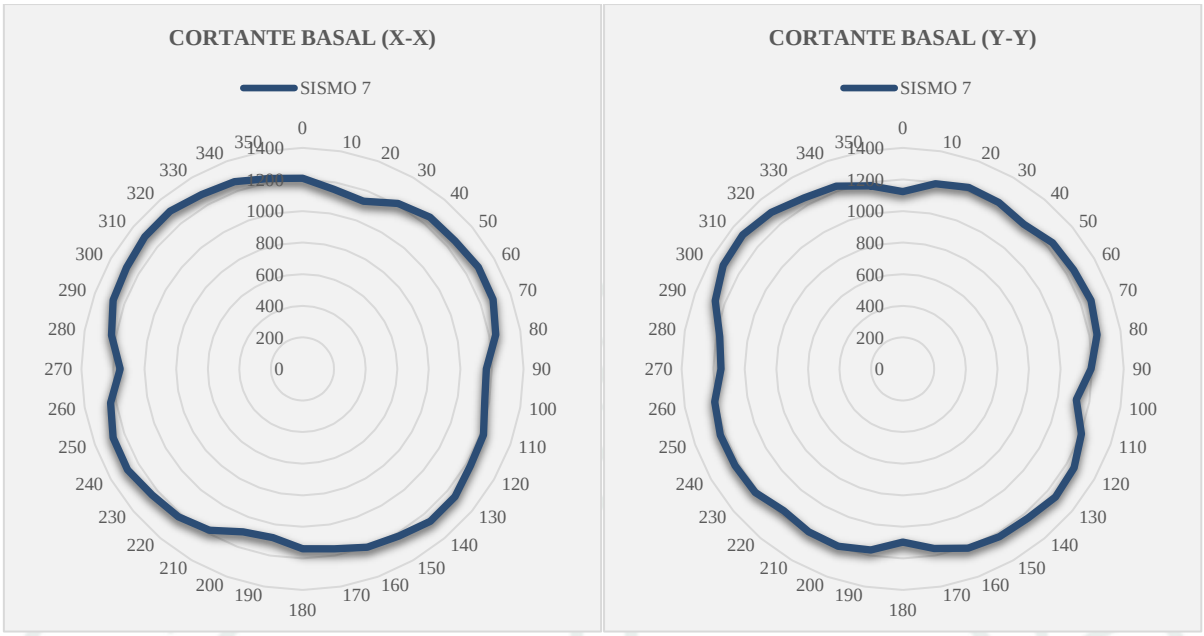


Figura 6.2.7 Cortante Basal - Sismo 7 (Primer modelo - 4 pisos)

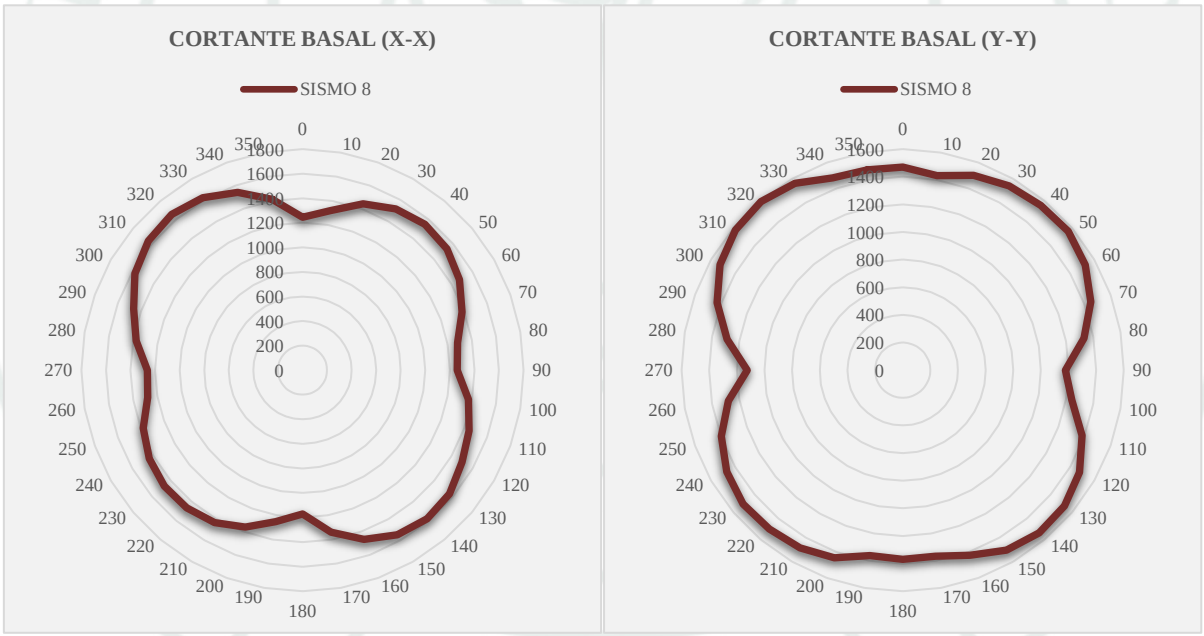


Figura 6.2.8 Cortante Basal - Sismo 8 (Primer modelo - 4 pisos)

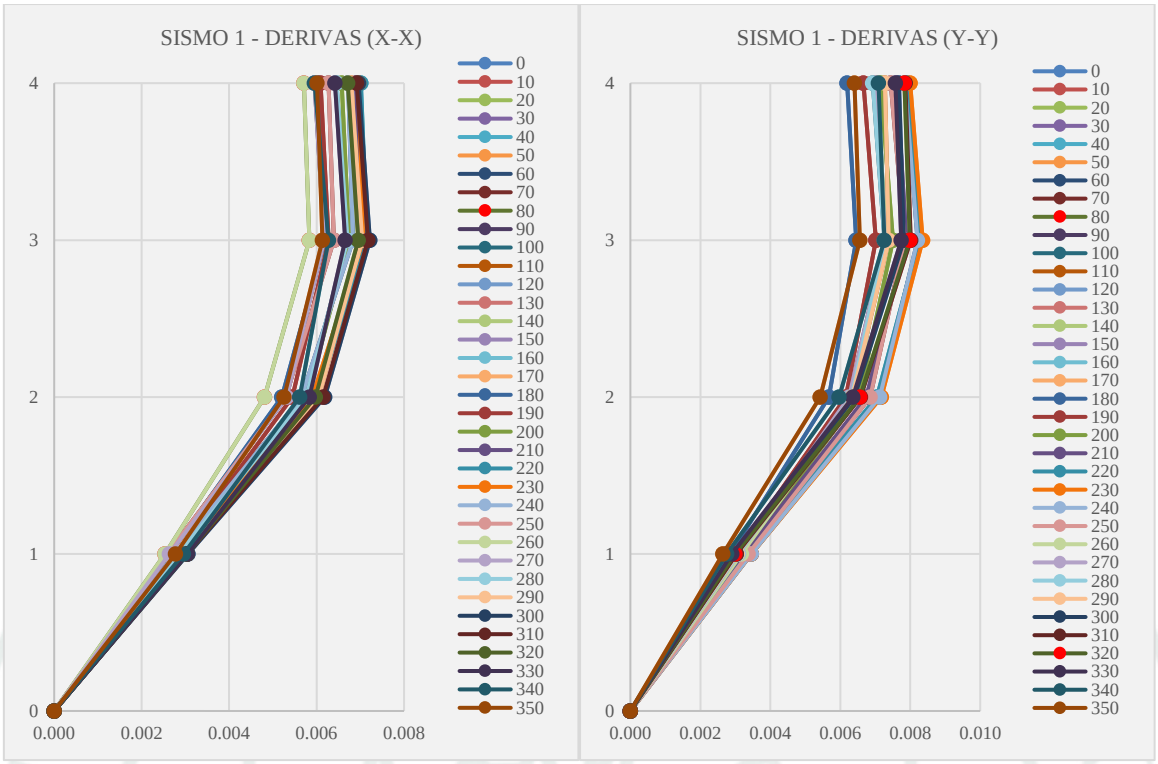


Figura 6.2.9 Derivas - Sismo 1 (Primer modelo - 4 pisos)

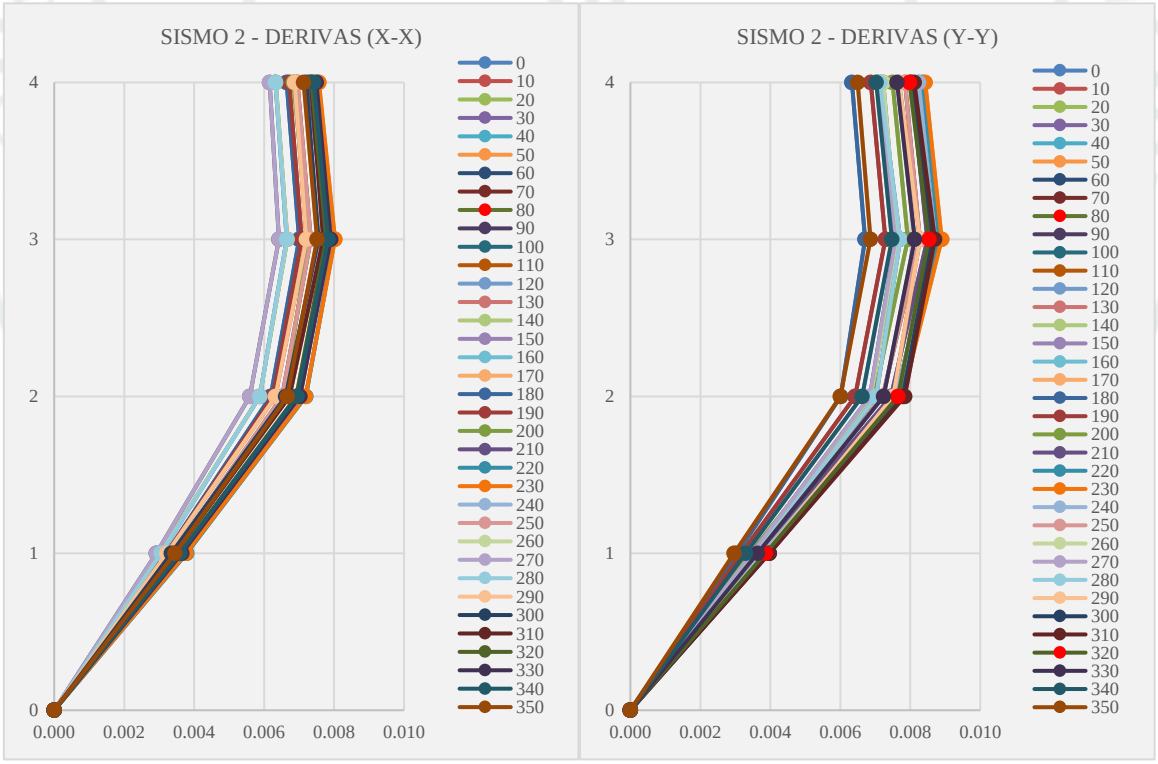


Figura 6.2.10 Derivas - Sismo 2 (Primer modelo - 4 pisos)

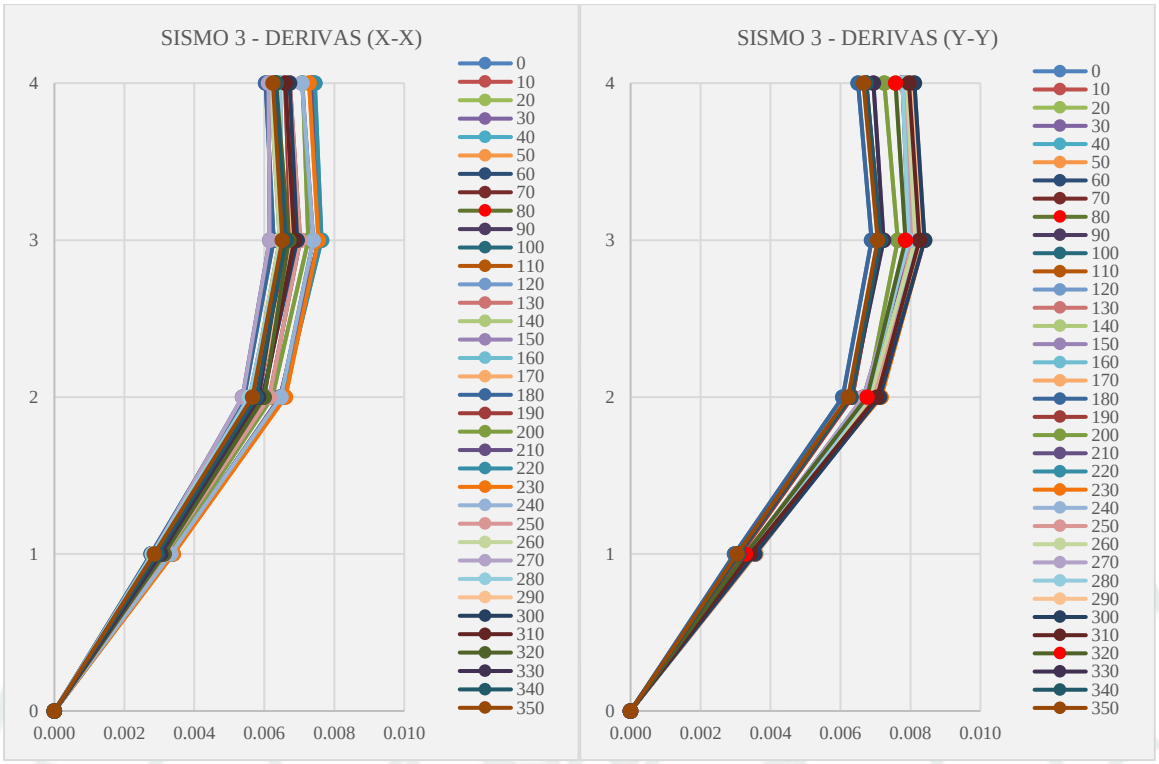


Figura 6.2.11 Derivas - Sismo 3 (Primer modelo - 4 pisos)

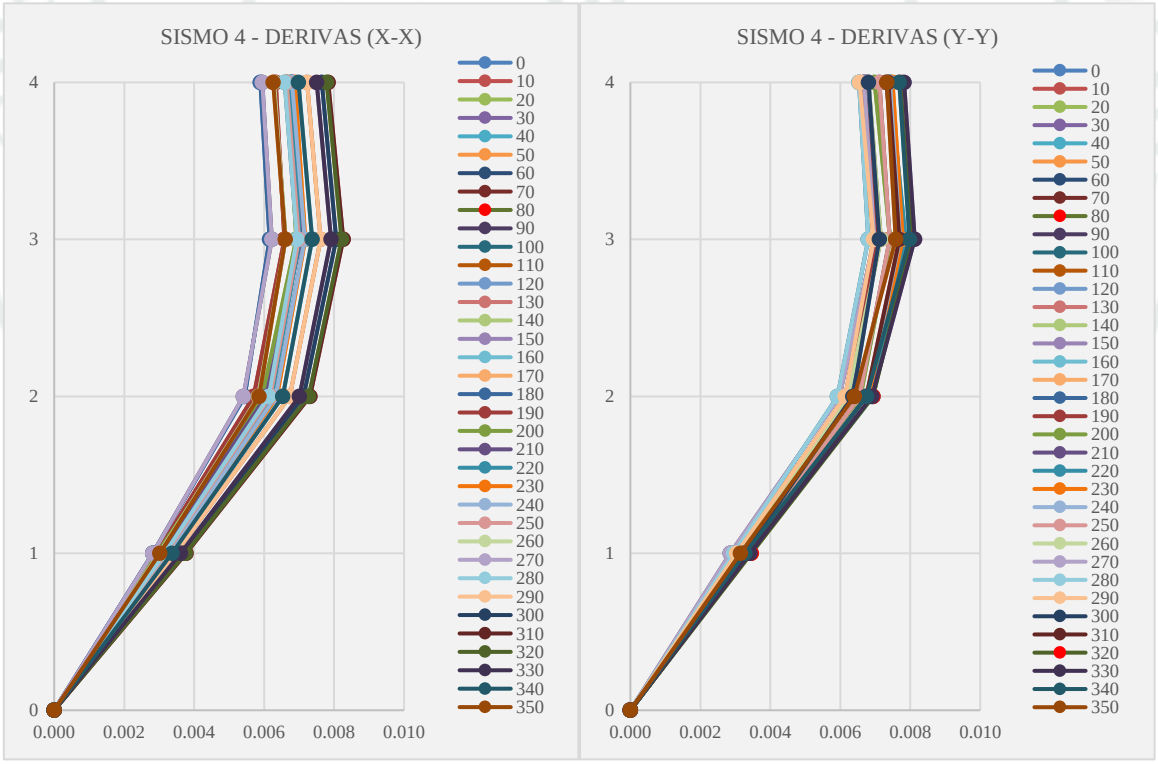


Figura 6.2.12 Derivas - Sismo 4 (Primer modelo - 4 pisos)

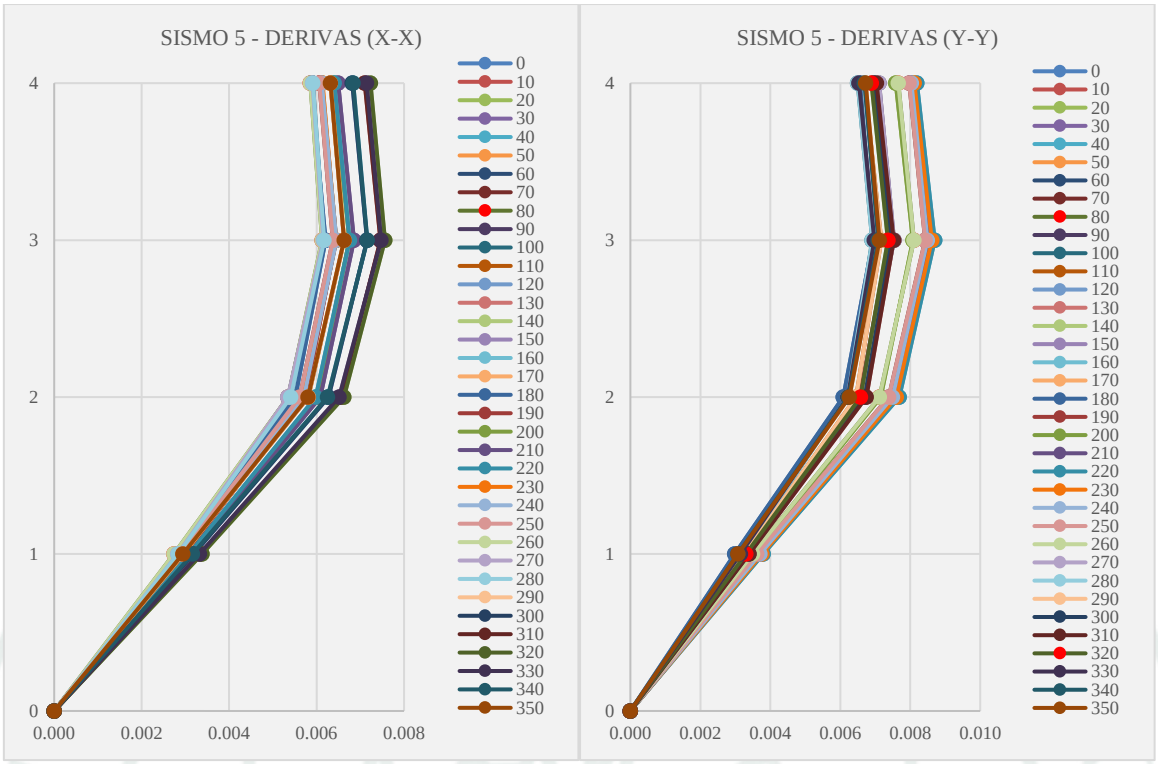


Figura 6.2.13 Derivas - Sismo 5 (Primer modelo - 4 pisos)

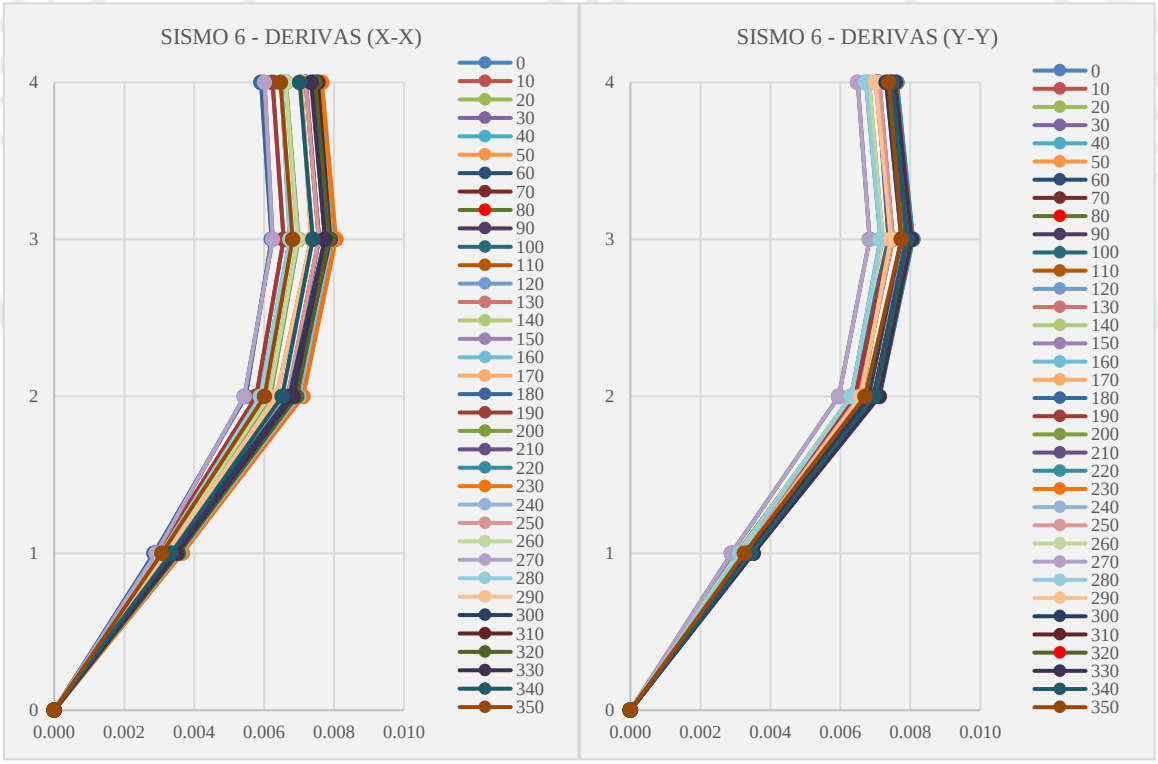


Figura 6.2.14 Derivas - Sismo 6 (Primer modelo - 4 pisos)

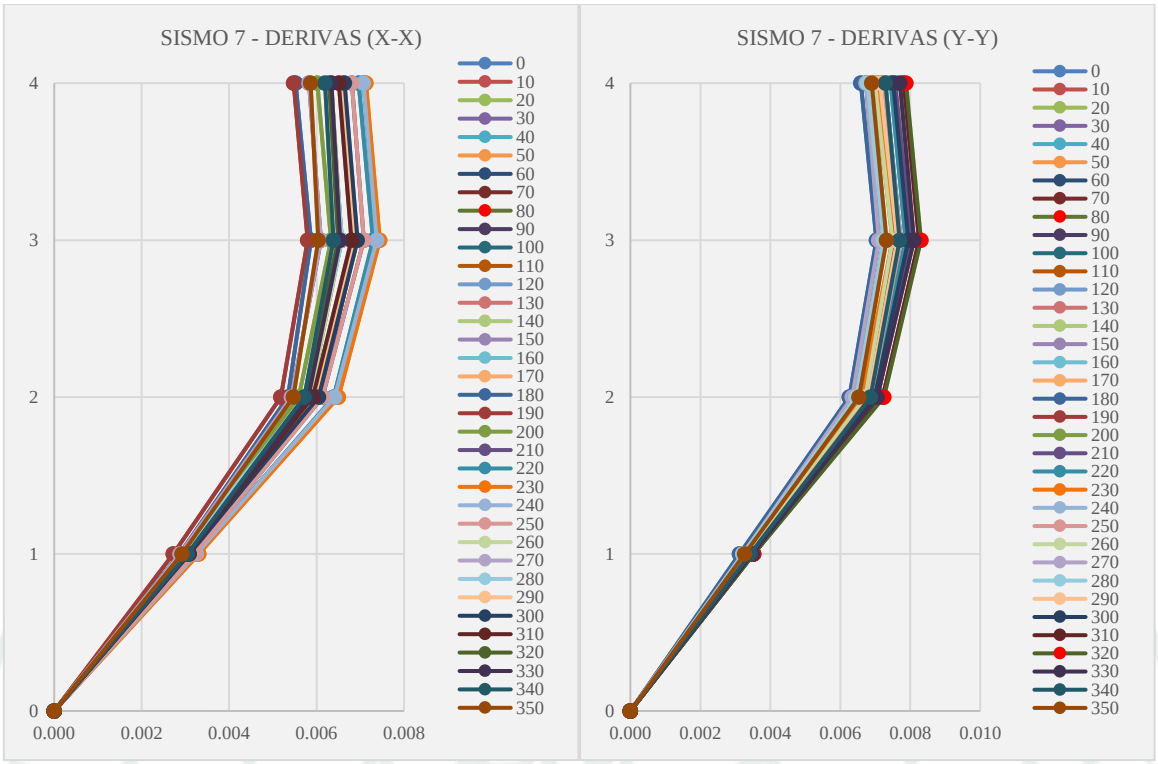


Figura 6.2.15 Derivas - Sismo 7 (Primer modelo - 4 pisos)

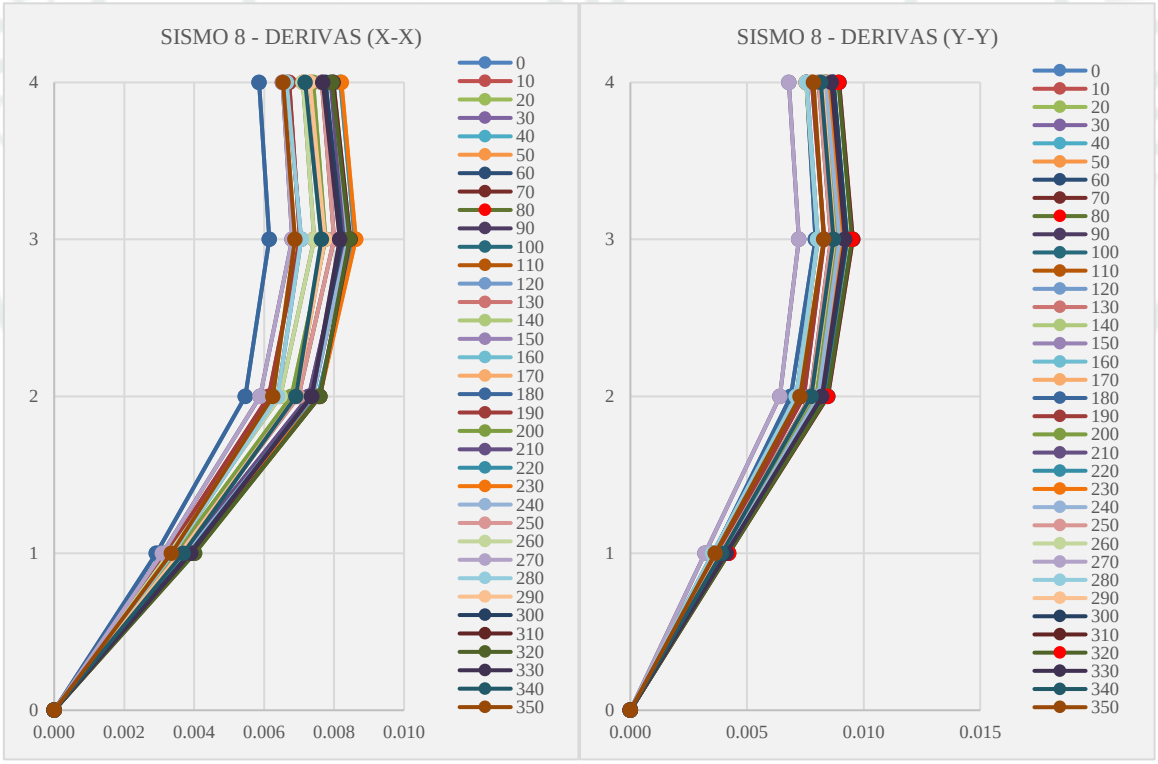


Figura 6.2.16 Derivas - Sismo 8 (Primer modelo - 4 pisos)

6.3 Comparación de análisis

Para la comparación entre el Análisis Tiempo Historia (ATH) y el Análisis Modal Espectral (AME). Primeramente, se promediaron las respuestas (Cortante Basal, Desplazamiento de entrepiso, fuerzas cortantes y momentos flectores en columnas y placas) entre los 8 registros sísmicos para cada modelo y número de pisos, esto para el Análisis Tiempo Historia (ATH) considerando la bidireccionalidad y ángulo de incidencia. A continuación, se muestra la comparación para el primer modelo de 4 pisos; en el Figura 6.3.1 de tipo radial, se considera los promedios de cortantes basales en cada ángulo de incidencia entre los 8 registros sísmicos; para el caso del Figura 6.3.2 de tipo dispersión, se considera los promedios de las derivas de entrepiso por cada nivel de piso entre cada ángulo de incidencia y registro sísmicos.

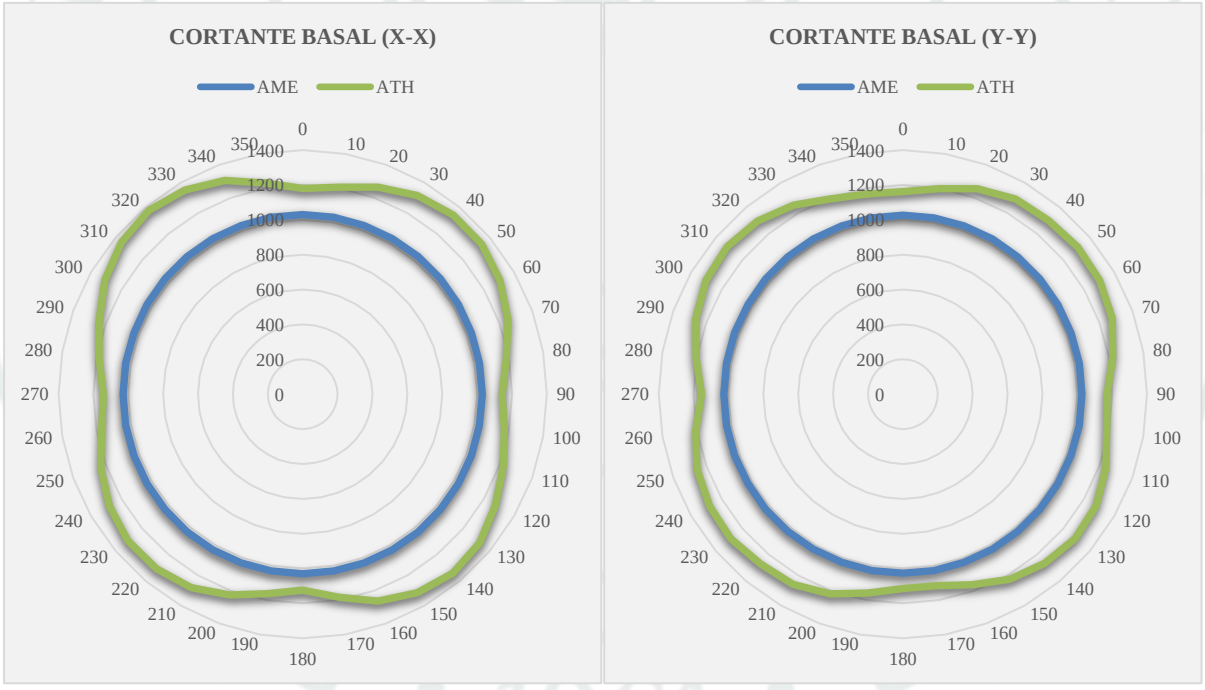


Figura 6.3.1 Cortante Basal máxima (Primer modelo - 4 pisos)

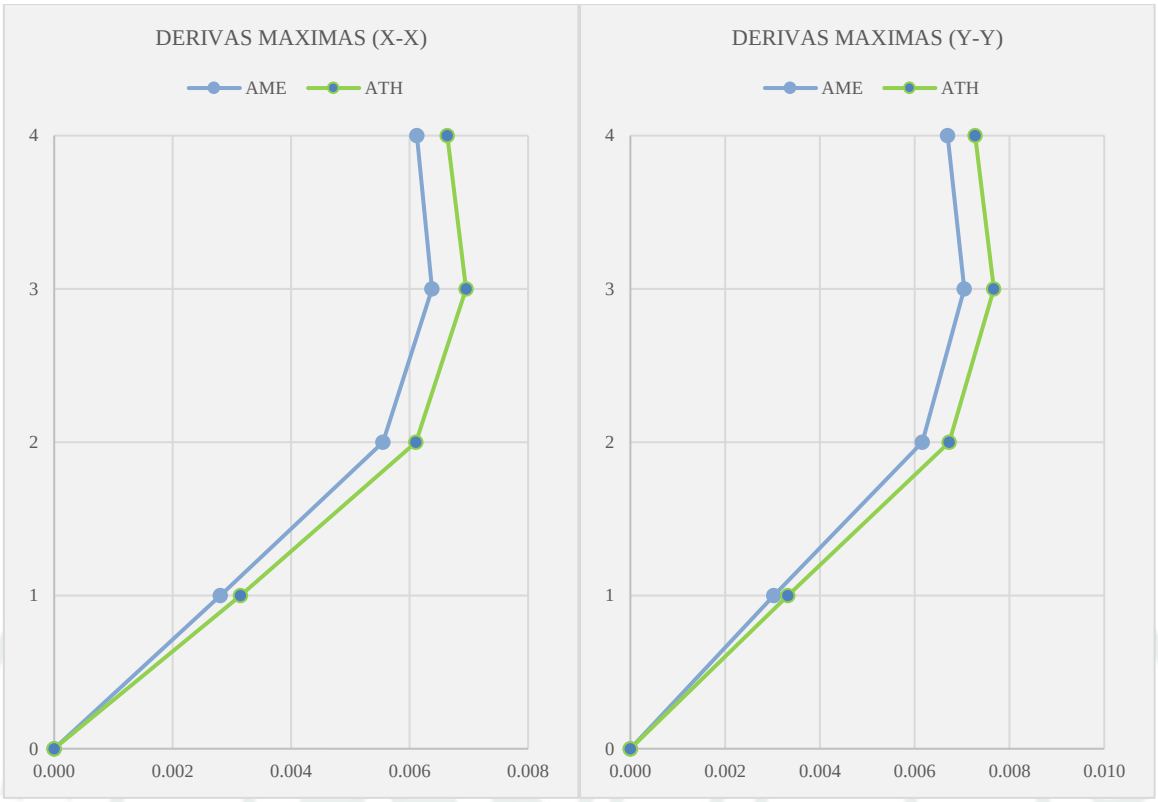


Figura 6.3.2 Derivas de entrepiso máximas (Primer modelo - 4 pisos)

Se puede observar que el Análisis Modal Espectral planteada por la norma E.030 subestima el efecto bidireccional y ángulo de incidencia. El resto de comparaciones graficas se encuentran en el Anexo D.

6.4 Ángulos de Incidencia Críticos

Para el análisis de ángulo de incidencia se tomaron las respuestas locales (fuerzas cortantes, momentos flectores) en columnas y placas. Estas respuestas se obtienen de la comparación de análisis tiempo historia y modal espectral, además se añade la Regla 100 -30 a estas respuestas locales, esto para analizar si esta regla se asemeja a las respuestas del análisis tiempo historia.

En el Figura 6.4.1 se muestra una gráfica lineal o de dispersión las respuestas locales (para este caso momento flector) del análisis tiempo historia, modal espectral y regla 100-30 en función del ángulo de incidencia, donde se observa que las respuestas del análisis tiempo

historia tiene forma de una señal de vibración, donde se tiene 04 valores máximos y/o picos. Para esta investigación se considera para dichos valores su ángulo de incidencia como crítico.

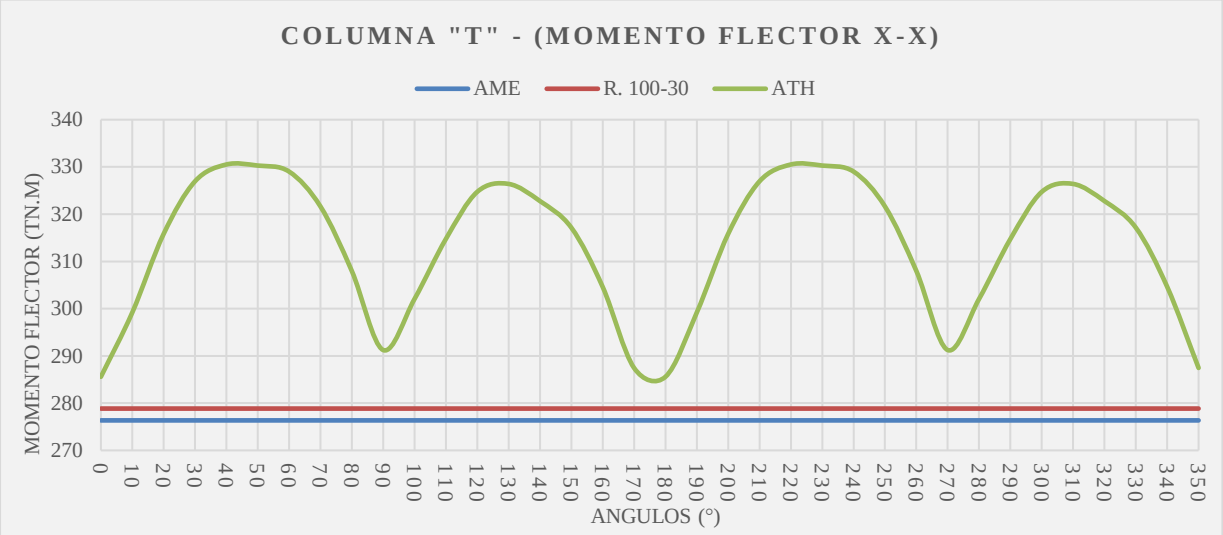


Figura 6.4.1 Momento Flector para ángulos de incidencia - Columna "T" – 1° Modelo - 4 Pisos

En el Figura 6.4.2 se muestra a diferencia del anterior gráfico respuestas del análisis tiempo historia muy dispersas, donde se tiene 6 a 8 valores máximos y/o picos. Por otra parte, la Regla 100-30 ya no se asemeja al análisis modal espectral, como en el anterior gráfico, donde hay una diferencia mayor al 10% aproximadamente para la Regla 100-30 con respecto al AME.

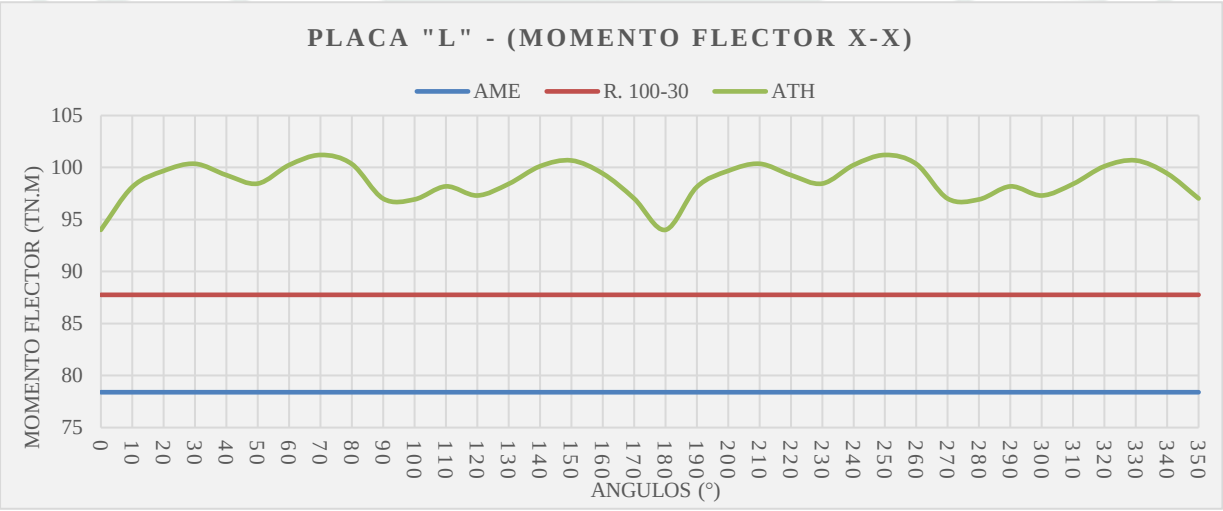


Figura 6.4.2 Momento Flector para ángulos de incidencia - Placa "L" – 1° Modelo - 4 Pisos

Para simplificar el análisis de todos los elementos columnas y placas para los 12 modelos realizados y para cada nivel de piso, se opta por gráficos radiales como se muestra a continuación:

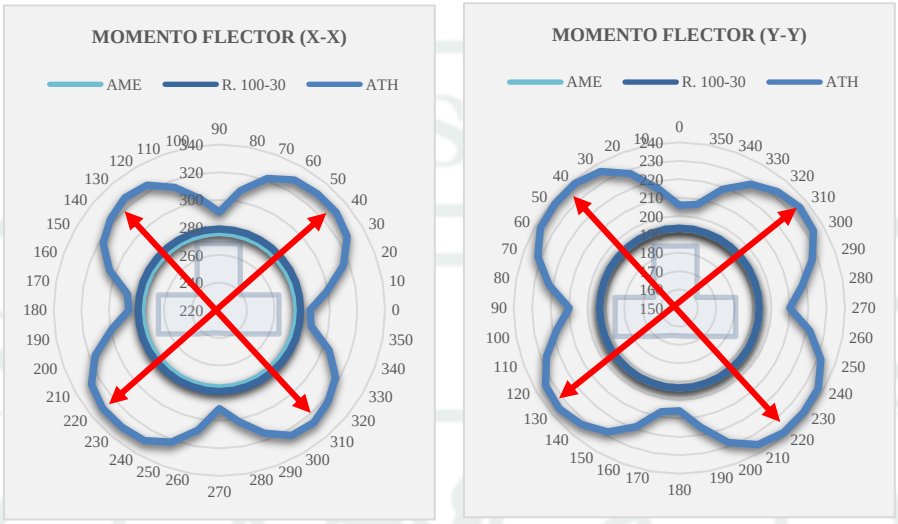


Figura 6.4.3 Momento Flector (X e Y) para ángulos - Columna "T" – 1° Modelo - 4 Pisos

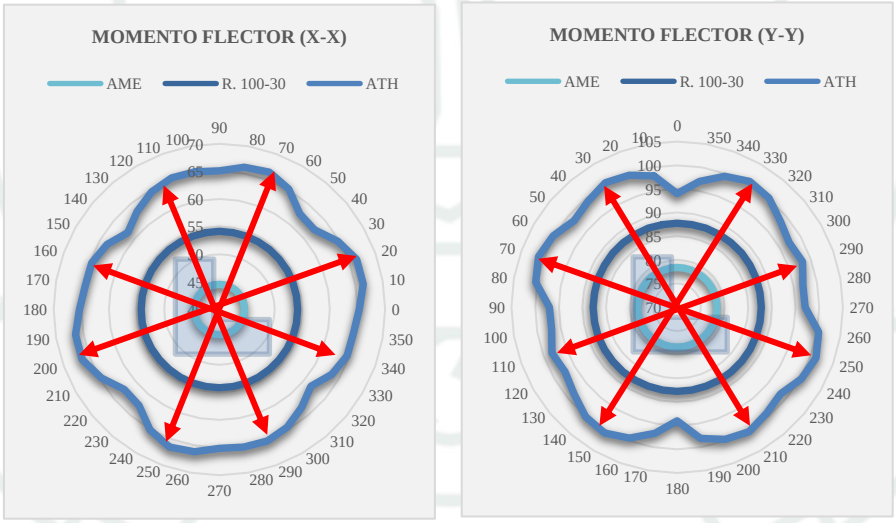
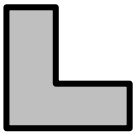
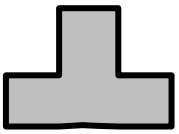
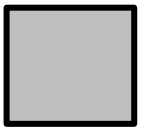
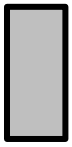


Figura 6.4.4 Momento Flector (X e Y) para ángulos - Placa "L" – 1° Modelo - 4 Pisos

Para las demás columnas y placas para cada modelo se muestran en el Anexo E.

Los ángulos hallados en las gráficas anteriores se resumen en tablas, como se muestra en la Tabla 6.4-1, donde se propone un ángulo de incidencia critico por cuadrante (I:0°-90°, II:90°-180°, III:180°-270°, IV:270°-0°) el resto de tablas se encuentra en el Anexo F.

Tabla 6.4-1 Angulos de Incidencia Critico de Columnas para 4 Pisos

COLUMNA			Tipo "L" 				Tipo "T" 				Cuadrada 				Rectangular 			
Modelo	**Momento/ Fuerza**	**Eje**	**ANGULO DE INCIDENCIA (GRADOS)**															
			I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**
1	Flexión	X-X	50	140	230	320	40	130	220	310	50	140	230	320	40	140	220	320
		Y-Y	40	130	220	310	40	130	220	310	50	130	230	310	40	130	220	310
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	50	130	230	310	50	140	230	320	50	130	230	310	50	130	230	310
2	Flexión	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	50	140	230	320	40	140	220	320	50	140	230	320	50	140	230	320
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	60	130	240	310	40	140	220	320	60	130	240	310	60	130	240	310
3	Flexión	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	50	130	230	310	40	140	220	320	50	130	230	310	50	130	230	310
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	50	130	230	310	40	140	220	320	50	130	230	310	50	130	230	310
4	Flexión	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
5	Flexión	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
		Y-Y	50	140	230	320	40	140	220	320	50	140	230	320	50	140	230	320
6	Flexión	X-X	50	150	230	330	40	130	220	310	50	140	230	320	50	140	230	320
		Y-Y	40	130	220	310	40	130	220	310	40	130	220	310	40	130	220	310
	Cortante	X-X	40	150	220	330	40	130	220	310	40	140	220	320	40	140	220	320
		Y-Y	40	130	220	310	40	150	220	330	40	130	220	310	40	130	220	310
7	Flexión	X-X	50	140	230	320	50	130	230	310	50	140	230	320	40	140	220	320
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310	50	130	230	310
	Cortante	X-X	40	140	220	320	40	140	220	320	50	140	230	320	40	150	220	330
		Y-Y	40	130	220	310	40	140	220	320	40	130	220	310	40	130	220	310
8	Flexión	X-X	50	140	230	320	50	130	230	310	50	140	230	320	40	140	220	320
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310	50	130	230	310
	Cortante	X-X	40	140	220	320	50	140	230	320	40	140	220	320	40	140	220	320
		Y-Y	50	130	230	310	50	140	230	320	50	130	230	310	50	130	230	310
9	Flexión	X-X	30	130	210	310	40	130	220	310					40	130	220	310
		Y-Y	40	120	220	300	40	130	220	310					40	130	220	310
	Cortante	X-X	40	130	220	310	40	130	220	310					40	130	220	310
		Y-Y	40	130	220	310	40	130	220	310					40	130	220	310
10	Flexión	X-X	40	140	220	320	40	140	220	320	40	130	220	310	40	130	220	310
		Y-Y	40	150	220	330	40	130	220	310	40	140	220	320	40	150	220	330
	Cortante	X-X	40	140	220	320	40	140	220	320	40	130	220	310	40	130	220	310
		Y-Y	40	150	220	330	40	130	220	310	40	150	220	330	40	150	220	330
11	Flexión	X-X	40	120	220	300	40	120	220	300	60	130	240	310	50	120	230	300
		Y-Y	50	150	230	330	60	130	240	310	40	140	220	320	50	150	230	330
	Cortante	X-X	50	130	230	310	50	120	230	300	50	130	230	310	50	120	230	300
		Y-Y	50	150	230	330	50	140	230	320	40	140	220	320	40	150	220	330

12	Flexión	X-X	50	130	230	310	50	130	230	310	50	130	230	310	50	130	230	310
		Y-Y	40	140	220	320	50	130	230	310	40	140	220	320	40	140	220	320
	Cortante	X-X	60	130	240	310	60	130	240	310	60	130	240	310	50	130	230	310
		Y-Y	40	150	220	330	60	130	240	310	40	150	220	330	40	150	220	330

Los resultados de la Tabla 6.4-1 y las demás tablas del Anexo F se presentan en un gráfico radial, se observa que para las columnas y placas tienden a tener ángulos de incidencia similares, excepto para la placa tipo “L”, esta placa presenta varias respuestas pico para diferentes ángulos de incidencia, como se muestra en el Figura 6.4.2.

Primeramente, se analiza los modelos de 4 pisos, donde se obtiene que para modelos regulares (1-8), modelos irregulares de Esquinas entrantes (10) y Masa o Peso (12) tienen tendencia a ángulos críticos predominantes entre 40º y 60º, al igual que sus perpendiculares (130°-150°, 310°-330°) y paralelas (220°-240°) como se muestra en el Figura 6.4.5; lo común de estos modelos son los periodos de vibración que se encuentran entre 0.20 a 0.26 segundos aproximadamente, estos periodos son determinados del análisis modal.

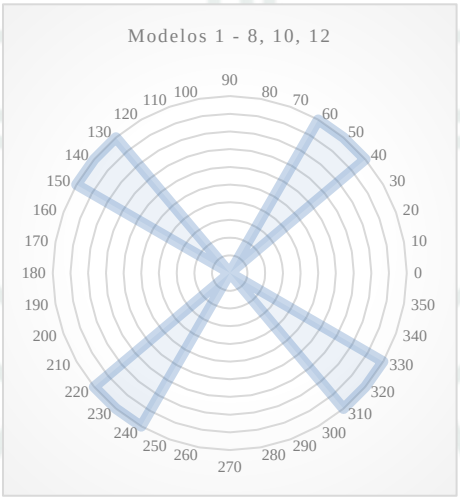


Figura 6.4.5 Ángulos de incidencia críticos para modelos 1 - 8, 10, 12 – 4 Pisos

Para el caso de la placa “L” solo se usó en los modelos de variación de excentricidades (1,6-8), donde se observa en el Figura 6.4.6 que presenta un gran rango de ángulos de incidencia críticos.

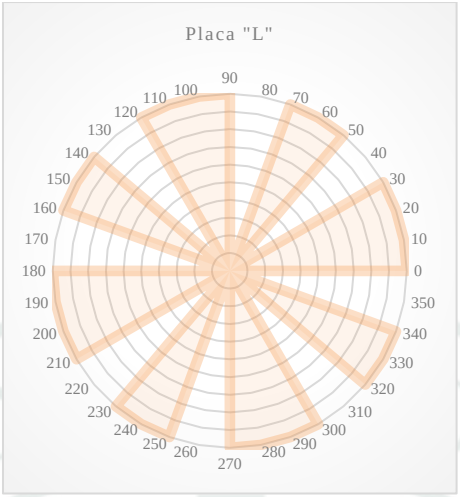


Figura 6.4.6 Ángulos de incidencia críticos para Placa "L" - 4 Pisos

Para el caso de los modelos irregulares de Diafragma Discontinuo (9) y Geometría Vertical (11) con un periodo de vibración menor a 2 segundos, se adiciona los ángulos de 30°, 120°, 210° y 300° se mantiene los ángulos paralelos y perpendiculares, como se muestra en el Figura 6.4.7.

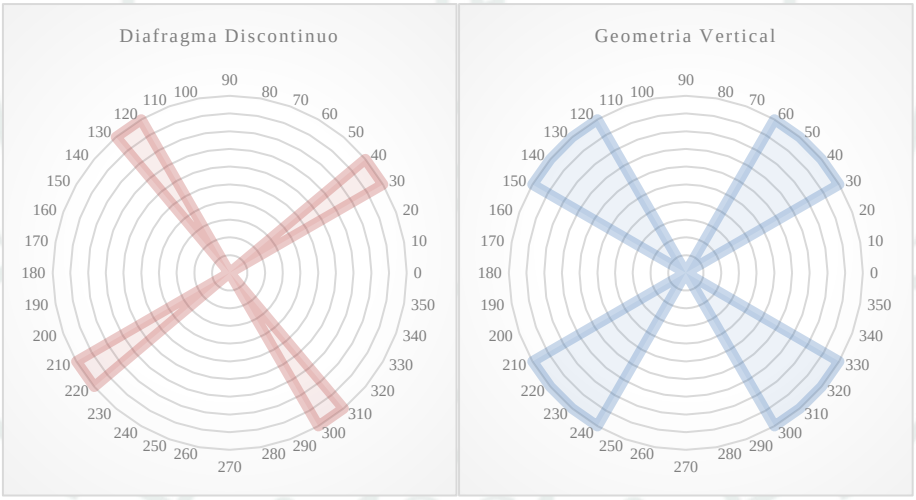


Figura 6.4.7 Ángulos de incidencia críticos para modelos 9, 11 – 4 Pisos

Luego se analiza los modelos de 8 pisos donde se obtiene que para modelos regulares (1-8) tienen tendencia a ángulos críticos predominantes entre 10º y 50º, al igual que sus perpendiculares (100°-140°, 280°-320°) y paralelas (190°-230°) como se muestra en el Figura

6.4.8; lo común de estos modelos son los periodos de vibración que se encuentran entre 0.60 a 0.65 segundos aproximadamente, aunque el segundo periodo va disminuyendo conforme aumenta la rigidez en “Y” alcanzando un periodo de 0.5 segundos, lo que produce que el rango de ángulos críticos sea más amplio, de igual forma es cuando se aumenta la excentricidad.

En el caso de la placa “L” se observa en el Figura 6.4.9, al igual que en los modelos de 4 pisos, se tiene un gran rango de ángulos de incidencia críticos, pero disminuye la cantidad de rangos.

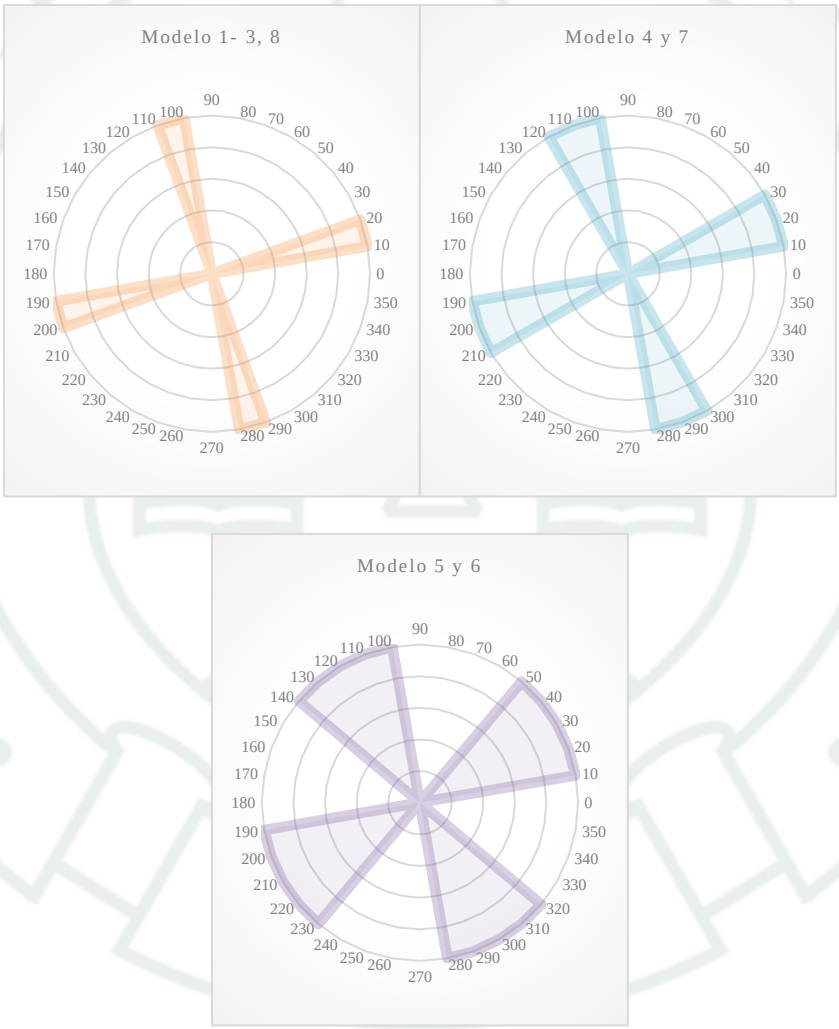


Figura 6.4.8 Ángulos de incidencia críticos para modelos 1 - 8 – 8 Pisos

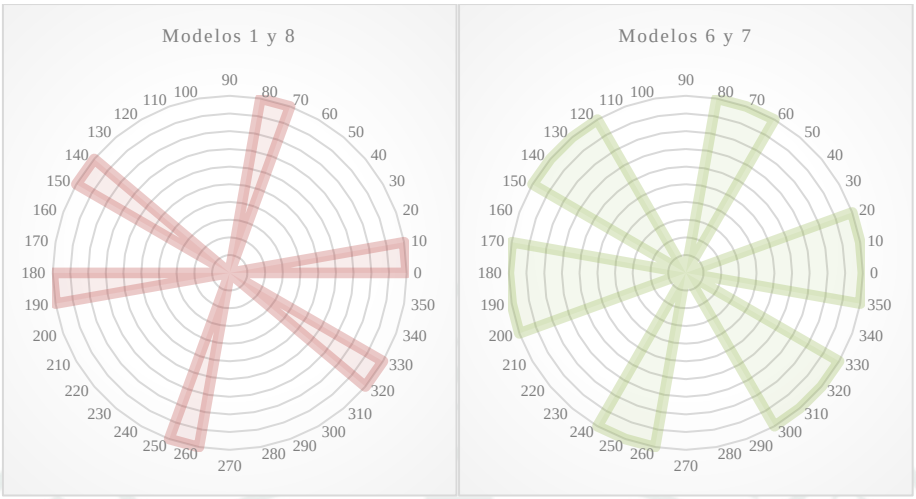


Figura 6.4.9 Ángulos de incidencia críticos para Placa "L" - 8 Pisos

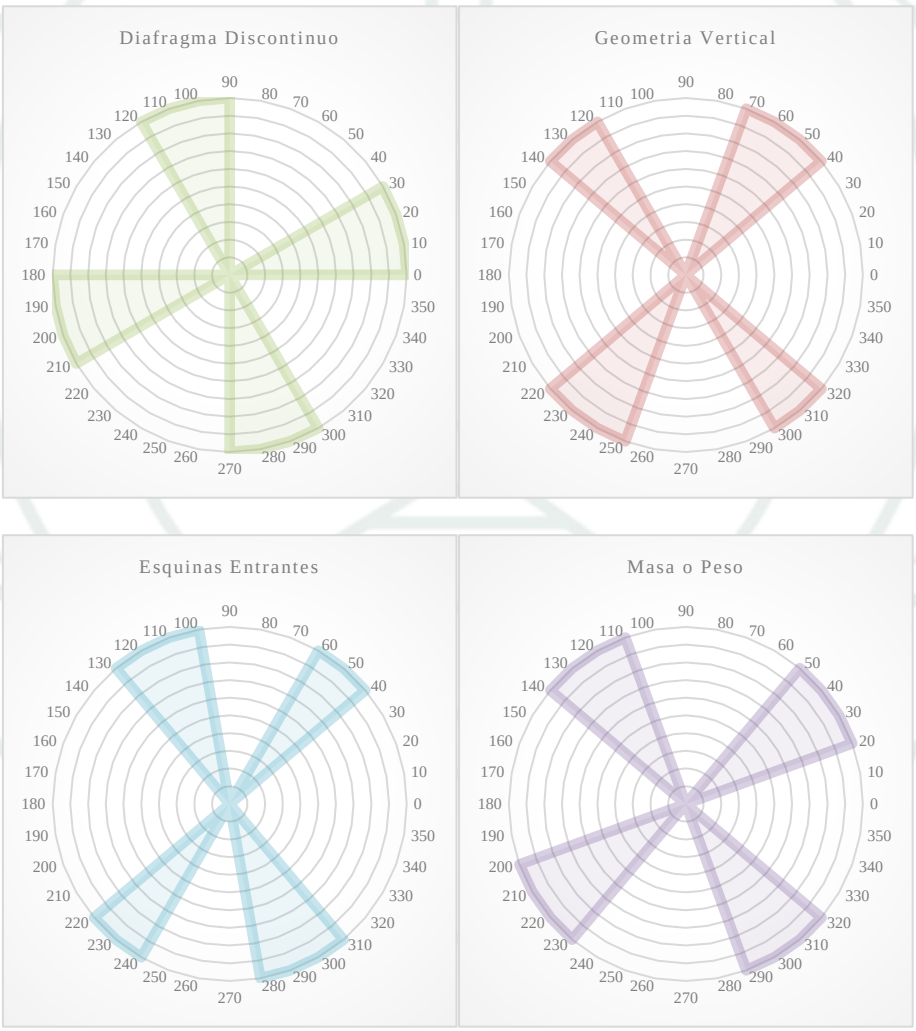


Figura 6.4.10 Ángulos de incidencia críticos para modelos 9 - 12 – 8 Pisos

Para el caso de los modelos irregulares de Diafragma Discontinuo (9), Esquinas Entrantes (10), Geometría Vertical (11) y Masa o Peso (12) con un periodo de vibración menor a 0.43, 0.53, 0.49 y 0.54 segundos respectivamente, se observa de que conforme aumenta el periodo el rango de ángulos de incidencia disminuye, además se mantiene los ángulos paralelos y perpendiculares en los modelos 9 y 12, en cambio para los modelos 10 y 11 ya no se mantiene los ángulos perpendiculares, como se muestra en el Figura 6.4.10.

Por último se analiza los modelos de 12 pisos donde se obtiene que para modelos regulares (1-8) tienen tendencia a ángulos críticos predominantes entre 330º y 40º, al igual que sus perpendiculares (60°-130°, 280°-320°) y paralelas (150°-220°) como se muestra en el Figura 6.4.11; lo común de estos modelos son los periodos de vibración que se encuentran entre 1.00 a 1.10 segundos aproximadamente, aunque el segundo periodo va disminuyendo conforme aumenta la rigidez en "Y" alcanzando un periodo de 0.74 segundos, lo que produce que el rango de ángulos críticos sea más amplio, de igual forma es cuando se aumenta la excentricidad.

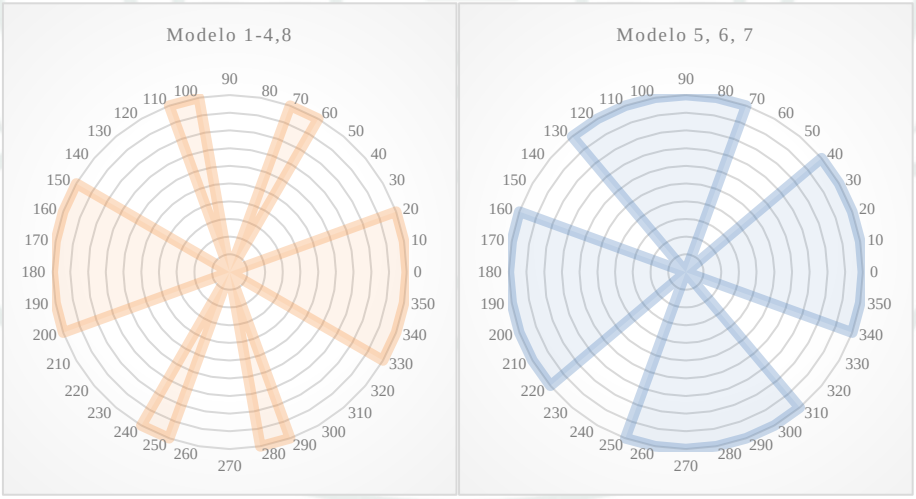


Figura 6.4.11 Ángulos de incidencia críticos para modelos 1 - 8 – 12 Pisos

En el caso de la placa "L" se observa en el Figura 6.4.12, al igual que en los modelos de 4 pisos, se tiene un gran rango de ángulos de incidencia críticos.

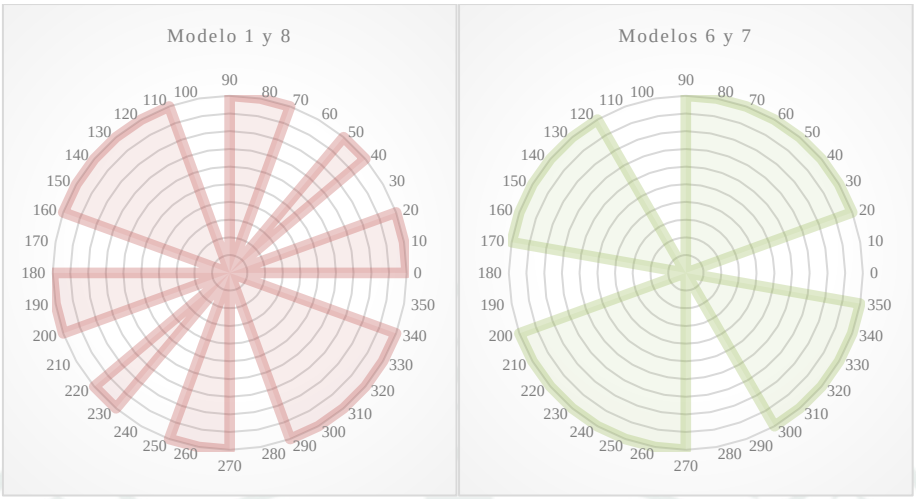


Figura 6.4.12 Ángulos de incidencia críticos para Placa "L" - 12 Pisos

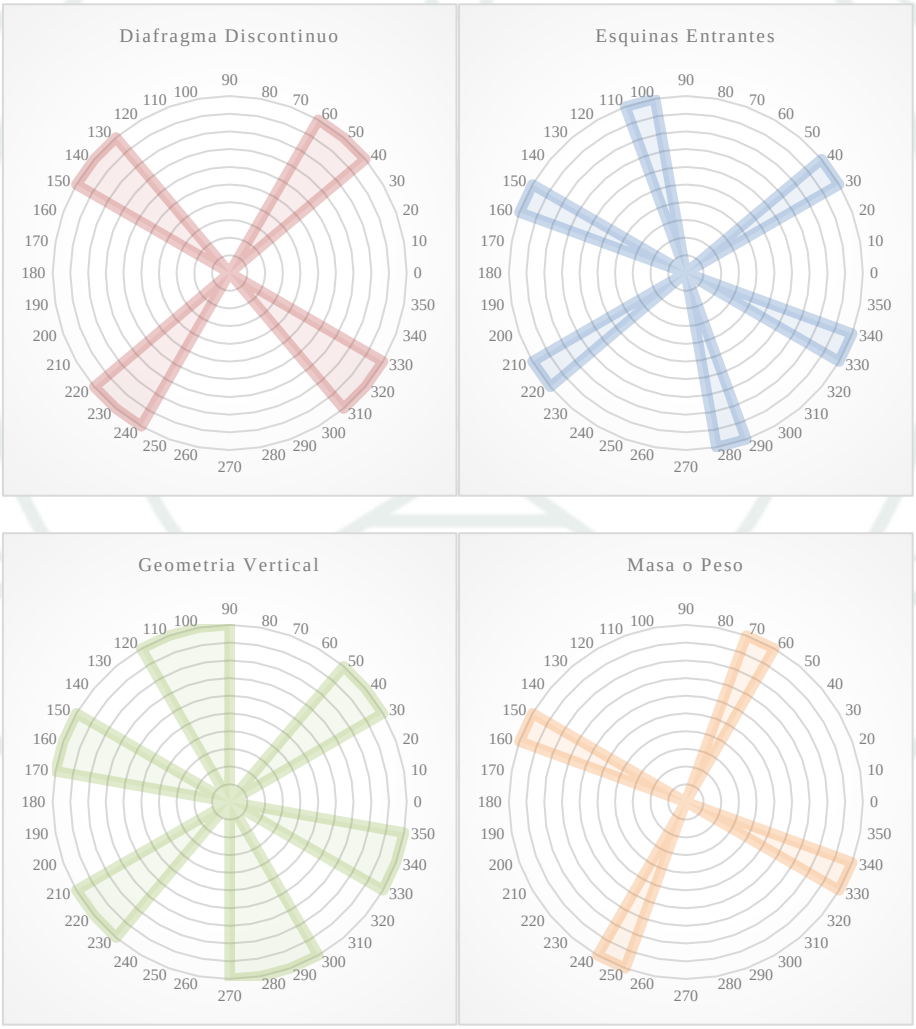


Figura 6.4.13 Ángulos de incidencia críticos para modelos 9 - 12 – 12 Pisos

Para el caso de los modelos irregulares de Diafragma Discontinuo (9), Esquinas Entrantes (10), Geometría Vertical (11) y Masa o Peso (12) con un periodo de vibración menor a 0.71, 0.89, 0.84 y 0.94 segundos respectivamente, se observa de que conforme aumenta el periodo el rango de ángulos de incidencia disminuye, además se mantiene los ángulos paralelos y perpendiculares en los modelos 9 y 12, en cambio para los modelos 10 y 11 ya no se mantiene los ángulos perpendiculares, como se muestra en el Figura 6.4.13.

6.5 Factor de Amplificación entre el Análisis Tiempo Historia (ATH) y el Análisis Modal Espectral (AME)

6.5.1 Estimación de Factor de Amplificación

Para estimar un factor de amplificación entre el Análisis Tiempo Historia (ATH) y el Análisis Modal Espectral (AME), se divide las respuestas obtenidas del Análisis Tiempo Historia (ATH) entre el Análisis Modal Espectral (AME) determinadas en la comparación de análisis (respuestas globales) y ángulo de incidencia (respuestas locales). Para el caso de fuerzas y momentos, se determinar un factor por cada ángulo de incidencia; en el caso de las derivas, se halla un factor por cada nivel de piso.

Por último, se calcula la media (M) de todos los factores hallados anteriormente y se calcula la desviación estándar (σ) de los mismos valores por cada modelo, esto para definir un porcentaje global de variación por cada modelo.

6.5.2 Factor de Amplificación en función de la relación de rigidez

De la estimación del factor de amplificación para los modelos variando la relación de rigideces se obtienen los siguientes resultados:

Tabla 6.5-1 Resultados de Factor de Amplificación para Relación de Rigideces (Ky/Kx) - 4 Pisos

Modelo	Ky/Kx	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación

1	1.00	119.32%	8.53%	127.86%	110.79%	1.2786
2	1.20	116.73%	6.55%	123.27%	110.18%	1.2327
3	1.30	117.27%	7.05%	124.33%	110.22%	1.2433
4	1.50	117.53%	6.38%	123.90%	111.15%	1.2390
5	1.80	121.21%	8.26%	129.48%	112.95%	1.2948

Tabla 6.5-2 Resultados de Factor de Amplificación para Relación de Rigideces (Ky/Kx) - 8 Pisos

Modelo	Ky/Kx	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
1	1.00	114.41%	7.23%	121.64%	107.18%	1.2164
2	1.20	118.83%	8.66%	127.48%	110.17%	1.2748
3	1.30	118.35%	8.64%	126.99%	109.71%	1.2699
4	1.50	118.12%	8.73%	126.86%	109.39%	1.2686
5	1.80	117.06%	9.88%	126.94%	107.18%	1.2694

Tabla 6.5-3 Resultados de Factor de Amplificación para Relación de Rigideces (Ky/Kx) - 12 Pisos

Modelo	Ky/Kx	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
1	1.00	88.16%	5.96%	94.11%	82.20%	0.9411
2	1.20	82.69%	8.29%	90.98%	74.39%	0.9098
3	1.30	85.43%	10.50%	95.93%	74.93%	0.9593
4	1.50	86.13%	10.81%	96.94%	75.32%	0.9694
5	1.80	89.16%	13.83%	102.99%	75.33%	1.0299

De las tablas anteriores se puede graficar los factores de amplificación hallados en función de la relación de rigideces, esto para obtener una expresión lineal como realizó (Moscoso Alcantara & Quiroz Torres, 2018) en su investigación. Se determina ecuaciones lineales para determinar un factor de amplificación según la relación de rigideces, como se muestra en las siguientes graficas:

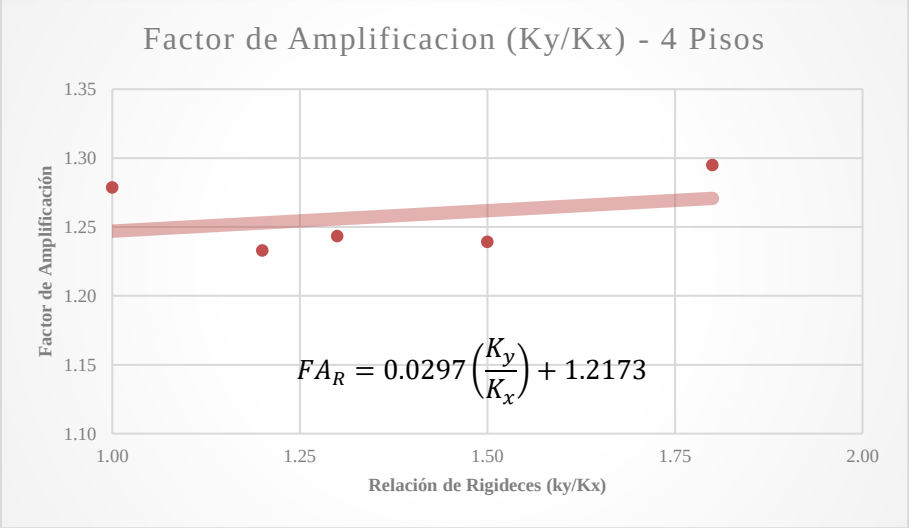


Figura 6.5.1 Factor de Amplificación para Relación de Rigideces (Ky/Kx) - 4 Pisos

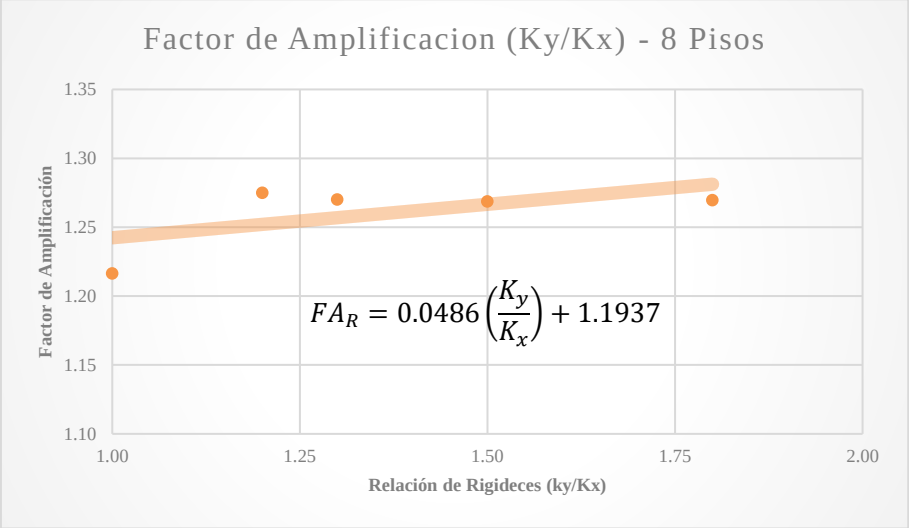


Figura 6.5.2 Factor de Amplificación para Relación de Rigideces (Ky/Kx) - 8 Pisos

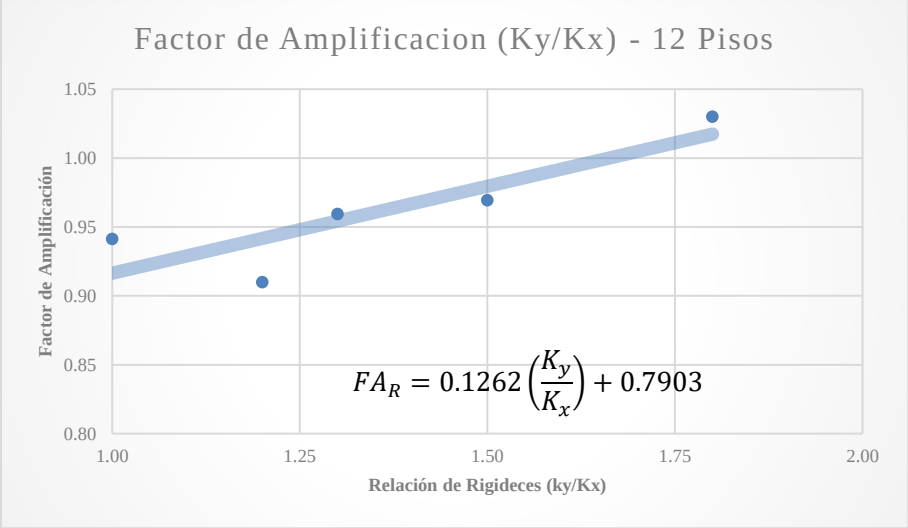


Figura 6.5.3 Factor de Amplificación para Relación de Rigideces (Ky/Kx) - 12 Pisos

De las expresiones lineales halladas en las graficas, se obtienen diferentes pendientes y constantes para determinar un factor de amplificación, dichas ecuaciones se pueden expresar en la siguiente ecuación:

$$FA_R = K_R\left(\frac{K_y}{K_x}\right) + C_R \qquad Ec.(6.5.2.1)$$

Donde FA_R es el Factor de Amplificación, K_R es la pendiente y C_R es la constante para relación de rigideces.

Luego podemos tabular la pendiente (K_R) y la constante (C_R) en función de los números de pisos, pero estos números de pisos se pueden expresar en periodos de vibración según la norma E.030, de igual manera que se hizo en el proceso de escalonamiento.

Tabla 6.5-4 Pendiente (K_R) y Constate (C_R) en función del Periodo (T) para Ky/Kx

Pisos	**T**	**K_R**	**C_R**
4	0.19	0.0297	1.2173
8	0.37	0.0486	1.1937
12	0.56	0.1262	0.7903

De igual manera que se hizo anteriormente, se grafica la pendiente (K_R) y la constante (C_R) en función del periodo (T). Donde para la pendiente (K_R) se propone una función potencial

como se muestra en el Figura 6.5.4, y para la constante (C_R) se propone una función lineal como se muestra en el Figura 6.5.5.

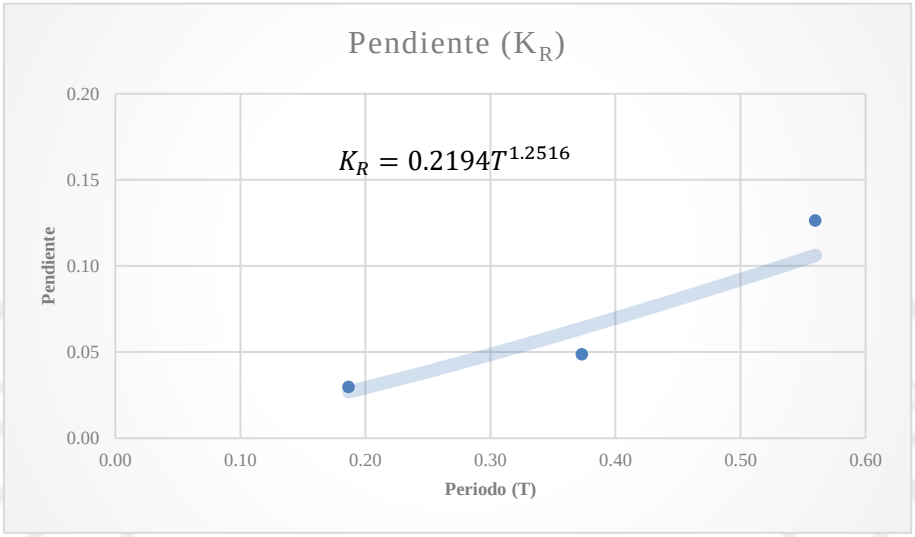


Figura 6.5.4 Pendiente (K_R) en función del periodo (T) para Ky/Kx

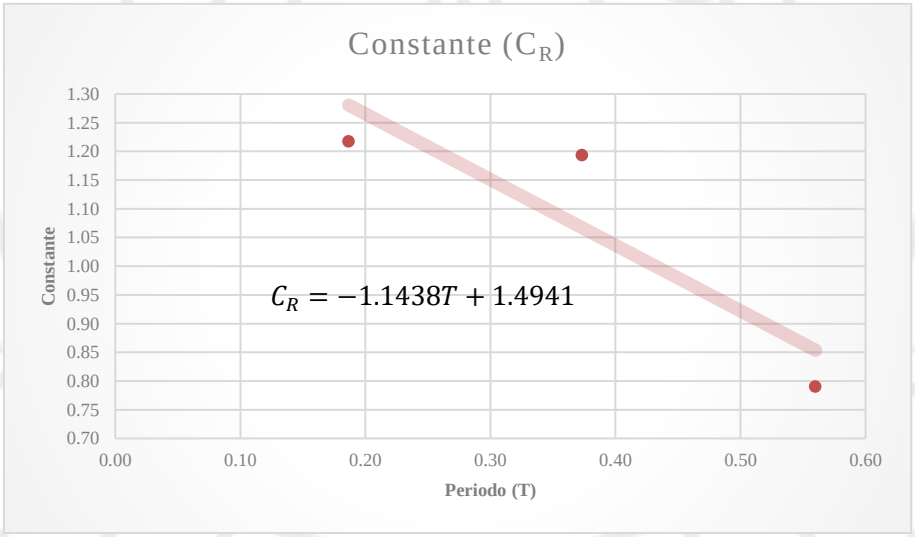


Figura 6.5.5 Constante (C_R) en función del periodo (T) para Ky/Kx

Finalmente se determina una ecuación general para factor de amplificación para relación de rigideces Ky/Kx en función del periodo y dicha relación de rigideces. De la Ecuación (6.5.2.1) se reemplazan las funciones de la pendiente (K_R) y la constante (C_R).

$$FA_R = 0.2194T^{1.2516}\left(\frac{K_y}{K_x}\right) - 1.1438T + 1.4941 \qquad Ec.(6.5.2.2)$$

6.5.3 Factor de Amplificación en función de la excentricidad

De igual manera que se realizó en la relación de rigideces se obtiene un factor de amplificación para los modelos variando la excentricidad, para este caso se trabajara con excentricidad relativa (e_r) y se obtienen los siguientes resultados:

Tabla 6.5-5 Resultados de Factor de Amplificación para excentricidad relativa (e_r) - 4 Pisos

Modelo	e_r (%)	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
1	0.000	119.32%	8.53%	127.86%	110.79%	1.2786
8	0.031	119.22%	8.84%	128.06%	110.38%	1.2806
7	0.063	119.49%	9.18%	128.67%	110.31%	1.2867
6	0.094	120.09%	9.16%	129.24%	110.93%	1.2924

Tabla 6.5-6 Resultados de Factor de Amplificación para excentricidad relativa (e_r) - 8 Pisos

Modelo	e_r (%)	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
1	0.000	114.41%	7.23%	121.64%	107.18%	1.2164
8	0.031	116.12%	7.33%	123.45%	108.79%	1.2345
7	0.063	118.26%	7.45%	125.71%	110.81%	1.2571
6	0.094	120.49%	7.66%	128.15%	112.83%	1.2815

Tabla 6.5-7 Resultados de Factor de Amplificación para excentricidad relativa (e_r) - 12 Pisos

Modelo	e_r (%)	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
1	0.000	88.16%	5.96%	94.11%	82.20%	0.9411
8	0.031	86.19%	5.67%	91.86%	80.52%	0.9186
7	0.063	84.55%	5.58%	90.13%	78.96%	0.9013
6	0.094	83.18%	5.84%	89.02%	77.34%	0.8902

De las tablas anteriores se puede graficar los factores de amplificación hallados en función de la excentricidad relativa, esto para obtener una expresión lineal como realizó (Moscoso Alcantara & Quiroz Torres, 2018) en su investigación. Se determina ecuaciones lineales para determinar un factor de amplificación según la excentricidad relativa, como se muestra en las siguientes graficas:

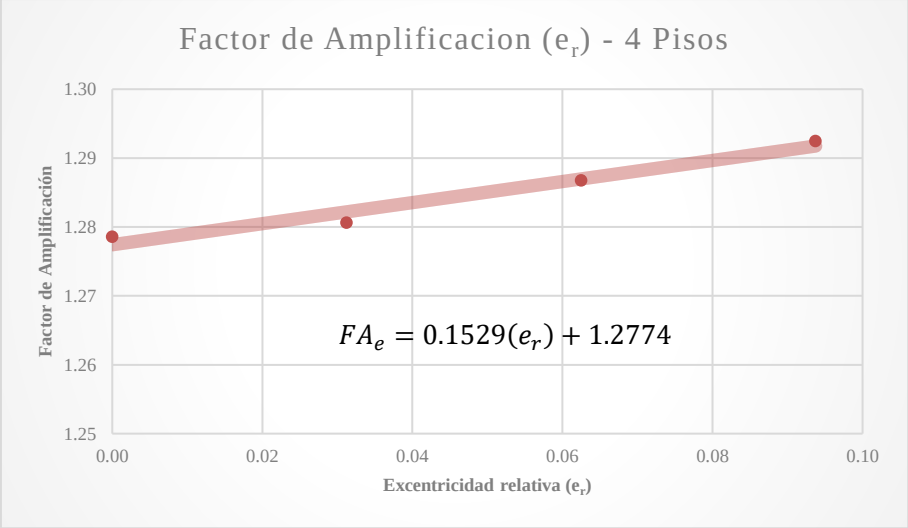


Figura 6.5.6 Factor de Amplificación para Excentricidad relativa (e_r) - 4 Pisos

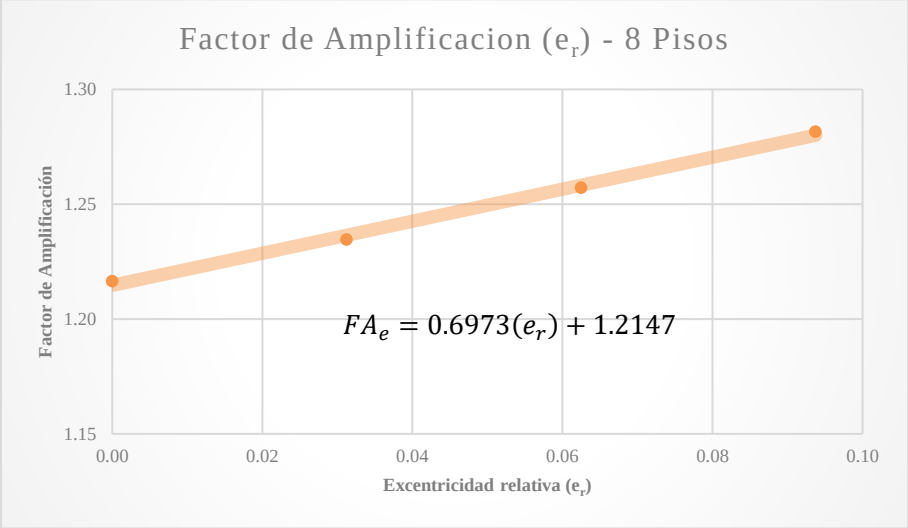


Figura 6.5.7 Factor de Amplificación para Excentricidad relativa (e_r) - 8 Pisos

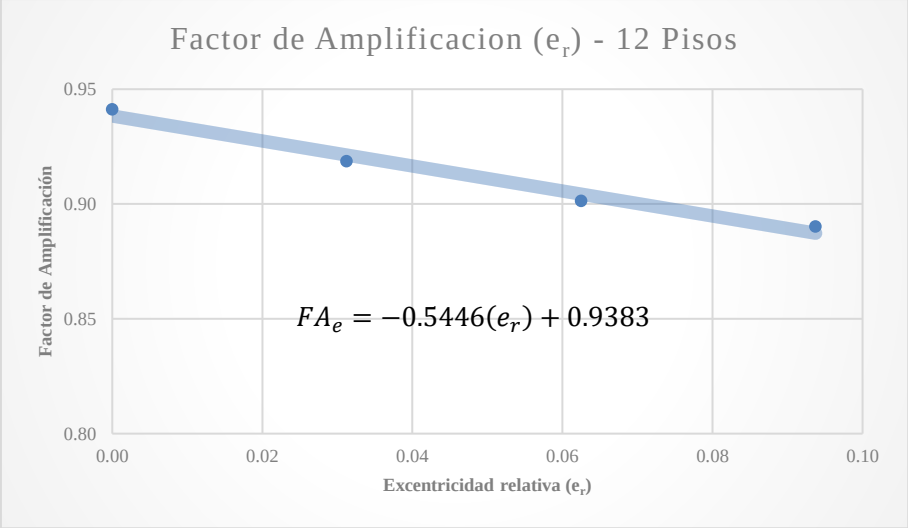


Figura 6.5.8 Factor de Amplificación para Excentricidad relativa (e_r) - 12 Pisos

De las expresiones lineales halladas en las graficas, se obtienen diferentes pendientes y constantes para determinar un factor de amplificación, dichas ecuaciones se pueden expresar en la siguiente ecuación:

$$FA_e = K_e(e_r) + C_e \qquad Ec.(6.5.3.1)$$

Donde FA_e es el Factor de Amplificación, K_e es la pendiente y C_e es la constante para excentricidad relativa.

Luego podemos tabular la pendiente (K_e) y la constante (C_e) en función de los números de pisos, pero estos números de pisos se pueden expresar en periodos de vibración según la norma E.030, de igual manera que se hizo en el proceso de escalonamiento. Para el caso de 12 pisos no se tomará en cuenta, debido a que el factor de amplificación es menor a 1.

Tabla 6.5-8 Pendiente (KR) y Constate (CR) en función del Periodo (T) para e_r

Pisos	T	Ke	Ce
4	0.19	0.1529	1.2773
8	0.37	0.6973	1.2147

De igual manera que se hizo anteriormente para relación de rigideces, se grafica la pendiente (K_e) y la constante (C_e) en función del periodo (T). Donde para la pendiente (K_e) se

propone una función potencial como se muestra en el Figura 6.5.9, y para la constante (C_e) se propone una función lineal como se muestra en el Figura 6.5.10.

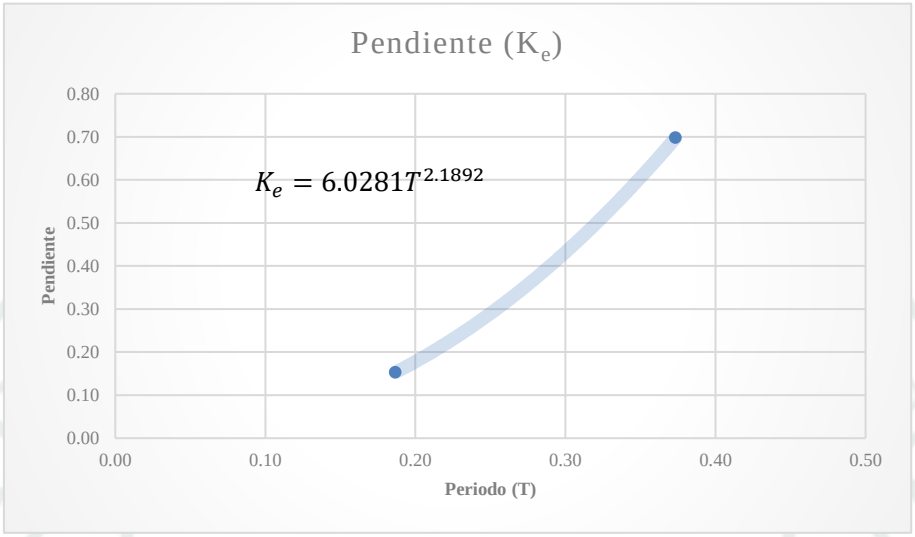


Figura 6.5.9 Pendiente (K_e) en función del periodo (T) para e_r

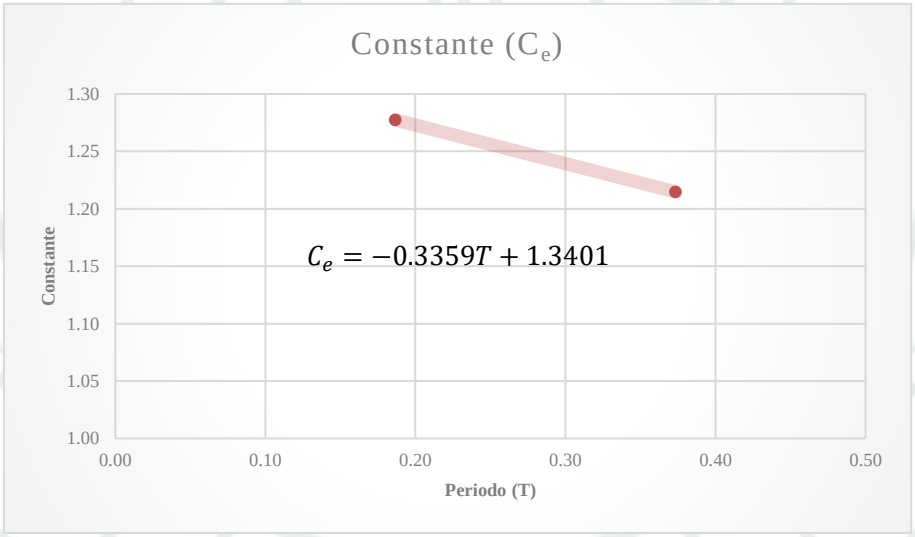


Figura 6.5.10 Constante (C_e) en función del periodo (T) para e_r

Finalmente se determina una ecuación general para factor de amplificación para relación de rigideces Ky/Kx en función del periodo y dicha relación de rigideces. De la Ecuación (6.5.2.1) se reemplazan las funciones de la pendiente (K_R) y la constante (C_R).

$$FA_e = 6.0281T^{2.1892}(e_r) - 0.3359T + 1.3401 \qquad Ec.(6.5.3.2)$$

6.5.4 Factor de Amplificación según irregularidad

Por último, se obtiene un factor de amplificación para los modelos irregulares, para estos casos se trabajará con los números de pisos y/o periodo (T) como se realizó en los anteriores casos de rigidez y excentricidad, en estos casos no se puso énfasis en la variación de rigideces y/o excentricidades, solo en la irregularidad del modelo.

Tabla 6.5-9 Resultados de Factor de Amplificación para Irregularidad Diafragma Discontinuo

Pisos	T (s)	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
4	0.19	139.36%	5.93%	145.28%	133.43%	1.4528
8	0.37	111.57%	4.20%	115.78%	107.37%	1.1578
12	0.56	106.85%	4.23%	111.08%	102.63%	1.1108

Tabla 6.5-10 Resultados de Factor de Amplificación para Irregularidad Esquinas Entrantes

Pisos	T (s)	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
4	0.19	124.74%	7.30%	132.04%	117.44%	1.3204
8	0.37	110.64%	5.70%	116.34%	104.94%	1.1634
12	0.56	102.67%	6.62%	109.29%	96.05%	1.0929

Tabla 6.5-11 Resultados de Factor de Amplificación para Irregularidad Geometría Vertical

Pisos	T (s)	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
4	0.19	138.72%	7.00%	145.72%	131.72%	1.4572
8	0.37	110.62%	4.15%	114.77%	106.48%	1.1477
12	0.56	104.01%	6.58%	110.59%	97.43%	1.1059

Tabla 6.5-12 Resultados de Factor de Amplificación para Irregularidad Masa o Peso

Pisos	T (s)	Media (M)	Des. Est. (σ)	M+ σ	M- σ	Factor de Amplificación
4	0.19	121.94%	6.29%	128.23%	115.65%	1.2823
8	0.37	110.17%	5.03%	115.20%	105.14%	1.1520
12	0.56	95.78%	6.63%	102.41%	89.15%	1.0241

De las tablas anteriores se puede graficar los factores de amplificación hallados en función del periodo (T). Se determina ecuaciones potenciales para determinar un factor de amplificación según el periodo (T), como se muestra en las siguientes graficas:

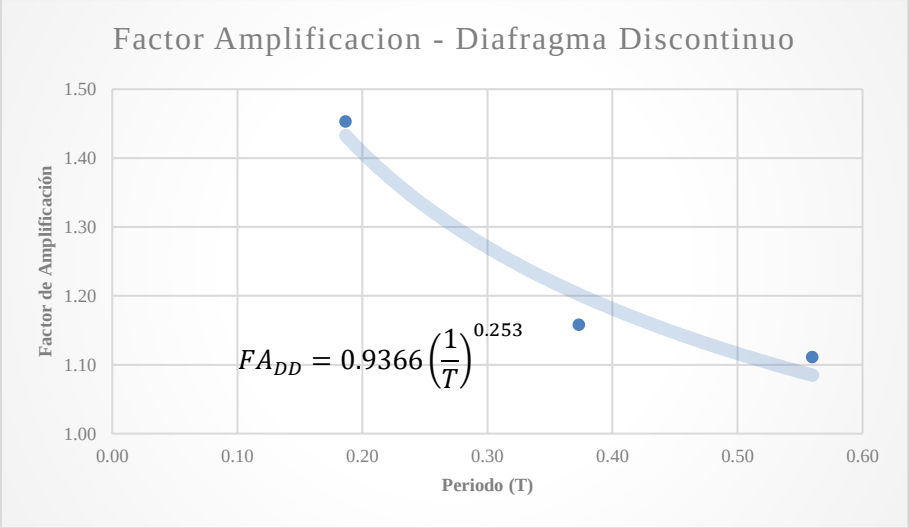


Figura 6.5.11 Factor de Amplificación para Irregularidad Diafragma Discontinuo

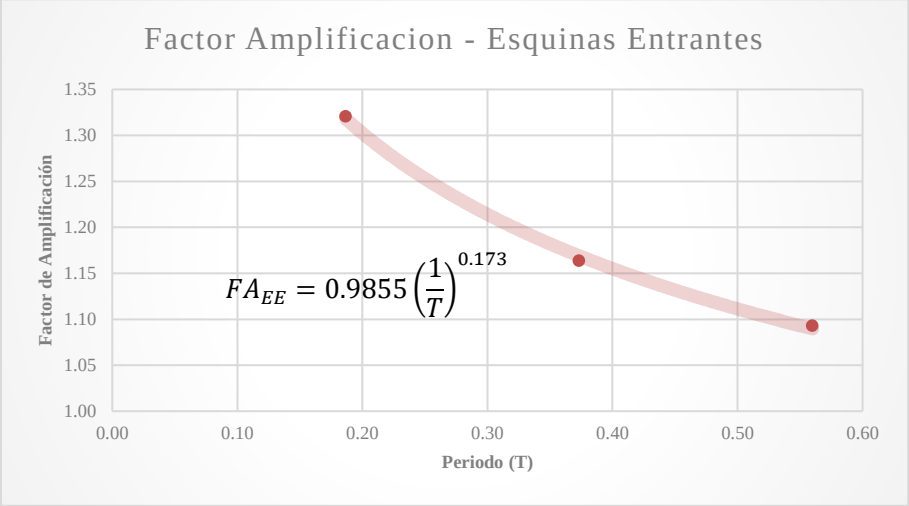


Figura 6.5.12 Factor de Amplificación para Irregularidad Esquinas Entrantes

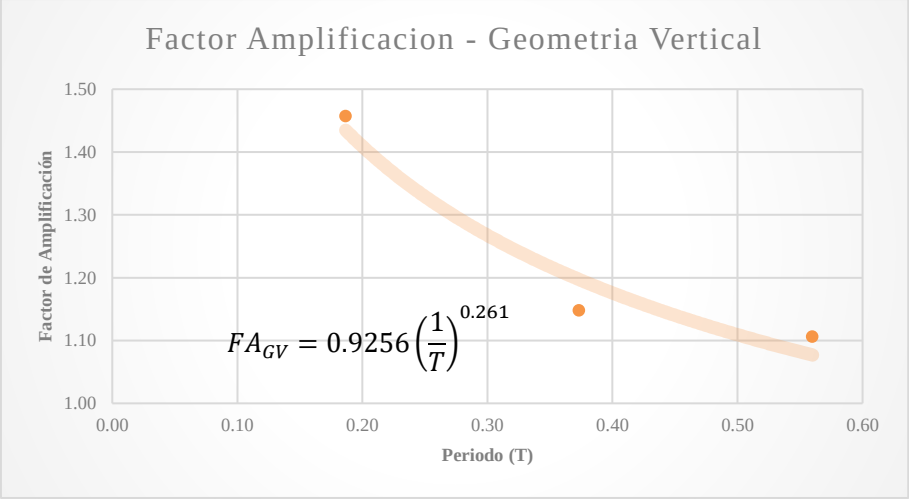


Figura 6.5.13 Factor de Amplificación para Irregularidad Geometría Vertical

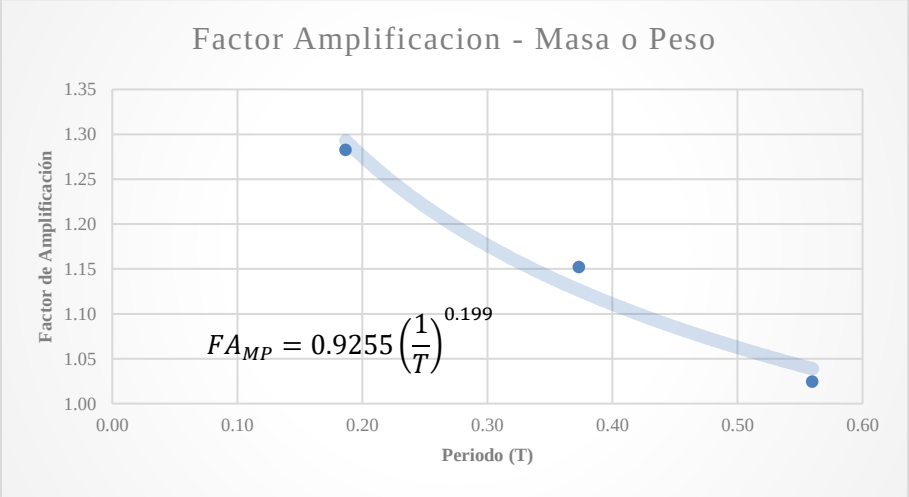


Figura 6.5.14 Factor de Amplificación para Irregularidad Masa o Peso

De las expresiones potenciales halladas en las graficas, se obtienen diferentes constantes y exponentes para determinar un factor de amplificación, dichas ecuaciones se pueden expresar en la siguiente ecuación:

$$FA_i = K_i\left(\frac{1}{T}\right)^{n_i} \qquad Ec.\,(6.5.4.1)$$

Donde FA_i es el Factor de Amplificación, K_i es la constante de proporcionalidad y n_i es la exponente de la función para cada irregularidad; T es el periodo de vibración (E.030).

CONCLUSIONES

Luego del análisis integral de la investigación y la revisión de los resultados obtenidos, se concluye que la evaluación comparativa entre el análisis modal espectral (AME) y el análisis tiempo historia lineal (ATH) conforme a lo mencionado en el objetivo principal de la investigación, considerando la acción sísmica bidireccional y la variación del ángulo de incidencia, demuestra que el ATH permite representar de manera más precisa y realista la demanda sísmica en edificaciones de concreto armado con sistema dual. Asimismo, los resultados evidencian incrementos significativos en las respuestas máximas —tales como derivas, cortantes basales y momentos— para determinados ángulos de incidencia, los cuales no son adecuadamente capturados por el AME debido a sus simplificaciones. Esta diferencia se acentúa en modelos con excentricidad e irregularidades, donde la interacción traslación–torsión cobra mayor relevancia. En consecuencia, se confirma la necesidad de incorporar el efecto bidireccional y la variabilidad angular del sismo en la evaluación estructural, a fin de obtener estimaciones más representativas y seguras del comportamiento sísmico.

Del mismo modo, en concordancia con los objetivos específicos de la investigación se concluye lo siguiente:

En primer lugar, En la generación y modelamiento estructural se consideraron edificaciones de 4, 8 y 12 niveles con sistema dual, con el objetivo de representar distintos rangos de comportamiento dinámico conforme a la normativa vigente, abarcando desde estructuras rígidas (periodos cortos) hasta estructuras más flexibles (periodos largos). Los modelos de 4 niveles presentan una respuesta dominada por la rigidez, los de 8 niveles reflejan una condición de transición con mayor participación modal, y los de 12 niveles evidencian una mayor influencia de desplazamientos y efectos dinámicos. Asimismo, se incorporaron variaciones de rigidez lateral y excentricidad en planta para evaluar su influencia en la respuesta

estructural. Los resultados muestran que el incremento de altura genera mayores derivas globales, mientras que la excentricidad induce efectos torsionales que amplifican las derivas en los extremos y producen una distribución no uniforme de esfuerzos. Por su parte, las diferencias de rigidez lateral condicionan la dirección predominante de respuesta y la localización de máximas solicitaciones. Finalmente, se identificó que la configuración geométrica influye en la respuesta angular, destacando que las placas tipo "L" presentan más ángulos críticos debido a la orientación de sus ejes principales. Además, los ángulos de incidencia críticos dependen de los periodos fundamentales, de modo que una mayor diferencia entre los periodos en X e Y incrementa el rango de ángulos críticos y la sensibilidad estructural.

En segundo lugar, los registros sísmicos seleccionados y escalados conforme al espectro de diseño de la norma E030 resultan representativos de la amenaza sísmica de la zona de estudio. El proceso de escalamiento permitió asegurar compatibilidad espectral en el rango de periodos de interés, garantizando que la demanda sísmica aplicada en el análisis tiempo historia sea consistente con las condiciones de diseño. Se observa además que la variabilidad entre registros influye en la dispersión de resultados, reflejando adecuadamente la incertidumbre inherente al fenómeno sísmico.

En tercer lugar, se tiene que el AME y la regla 100-30 proporciona resultados coherentes con los procedimientos normativos para la estimación de solicitaciones globales, sin embargo, presentan limitaciones al no considerar explícitamente la orientación del movimiento sísmico. En ese sentido, las respuestas obtenidas (derivas, cortantes y momentos) corresponden a condiciones idealizadas en ejes principales, lo que conlleva a una subestimación de las demandas en escenarios donde el sismo actúa con ángulos distintos a dichos ejes. Esta limitación se vuelve más relevante en estructuras con asimetría o irregularidades, asimismo, en presencia de excentricidad la regla 100-30 adquiere mayor relevancia al captar parcialmente la interacción direccional.

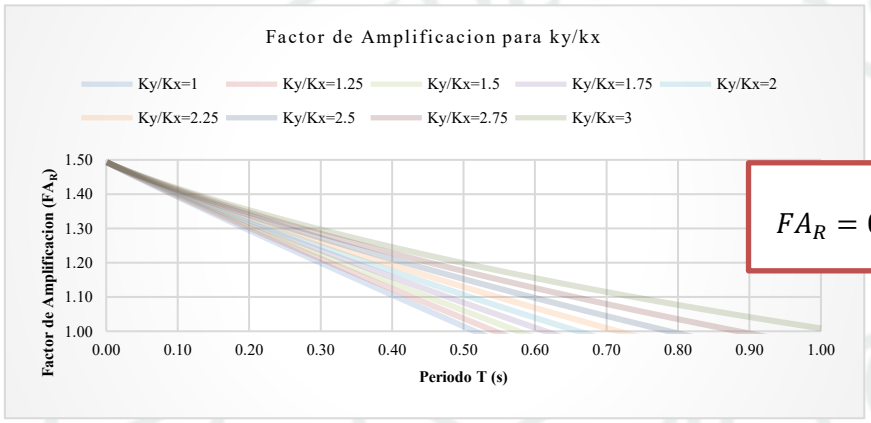
En cuarto lugar, el análisis tiempo historia lineal permitió capturar la variación de la respuesta estructural en función del ángulo de incidencia sísmica, evidenciando que no existe un único ángulo crítico global, sino que este depende del tipo de respuesta analizada (deriva, cortante o momento). Los resultados muestran incrementos significativos en las demandas estructurales para determinados ángulos, especialmente en configuraciones con excentricidad, donde se intensifica el acoplamiento entre traslación y torsión. Asimismo, se observa que la dispersión de resultados aumenta con la altura y el grado de irregularidad de la estructura.

En quinto lugar, La comparación integral entre el análisis modal espectral (AME) y el análisis tiempo historia (ATH), incorporando el efecto sísmico bidireccional y la variación del ángulo de incidencia, permite concluir de manera consistente que el AME presenta una tendencia sistemática a subestimar las respuestas máximas estructurales frente a condiciones sísmicas más realistas. En contraste, el ATH, al considerar la acción simultánea de las componentes sísmicas y su orientación variable, logra captar con mayor precisión los estados críticos de respuesta, evidenciando mayores demandas en términos de derivas, cortantes y momentos.

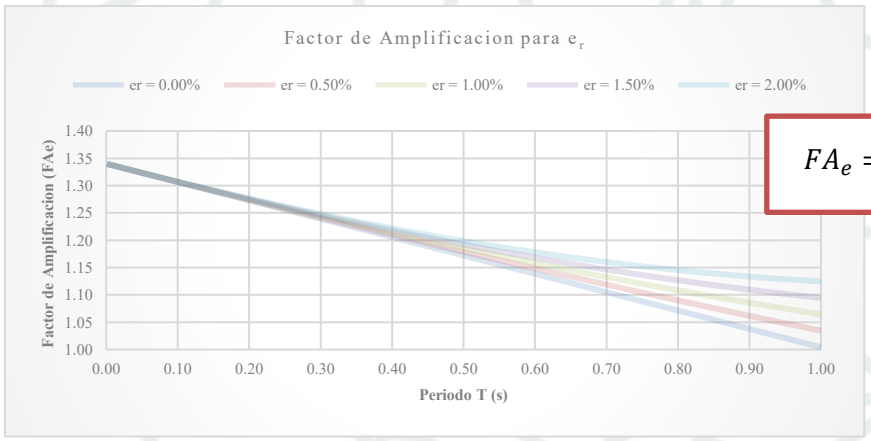
Asimismo, se demuestra que el ángulo de incidencia sísmica constituye un parámetro altamente influyente en el comportamiento estructural, dado que las máximas respuestas no necesariamente se presentan en los ejes principales, sino en direcciones intermedias, especialmente en edificaciones con excentricidad, irregularidad en planta o diferencias significativas de rigidez lateral. Esta condición revela una limitación importante de los enfoques tradicionales de análisis.

En consecuencia, los resultados obtenidos evidencian que la consideración del efecto bidireccional y la variabilidad angular del sismo no solo permite una representación más fiel del comportamiento estructural, sino que también resulta fundamental para identificar

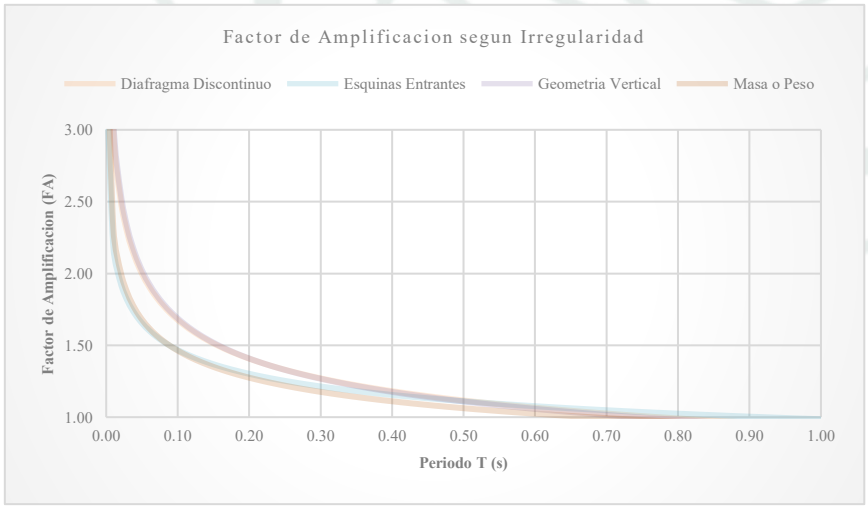
escenarios críticos que podrían no ser detectados mediante el AME. Por ello, se establece la necesidad de complementar los métodos convencionales con análisis más avanzados como el ATH, a fin de mejorar la confiabilidad de la evaluación estructural y garantizar mayores niveles de seguridad en el diseño sísmico, finalmente, se muestran a continuación las formulas para determinar el factor de amplificación según la rigidez relativa, la excentricidad y en el caso de irregularidades en función al periodo.



$$FA_R = 0.2194T^{1.2516}\left(\frac{Ky}{Kx}\right) - 1.1438T + 1.4941$$



$$FA_e = 6.0281T^{2.1892}(e_r) - 0.3359T + 1.3401$$



$$FA_{DD} = 0.9366\left(\frac{1}{T}\right)^{0.253}$$

$$FA_{EE} = 0.9855\left(\frac{1}{T}\right)^{0.173}$$

$$FA_{GV} = 0.9256\left(\frac{1}{T}\right)^{0.261}$$

$$FA_{MP} = 0.9255\left(\frac{1}{T}\right)^{0.199}$$

RECOMENDACIONES

- Se recomienda para la configuración de edificios de concreto armado con sistema dual, la configuración más cercana posible a los parámetros Ky/Kx = 1, y e = 0.00 debido a que son los que tienen menor efecto ante la bidireccionalidad y ángulo de incidencia.
- Se recomienda no usar la sección tipo “L” ´para elementos estructuras o cualquier otra sección que tenga ejes principales diferentes a los ejes X e Y.
- Realizar el análisis sísmico bajo un efecto bidireccional o tridireccional variando el ángulo de incidencia para edificaciones con otros sistemas estructurales.
- Realizar el análisis sísmico bidireccional o tridireccional variando el periodo fundamental de vibración para localizar de mejor manera los ángulos de incidencia críticos.
- Analizar para estructuras con irregularidades extremas tanto en planta como en altura, ya que se pueden encontrar factores mayores a los encontrados.
- Realizar el análisis sísmico bidireccional o tridireccional considerando registros sísmicos sintéticos y/o registros sísmicos de estaciones que generen resonancia con los modelos.
- Realizar el análisis sísmico bidireccional o tridireccional en el rango no lineal, evaluando el desempeño de los modelos estructurales.

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ANEXOS

TABLA 1: MATRIZ DE CONSISTENCIA

PROBLEMA	OBJETIVOS	HIPÓTESIS
PROBLEMA PRINCIPAL	OBJETIVO GENERAL	GENERAL
¿Cuál es la relación de Respuestas del Análisis Tiempo Historia y Modal Espectral para Edificaciones de Concreto Armado con Sistema Dual bajo el Efecto Bidireccional y Ángulo de Incidencia Sísmica en la Ciudad de Arequipa?	Evaluar las Respuestas del Análisis Tiempo Historia y Modal Espectral para Edificaciones de Concreto Armado con Sistema Dual bajo el Efecto Bidireccional y Ángulo de Incidencia Sísmica en la Ciudad de Arequipa	Planteamos demostrar que, si analizamos la respuesta sísmica frente a los efectos de un ángulo de incidencia variable en diferentes tipos de edificaciones con sistema estructural de concreto armado con sistema dual, como casos teóricos, podemos realizar una evaluación comparativa estadísticamente para considerar dichos efectos y de ese modo tener una óptima y segura propuesta de diseño para futuras edificaciones o realización de reforzamientos.
PROBLEMAS ESPECÍFICOS	OBJETIVOS ESPECÍFICOS	
¿Cuántos serán los modelos de edificaciones de 4, 8, 12 pisos con sistema estructural de concreto armado con sistema dual que se generarán como casos teóricos?	Generar un grupo de modelos de edificaciones de 4, 8 y 12 pisos con sistema estructural dual en función a parámetros (relación de rigidez, excentricidades, irregularidad en planta y altura).	
¿Cómo se seleccionará, corregirá y escalonará los registros acelerográficos con respecto al espectro de diseño de la norma peruana E.030 para mejorar la precisión de los resultados?	Seleccionar, corregir y escalar ocho registros acelerográficos de sismos ocurridos cerca de la ciudad de Arequipa en base al espectro de diseño que indica la norma peruana E. 030 "Diseño Sismorresistente".	
¿Cuáles serán las respuestas sísmicas de los casos de estudio para el análisis modal espectral?	Determinar la respuesta sísmica que tendrá cada uno de los casos de edificaciones teóricas luego de realizado el análisis modal espectral considerando parámetro de zonificación $Z3$, condición suelo $S2$ y factor de uso de edificaciones comunes.	
¿Cuáles serán las respuestas sísmicas de los casos de estudio para el análisis tiempo-historia lineal con incrementos de ángulos de incidencia cada 10°?	Determinar la respuesta sísmica que tendrá cada uno de los casos de edificaciones teóricas luego de realizado el análisis tiempo- historia lineal aplicando los ángulos de incidencia con incremento de cada 10° desde 0° a 350°.	
¿Qué evaluación se obtendrá luego de realizar la comparación estadística de ambos análisis para los mismos casos de estudio?	Evaluar comparando estadísticamente los resultados obtenidos del análisis tiempo-historia lineal con los resultados del análisis modal espectral.	

TABLA 2: OPERACIONALIZACIÓN DE VARIABLES

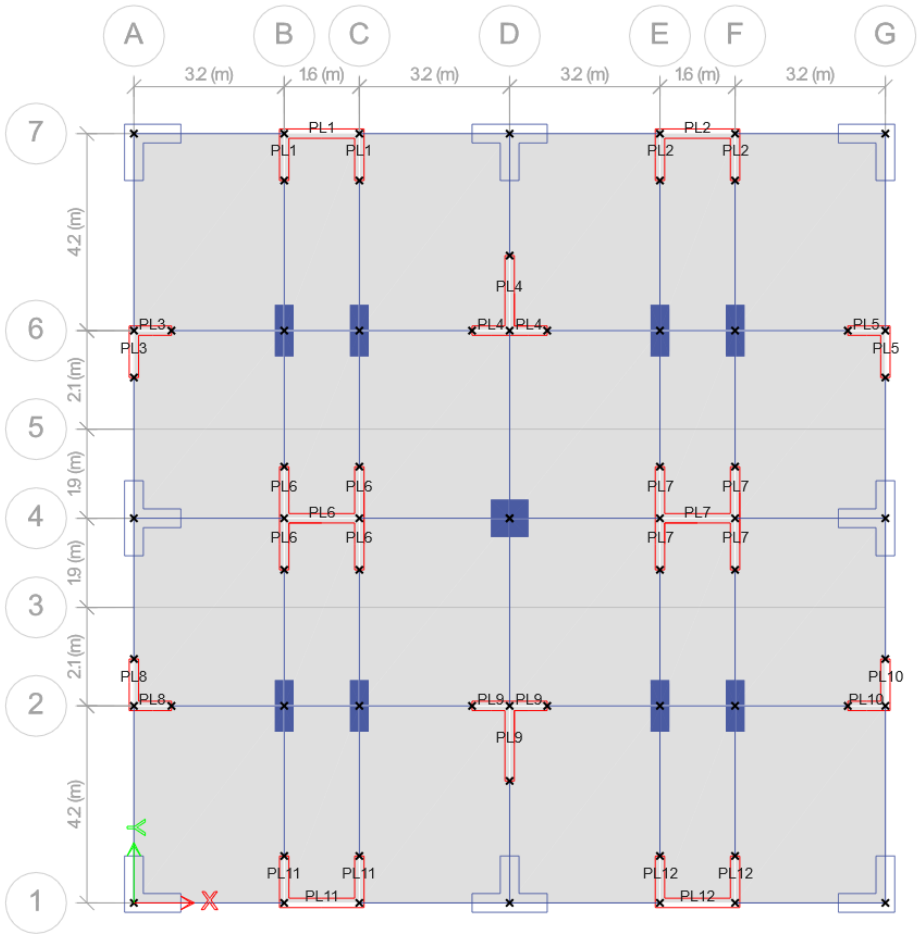
VARIABLE		DIMENSIONES	INDICADORES
INDEPENDIENTE	Efecto del Ángulo de Incidencia Sísmica	Irregularidades	Metro, Metro Cuadrado
		Excentricidades	Metro
		Rigidez Relativa	Adimensional
		Variación de Ángulos	Grados
DEPENDIENTE	Evaluación de Respuestas del Análisis Tiempo Historia y Modal Espectral para Edificaciones de Concreto Armado con Sistema Dual	Cortante Basal	Toneladas, KN
		Espectro de Diseño	cm/s2, g

CRONOGRAMA DE ACTIVIDADES

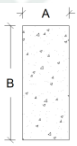
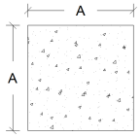
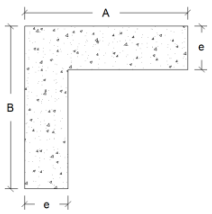
PROCEDIMIENTO		CRONOGRAMA DE ACTIVIDADES																													
TIEMPO (en meses)		Mes 1				Mes 2				Mes 3				Mes 4				Mes 5				Mes 6				Mes 7				Mes 8			
TIEMPO (en semanas)		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ELABORACIÓN DEL PLAN DE TESIS																															
1	Elección del tema de investigación																														
2	Revisión Bibliográfica																														
3	Presentación del tema																														
4	Elaboración de la justificación																														
5	Elaboración del alcance																														
6	Elaboración de la hipótesis																														
7	Elaboración de los objetivos																														
8	Elaboración del fundamento teórico																														
9	Planteamiento de la metodología propuesta																														
10	Planteamiento del borrador del marco teórico																														
11	Correcciones del borrador del marco teórico																														
12	Presentar el proyecto de tesis para revisión																														
13	Modificaciones según revisión																														
14	Presentación del proyecto con las correcciones																														
15	Encontrar los registros de sismo y escalonarlos																														
16	Determinación de parámetros de irregularidad																														
17	Modelamiento estructural																														
18	Realizar análisis tiempo-historia lineal																														
19	Realizar análisis modal espectral																														
20	Comparación de los resultados obtenidos																														
21	Determinación del factor de amplificación																														
22	Redacción y revisión de la tesis																														
TIEMPO (en semanas)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

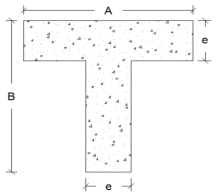
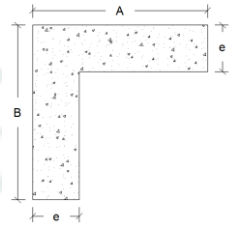
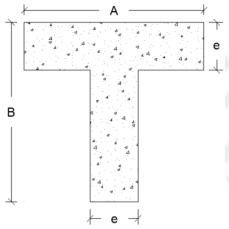
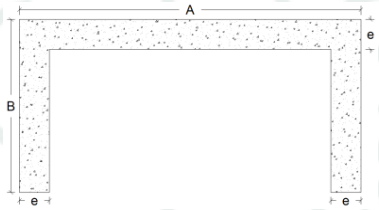
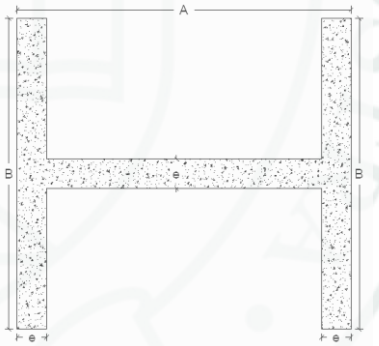
ANEXO A: MODELOS TEORICOS

MODELO 1: REGULAR Ky/Kx = 1.00, e = 0

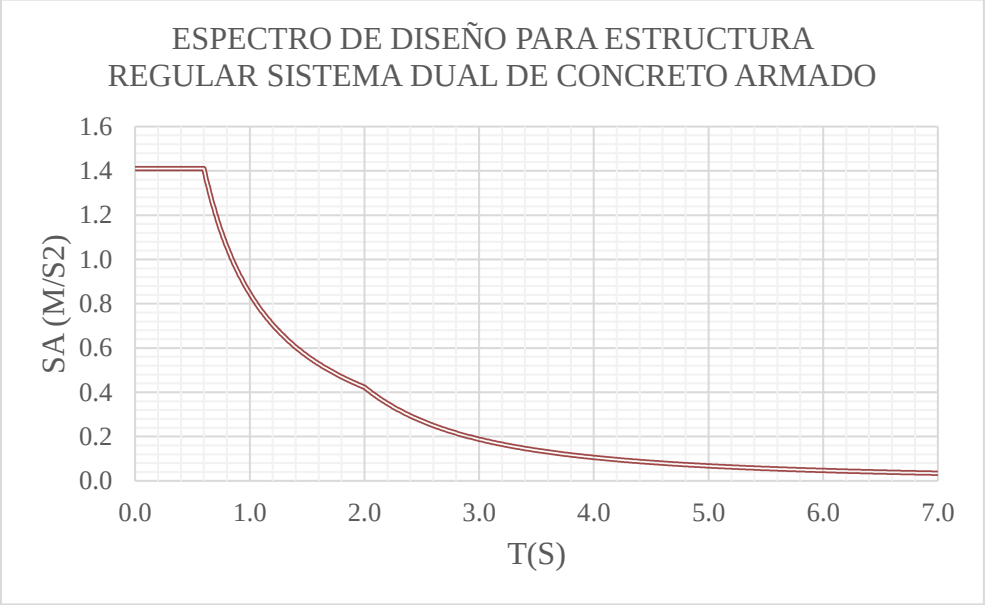


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	0.70 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	0.80 m	
		B	1.00 m	
		e	0.20 m	
PL4, PL9	02	A	1.60 m	
		B	1.60 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.254	0.0000	0.7408	0.0000	0.0000	0.7408	0.0000	0.3467	0.0000	0.0000	0.3467	0.0000	0.0000
Modal	2	0.241	0.7424	0.0000	0.0000	0.7424	0.7408	0.0000	0.0000	0.3450	0.0000	0.3467	0.3450	0.0000
Modal	3	0.214	0.0000	0.0000	0.0000	0.7424	0.7408	0.0000	0.0000	0.0000	0.7365	0.3467	0.3450	0.7365
Modal	4	0.061	0.0000	0.1808	0.0000	0.7424	0.9217	0.0000	0.4414	0.0000	0.0000	0.7881	0.3450	0.7365
Modal	5	0.059	0.1866	0.0000	0.0000	0.9290	0.9217	0.0000	0.0000	0.4577	0.0000	0.7881	0.8026	0.7365
Modal	6	0.05	0.0000	0.0000	0.0000	0.9290	0.9217	0.0000	0.0000	0.0000	0.1873	0.7881	0.8026	0.9237
Modal	7	0.027	0.0561	0.0000	0.0000	0.9851	0.9217	0.0000	0.0000	0.1495	0.0000	0.7881	0.9522	0.9237
Modal	8	0.027	0.0000	0.0615	0.0000	0.9851	0.9832	0.0000	0.1593	0.0000	0.0000	0.9474	0.9522	0.9237
Modal	9	0.022	0.0000	0.0000	0.0000	0.9851	0.9832	0.0000	0.0000	0.0000	0.0600	0.9474	0.9522	0.9837
Modal	10	0.018	0.0149	0.0000	0.0000	1.0000	0.9832	0.0000	0.0000	0.0477	0.0000	0.9474	0.9999	0.9837
Modal	11	0.017	0.0000	0.0168	0.0000	1.0000	1.0000	0.0000	0.0525	0.0000	0.0000	0.9999	0.9999	0.9837
Modal	12	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0162	0.9999	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.61	0.0000	0.7381	0.0000	0.0000	0.7381	0.0000	0.2989	0.0000	0.0000	0.2989	0.0000	0.0000
Modal	2	0.597	0.7272	0.0000	0.0000	0.7272	0.7381	0.0000	0.0000	0.3107	0.0000	0.2989	0.3107	0.0000
Modal	3	0.525	0.0000	0.0000	0.0000	0.7272	0.7381	0.0000	0.0000	0.0000	0.7295	0.2989	0.3107	0.7295
Modal	4	0.168	0.0000	0.1357	0.0000	0.7272	0.8738	0.0000	0.3927	0.0000	0.0000	0.6916	0.3107	0.7295
Modal	5	0.159	0.1497	0.0000	0.0000	0.8769	0.8738	0.0000	0.0000	0.3840	0.0000	0.6916	0.6947	0.7295
Modal	6	0.14	0.0000	0.0000	0.0000	0.8769	0.8738	0.0000	0.0000	0.0000	0.1437	0.6916	0.6947	0.8732
Modal	7	0.076	0.0000	0.0591	0.0000	0.8769	0.9328	0.0000	0.1188	0.0000	0.0000	0.8104	0.6947	0.8732
Modal	8	0.072	0.0606	0.0000	0.0000	0.9375	0.9328	0.0000	0.0000	0.1270	0.0000	0.8104	0.8216	0.8732
Modal	9	0.063	0.0000	0.0000	0.0000	0.9375	0.9328	0.0000	0.0000	0.0000	0.0609	0.8104	0.8216	0.9340
Modal	10	0.044	0.0000	0.0318	0.0000	0.9375	0.9646	0.0000	0.0883	0.0000	0.0000	0.8987	0.8216	0.9340
Modal	11	0.043	0.0306	0.0000	0.0000	0.9682	0.9646	0.0000	0.0000	0.0859	0.0000	0.8987	0.9075	0.9340
Modal	12	0.036	0.0000	0.0000	0.0000	0.9682	0.9646	0.0000	0.0000	0.0000	0.0317	0.8987	0.9075	0.9658
Modal	13	0.029	0.0169	0.0000	0.0000	0.9850	0.9646	0.0000	0.0000	0.0471	0.0000	0.8987	0.9546	0.9658
Modal	14	0.029	0.0000	0.0184	0.0000	0.9850	0.9831	0.0000	0.0506	0.0000	0.0000	0.9493	0.9546	0.9658
Modal	15	0.024	0.0000	0.0000	0.0000	0.9850	0.9831	0.0000	0.0000	0.0000	0.0179	0.9493	0.9546	0.9837
Modal	16	0.022	0.0093	0.0000	0.0000	0.9943	0.9831	0.0000	0.0000	0.0282	0.0000	0.9493	0.9828	0.9837
Modal	17	0.022	0.0000	0.0105	0.0000	0.9943	0.9935	0.0000	0.0313	0.0000	0.0000	0.9806	0.9828	0.9837
Modal	18	0.019	0.0044	0.0000	0.0000	0.9988	0.9935	0.0000	0.0000	0.0133	0.0000	0.9806	0.9962	0.9837
Modal	19	0.018	0.0000	0.0000	0.0000	0.9988	0.9935	0.0000	0.0000	0.0000	0.0101	0.9806	0.9962	0.9938

Modal	20	0.018	0.0000	0.0050	0.0000	0.9988	0.9986	0.0000	0.0151	0.0000	0.0000	0.9957	0.9962	0.9938
Modal	21	0.017	0.0012	0.0000	0.0000	1.0000	0.9986	0.0000	0.0000	0.0038	0.0000	0.9957	0.9999	0.9938
Modal	22	0.016	0.0000	0.0014	0.0000	1.0000	1.0000	0.0000	0.0043	0.0000	0.0000	1.0000	0.9999	0.9938
Modal	23	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0048	1.0000	0.9999	0.9986
Modal	24	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0013	1.0000	0.9999	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.999	0.0000	0.7469	0.0000	0.0000	0.7469	0.0000	0.2744	0.0000	0.0000	0.2744	0.0000	0.0000
Modal	2	0.992	0.7342	0.0000	0.0000	0.7342	0.7469	0.0000	0.0000	0.2886	0.0000	0.2744	0.2886	0.0000
Modal	3	0.863	0.0000	0.0000	0.0000	0.7342	0.7469	0.0000	0.0000	0.0000	0.7411	0.2744	0.2886	0.7411
Modal	4	0.292	0.0000	0.1180	0.0000	0.7342	0.8649	0.0000	0.4026	0.0000	0.0000	0.6770	0.2886	0.7411
Modal	5	0.281	0.1292	0.0000	0.0000	0.8634	0.8649	0.0000	0.0000	0.3833	0.0000	0.6770	0.6719	0.7411
Modal	6	0.248	0.0000	0.0000	0.0000	0.8634	0.8649	0.0000	0.0000	0.0000	0.1209	0.6770	0.6719	0.8620
Modal	7	0.143	0.0000	0.0515	0.0000	0.8634	0.9164	0.0000	0.0918	0.0000	0.0000	0.7688	0.6719	0.8620
Modal	8	0.134	0.0554	0.0000	0.0000	0.9188	0.9164	0.0000	0.0000	0.1035	0.0000	0.7688	0.7754	0.8620
Modal	9	0.119	0.0000	0.0000	0.0000	0.9188	0.9164	0.0000	0.0000	0.0000	0.0543	0.7688	0.7754	0.9163
Modal	10	0.084	0.0000	0.0296	0.0000	0.9188	0.9460	0.0000	0.0814	0.0000	0.0000	0.8502	0.7754	0.9163
Modal	11	0.079	0.0305	0.0000	0.0000	0.9493	0.9460	0.0000	0.0000	0.0825	0.0000	0.8502	0.8579	0.9163
Modal	12	0.069	0.0000	0.0000	0.0000	0.9493	0.9460	0.0000	0.0000	0.0000	0.0305	0.8502	0.8579	0.9468
Modal	13	0.055	0.0000	0.0188	0.0000	0.9493	0.9648	0.0000	0.0477	0.0000	0.0000	0.8979	0.8579	0.9468
Modal	14	0.053	0.0185	0.0000	0.0000	0.9678	0.9648	0.0000	0.0000	0.0479	0.0000	0.8979	0.9058	0.9468
Modal	15	0.046	0.0000	0.0000	0.0000	0.9678	0.9648	0.0000	0.0000	0.0000	0.0189	0.8979	0.9058	0.9657
Modal	16	0.04	0.0000	0.0126	0.0000	0.9678	0.9774	0.0000	0.0362	0.0000	0.0000	0.9341	0.9058	0.9657
Modal	17	0.039	0.0120	0.0000	0.0000	0.9797	0.9774	0.0000	0.0000	0.0346	0.0000	0.9341	0.9404	0.9657
Modal	18	0.033	0.0000	0.0000	0.0000	0.9797	0.9774	0.0000	0.0000	0.0000	0.0125	0.9341	0.9404	0.9782
Modal	19	0.03	0.0080	0.0000	0.0000	0.9877	0.9774	0.0000	0.0000	0.0228	0.0000	0.9341	0.9632	0.9782
Modal	20	0.03	0.0000	0.0087	0.0000	0.9877	0.9861	0.0000	0.0246	0.0000	0.0000	0.9587	0.9632	0.9782
Modal	21	0.025	0.0000	0.0000	0.0000	0.9877	0.9861	0.0000	0.0000	0.0000	0.0085	0.9587	0.9632	0.9867
Modal	22	0.025	0.0054	0.0000	0.0000	0.9931	0.9861	0.0000	0.0000	0.0161	0.0000	0.9587	0.9793	0.9867
Modal	23	0.024	0.0000	0.0060	0.0000	0.9931	0.9922	0.0000	0.0179	0.0000	0.0000	0.9766	0.9793	0.9867
Modal	24	0.021	0.0035	0.0000	0.0000	0.9966	0.9922	0.0000	0.0000	0.0105	0.0000	0.9766	0.9898	0.9867
Modal	25	0.02	0.0000	0.0000	0.0000	0.9966	0.9922	0.0000	0.0000	0.0000	0.0058	0.9766	0.9898	0.9925
Modal	26	0.02	0.0000	0.0040	0.0000	0.9966	0.9962	0.0000	0.0118	0.0000	0.0000	0.9884	0.9898	0.9925
Modal	27	0.019	0.0021	0.0000	0.0000	0.9987	0.9962	0.0000	0.0000	0.0064	0.0000	0.9884	0.9961	0.9925
Modal	28	0.018	0.0000	0.0024	0.0000	0.9987	0.9985	0.0000	0.0072	0.0000	0.0000	0.9956	0.9961	0.9925
Modal	29	0.017	0.0000	0.0000	0.0000	0.9987	0.9985	0.0000	0.0000	0.0000	0.0038	0.9956	0.9961	0.9963
Modal	30	0.017	0.0010	0.0000	0.0000	0.9997	0.9985	0.0000	0.0000	0.0030	0.0000	0.9956	0.9992	0.9963
Modal	31	0.016	0.0003	0.0000	0.0000	1.0000	0.9985	0.0000	0.0000	0.0008	0.0000	0.9956	1.0000	0.9963
Modal	32	0.016	0.0000	0.0011	0.0000	1.0000	0.9997	0.0000	0.0034	0.0000	0.0000	0.9990	1.0000	0.9963
Modal	33	0.015	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0009	0.0000	0.0000	1.0000	1.0000	0.9963
Modal	34	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0023	1.0000	1.0000	0.9986
Modal	35	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0011	1.0000	1.0000	0.9997
Modal	36	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0003	1.0000	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.000875	5.25	2.80	0.002	ok
Story3	SISMO X	0.000911	5.25	2.80	0.002	ok
Story2	SISMO X	0.000793	5.25	2.80	0.001	ok
Story1	SISMO X	0.000401	5.25	2.80	0.001	ok
Story4	SISMO Y	0.000957	5.25	2.80	0.002	ok
Story3	SISMO Y	0.001007	5.25	2.80	0.002	ok
Story2	SISMO Y	0.00088	5.25	2.80	0.002	ok
Story1	SISMO Y	0.000432	5.25	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002143	5.25	2.80	0.004	ok

Story7	SISMO X	0.002411	5.25	2.80	0.005	ok
Story6	SISMO X	0.00268	5.25	2.80	0.005	ok
Story5	SISMO X	0.002861	5.25	2.80	0.005	ok
Story4	SISMO X	0.002876	5.25	2.80	0.005	ok
Story3	SISMO X	0.002642	5.25	2.80	0.005	ok
Story2	SISMO X	0.002061	5.25	2.80	0.004	ok
Story1	SISMO X	0.000957	5.25	2.80	0.002	ok
Story8	SISMO Y	0.00195	5.25	2.80	0.004	ok
Story7	SISMO Y	0.002269	5.25	2.80	0.004	ok
Story6	SISMO Y	0.002624	5.25	2.80	0.005	ok
Story5	SISMO Y	0.002904	5.25	2.80	0.005	ok
Story4	SISMO Y	0.003009	5.25	2.80	0.006	ok
Story3	SISMO Y	0.002832	5.25	2.80	0.005	ok
Story2	SISMO Y	0.002238	5.25	2.80	0.004	ok
Story1	SISMO Y	0.001019	5.25	2.80	0.002	ok

Para 12 pisos:

Story	**Load Case/Combo**	**Max Drift**	**0.75 R**	**H**	**0.75R*D/H**	**< 0.007**
		m		**m**		
Story12	SISMO X	0.001906	5.25	2.80	0.004	ok
Story11	SISMO X	0.002146	5.25	2.80	0.004	ok
Story10	SISMO X	0.002431	5.25	2.80	0.005	ok
Story9	SISMO X	0.00272	5.25	2.80	0.005	ok
Story8	SISMO X	0.002981	5.25	2.80	0.006	ok
Story7	SISMO X	0.003186	5.25	2.80	0.006	ok
Story6	SISMO X	0.003309	5.25	2.80	0.006	ok
Story5	SISMO X	0.003316	5.25	2.80	0.006	ok
Story4	SISMO X	0.003165	5.25	2.80	0.006	ok
Story3	SISMO X	0.002793	5.25	2.80	0.005	ok
Story2	SISMO X	0.002115	5.25	2.80	0.004	ok
Story1	SISMO X	0.000959	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001621	5.25	2.80	0.003	ok
Story11	SISMO Y	0.001884	5.25	2.80	0.004	ok
Story10	SISMO Y	0.002215	5.25	2.80	0.004	ok
Story9	SISMO Y	0.002558	5.25	2.80	0.005	ok
Story8	SISMO Y	0.002877	5.25	2.80	0.005	ok
Story7	SISMO Y	0.003144	5.25	2.80	0.006	ok
Story6	SISMO Y	0.003333	5.25	2.80	0.006	ok
Story5	SISMO Y	0.003409	5.25	2.80	0.006	ok
Story4	SISMO Y	0.003321	5.25	2.80	0.006	ok
Story3	SISMO Y	0.00299	5.25	2.80	0.006	ok
Story2	SISMO Y	0.002291	5.25	2.80	0.004	ok
Story1	SISMO Y	0.001022	5.25	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Kx/Ky**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	147.15	0.002921	50376.69	0.90
Y-Y	SISMO Y	146.67	0.003219	45564.99	

Para 8 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	293.14	0.018237	16074.09	0.99
Y-Y	SISMO Y	292.25	0.018453	15837.40	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	278.32	0.030052	9261.39	1.01
Y-Y	SISMO Y	278.78	0.029658	9399.80	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	8.69	8.69	8.00	8.20	8.00	8.20	0.00	0.00

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	8.69	8.69	8.00	8.20	8.00	8.20	0.00	0.00

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story9	D9	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story10	D10	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story11	D11	13.15	13.15	8.00	8.20	8.00	8.20	0.00	0.00
Story12	D12	8.69	8.69	8.00	8.20	8.00	8.20	0.00	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	Columnas	60.60	41.17%	DUAL

	Muros	86.58	58.83%	
Y-Y	**Columnas**	63.83	43.52%	**DUAL**
	Muros	82.83	56.48%	

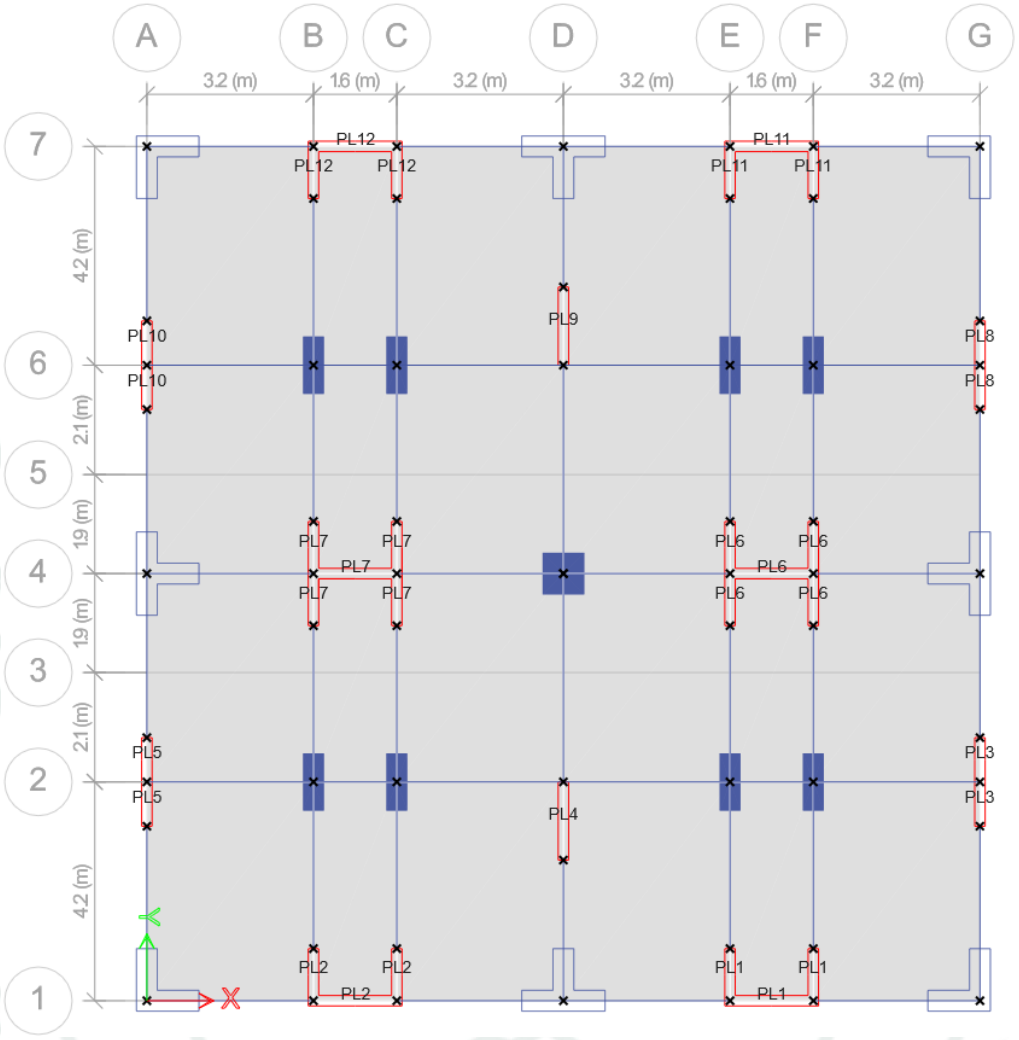
Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	119.51	40.77%	**DUAL**
	Muros	173.64	59.23%	
Y-Y	**Columnas**	125.57	42.97%	**DUAL**
	Muros	166.68	57.03%	

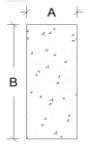
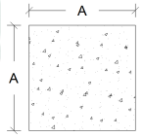
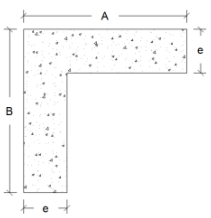
Para 12 pisos:

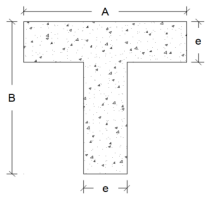
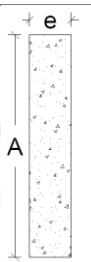
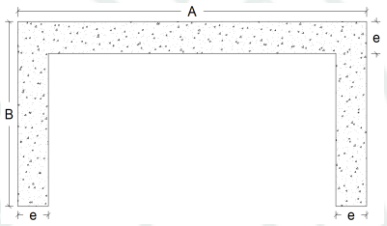
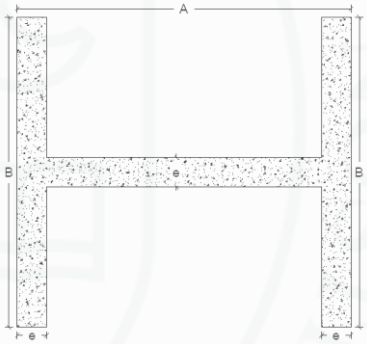
Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	113.42	40.75%	**DUAL**
	Muros	164.91	59.25%	
Y-Y	**Columnas**	119.39	42.82%	**DUAL**
	Muros	159.40	57.18%	

MODELO 2: REGULAR Ky/Kx = 1.20, e = 0

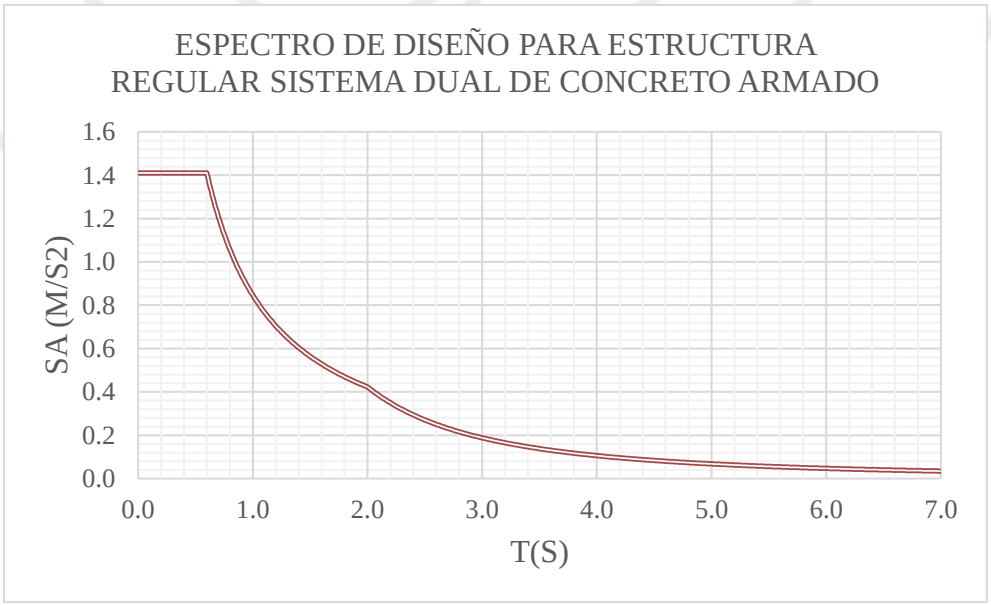


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	1.10 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	1.70 m	
		e	0.20 m	
PL4, PL9	02	A	1.50 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.00 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.258	0.7404	0.0000	0.0000	0.7404	0.0000	0.0000	0.0000	0.3482	0.0000	0.0000	0.3482	0.0000
Modal	2	0.25	0.0000	0.7396	0.0000	0.7404	0.7396	0.0000	0.3491	0.0000	0.0000	0.3491	0.3482	0.0000
Modal	3	0.214	0.0000	0.0000	0.0000	0.7404	0.7396	0.0000	0.0000	0.0000	0.7350	0.3491	0.3482	0.7350
Modal	4	0.062	0.1891	0.0000	0.0000	0.9295	0.7396	0.0000	0.0000	0.4557	0.0000	0.3491	0.8039	0.7350
Modal	5	0.059	0.0000	0.1801	0.0000	0.9295	0.9197	0.0000	0.4353	0.0000	0.0000	0.7844	0.8039	0.7350
Modal	6	0.05	0.0000	0.0000	0.0000	0.9295	0.9197	0.0000	0.0000	0.0000	0.1881	0.7844	0.8039	0.9231
Modal	7	0.029	0.0558	0.0000	0.0000	0.9853	0.9197	0.0000	0.0000	0.1489	0.0000	0.7844	0.9528	0.9231
Modal	8	0.026	0.0000	0.0627	0.0000	0.9853	0.9824	0.0000	0.1611	0.0000	0.0000	0.9455	0.9528	0.9231
Modal	9	0.022	0.0000	0.0000	0.0000	0.9853	0.9824	0.0000	0.0000	0.0000	0.0604	0.9455	0.9528	0.9835
Modal	10	0.019	0.0147	0.0000	0.0000	1.0000	0.9824	0.0000	0.0000	0.0471	0.0000	0.9455	0.9999	0.9835
Modal	11	0.016	0.0000	0.0176	0.0000	1.0000	1.0000	0.0000	0.0544	0.0000	0.0000	0.9999	0.9999	0.9835
Modal	12	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0164	0.9999	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.652	0.7211	0.0000	0.0000	0.7211	0.0000	0.0000	0.0000	0.3175	0.0000	0.0000	0.3175	0.0000
Modal	2	0.602	0.0000	0.7382	0.0000	0.7211	0.7382	0.0000	0.2992	0.0000	0.0000	0.2992	0.3175	0.0000
Modal	3	0.53	0.0000	0.0000	0.0000	0.7211	0.7382	0.0000	0.0000	0.0000	0.7273	0.2992	0.3175	0.7273
Modal	4	0.169	0.1552	0.0000	0.0000	0.8764	0.7382	0.0000	0.0000	0.3756	0.0000	0.2992	0.6931	0.7273
Modal	5	0.165	0.0000	0.1347	0.0000	0.8764	0.8729	0.0000	0.3913	0.0000	0.0000	0.6905	0.6931	0.7273
Modal	6	0.14	0.0000	0.0000	0.0000	0.8764	0.8729	0.0000	0.0000	0.0000	0.1453	0.6905	0.6931	0.8726
Modal	7	0.076	0.0613	0.0000	0.0000	0.9376	0.8729	0.0000	0.0000	0.1293	0.0000	0.6905	0.8224	0.8726
Modal	8	0.075	0.0000	0.0588	0.0000	0.9376	0.9317	0.0000	0.1176	0.0000	0.0000	0.8081	0.8224	0.8726
Modal	9	0.063	0.0000	0.0000	0.0000	0.9376	0.9317	0.0000	0.0000	0.0000	0.0611	0.8081	0.8224	0.9337
Modal	10	0.045	0.0308	0.0000	0.0000	0.9684	0.9317	0.0000	0.0000	0.0857	0.0000	0.8081	0.9081	0.9337
Modal	11	0.043	0.0000	0.0319	0.0000	0.9684	0.9637	0.0000	0.0881	0.0000	0.0000	0.8963	0.9081	0.9337
Modal	12	0.036	0.0000	0.0000	0.0000	0.9684	0.9637	0.0000	0.0000	0.0000	0.0318	0.8963	0.9081	0.9655
Modal	13	0.031	0.0168	0.0000	0.0000	0.9852	0.9637	0.0000	0.0000	0.0470	0.0000	0.8963	0.9552	0.9655
Modal	14	0.028	0.0000	0.0187	0.0000	0.9852	0.9824	0.0000	0.0512	0.0000	0.0000	0.9475	0.9552	0.9655
Modal	15	0.024	0.0000	0.0000	0.0000	0.9852	0.9824	0.0000	0.0000	0.0000	0.0181	0.9475	0.9552	0.9835
Modal	16	0.024	0.0092	0.0000	0.0000	0.9944	0.9824	0.0000	0.0000	0.0279	0.0000	0.9475	0.9831	0.9835
Modal	17	0.021	0.0000	0.0108	0.0000	0.9944	0.9932	0.0000	0.0322	0.0000	0.0000	0.9796	0.9831	0.9835
Modal	18	0.02	0.0044	0.0000	0.0000	0.9988	0.9932	0.0000	0.0000	0.0132	0.0000	0.9796	0.9962	0.9835
Modal	19	0.018	0.0000	0.0000	0.0000	0.9988	0.9932	0.0000	0.0000	0.0000	0.0102	0.9796	0.9962	0.9937
Modal	20	0.017	0.0012	0.0000	0.0000	1.0000	0.9932	0.0000	0.0000	0.0037	0.0000	0.9796	0.9999	0.9937
Modal	21	0.017	0.0000	0.0053	0.0000	1.0000	0.9985	0.0000	0.0158	0.0000	0.0000	0.9954	0.9999	0.9937
Modal	22	0.015	0.0000	0.0000	0.0000	1.0000	0.9985	0.0000	0.0000	0.0000	0.0049	0.9954	0.9999	0.9986
Modal	23	0.015	0.0000	0.0015	0.0000	1.0000	1.0000	0.0000	0.0045	0.0000	0.0000	0.9999	0.9999	0.9986
Modal	24	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0013	0.9999	0.9999	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	1.095	0.7267	0.0000	0.0000	0.7267	0.0000	0.0000	0.0000	0.2969	0.0000	0.0000	0.2969	0.0000
Modal	2	0.985	0.0000	0.7473	0.0000	0.7267	0.7473	0.0000	0.2742	0.0000	0.0000	0.2742	0.2969	0.0000
Modal	3	0.873	0.0000	0.0000	0.0000	0.7267	0.7473	0.0000	0.0000	0.0000	0.7386	0.2742	0.2969	0.7386
Modal	4	0.303	0.1351	0.0000	0.0000	0.8619	0.7473	0.0000	0.0000	0.3716	0.0000	0.2742	0.6685	0.7386
Modal	5	0.288	0.0000	0.1173	0.0000	0.8619	0.8646	0.0000	0.4026	0.0000	0.0000	0.6768	0.6685	0.7386
Modal	6	0.249	0.0000	0.0000	0.0000	0.8619	0.8646	0.0000	0.0000	0.0000	0.1226	0.6768	0.6685	0.8612
Modal	7	0.142	0.0565	0.0000	0.0000	0.9184	0.8646	0.0000	0.0000	0.1070	0.0000	0.6768	0.7755	0.8612
Modal	8	0.141	0.0000	0.0512	0.0000	0.9184	0.9158	0.0000	0.0907	0.0000	0.0000	0.7675	0.7755	0.8612
Modal	9	0.119	0.0000	0.0000	0.0000	0.9184	0.9158	0.0000	0.0000	0.0000	0.0547	0.7675	0.7755	0.9159
Modal	10	0.083	0.0309	0.0000	0.0000	0.9493	0.9158	0.0000	0.0000	0.0825	0.0000	0.7675	0.8579	0.9159
Modal	11	0.083	0.0000	0.0295	0.0000	0.9493	0.9453	0.0000	0.0810	0.0000	0.0000	0.8485	0.8579	0.9159
Modal	12	0.069	0.0000	0.0000	0.0000	0.9493	0.9453	0.0000	0.0000	0.0000	0.0306	0.8485	0.8579	0.9465
Modal	13	0.056	0.0186	0.0000	0.0000	0.9679	0.9453	0.0000	0.0000	0.0484	0.0000	0.8485	0.9063	0.9465
Modal	14	0.054	0.0000	0.0188	0.0000	0.9679	0.9640	0.0000	0.0475	0.0000	0.0000	0.8960	0.9063	0.9465
Modal	15	0.045	0.0000	0.0000	0.0000	0.9679	0.9640	0.0000	0.0000	0.0000	0.0190	0.8960	0.9063	0.9655
Modal	16	0.041	0.0120	0.0000	0.0000	0.9799	0.9640	0.0000	0.0000	0.0345	0.0000	0.8960	0.9408	0.9655
Modal	17	0.038	0.0000	0.0127	0.0000	0.9799	0.9768	0.0000	0.0363	0.0000	0.0000	0.9323	0.9408	0.9655
Modal	18	0.033	0.0000	0.0000	0.0000	0.9799	0.9768	0.0000	0.0000	0.0000	0.0125	0.9323	0.9408	0.9780

Modal	19	0.032	0.0080	0.0000	0.0000	0.9879	0.9768	0.0000	0.0000	0.0228	0.0000	0.9323	0.9636	0.9780
Modal	20	0.029	0.0000	0.0089	0.0000	0.9879	0.9856	0.0000	0.0249	0.0000	0.0000	0.9573	0.9636	0.9780
Modal	21	0.026	0.0053	0.0000	0.0000	0.9932	0.9856	0.0000	0.0000	0.0160	0.0000	0.9573	0.9796	0.9780
Modal	22	0.025	0.0000	0.0000	0.0000	0.9932	0.9856	0.0000	0.0000	0.0000	0.0085	0.9573	0.9796	0.9865
Modal	23	0.023	0.0000	0.0062	0.0000	0.9932	0.9918	0.0000	0.0183	0.0000	0.0000	0.9755	0.9796	0.9865
Modal	24	0.022	0.0035	0.0000	0.0000	0.9967	0.9918	0.0000	0.0000	0.0103	0.0000	0.9755	0.9899	0.9865
Modal	25	0.02	0.0000	0.0000	0.0000	0.9967	0.9918	0.0000	0.0000	0.0000	0.0058	0.9755	0.9899	0.9924
Modal	26	0.02	0.0021	0.0000	0.0000	0.9988	0.9918	0.0000	0.0000	0.0063	0.0000	0.9755	0.9962	0.9924
Modal	27	0.019	0.0000	0.0041	0.0000	0.9988	0.9959	0.0000	0.0122	0.0000	0.0000	0.9877	0.9962	0.9924
Modal	28	0.018	0.0010	0.0000	0.0000	0.9997	0.9959	0.0000	0.0000	0.0030	0.0000	0.9877	0.9992	0.9924
Modal	29	0.017	0.0003	0.0000	0.0000	1.0000	0.9959	0.0000	0.0000	0.0008	0.0000	0.9877	1.0000	0.9924
Modal	30	0.017	0.0000	0.0000	0.0000	1.0000	0.9959	0.0000	0.0000	0.0000	0.0039	0.9877	1.0000	0.9963
Modal	31	0.017	0.0000	0.0025	0.0000	1.0000	0.9984	0.0000	0.0076	0.0000	0.0000	0.9953	1.0000	0.9963
Modal	32	0.015	0.0000	0.0012	0.0000	1.0000	0.9997	0.0000	0.0036	0.0000	0.0000	0.9990	1.0000	0.9963
Modal	33	0.015	0.0000	0.0000	0.0000	1.0000	0.9997	0.0000	0.0000	0.0000	0.0023	0.9990	1.0000	0.9986
Modal	34	0.014	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0010	0.0000	0.0000	1.0000	1.0000	0.9986
Modal	35	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0011	1.0000	1.0000	0.9997
Modal	36	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0003	1.0000	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.001003	5.25	2.80	0.002	ok
Story3	SISMO X	0.001039	5.25	2.80	0.002	ok
Story2	SISMO X	0.000896	5.25	2.80	0.002	ok
Story1	SISMO X	0.000451	5.25	2.80	0.001	ok
Story4	SISMO Y	0.000936	5.25	2.80	0.002	ok
Story3	SISMO Y	0.000983	5.25	2.80	0.002	ok
Story2	SISMO Y	0.000858	5.25	2.80	0.002	ok
Story1	SISMO Y	0.000417	5.25	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002479	5.25	2.80	0.005	ok
Story7	SISMO X	0.002751	5.25	2.80	0.005	ok
Story6	SISMO X	0.003009	5.25	2.80	0.006	ok
Story5	SISMO X	0.003166	5.25	2.80	0.006	ok
Story4	SISMO X	0.003142	5.25	2.80	0.006	ok
Story3	SISMO X	0.002852	5.25	2.80	0.005	ok
Story2	SISMO X	0.002200	5.25	2.80	0.004	ok
Story1	SISMO X	0.001012	5.25	2.80	0.002	ok
Story8	SISMO Y	0.001917	5.25	2.80	0.004	ok
Story7	SISMO Y	0.002233	5.25	2.80	0.004	ok
Story6	SISMO Y	0.002590	5.25	2.80	0.005	ok
Story5	SISMO Y	0.002872	5.25	2.80	0.005	ok
Story4	SISMO Y	0.002979	5.25	2.80	0.006	ok
Story3	SISMO Y	0.002806	5.25	2.80	0.005	ok
Story2	SISMO Y	0.002215	5.25	2.80	0.004	ok
Story1	SISMO Y	0.001000	5.25	2.80	0.002	ok

Para 12 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story12	SISMO X	0.002307	5.25	2.80	0.004	ok
Story11	SISMO X	0.002555	5.25	2.80	0.005	ok
Story10	SISMO X	0.002842	5.25	2.80	0.005	ok

Story9	SISMO X	0.003126	5.25	2.80	0.006	ok
Story8	SISMO X	0.003375	5.25	2.80	0.006	ok
Story7	SISMO X	0.003560	5.25	2.80	0.007	ok
Story6	SISMO X	0.003655	5.25	2.80	0.007	ok
Story5	SISMO X	0.003627	5.25	2.80	0.007	ok
Story4	SISMO X	0.003428	5.25	2.80	0.006	ok
Story3	SISMO X	0.002997	5.25	2.80	0.006	ok
Story2	SISMO X	0.002247	5.25	2.80	0.004	ok
Story1	SISMO X	0.001011	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001590	5.25	2.80	0.003	ok
Story11	SISMO Y	0.001850	5.25	2.80	0.003	ok
Story10	SISMO Y	0.002182	5.25	2.80	0.004	ok
Story9	SISMO Y	0.002527	5.25	2.80	0.005	ok
Story8	SISMO Y	0.002847	5.25	2.80	0.005	ok
Story7	SISMO Y	0.003116	5.25	2.80	0.006	ok
Story6	SISMO Y	0.003307	5.25	2.80	0.006	ok
Story5	SISMO Y	0.003385	5.25	2.80	0.006	ok
Story4	SISMO Y	0.003300	5.25	2.80	0.006	ok
Story3	SISMO Y	0.002972	5.25	2.80	0.006	ok
Story2	SISMO Y	0.002275	5.25	2.80	0.004	ok
Story1	SISMO Y	0.001007	5.25	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Kx/Ky**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	148.00	0.003326	44497.35	1.06
Y-Y	SISMO Y	147.53	0.003135	47059.65	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	273.06	0.020199	13518.51	1.21
Y-Y	SISMO Y	297.82	0.018196	16367.45	

Para 12 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	257.69	0.033652	7657.38	1.27
Y-Y	SISMO Y	284.88	0.029318	9716.84	

Excentricidades

Para 4 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**
		tonf-s²/m	**tonf-s²/m**	**m**	**m**	**m**	**m**	**m**	**m**
Story1	D1	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	9.22	9.22	8.00	8.20	8.00	8.20	0.00	0.00

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	9.22	9.22	8.00	8.20	8.00	8.20	0.00	0.00

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story9	D9	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story10	D10	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story11	D11	14.09	14.09	8.00	8.20	8.00	8.20	0.00	0.00
Story12	D12	9.22	9.22	8.00	8.20	8.00	8.20	0.00	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	68.69	46.40%	**DUAL**
	Muros	79.35	53.60%	
Y-Y	**Columnas**	73.72	49.96%	**DUAL**
	Muros	73.83	50.04%	

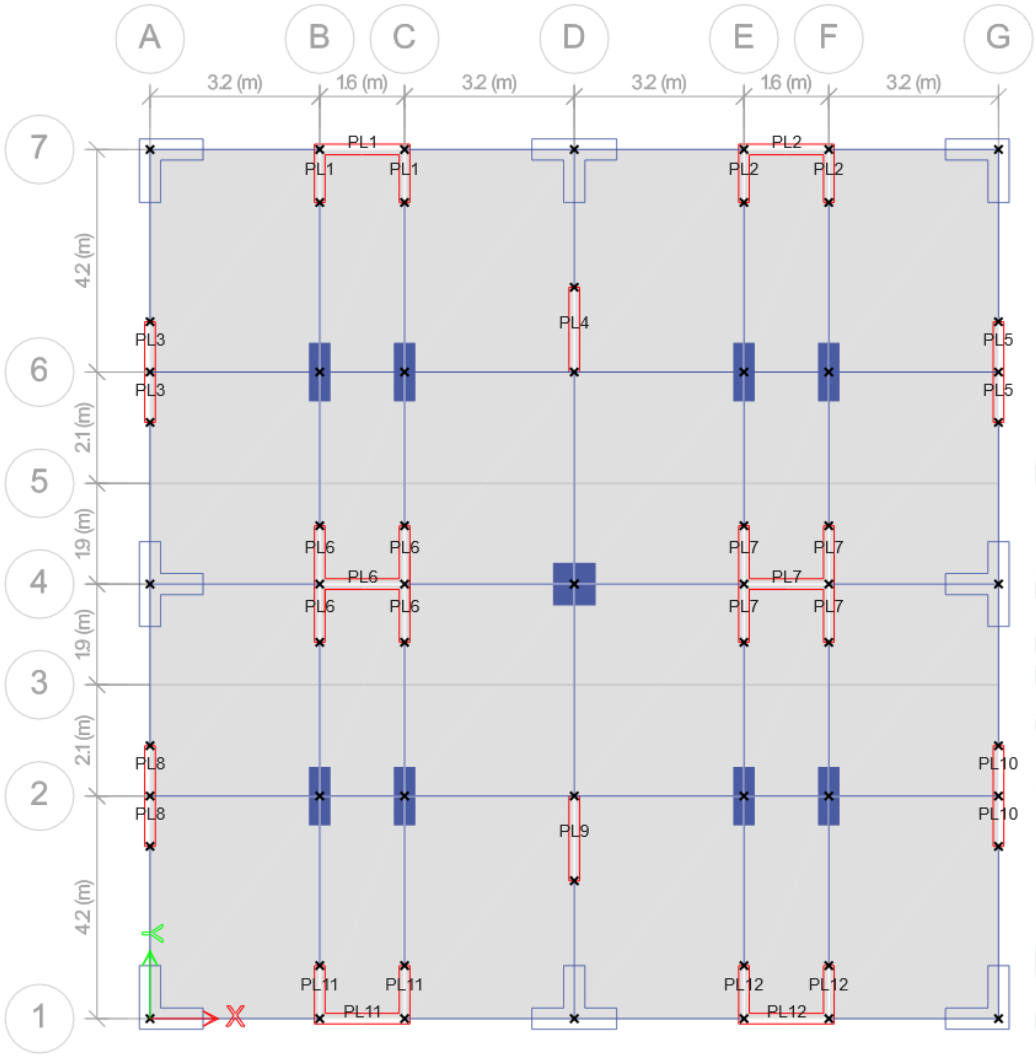
Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	125.36	45.91%	**DUAL**
	Muros	147.70	54.09%	
Y-Y	**Columnas**	146.33	49.13%	**DUAL**
	Muros	151.50	50.87%	

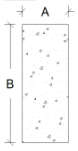
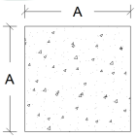
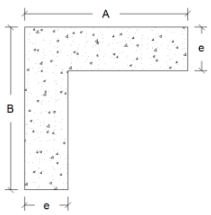
Para 12 pisos:

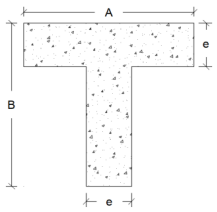
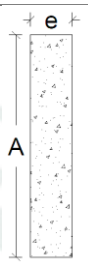
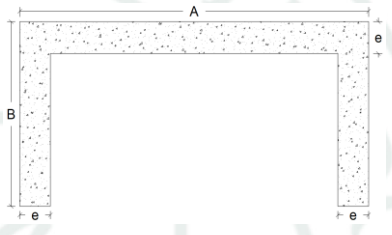
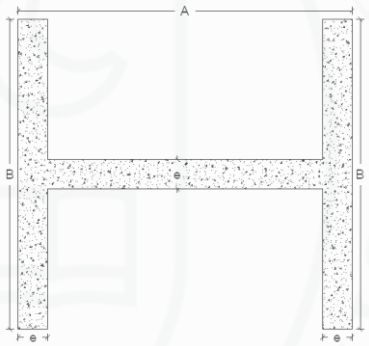
Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	118.23	45.88%	**DUAL**
	Muros	139.47	54.12%	
Y-Y	**Columnas**	139.27	48.90%	**DUAL**
	Muros	145.54	51.10%	

MODELO 3: REGULAR Ky/Kx = 1.30, e = 0

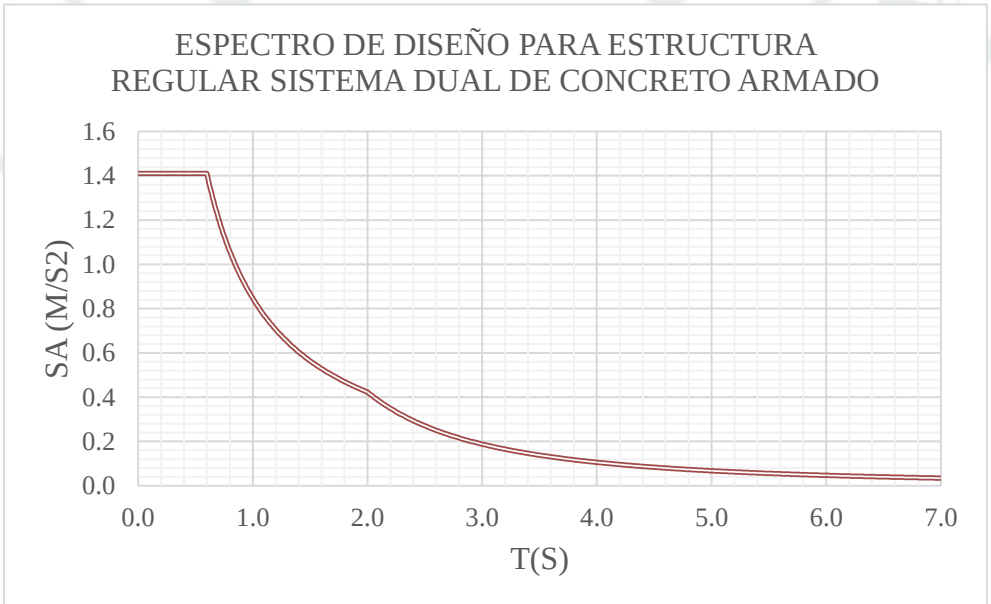


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	1.10 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	1.90 m	
		e	0.20 m	
PL4, PL9	02	A	1.60 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.257	0.7407	0.0000	0.0000	0.7407	0.0000	0.0000	0.0000	0.3492	0.0000	0.0000	0.3492	0.0000
Modal	2	0.24	0.0000	0.7390	0.0000	0.7407	0.7390	0.0000	0.3510	0.0000	0.0000	0.3510	0.3492	0.0000
Modal	3	0.209	0.0000	0.0000	0.0000	0.7407	0.7390	0.0000	0.0000	0.0000	0.7348	0.3510	0.3492	0.7348
Modal	4	0.062	0.1891	0.0000	0.0000	0.9297	0.7390	0.0000	0.0000	0.4557	0.0000	0.3510	0.8049	0.7348
Modal	5	0.057	0.0000	0.1815	0.0000	0.9297	0.9205	0.0000	0.4355	0.0000	0.0000	0.7865	0.8049	0.7348
Modal	6	0.049	0.0000	0.0000	0.0000	0.9297	0.9205	0.0000	0.0000	0.0000	0.1885	0.7865	0.8049	0.9233
Modal	7	0.029	0.0556	0.0000	0.0000	0.9853	0.9205	0.0000	0.0000	0.1481	0.0000	0.7865	0.9529	0.9233
Modal	8	0.025	0.0000	0.0623	0.0000	0.9853	0.9828	0.0000	0.1602	0.0000	0.0000	0.9466	0.9529	0.9233
Modal	9	0.022	0.0000	0.0000	0.0000	0.9853	0.9828	0.0000	0.0000	0.0000	0.0603	0.9466	0.9529	0.9837
Modal	10	0.019	0.0147	0.0000	0.0000	1.0000	0.9828	0.0000	0.0000	0.0469	0.0000	0.9466	0.9999	0.9837
Modal	11	0.016	0.0000	0.0172	0.0000	1.0000	0.9999	0.0000	0.0532	0.0000	0.0000	0.9998	0.9999	0.9837
Modal	12	0.014	0.0000	0.0000	0.0000	1.0000	0.9999	0.0000	0.0000	0.0000	0.0163	0.9998	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.651	0.7207	0.0000	0.0000	0.7207	0.0000	0.0000	0.0000	0.3185	0.0000	0.0000	0.3185	0.0000
Modal	2	0.579	0.0000	0.7367	0.0000	0.7207	0.7367	0.0000	0.3014	0.0000	0.0000	0.3014	0.3185	0.0000
Modal	3	0.52	0.0000	0.0000	0.0000	0.7207	0.7367	0.0000	0.0000	0.0000	0.7270	0.3014	0.3185	0.7270
Modal	4	0.169	0.1560	0.0000	0.0000	0.8767	0.7367	0.0000	0.0000	0.3753	0.0000	0.3014	0.6938	0.7270
Modal	5	0.158	0.0000	0.1361	0.0000	0.8767	0.8728	0.0000	0.3891	0.0000	0.0000	0.6905	0.6938	0.7270
Modal	6	0.138	0.0000	0.0000	0.0000	0.8767	0.8728	0.0000	0.0000	0.0000	0.1456	0.6905	0.6938	0.8725
Modal	7	0.076	0.0612	0.0000	0.0000	0.9379	0.8728	0.0000	0.0000	0.1293	0.0000	0.6905	0.8231	0.8725
Modal	8	0.072	0.0000	0.0592	0.0000	0.9379	0.9321	0.0000	0.1187	0.0000	0.0000	0.8092	0.8231	0.8725
Modal	9	0.061	0.0000	0.0000	0.0000	0.9379	0.9321	0.0000	0.0000	0.0000	0.0612	0.8092	0.8231	0.9337
Modal	10	0.045	0.0307	0.0000	0.0000	0.9685	0.9321	0.0000	0.0000	0.0854	0.0000	0.8092	0.9085	0.9337
Modal	11	0.041	0.0000	0.0320	0.0000	0.9685	0.9641	0.0000	0.0882	0.0000	0.0000	0.8974	0.9085	0.9337
Modal	12	0.035	0.0000	0.0000	0.0000	0.9685	0.9641	0.0000	0.0000	0.0000	0.0319	0.8974	0.9085	0.9656
Modal	13	0.031	0.0167	0.0000	0.0000	0.9853	0.9641	0.0000	0.0000	0.0468	0.0000	0.8974	0.9553	0.9656
Modal	14	0.027	0.0000	0.0186	0.0000	0.9853	0.9827	0.0000	0.0510	0.0000	0.0000	0.9484	0.9553	0.9656
Modal	15	0.024	0.0000	0.0000	0.0000	0.9853	0.9827	0.0000	0.0000	0.0000	0.0180	0.9484	0.9553	0.9837
Modal	16	0.024	0.0092	0.0000	0.0000	0.9944	0.9827	0.0000	0.0000	0.0278	0.0000	0.9484	0.9831	0.9837
Modal	17	0.02	0.0000	0.0107	0.0000	0.9944	0.9934	0.0000	0.0317	0.0000	0.0000	0.9802	0.9831	0.9837
Modal	18	0.02	0.0044	0.0000	0.0000	0.9988	0.9934	0.0000	0.0000	0.0131	0.0000	0.9802	0.9962	0.9837
Modal	19	0.018	0.0000	0.0000	0.0000	0.9988	0.9934	0.0000	0.0000	0.0000	0.0101	0.9802	0.9962	0.9938
Modal	20	0.018	0.0012	0.0000	0.0000	1.0000	0.9934	0.0000	0.0000	0.0037	0.0000	0.9802	0.9999	0.9938
Modal	21	0.016	0.0000	0.0052	0.0000	1.0000	0.9985	0.0000	0.0154	0.0000	0.0000	0.9955	0.9999	0.9938
Modal	22	0.015	0.0000	0.0000	0.0000	1.0000	0.9985	0.0000	0.0000	0.0000	0.0048	0.9955	0.9999	0.9986
Modal	23	0.014	0.0000	0.0014	0.0000	1.0000	1.0000	0.0000	0.0044	0.0000	0.0000	0.9999	0.9999	0.9986
Modal	24	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0013	0.9999	0.9999	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	1.093	0.7261	0.0000	0.0000	0.7261	0.0000	0.0000	0.0000	0.2979	0.0000	0.0000	0.2979	0.0000
Modal	2	0.949	0.0000	0.7458	0.0000	0.7261	0.7458	0.0000	0.2763	0.0000	0.0000	0.2763	0.2979	0.0000
Modal	3	0.857	0.0000	0.0000	0.0000	0.7261	0.7458	0.0000	0.0000	0.0000	0.7383	0.2763	0.2979	0.7383
Modal	4	0.302	0.1358	0.0000	0.0000	0.8619	0.7458	0.0000	0.0000	0.3707	0.0000	0.2763	0.6686	0.7383
Modal	5	0.277	0.0000	0.1183	0.0000	0.8619	0.8641	0.0000	0.3997	0.0000	0.0000	0.6760	0.6686	0.7383
Modal	6	0.244	0.0000	0.0000	0.0000	0.8619	0.8641	0.0000	0.0000	0.0000	0.1228	0.6760	0.6686	0.8611
Modal	7	0.141	0.0567	0.0000	0.0000	0.9186	0.8641	0.0000	0.0000	0.1074	0.0000	0.6760	0.7761	0.8611
Modal	8	0.135	0.0000	0.0517	0.0000	0.9186	0.9158	0.0000	0.0919	0.0000	0.0000	0.7679	0.7761	0.8611
Modal	9	0.116	0.0000	0.0000	0.0000	0.9186	0.9158	0.0000	0.0000	0.0000	0.0548	0.7679	0.7761	0.9158
Modal	10	0.083	0.0309	0.0000	0.0000	0.9495	0.9158	0.0000	0.0000	0.0824	0.0000	0.7679	0.8584	0.9158
Modal	11	0.079	0.0000	0.0297	0.0000	0.9495	0.9455	0.0000	0.0812	0.0000	0.0000	0.8491	0.8584	0.9158
Modal	12	0.068	0.0000	0.0000	0.0000	0.9495	0.9455	0.0000	0.0000	0.0000	0.0307	0.8491	0.8584	0.9465
Modal	13	0.055	0.0186	0.0000	0.0000	0.9681	0.9455	0.0000	0.0000	0.0483	0.0000	0.8491	0.9067	0.9465
Modal	14	0.052	0.0000	0.0189	0.0000	0.9681	0.9643	0.0000	0.0477	0.0000	0.0000	0.8969	0.9067	0.9465
Modal	15	0.044	0.0000	0.0000	0.0000	0.9681	0.9643	0.0000	0.0000	0.0000	0.0190	0.8969	0.9067	0.9655
Modal	16	0.041	0.0119	0.0000	0.0000	0.9800	0.9643	0.0000	0.0000	0.0343	0.0000	0.8969	0.9411	0.9655
Modal	17	0.037	0.0000	0.0127	0.0000	0.9800	0.9770	0.0000	0.0363	0.0000	0.0000	0.9332	0.9411	0.9655
Modal	18	0.032	0.0000	0.0000	0.0000	0.9800	0.9770	0.0000	0.0000	0.0000	0.0126	0.9332	0.9411	0.9781

Modal	19	0.032	0.0079	0.0000	0.0000	0.9879	0.9770	0.0000	0.0000	0.0227	0.0000	0.9332	0.9637	0.9781
Modal	20	0.028	0.0000	0.0088	0.0000	0.9879	0.9859	0.0000	0.0248	0.0000	0.0000	0.9580	0.9637	0.9781
Modal	21	0.026	0.0053	0.0000	0.0000	0.9932	0.9859	0.0000	0.0000	0.0159	0.0000	0.9580	0.9796	0.9781
Modal	22	0.025	0.0000	0.0000	0.0000	0.9932	0.9859	0.0000	0.0000	0.0000	0.0085	0.9580	0.9796	0.9866
Modal	23	0.022	0.0000	0.0061	0.0000	0.9932	0.9920	0.0000	0.0181	0.0000	0.0000	0.9761	0.9796	0.9866
Modal	24	0.022	0.0035	0.0000	0.0000	0.9967	0.9920	0.0000	0.0000	0.0103	0.0000	0.9761	0.9899	0.9866
Modal	25	0.02	0.0000	0.0000	0.0000	0.9967	0.9920	0.0000	0.0000	0.0000	0.0058	0.9761	0.9899	0.9925
Modal	26	0.02	0.0021	0.0000	0.0000	0.9988	0.9920	0.0000	0.0000	0.0063	0.0000	0.9761	0.9962	0.9925
Modal	27	0.019	0.0000	0.0041	0.0000	0.9988	0.9960	0.0000	0.0120	0.0000	0.0000	0.9881	0.9962	0.9925
Modal	28	0.018	0.0010	0.0000	0.0000	0.9997	0.9960	0.0000	0.0000	0.0030	0.0000	0.9881	0.9992	0.9925
Modal	29	0.017	0.0003	0.0000	0.0000	1.0000	0.9960	0.0000	0.0000	0.0008	0.0000	0.9881	1.0000	0.9925
Modal	30	0.017	0.0000	0.0000	0.0000	1.0000	0.9960	0.0000	0.0000	0.0000	0.0038	0.9881	1.0000	0.9963
Modal	31	0.016	0.0000	0.0024	0.0000	1.0000	0.9985	0.0000	0.0074	0.0000	0.0000	0.9955	1.0000	0.9963
Modal	32	0.015	0.0000	0.0012	0.0000	1.0000	0.9997	0.0000	0.0035	0.0000	0.0000	0.9990	1.0000	0.9963
Modal	33	0.015	0.0000	0.0000	0.0000	1.0000	0.9997	0.0000	0.0000	0.0000	0.0023	0.9990	1.0000	0.9986
Modal	34	0.014	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0010	0.0000	0.0000	0.9999	1.0000	0.9986
Modal	35	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0011	0.9999	1.0000	0.9997
Modal	36	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0003	0.9999	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.000993	5.25	2.80	0.002	ok
Story3	SISMO X	0.001028	5.25	2.80	0.002	ok
Story2	SISMO X	0.000888	5.25	2.80	0.002	ok
Story1	SISMO X	0.000448	5.25	2.80	0.001	ok
Story4	SISMO Y	0.000863	5.25	2.80	0.002	ok
Story3	SISMO Y	0.000903	5.25	2.80	0.002	ok
Story2	SISMO Y	0.000787	5.25	2.80	0.001	ok
Story1	SISMO Y	0.000383	5.25	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002481	5.25	2.80	0.005	ok
Story7	SISMO X	0.002751	5.25	2.80	0.005	ok
Story6	SISMO X	0.003003	5.25	2.80	0.006	ok
Story5	SISMO X	0.003156	5.25	2.80	0.006	ok
Story4	SISMO X	0.003127	5.25	2.80	0.006	ok
Story3	SISMO X	0.002837	5.25	2.80	0.005	ok
Story2	SISMO X	0.002187	5.25	2.80	0.004	ok
Story1	SISMO X	0.001008	5.25	2.80	0.002	ok
Story8	SISMO Y	0.001805	5.25	2.80	0.003	ok
Story7	SISMO Y	0.002093	5.25	2.80	0.004	ok
Story6	SISMO Y	0.002416	5.25	2.80	0.005	ok
Story5	SISMO Y	0.002669	5.25	2.80	0.005	ok
Story4	SISMO Y	0.002759	5.25	2.80	0.005	ok
Story3	SISMO Y	0.00259	5.25	2.80	0.005	ok
Story2	SISMO Y	0.002039	5.25	2.80	0.004	ok
Story1	SISMO Y	0.000921	5.25	2.80	0.002	ok

Para 12 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story12	SISMO X	0.002316	5.25	2.80	0.004	ok
Story11	SISMO X	0.002563	5.25	2.80	0.005	ok
Story10	SISMO X	0.002846	5.25	2.80	0.005	ok
Story9	SISMO X	0.003127	5.25	2.80	0.006	ok

Story8	SISMO X	0.003371	5.25	2.80	0.006	ok
Story7	SISMO X	0.003552	5.25	2.80	0.007	ok
Story6	SISMO X	0.003644	5.25	2.80	0.007	ok
Story5	SISMO X	0.003611	5.25	2.80	0.007	ok
Story4	SISMO X	0.00341	5.25	2.80	0.006	ok
Story3	SISMO X	0.002979	5.25	2.80	0.006	ok
Story2	SISMO X	0.002233	5.25	2.80	0.004	ok
Story1	SISMO X	0.001006	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001558	5.25	2.80	0.003	ok
Story11	SISMO Y	0.001806	5.25	2.80	0.003	ok
Story10	SISMO Y	0.002123	5.25	2.80	0.004	ok
Story9	SISMO Y	0.002452	5.25	2.80	0.005	ok
Story8	SISMO Y	0.002758	5.25	2.80	0.005	ok
Story7	SISMO Y	0.003014	5.25	2.80	0.006	ok
Story6	SISMO Y	0.003193	5.25	2.80	0.006	ok
Story5	SISMO Y	0.003262	5.25	2.80	0.006	ok
Story4	SISMO Y	0.003171	5.25	2.80	0.006	ok
Story3	SISMO Y	0.002847	5.25	2.80	0.005	ok
Story2	SISMO Y	0.002172	5.25	2.80	0.004	ok
Story1	SISMO Y	0.000961	5.25	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Kx/Ky**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	148.76	0.003299	45091.27	1.14
Y-Y	SISMO Y	148.19	0.002880	51454.83	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	274.84	0.020158	13634.29	1.30
Y-Y	SISMO Y	299.59	0.016904	17723.02	

Para 12 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	259.21	0.033616	7710.99	1.36
Y-Y	SISMO Y	296.30	0.028349	10452.02	

Excentricidades

Para 4 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**
		tonf-s²/m	**tonf-s²/m**	**m**	**m**	**m**	**m**	**m**	**m**
Story1	D1	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	8.99	8.99	8.00	8.20	8.00	8.20	0.00	0.00

Para 8 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**

		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	8.99	8.99	8.00	8.20	8.00	8.20	0.00	0.00

Para 12 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**
		tonf-s²/m	**tonf-s²/m**	**m**	**m**	**m**	**m**	**m**	**m**
Story1	D1	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story9	D9	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story10	D10	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story11	D11	13.79	13.79	8.00	8.20	8.00	8.20	0.00	0.00
Story12	D12	8.99	8.99	8.00	8.20	8.00	8.20	0.00	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	**Elementos**	**Cortante**	**% Cortante**	**Sistema**
X-X	**Columnas**	68.67	46.15%	**DUAL**
	Muros	80.13	53.85%	
Y-Y	**Columnas**	68.48	46.21%	**DUAL**
	Muros	79.73	53.79%	

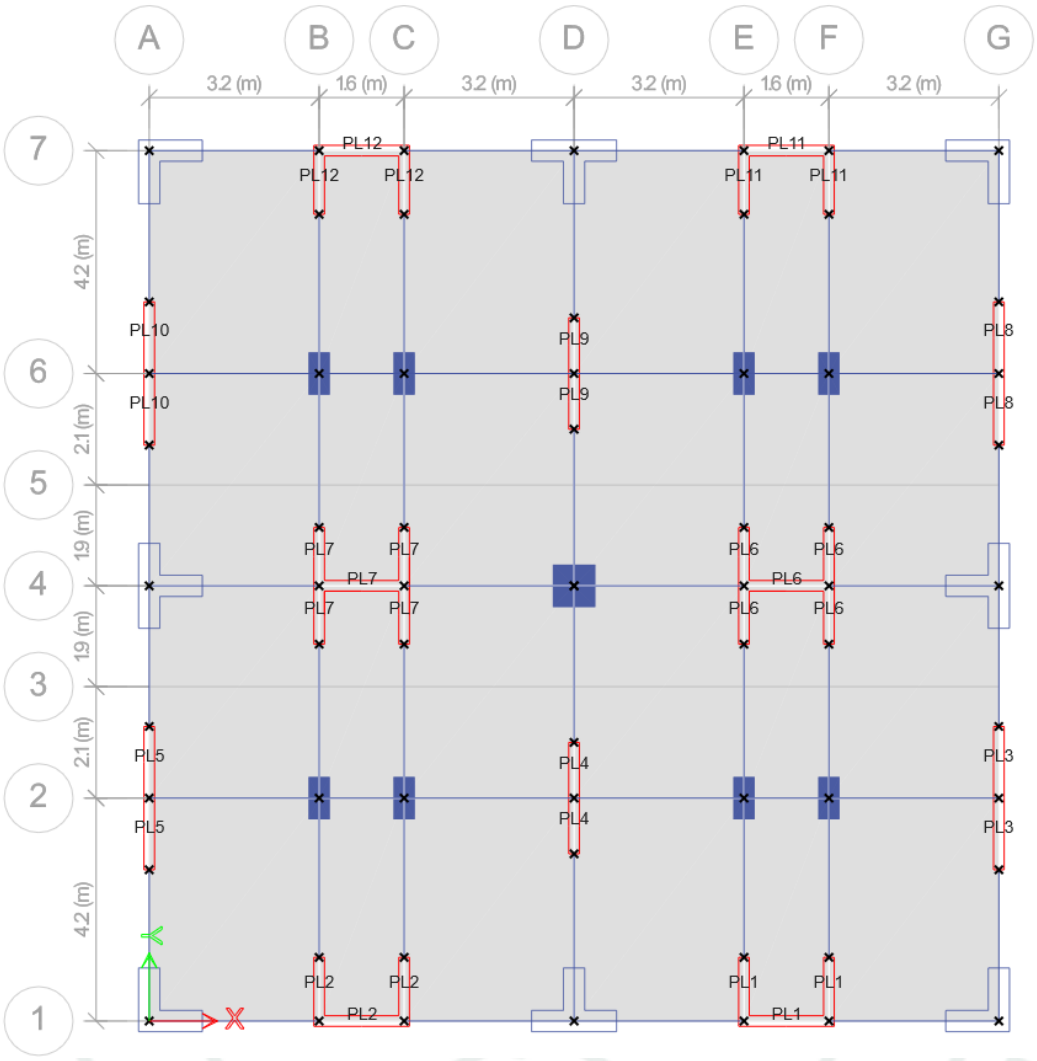
Para 8 pisos:

Eje	**Elementos**	**Cortante**	**% Cortante**	**Sistema**
X-X	**Columnas**	125.48	45.65%	**DUAL**
	Muros	149.39	54.35%	
Y-Y	**Columnas**	136.28	45.49%	**DUAL**
	Muros	163.32	54.51%	

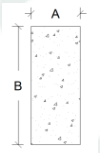
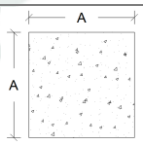
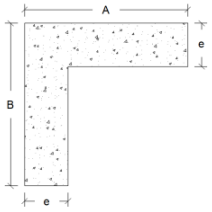
Para 12 pisos:

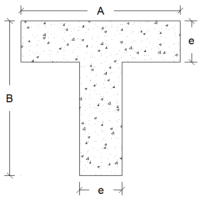
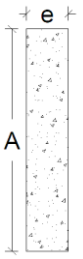
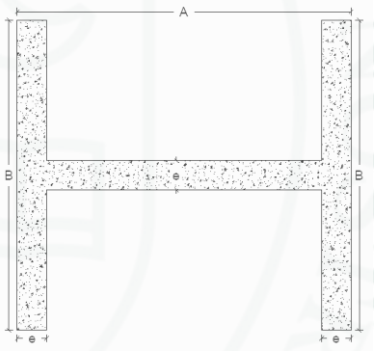
Eje	**Elementos**	**Cortante**	**% Cortante**	**Sistema**
X-X	**Columnas**	118.26	45.62%	**DUAL**
	Muros	140.96	54.38%	
Y-Y	**Columnas**	134.18	45.28%	**DUAL**
	Muros	162.13	54.72%	

MODELO 4: REGULAR Ky/Kx = 1.50, e = 0

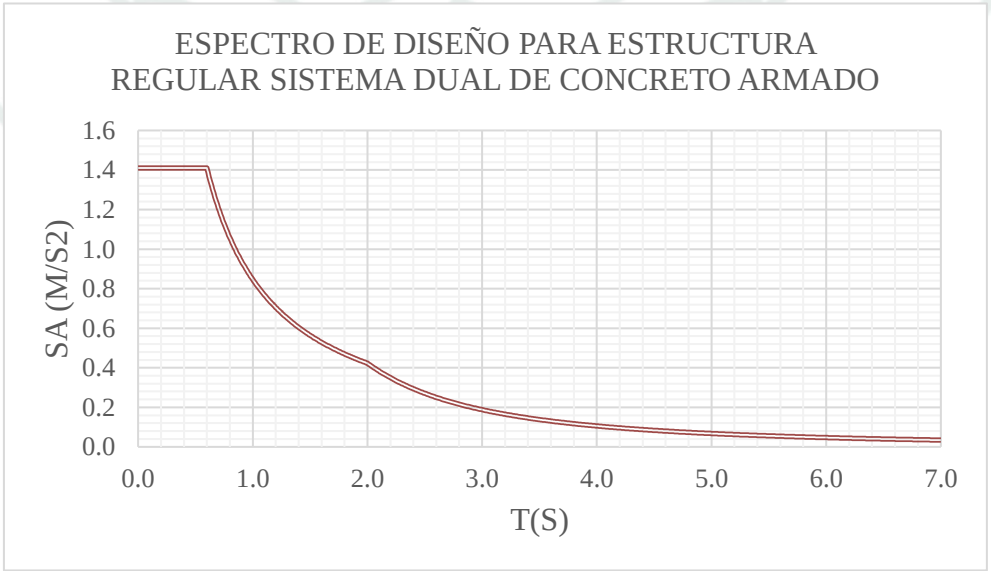


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	0.80 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	2.70 m	
		e	0.20 m	
PL4, PL9	02	A	2.10 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.20 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

<u>Espectro de Diseño (Norma E030)</u>



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.255	0.7407	0.0000	0.0000	0.7407	0.0000	0.0000	0.0000	0.3500	0.0000	0.0000	0.3500	0.0000
Modal	2	0.219	0.0000	0.7367	0.0000	0.7407	0.7367	0.0000	0.3543	0.0000	0.0000	0.3543	0.3500	0.0000
Modal	3	0.191	0.0000	0.0000	0.0000	0.7407	0.7367	0.0000	0.0000	0.0000	0.7347	0.3543	0.3500	0.7347
Modal	4	0.061	0.1898	0.0000	0.0000	0.9305	0.7367	0.0000	0.0000	0.4566	0.0000	0.3543	0.8066	0.7347
Modal	5	0.052	0.0000	0.1865	0.0000	0.9305	0.9232	0.0000	0.4377	0.0000	0.0000	0.7920	0.8066	0.7347
Modal	6	0.045	0.0000	0.0000	0.0000	0.9305	0.9232	0.0000	0.0000	0.0000	0.1913	0.7920	0.8066	0.9260
Modal	7	0.029	0.0549	0.0000	0.0000	0.9854	0.9232	0.0000	0.0000	0.1468	0.0000	0.7920	0.9534	0.9260
Modal	8	0.023	0.0000	0.0608	0.0000	0.9854	0.9840	0.0000	0.1581	0.0000	0.0000	0.9501	0.9534	0.9260
Modal	9	0.02	0.0000	0.0000	0.0000	0.9854	0.9840	0.0000	0.0000	0.0000	0.0587	0.9501	0.9534	0.9846
Modal	10	0.019	0.0145	0.0000	0.0000	1.0000	0.9840	0.0000	0.0000	0.0465	0.0000	0.9501	0.9999	0.9846
Modal	11	0.015	0.0000	0.0159	0.0000	1.0000	0.9999	0.0000	0.0498	0.0000	0.0000	0.9998	0.9999	0.9846
Modal	12	0.014	0.0000	0.0000	0.0000	1.0000	0.9999	0.0000	0.0000	0.0000	0.0153	0.9998	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.647	0.7198	0.0000	0.0000	0.7198	0.0000	0.0000	0.0000	0.3198	0.0000	0.0000	0.3198	0.0000
Modal	2	0.535	0.0000	0.7311	0.0000	0.7198	0.7311	0.0000	0.3079	0.0000	0.0000	0.3079	0.3198	0.0000
Modal	3	0.479	0.0000	0.0000	0.0000	0.7198	0.7311	0.0000	0.0000	0.0000	0.7237	0.3079	0.3198	0.7237
Modal	4	0.167	0.1572	0.0000	0.0000	0.8771	0.7311	0.0000	0.0000	0.3746	0.0000	0.3079	0.6944	0.7237
Modal	5	0.144	0.0000	0.1416	0.0000	0.8771	0.8726	0.0000	0.3814	0.0000	0.0000	0.6893	0.6944	0.7237
Modal	6	0.126	0.0000	0.0000	0.0000	0.8771	0.8726	0.0000	0.0000	0.0000	0.1494	0.6893	0.6944	0.8732
Modal	7	0.075	0.0614	0.0000	0.0000	0.9385	0.8726	0.0000	0.0000	0.1302	0.0000	0.6893	0.8246	0.8732
Modal	8	0.065	0.0000	0.0607	0.0000	0.9385	0.9333	0.0000	0.1233	0.0000	0.0000	0.8126	0.8246	0.8732
Modal	9	0.056	0.0000	0.0000	0.0000	0.9385	0.9333	0.0000	0.0000	0.0000	0.0620	0.8126	0.8246	0.9351
Modal	10	0.045	0.0304	0.0000	0.0000	0.9689	0.9333	0.0000	0.0000	0.0849	0.0000	0.8126	0.9095	0.9351
Modal	11	0.037	0.0000	0.0322	0.0000	0.9689	0.9655	0.0000	0.0885	0.0000	0.0000	0.9011	0.9095	0.9351
Modal	12	0.033	0.0000	0.0000	0.0000	0.9689	0.9655	0.0000	0.0000	0.0000	0.0318	0.9011	0.9095	0.9669
Modal	13	0.031	0.0165	0.0000	0.0000	0.9854	0.9655	0.0000	0.0000	0.0463	0.0000	0.9011	0.9558	0.9669
Modal	14	0.025	0.0000	0.0183	0.0000	0.9854	0.9838	0.0000	0.0503	0.0000	0.0000	0.9514	0.9558	0.9669
Modal	15	0.024	0.0091	0.0000	0.0000	0.9945	0.9838	0.0000	0.0000	0.0275	0.0000	0.9514	0.9833	0.9669
Modal	16	0.022	0.0000	0.0000	0.0000	0.9945	0.9838	0.0000	0.0000	0.0000	0.0176	0.9514	0.9833	0.9845
Modal	17	0.02	0.0043	0.0000	0.0000	0.9988	0.9838	0.0000	0.0000	0.0130	0.0000	0.9514	0.9963	0.9845
Modal	18	0.019	0.0000	0.0101	0.0000	0.9988	0.9939	0.0000	0.0303	0.0000	0.0000	0.9818	0.9963	0.9845
Modal	19	0.018	0.0012	0.0000	0.0000	1.0000	0.9939	0.0000	0.0000	0.0037	0.0000	0.9818	1.0000	0.9845
Modal	20	0.017	0.0000	0.0000	0.0000	1.0000	0.9939	0.0000	0.0000	0.0000	0.0097	0.9818	1.0000	0.9942
Modal	21	0.015	0.0000	0.0048	0.0000	1.0000	0.9987	0.0000	0.0142	0.0000	0.0000	0.9960	1.0000	0.9942
Modal	22	0.014	0.0000	0.0000	0.0000	1.0000	0.9987	0.0000	0.0000	0.0000	0.0045	0.9960	1.0000	0.9987
Modal	23	0.014	0.0000	0.0013	0.0000	1.0000	1.0000	0.0000	0.0039	0.0000	0.0000	0.9999	1.0000	0.9987
Modal	24	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0012	0.9999	1.0000	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	1.085	0.7259	0.0000	0.0000	0.7259	0.0000	0.0000	0.0000	0.2984	0.0000	0.0000	0.2984	0.0000
Modal	2	0.883	0.0000	0.7403	0.0000	0.7259	0.7403	0.0000	0.2826	0.0000	0.0000	0.2826	0.2984	0.0000
Modal	3	0.794	0.0000	0.0000	0.0000	0.7259	0.7403	0.0000	0.0000	0.0000	0.7349	0.2826	0.2984	0.7349
Modal	4	0.3	0.1359	0.0000	0.0000	0.8618	0.7403	0.0000	0.0000	0.3700	0.0000	0.2826	0.6684	0.7349
Modal	5	0.254	0.0000	0.1220	0.0000	0.8618	0.8623	0.0000	0.3897	0.0000	0.0000	0.6723	0.6684	0.7349
Modal	6	0.224	0.0000	0.0000	0.0000	0.8618	0.8623	0.0000	0.0000	0.0000	0.1256	0.6723	0.6684	0.8605
Modal	7	0.14	0.0572	0.0000	0.0000	0.9190	0.8623	0.0000	0.0000	0.1085	0.0000	0.6723	0.7769	0.8605
Modal	8	0.122	0.0000	0.0535	0.0000	0.9190	0.9158	0.0000	0.0965	0.0000	0.0000	0.7688	0.7769	0.8605
Modal	9	0.106	0.0000	0.0000	0.0000	0.9190	0.9158	0.0000	0.0000	0.0000	0.0559	0.7688	0.7769	0.9164
Modal	10	0.082	0.0309	0.0000	0.0000	0.9499	0.9158	0.0000	0.0000	0.0826	0.0000	0.7688	0.8595	0.9164
Modal	11	0.071	0.0000	0.0304	0.0000	0.9499	0.9462	0.0000	0.0821	0.0000	0.0000	0.8508	0.8595	0.9164
Modal	12	0.062	0.0000	0.0000	0.0000	0.9499	0.9462	0.0000	0.0000	0.0000	0.0311	0.8508	0.8595	0.9474
Modal	13	0.055	0.0185	0.0000	0.0000	0.9684	0.9462	0.0000	0.0000	0.0482	0.0000	0.8508	0.9077	0.9474
Modal	14	0.047	0.0000	0.0191	0.0000	0.9684	0.9653	0.0000	0.0487	0.0000	0.0000	0.8996	0.9077	0.9474
Modal	15	0.041	0.0000	0.0000	0.0000	0.9684	0.9653	0.0000	0.0000	0.0000	0.0191	0.8996	0.9077	0.9665
Modal	16	0.041	0.0118	0.0000	0.0000	0.9802	0.9653	0.0000	0.0000	0.0341	0.0000	0.8996	0.9417	0.9665
Modal	17	0.034	0.0000	0.0127	0.0000	0.9802	0.9780	0.0000	0.0363	0.0000	0.0000	0.9358	0.9417	0.9665
Modal	18	0.032	0.0078	0.0000	0.0000	0.9881	0.9780	0.0000	0.0000	0.0224	0.0000	0.9358	0.9642	0.9665

Modal	19	0.03	0.0000	0.0000	0.0000	0.9881	0.9780	0.0000	0.0000	0.0000	0.0124	0.9358	0.9642	0.9790
Modal	20	0.026	0.0052	0.0000	0.0000	0.9933	0.9780	0.0000	0.0000	0.0157	0.0000	0.9358	0.9799	0.9790
Modal	21	0.026	0.0000	0.0087	0.0000	0.9933	0.9867	0.0000	0.0245	0.0000	0.0000	0.9603	0.9799	0.9790
Modal	22	0.023	0.0000	0.0000	0.0000	0.9933	0.9867	0.0000	0.0000	0.0000	0.0084	0.9603	0.9799	0.9873
Modal	23	0.022	0.0034	0.0000	0.0000	0.9967	0.9867	0.0000	0.0000	0.0102	0.0000	0.9603	0.9901	0.9873
Modal	24	0.021	0.0000	0.0059	0.0000	0.9967	0.9926	0.0000	0.0175	0.0000	0.0000	0.9778	0.9901	0.9873
Modal	25	0.02	0.0020	0.0000	0.0000	0.9988	0.9926	0.0000	0.0000	0.0062	0.0000	0.9778	0.9963	0.9873
Modal	26	0.019	0.0000	0.0000	0.0000	0.9988	0.9926	0.0000	0.0000	0.0000	0.0056	0.9778	0.9963	0.9929
Modal	27	0.018	0.0010	0.0000	0.0000	0.9997	0.9926	0.0000	0.0000	0.0029	0.0000	0.9778	0.9992	0.9929
Modal	28	0.018	0.0000	0.0038	0.0000	0.9997	0.9964	0.0000	0.0113	0.0000	0.0000	0.9891	0.9992	0.9929
Modal	29	0.017	0.0003	0.0000	0.0000	1.0000	0.9964	0.0000	0.0000	0.0008	0.0000	0.9891	1.0000	0.9929
Modal	30	0.016	0.0000	0.0000	0.0000	1.0000	0.9964	0.0000	0.0000	0.0000	0.0036	0.9891	1.0000	0.9966
Modal	31	0.016	0.0000	0.0023	0.0000	1.0000	0.9986	0.0000	0.0068	0.0000	0.0000	0.9959	1.0000	0.9966
Modal	32	0.014	0.0000	0.0011	0.0000	1.0000	0.9997	0.0000	0.0032	0.0000	0.0000	0.9991	1.0000	0.9966
Modal	33	0.014	0.0000	0.0000	0.0000	1.0000	0.9997	0.0000	0.0000	0.0000	0.0021	0.9991	1.0000	0.9987
Modal	34	0.013	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0008	0.0000	0.0000	0.9999	1.0000	0.9987
Modal	35	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0010	0.9999	1.0000	0.9997
Modal	36	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0003	0.9999	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.000974	5.25	2.80	0.002	ok
Story3	SISMO X	0.001006	5.25	2.80	0.002	ok
Story2	SISMO X	0.000869	5.25	2.80	0.002	ok
Story1	SISMO X	0.00044	5.25	2.80	0.001	ok
Story4	SISMO Y	0.000729	5.25	2.80	0.001	ok
Story3	SISMO Y	0.000755	5.25	2.80	0.001	ok
Story2	SISMO Y	0.000649	5.25	2.80	0.001	ok
Story1	SISMO Y	0.000316	5.25	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002476	5.25	2.80	0.005	ok
Story7	SISMO X	0.002737	5.25	2.80	0.005	ok
Story6	SISMO X	0.002979	5.25	2.80	0.006	ok
Story5	SISMO X	0.003120	5.25	2.80	0.006	ok
Story4	SISMO X	0.003084	5.25	2.80	0.006	ok
Story3	SISMO X	0.002791	5.25	2.80	0.005	ok
Story2	SISMO X	0.002150	5.25	2.80	0.004	ok
Story1	SISMO X	0.000994	5.25	2.80	0.002	ok
Story8	SISMO Y	0.001632	5.25	2.80	0.003	ok
Story7	SISMO Y	0.001860	5.25	2.80	0.003	ok
Story6	SISMO Y	0.002108	5.25	2.80	0.004	ok
Story5	SISMO Y	0.002292	5.25	2.80	0.004	ok
Story4	SISMO Y	0.002338	5.25	2.80	0.004	ok
Story3	SISMO Y	0.002169	5.25	2.80	0.004	ok
Story2	SISMO Y	0.001689	5.25	2.80	0.003	ok
Story1	SISMO Y	0.000763	5.25	2.80	0.001	ok

Para 12 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story12	SISMO X	0.002293	5.25	2.80	0.004	ok
Story11	SISMO X	0.002536	5.25	2.80	0.005	ok
Story10	SISMO X	0.002814	5.25	2.80	0.005	ok
Story9	SISMO X	0.003089	5.25	2.80	0.006	ok

Story8	SISMO X	0.003330	5.25	2.80	0.006	ok
Story7	SISMO X	0.003509	5.25	2.80	0.007	ok
Story6	SISMO X	0.003597	5.25	2.80	0.007	ok
Story5	SISMO X	0.003562	5.25	2.80	0.007	ok
Story4	SISMO X	0.003360	5.25	2.80	0.006	ok
Story3	SISMO X	0.002932	5.25	2.80	0.005	ok
Story2	SISMO X	0.002196	5.25	2.80	0.004	ok
Story1	SISMO X	0.000992	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001539	5.25	2.80	0.003	ok
Story11	SISMO Y	0.001758	5.25	2.80	0.003	ok
Story10	SISMO Y	0.002036	5.25	2.80	0.004	ok
Story9	SISMO Y	0.002327	5.25	2.80	0.004	ok
Story8	SISMO Y	0.002596	5.25	2.80	0.005	ok
Story7	SISMO Y	0.002817	5.25	2.80	0.005	ok
Story6	SISMO Y	0.002963	5.25	2.80	0.006	ok
Story5	SISMO Y	0.003003	5.25	2.80	0.006	ok
Story4	SISMO Y	0.002892	5.25	2.80	0.005	ok
Story3	SISMO Y	0.002569	5.25	2.80	0.005	ok
Story2	SISMO Y	0.001940	5.25	2.80	0.004	ok
Story1	SISMO Y	0.000856	5.25	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Kx/Ky**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	148.88	0.003240	45949.54	1.34
Y-Y	SISMO Y	148.06	0.002406	61536.91	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	276.50	0.019999	13825.54	1.48
Y-Y	SISMO Y	298.08	0.014539	20502.34	

Para 12 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	261.13	0.033275	7847.50	1.52
Y-Y	SISMO Y	315.28	0.026499	11897.81	

Excentricidades

Para 4 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**
		tonf-s²/m	**tonf-s²/m**	**m**	**m**	**m**	**m**	**m**	**m**
Story1	D1	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	8.53	8.53	8.00	8.20	8.00	8.20	0.00	0.00

Para 8 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**

		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	8.53	8.53	8.00	8.20	8.00	8.20	0.00	0.00

Para 12 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**
		tonf-s²/m	**tonf-s²/m**	**m**	**m**	**m**	**m**	**m**	**m**
Story1	D1	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story9	D9	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story10	D10	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story11	D11	12.98	12.98	8.00	8.20	8.00	8.20	0.00	0.00
Story12	D12	8.53	8.53	8.00	8.20	8.00	8.20	0.00	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	**Elementos**	**Cortante**	**% Cortante**	**Sistema**
X-X	**Columnas**	66.77	44.84%	**DUAL**
	Muros	82.13	55.16%	
Y-Y	**Columnas**	49.35	33.33%	**DUAL**
	Muros	98.71	66.67%	

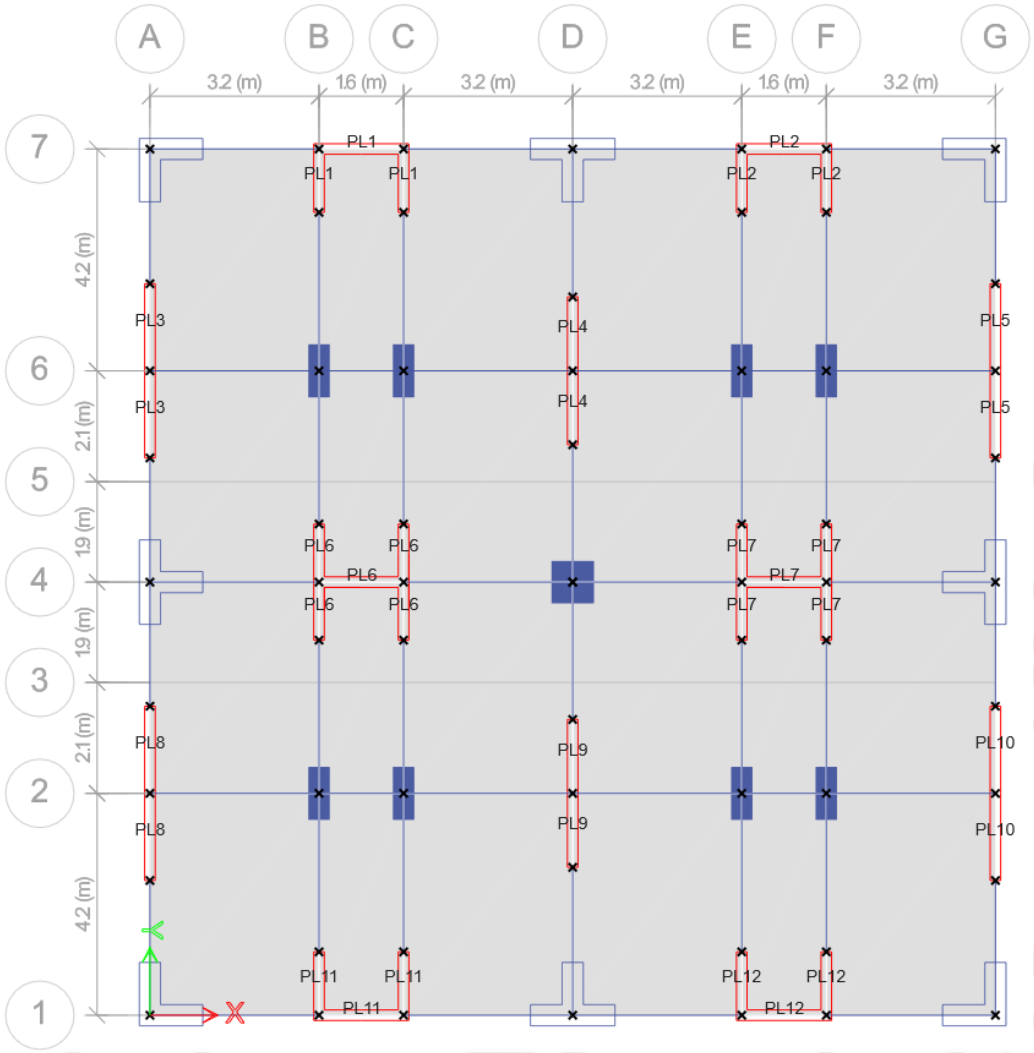
Para 8 pisos:

Eje	**Elementos**	**Cortante**	**% Cortante**	**Sistema**
X-X	**Columnas**	122.55	44.32%	**DUAL**
	Muros	153.96	55.68%	
Y-Y	**Columnas**	98.51	33.05%	**DUAL**
	Muros	199.57	66.95%	

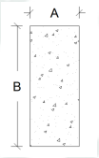
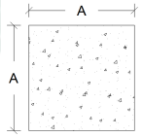
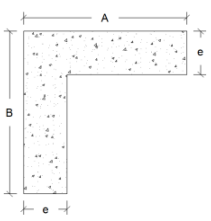
Para 12 pisos:

Eje	**Elementos**	**Cortante**	**% Cortante**	**Sistema**
X-X	**Columnas**	115.67	44.30%	**DUAL**
	Muros	145.47	55.70%	
Y-Y	**Columnas**	103.99	32.98%	**DUAL**
	Muros	211.29	67.02%	

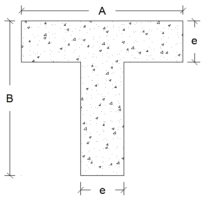
MODELO 5: REGULAR Ky/Kx = 1.80, e = 0



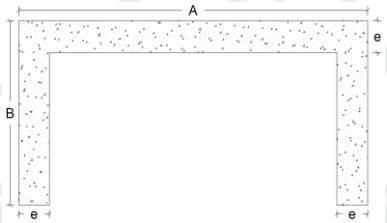
Secciones definidas

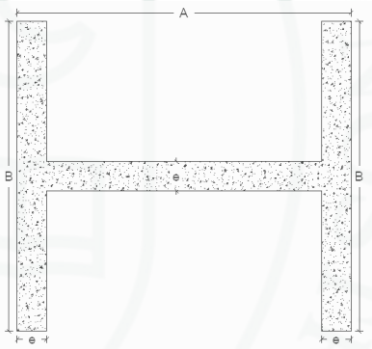
Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	1.00 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m
		B	1.20 m
		e	0.40 m
PL3, PL5, PL8, PL10	04	A	3.30 m
		e	0.20 m
PL4, PL9	04	A	2.80 m
		e	0.20 m
PL1, PL2, PL11, PL12	04	A	1.60 m
		B	1.20 m
		e	0.20 m
PL6, PL7	02	A	1.60 m
		B	2.20 m
		e	0.20 m

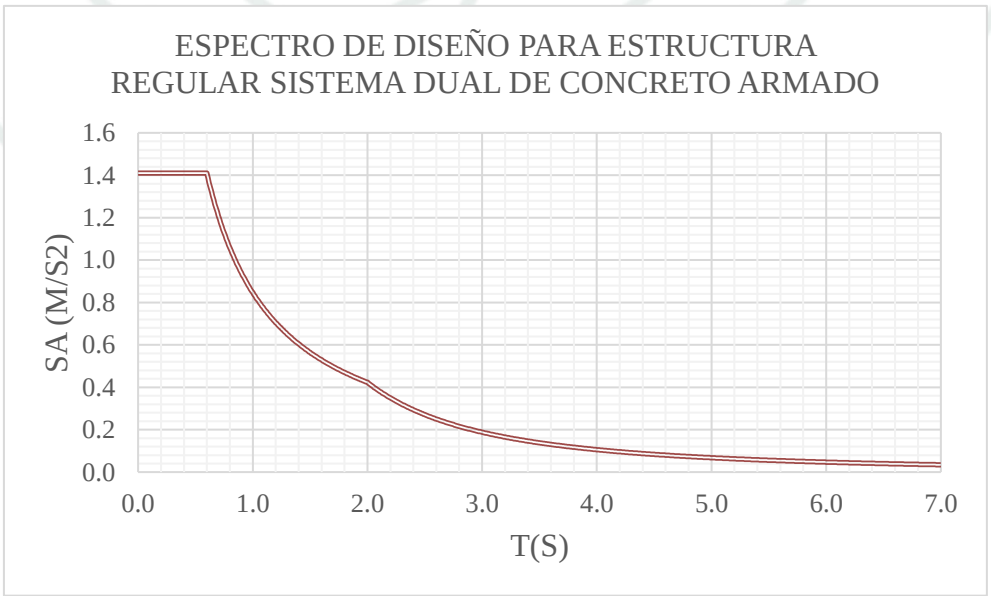








<u>Espectro de Diseño (Norma E030)</u>



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.255	0.7411	0.0000	0.0000	0.7411	0.0000	0.0000	0.0000	0.3543	0.0000	0.0000	0.3543	0.0000
Modal	2	0.194	0.0000	0.7372	0.0000	0.7411	0.7372	0.0000	0.3586	0.0000	0.0000	0.3586	0.3543	0.0000
Modal	3	0.176	0.0000	0.0000	0.0000	0.7411	0.7372	0.0000	0.0000	0.0000	0.7363	0.3586	0.3543	0.7363
Modal	4	0.062	0.1893	0.0000	0.0000	0.9305	0.7372	0.0000	0.0000	0.4539	0.0000	0.3586	0.8082	0.7363
Modal	5	0.046	0.0000	0.1890	0.0000	0.9305	0.9262	0.0000	0.4409	0.0000	0.0000	0.7995	0.8082	0.7363
Modal	6	0.042	0.0000	0.0000	0.0000	0.9305	0.9262	0.0000	0.0000	0.0000	0.1920	0.7995	0.8082	0.9283
Modal	7	0.029	0.0549	0.0000	0.0000	0.9854	0.9262	0.0000	0.0000	0.1453	0.0000	0.7995	0.9536	0.9283
Modal	8	0.021	0.0000	0.0588	0.0000	0.9854	0.9849	0.0000	0.1531	0.0000	0.0000	0.9526	0.9536	0.9283
Modal	9	0.019	0.0000	0.0000	0.0000	0.9854	0.9849	0.0000	0.0000	0.0000	0.0571	0.9526	0.9536	0.9853
Modal	10	0.019	0.0146	0.0000	0.0000	1.0000	0.9849	0.0000	0.0000	0.0463	0.0000	0.9526	0.9999	0.9853
Modal	11	0.014	0.0000	0.0150	0.0000	1.0000	0.9999	0.0000	0.0471	0.0000	0.0000	0.9998	0.9999	0.9853
Modal	12	0.013	0.0000	0.0000	0.0000	1.0000	0.9999	0.0000	0.0000	0.0000	0.0146	0.9998	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.648	0.7204	0.0000	0.0000	0.7204	0.0000	0.0000	0.0000	0.3213	0.0000	0.0000	0.3213	0.0000
Modal	2	0.48	0.0000	0.7273	0.0000	0.7204	0.7273	0.0000	0.3140	0.0000	0.0000	0.3140	0.3213	0.0000
Modal	3	0.444	0.0000	0.0000	0.0000	0.7204	0.7273	0.0000	0.0000	0.0000	0.7232	0.3140	0.3213	0.7232
Modal	4	0.168	0.1568	0.0000	0.0000	0.8772	0.7273	0.0000	0.0000	0.3745	0.0000	0.3140	0.6958	0.7232
Modal	5	0.128	0.0000	0.1464	0.0000	0.8772	0.8737	0.0000	0.3774	0.0000	0.0000	0.6913	0.6958	0.7232
Modal	6	0.116	0.0000	0.0000	0.0000	0.8772	0.8737	0.0000	0.0000	0.0000	0.1512	0.6913	0.6958	0.8744
Modal	7	0.076	0.0613	0.0000	0.0000	0.9385	0.8737	0.0000	0.0000	0.1292	0.0000	0.6913	0.8250	0.8744
Modal	8	0.057	0.0000	0.0614	0.0000	0.9385	0.9351	0.0000	0.1260	0.0000	0.0000	0.8173	0.8250	0.8744
Modal	9	0.052	0.0000	0.0000	0.0000	0.9385	0.9351	0.0000	0.0000	0.0000	0.0622	0.8173	0.8250	0.9366
Modal	10	0.045	0.0304	0.0000	0.0000	0.9689	0.9351	0.0000	0.0000	0.0846	0.0000	0.8173	0.9097	0.9366
Modal	11	0.033	0.0000	0.0319	0.0000	0.9689	0.9670	0.0000	0.0877	0.0000	0.0000	0.9051	0.9097	0.9366
Modal	12	0.031	0.0165	0.0000	0.0000	0.9854	0.9670	0.0000	0.0000	0.0462	0.0000	0.9051	0.9558	0.9366
Modal	13	0.031	0.0000	0.0000	0.0000	0.9854	0.9670	0.0000	0.0000	0.0000	0.0315	0.9051	0.9558	0.9680
Modal	14	0.024	0.0091	0.0000	0.0000	0.9945	0.9670	0.0000	0.0000	0.0275	0.0000	0.9051	0.9833	0.9680
Modal	15	0.023	0.0000	0.0177	0.0000	0.9945	0.9847	0.0000	0.0489	0.0000	0.0000	0.9539	0.9833	0.9680
Modal	16	0.021	0.0000	0.0000	0.0000	0.9945	0.9847	0.0000	0.0000	0.0000	0.0172	0.9539	0.9833	0.9852
Modal	17	0.02	0.0043	0.0000	0.0000	0.9988	0.9847	0.0000	0.0000	0.0130	0.0000	0.9539	0.9963	0.9852
Modal	18	0.018	0.0012	0.0000	0.0000	1.0000	0.9847	0.0000	0.0000	0.0037	0.0000	0.9539	1.0000	0.9852
Modal	19	0.017	0.0000	0.0096	0.0000	1.0000	0.9943	0.0000	0.0289	0.0000	0.0000	0.9828	1.0000	0.9852
Modal	20	0.016	0.0000	0.0000	0.0000	1.0000	0.9943	0.0000	0.0000	0.0000	0.0093	0.9828	1.0000	0.9945
Modal	21	0.014	0.0000	0.0045	0.0000	1.0000	0.9988	0.0000	0.0134	0.0000	0.0000	0.9962	1.0000	0.9945
Modal	22	0.013	0.0000	0.0000	0.0000	1.0000	0.9988	0.0000	0.0000	0.0000	0.0043	0.9962	1.0000	0.9988
Modal	23	0.013	0.0000	0.0012	0.0000	1.0000	1.0000	0.0000	0.0037	0.0000	0.0000	0.9999	1.0000	0.9988
Modal	24	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0012	0.9999	1.0000	0.9999

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	1.088	0.7262	0.0000	0.0000	0.7262	0.0000	0.0000	0.0000	0.2994	0.0000	0.0000	0.2994	0.0000
Modal	2	0.799	0.0000	0.7356	0.0000	0.7262	0.7356	0.0000	0.2891	0.0000	0.0000	0.2891	0.2994	0.0000
Modal	3	0.736	0.0000	0.0000	0.0000	0.7262	0.7356	0.0000	0.0000	0.0000	0.7335	0.2891	0.2994	0.7335
Modal	4	0.301	0.1358	0.0000	0.0000	0.8620	0.7356	0.0000	0.0000	0.3702	0.0000	0.2891	0.6696	0.7335
Modal	5	0.227	0.0000	0.1262	0.0000	0.8620	0.8617	0.0000	0.3820	0.0000	0.0000	0.6711	0.6696	0.7335
Modal	6	0.208	0.0000	0.0000	0.0000	0.8620	0.8617	0.0000	0.0000	0.0000	0.1273	0.6711	0.6696	0.8608
Modal	7	0.14	0.0570	0.0000	0.0000	0.9190	0.8617	0.0000	0.0000	0.1079	0.0000	0.6711	0.7774	0.8608
Modal	8	0.108	0.0000	0.0548	0.0000	0.9190	0.9166	0.0000	0.1003	0.0000	0.0000	0.7714	0.7774	0.8608
Modal	9	0.098	0.0000	0.0000	0.0000	0.9190	0.9166	0.0000	0.0000	0.0000	0.0564	0.7714	0.7774	0.9172
Modal	10	0.082	0.0309	0.0000	0.0000	0.9499	0.9166	0.0000	0.0000	0.0824	0.0000	0.7714	0.8598	0.9172
Modal	11	0.063	0.0000	0.0308	0.0000	0.9499	0.9474	0.0000	0.0826	0.0000	0.0000	0.8539	0.8598	0.9172
Modal	12	0.057	0.0000	0.0000	0.0000	0.9499	0.9474	0.0000	0.0000	0.0000	0.0312	0.8539	0.8598	0.9484
Modal	13	0.055	0.0185	0.0000	0.0000	0.9684	0.9474	0.0000	0.0000	0.0480	0.0000	0.8539	0.9078	0.9484
Modal	14	0.042	0.0000	0.0191	0.0000	0.9684	0.9665	0.0000	0.0489	0.0000	0.0000	0.9028	0.9078	0.9484
Modal	15	0.041	0.0118	0.0000	0.0000	0.9802	0.9665	0.0000	0.0000	0.0340	0.0000	0.9028	0.9418	0.9484
Modal	16	0.038	0.0000	0.0000	0.0000	0.9802	0.9665	0.0000	0.0000	0.0000	0.0190	0.9028	0.9418	0.9674
Modal	17	0.032	0.0078	0.0000	0.0000	0.9880	0.9665	0.0000	0.0000	0.0224	0.0000	0.9028	0.9641	0.9674
Modal	18	0.03	0.0000	0.0125	0.0000	0.9880	0.9790	0.0000	0.0357	0.0000	0.0000	0.9386	0.9641	0.9674

Modal	19	0.028	0.0000	0.0000	0.0000	0.9880	0.9790	0.0000	0.0000	0.0000	0.0123	0.9386	0.9641	0.9797
Modal	20	0.026	0.0053	0.0000	0.0000	0.9933	0.9790	0.0000	0.0000	0.0157	0.0000	0.9386	0.9798	0.9797
Modal	21	0.023	0.0000	0.0084	0.0000	0.9933	0.9874	0.0000	0.0238	0.0000	0.0000	0.9624	0.9798	0.9797
Modal	22	0.023	0.0034	0.0000	0.0000	0.9967	0.9874	0.0000	0.0000	0.0102	0.0000	0.9624	0.9900	0.9797
Modal	23	0.022	0.0000	0.0000	0.0000	0.9967	0.9874	0.0000	0.0000	0.0000	0.0081	0.9624	0.9900	0.9879
Modal	24	0.02	0.0020	0.0000	0.0000	0.9988	0.9874	0.0000	0.0000	0.0062	0.0000	0.9624	0.9962	0.9879
Modal	25	0.019	0.0000	0.0056	0.0000	0.9988	0.9930	0.0000	0.0167	0.0000	0.0000	0.9791	0.9962	0.9879
Modal	26	0.018	0.0010	0.0000	0.0000	0.9997	0.9930	0.0000	0.0000	0.0029	0.0000	0.9791	0.9992	0.9879
Modal	27	0.018	0.0000	0.0000	0.0000	0.9997	0.9930	0.0000	0.0000	0.0000	0.0054	0.9791	0.9992	0.9933
Modal	28	0.017	0.0003	0.0000	0.0000	1.0000	0.9930	0.0000	0.0000	0.0008	0.0000	0.9791	1.0000	0.9933
Modal	29	0.016	0.0000	0.0036	0.0000	1.0000	0.9966	0.0000	0.0107	0.0000	0.0000	0.9898	1.0000	0.9933
Modal	30	0.015	0.0000	0.0000	0.0000	1.0000	0.9966	0.0000	0.0000	0.0000	0.0035	0.9898	1.0000	0.9967
Modal	31	0.014	0.0000	0.0021	0.0000	1.0000	0.9987	0.0000	0.0064	0.0000	0.0000	0.9962	1.0000	0.9967
Modal	32	0.014	0.0000	0.0000	0.0000	1.0000	0.9987	0.0000	0.0000	0.0000	0.0020	0.9962	1.0000	0.9988
Modal	33	0.013	0.0000	0.0010	0.0000	1.0000	0.9997	0.0000	0.0030	0.0000	0.0000	0.9991	1.0000	0.9988
Modal	34	0.013	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0008	0.0000	0.0000	0.9999	1.0000	0.9988
Modal	35	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0010	0.9999	1.0000	0.9997
Modal	36	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0002	0.9999	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.000971	5.25	2.80	0.002	ok
Story3	SISMO X	0.001007	5.25	2.80	0.002	ok
Story2	SISMO X	0.000871	5.25	2.80	0.002	ok
Story1	SISMO X	0.000442	5.25	2.80	0.001	ok
Story4	SISMO Y	0.000576	5.25	2.80	0.001	ok
Story3	SISMO Y	0.000595	5.25	2.80	0.001	ok
Story2	SISMO Y	0.000511	5.25	2.80	0.001	ok
Story1	SISMO Y	0.000252	5.25	2.80	0.000	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002461	5.25	2.80	0.005	ok
Story7	SISMO X	0.002726	5.25	2.80	0.005	ok
Story6	SISMO X	0.002971	5.25	2.80	0.006	ok
Story5	SISMO X	0.003117	5.25	2.80	0.006	ok
Story4	SISMO X	0.003084	5.25	2.80	0.006	ok
Story3	SISMO X	0.002794	5.25	2.80	0.005	ok
Story2	SISMO X	0.002156	5.25	2.80	0.004	ok
Story1	SISMO X	0.000998	5.25	2.80	0.002	ok
Story8	SISMO Y	0.001371	5.25	2.80	0.003	ok
Story7	SISMO Y	0.001547	5.25	2.80	0.003	ok
Story6	SISMO Y	0.00173	5.25	2.80	0.003	ok
Story5	SISMO Y	0.001859	5.25	2.80	0.003	ok
Story4	SISMO Y	0.001878	5.25	2.80	0.004	ok
Story3	SISMO Y	0.001727	5.25	2.80	0.003	ok
Story2	SISMO Y	0.001339	5.25	2.80	0.003	ok
Story1	SISMO Y	0.000609	5.25	2.80	0.001	ok

Para 12 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story12	SISMO X	0.002286	5.25	2.80	0.004	ok
Story11	SISMO X	0.00253	5.25	2.80	0.005	ok
Story10	SISMO X	0.002809	5.25	2.80	0.005	ok

Story9	SISMO X	0.003086	5.25	2.80	0.006	ok
Story8	SISMO X	0.003327	5.25	2.80	0.006	ok
Story7	SISMO X	0.003506	5.25	2.80	0.007	ok
Story6	SISMO X	0.003596	5.25	2.80	0.007	ok
Story5	SISMO X	0.003562	5.25	2.80	0.007	ok
Story4	SISMO X	0.003362	5.25	2.80	0.006	ok
Story3	SISMO X	0.002936	5.25	2.80	0.006	ok
Story2	SISMO X	0.002201	5.25	2.80	0.004	ok
Story1	SISMO X	0.000996	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001468	5.25	2.80	0.003	ok
Story11	SISMO Y	0.00166	5.25	2.80	0.003	ok
Story10	SISMO Y	0.001899	5.25	2.80	0.004	ok
Story9	SISMO Y	0.00215	5.25	2.80	0.004	ok
Story8	SISMO Y	0.002379	5.25	2.80	0.004	ok
Story7	SISMO Y	0.002563	5.25	2.80	0.005	ok
Story6	SISMO Y	0.002677	5.25	2.80	0.005	ok
Story5	SISMO Y	0.002692	5.25	2.80	0.005	ok
Story4	SISMO Y	0.002573	5.25	2.80	0.005	ok
Story3	SISMO Y	0.002267	5.25	2.80	0.004	ok
Story2	SISMO Y	0.001701	5.25	2.80	0.003	ok
Story1	SISMO Y	0.000755	5.25	2.80	0.001	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Kx/Ky**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	151.88	0.003247	46776.62	1.70
Y-Y	SISMO Y	151.16	0.001898	79641.89	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	281.98	0.020008	14093.53	1.82
Y-Y	SISMO Y	303.24	0.011795	25709.23	

Para 12 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	266.24	0.033308	7993.42	1.83
Y-Y	SISMO Y	351.77	0.024103	14594.49	

Excentricidades

Para 4 pisos:

Story	**Diaphragm**	**Mass X**	**Mass Y**	**XCM**	**YCM**	**XCR**	**YCR**	**Exx**	**Eyy**
		tonf-s²/m	**tonf-s²/m**	**m**	**m**	**m**	**m**	**m**	**m**
Story1	D1	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	8.63	8.63	8.00	8.20	8.00	8.20	0.00	0.00

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	8.63	8.63	8.00	8.20	8.00	8.20	0.00	0.00

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story9	D9	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story10	D10	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story11	D11	13.31	13.31	8.00	8.20	8.00	8.20	0.00	0.00
Story12	D12	8.63	8.63	8.00	8.20	8.00	8.20	0.00	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	68.61	45.16%	**DUAL**
	Muros	83.31	54.84%	
Y-Y	**Columnas**	45.92	30.37%	**DUAL**
	Muros	105.25	69.63%	

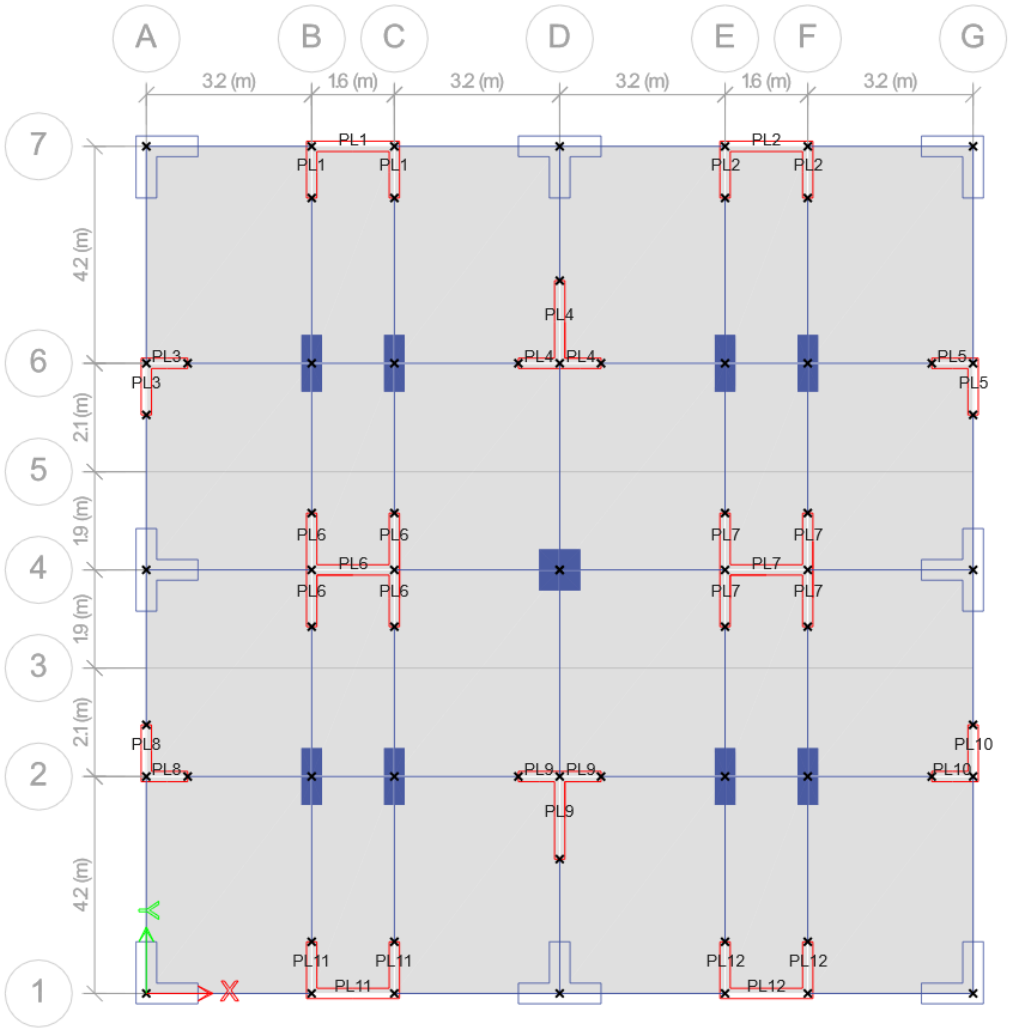
Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	125.92	44.65%	**DUAL**
	Muros	156.08	55.35%	
Y-Y	**Columnas**	91.43	30.15%	**DUAL**
	Muros	211.81	69.85%	

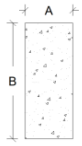
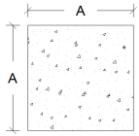
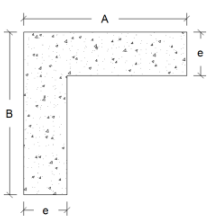
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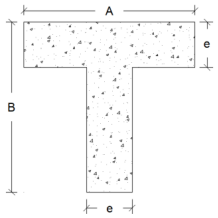
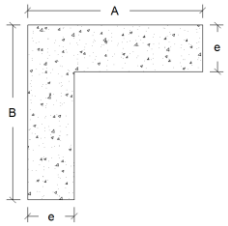
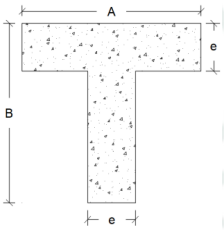
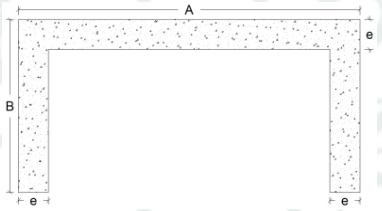
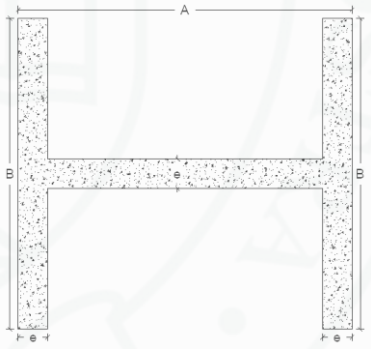
Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	118.83	44.63%	**DUAL**
	Muros	147.42	55.37%	
Y-Y	**Columnas**	105.96	30.12%	**DUAL**
	Muros	245.82	69.88%	

MODELO 6: REGULAR Ky/Kx = 1.00, e = 0.015

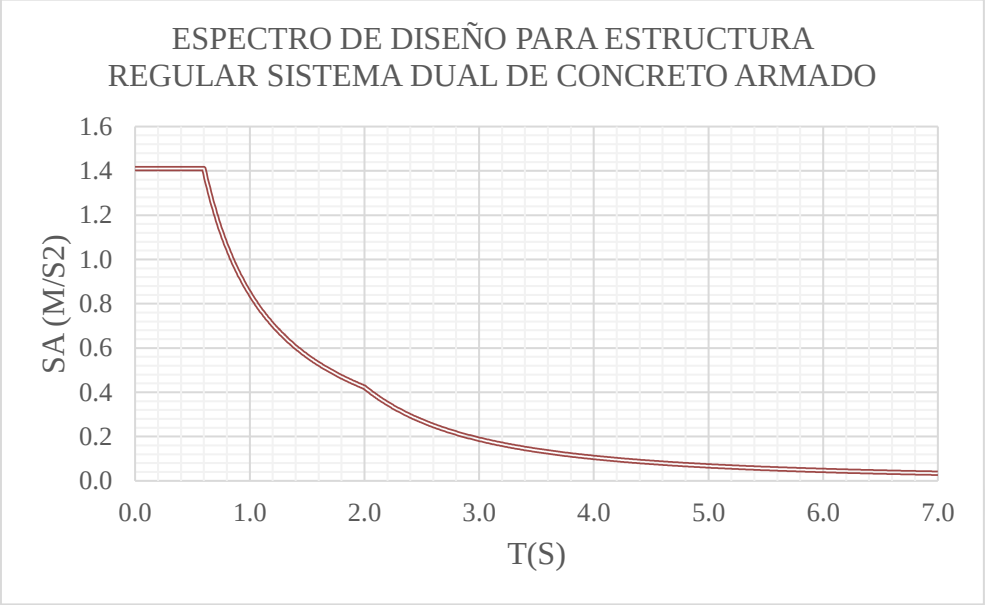


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	0.70 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	0.80 m	
		B	1.00 m	
		e	0.20 m	
PL4, PL9	02	A	1.60 m	
		B	1.60 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.263	0.0000	0.7356	0.0000	0.0000	0.7356	0.0000	0.3392	0.0000	0.0055	0.3392	0.0000	0.0055
Modal	2	0.25	0.7425	0.0000	0.0000	0.7425	0.7356	0.0000	0.0000	0.3397	0.0000	0.3392	0.3397	0.0055
Modal	3	0.219	0.0000	0.0053	0.0000	0.7425	0.7409	0.0000	0.0022	0.0000	0.7311	0.3414	0.3397	0.7365
Modal	4	0.063	0.0000	0.1798	0.0000	0.7425	0.9207	0.0000	0.4424	0.0000	0.0011	0.7838	0.3397	0.7376
Modal	5	0.06	0.1865	0.0000	0.0000	0.9290	0.9207	0.0000	0.0000	0.4612	0.0000	0.7838	0.8009	0.7376
Modal	6	0.052	0.0000	0.0010	0.0000	0.9290	0.9217	0.0000	0.0025	0.0000	0.1861	0.7863	0.8009	0.9237
Modal	7	0.028	0.0561	0.0000	0.0000	0.9851	0.9217	0.0000	0.0000	0.1509	0.0000	0.7863	0.9518	0.9237
Modal	8	0.027	0.0000	0.0611	0.0000	0.9851	0.9828	0.0000	0.1597	0.0000	0.0004	0.9460	0.9518	0.9241
Modal	9	0.023	0.0000	0.0004	0.0000	0.9851	0.9832	0.0000	0.0010	0.0000	0.0596	0.9470	0.9518	0.9837
Modal	10	0.019	0.0149	0.0000	0.0000	1.0000	0.9832	0.0000	0.0000	0.0480	0.0000	0.9470	0.9999	0.9837
Modal	11	0.018	0.0000	0.0166	0.0000	1.0000	0.9998	0.0000	0.0524	0.0000	0.0001	0.9995	0.9999	0.9839
Modal	12	0.015	0.0000	0.0001	0.0000	1.0000	1.0000	0.0000	0.0004	0.0000	0.0161	0.9999	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.63	0.0000	0.7316	0.0000	0.0000	0.7316	0.0000	0.2943	0.0000	0.0065	0.2943	0.0000	0.0065
Modal	2	0.616	0.7272	0.0000	0.0000	0.7272	0.7316	0.0000	0.0000	0.3085	0.0000	0.2943	0.3085	0.0065
Modal	3	0.538	0.0000	0.0065	0.0000	0.7272	0.7381	0.0000	0.0024	0.0000	0.7230	0.2967	0.3085	0.7295
Modal	4	0.173	0.0000	0.1349	0.0000	0.7272	0.8729	0.0000	0.3913	0.0000	0.0009	0.6880	0.3085	0.7304
Modal	5	0.164	0.1497	0.0000	0.0000	0.8769	0.8729	0.0000	0.0000	0.3850	0.0000	0.6880	0.6935	0.7304
Modal	6	0.144	0.0000	0.0008	0.0000	0.8769	0.8738	0.0000	0.0024	0.0000	0.1428	0.6904	0.6935	0.8732
Modal	7	0.079	0.0000	0.0588	0.0000	0.8769	0.9325	0.0000	0.1188	0.0000	0.0003	0.8092	0.6935	0.8735
Modal	8	0.074	0.0606	0.0000	0.0000	0.9375	0.9325	0.0000	0.0000	0.1276	0.0000	0.8092	0.8210	0.8735
Modal	9	0.065	0.0000	0.0003	0.0000	0.9375	0.9328	0.0000	0.0006	0.0000	0.0606	0.8098	0.8210	0.9341
Modal	10	0.045	0.0000	0.0317	0.0000	0.9375	0.9645	0.0000	0.0881	0.0000	0.0002	0.8979	0.8210	0.9342
Modal	11	0.044	0.0306	0.0000	0.0000	0.9682	0.9645	0.0000	0.0000	0.0861	0.0000	0.8979	0.9072	0.9342
Modal	12	0.037	0.0000	0.0002	0.0000	0.9682	0.9646	0.0000	0.0004	0.0000	0.0316	0.8983	0.9072	0.9658
Modal	13	0.03	0.0169	0.0000	0.0000	0.9850	0.9646	0.0000	0.0000	0.0473	0.0000	0.8983	0.9545	0.9658
Modal	14	0.03	0.0000	0.0183	0.0000	0.9850	0.9830	0.0000	0.0505	0.0000	0.0001	0.9488	0.9545	0.9659
Modal	15	0.025	0.0000	0.0001	0.0000	0.9850	0.9831	0.0000	0.0003	0.0000	0.0178	0.9491	0.9545	0.9837
Modal	16	0.023	0.0093	0.0000	0.0000	0.9943	0.9831	0.0000	0.0000	0.0283	0.0000	0.9491	0.9828	0.9837
Modal	17	0.022	0.0000	0.0104	0.0000	0.9943	0.9935	0.0000	0.0312	0.0000	0.0001	0.9803	0.9828	0.9838
Modal	18	0.019	0.0044	0.0000	0.0000	0.9988	0.9935	0.0000	0.0000	0.0134	0.0000	0.9803	0.9962	0.9838
Modal	19	0.019	0.0000	0.0001	0.0000	0.9988	0.9936	0.0000	0.0002	0.0000	0.0100	0.9806	0.9962	0.9938

Modal	20	0.018	0.0000	0.0050	0.0000	0.9988	0.9986	0.0000	0.0150	0.0000	0.0000	0.9955	0.9962	0.9938
Modal	21	0.017	0.0012	0.0000	0.0000	1.0000	0.9986	0.0000	0.0000	0.0038	0.0000	0.9955	0.9999	0.9938
Modal	22	0.016	0.0000	0.0014	0.0000	1.0000	0.9999	0.0000	0.0042	0.0000	0.0000	0.9998	0.9999	0.9939
Modal	23	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0001	0.0000	0.0048	0.9999	0.9999	0.9986
Modal	24	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0013	1.0000	0.9999	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	1.032	0.0000	0.7404	0.0000	0.0000	0.7404	0.0000	0.2708	0.0000	0.0065	0.2708	0.0000	0.0065
Modal	2	1.023	0.7342	0.0000	0.0000	0.7342	0.7404	0.0000	0.0000	0.2872	0.0000	0.2708	0.2872	0.0065
Modal	3	0.884	0.0000	0.0065	0.0000	0.7342	0.7469	0.0000	0.0023	0.0000	0.7345	0.2731	0.2872	0.7411
Modal	4	0.301	0.0000	0.1172	0.0000	0.7342	0.8640	0.0000	0.4003	0.0000	0.0009	0.6734	0.2872	0.7419
Modal	5	0.29	0.1292	0.0000	0.0000	0.8634	0.8640	0.0000	0.0000	0.3839	0.0000	0.6734	0.6711	0.7419
Modal	6	0.254	0.0000	0.0008	0.0000	0.8634	0.8649	0.0000	0.0028	0.0000	0.1200	0.6762	0.6711	0.8620
Modal	7	0.148	0.0000	0.0512	0.0000	0.8634	0.9161	0.0000	0.0916	0.0000	0.0003	0.7678	0.6711	0.8623
Modal	8	0.138	0.0554	0.0000	0.0000	0.9188	0.9161	0.0000	0.0000	0.1038	0.0000	0.7678	0.7749	0.8623
Modal	9	0.122	0.0000	0.0003	0.0000	0.9188	0.9164	0.0000	0.0005	0.0000	0.0540	0.7683	0.7749	0.9163
Modal	10	0.087	0.0000	0.0295	0.0000	0.9188	0.9459	0.0000	0.0812	0.0000	0.0001	0.8495	0.7749	0.9164
Modal	11	0.081	0.0305	0.0000	0.0000	0.9493	0.9459	0.0000	0.0000	0.0827	0.0000	0.8495	0.8576	0.9164
Modal	12	0.071	0.0000	0.0001	0.0000	0.9493	0.9460	0.0000	0.0004	0.0000	0.0303	0.8499	0.8576	0.9468
Modal	13	0.057	0.0000	0.0187	0.0000	0.9493	0.9647	0.0000	0.0476	0.0000	0.0001	0.8975	0.8576	0.9469
Modal	14	0.055	0.0185	0.0000	0.0000	0.9678	0.9647	0.0000	0.0000	0.0480	0.0000	0.8975	0.9056	0.9469
Modal	15	0.047	0.0000	0.0001	0.0000	0.9678	0.9648	0.0000	0.0002	0.0000	0.0188	0.8977	0.9056	0.9657
Modal	16	0.041	0.0000	0.0126	0.0000	0.9678	0.9773	0.0000	0.0361	0.0000	0.0001	0.9338	0.9056	0.9658
Modal	17	0.04	0.0120	0.0000	0.0000	0.9797	0.9773	0.0000	0.0000	0.0346	0.0000	0.9338	0.9402	0.9658
Modal	18	0.034	0.0000	0.0001	0.0000	0.9797	0.9774	0.0000	0.0002	0.0000	0.0124	0.9340	0.9402	0.9782
Modal	19	0.031	0.0080	0.0000	0.0000	0.9877	0.9774	0.0000	0.0000	0.0229	0.0000	0.9340	0.9631	0.9782
Modal	20	0.031	0.0000	0.0087	0.0000	0.9877	0.9861	0.0000	0.0245	0.0000	0.0000	0.9585	0.9631	0.9782
Modal	21	0.026	0.0000	0.0000	0.0000	0.9877	0.9861	0.0000	0.0001	0.0000	0.0085	0.9586	0.9631	0.9867
Modal	22	0.026	0.0054	0.0000	0.0000	0.9931	0.9861	0.0000	0.0000	0.0162	0.0000	0.9586	0.9793	0.9867
Modal	23	0.025	0.0000	0.0060	0.0000	0.9931	0.9921	0.0000	0.0178	0.0000	0.0000	0.9764	0.9793	0.9867
Modal	24	0.022	0.0035	0.0000	0.0000	0.9966	0.9921	0.0000	0.0000	0.0105	0.0000	0.9764	0.9897	0.9867
Modal	25	0.021	0.0000	0.0000	0.0000	0.9966	0.9921	0.0000	0.0000	0.0000	0.0058	0.9765	0.9897	0.9925
Modal	26	0.021	0.0000	0.0040	0.0000	0.9966	0.9961	0.0000	0.0118	0.0000	0.0000	0.9883	0.9897	0.9925
Modal	27	0.019	0.0021	0.0000	0.0000	0.9987	0.9961	0.0000	0.0000	0.0064	0.0000	0.9883	0.9961	0.9925
Modal	28	0.018	0.0000	0.0024	0.0000	0.9987	0.9985	0.0000	0.0072	0.0000	0.0000	0.9954	0.9961	0.9925
Modal	29	0.018	0.0010	0.0000	0.0000	0.9997	0.9985	0.0000	0.0000	0.0030	0.0000	0.9954	0.9991	0.9925
Modal	30	0.018	0.0000	0.0000	0.0000	0.9997	0.9985	0.0000	0.0001	0.0000	0.0038	0.9955	0.9991	0.9963
Modal	31	0.017	0.0003	0.0000	0.0000	1.0000	0.9985	0.0000	0.0000	0.0008	0.0000	0.9955	1.0000	0.9963
Modal	32	0.017	0.0000	0.0011	0.0000	1.0000	0.9997	0.0000	0.0034	0.0000	0.0000	0.9990	1.0000	0.9963
Modal	33	0.016	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0009	0.0000	0.0000	0.9999	1.0000	0.9963
Modal	34	0.016	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0001	0.0000	0.0023	0.9999	1.0000	0.9986
Modal	35	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0011	1.0000	1.0000	0.9997
Modal	36	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0003	1.0000	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.000932	5.25	2.80	0.002	ok
Story3	SISMO X	0.00097	5.25	2.80	0.002	ok
Story2	SISMO X	0.000843	5.25	2.80	0.002	ok
Story1	SISMO X	0.000426	5.25	2.80	0.001	ok
Story4	SISMO Y	0.001097	5.25	2.80	0.002	ok
Story3	SISMO Y	0.001151	5.25	2.80	0.002	ok
Story2	SISMO Y	0.001004	5.25	2.80	0.002	ok
Story1	SISMO Y	0.000492	5.25	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002227	5.25	2.80	0.004	ok

Story7	SISMO X	0.002505	5.25	2.80	0.005	ok
Story6	SISMO X	0.002781	5.25	2.80	0.005	ok
Story5	SISMO X	0.002967	5.25	2.80	0.006	ok
Story4	SISMO X	0.002981	5.25	2.80	0.006	ok
Story3	SISMO X	0.002738	5.25	2.80	0.005	ok
Story2	SISMO X	0.002135	5.25	2.80	0.004	ok
Story1	SISMO X	0.000991	5.25	2.80	0.002	ok
Story8	SISMO Y	0.002183	5.25	2.80	0.004	ok
Story7	SISMO Y	0.002532	5.25	2.80	0.005	ok
Story6	SISMO Y	0.002919	5.25	2.80	0.005	ok
Story5	SISMO Y	0.003221	5.25	2.80	0.006	ok
Story4	SISMO Y	0.00333	5.25	2.80	0.006	ok
Story3	SISMO Y	0.003129	5.25	2.80	0.006	ok
Story2	SISMO Y	0.00247	5.25	2.80	0.005	ok
Story1	SISMO Y	0.001124	5.25	2.80	0.002	ok

Para 12 pisos:

Story	**Load Case/Combo**	**Max Drift**	**0.75 R**	**H**	**0.75R*D/H**	**< 0.007**
		m		**m**		
Story12	SISMO X	0.001976	5.25	2.80	0.004	ok
Story11	SISMO X	0.002222	5.25	2.80	0.004	ok
Story10	SISMO X	0.002515	5.25	2.80	0.005	ok
Story9	SISMO X	0.002811	5.25	2.80	0.005	ok
Story8	SISMO X	0.003077	5.25	2.80	0.006	ok
Story7	SISMO X	0.003287	5.25	2.80	0.006	ok
Story6	SISMO X	0.003412	5.25	2.80	0.006	ok
Story5	SISMO X	0.003419	5.25	2.80	0.006	ok
Story4	SISMO X	0.003263	5.25	2.80	0.006	ok
Story3	SISMO X	0.00288	5.25	2.80	0.005	ok
Story2	SISMO X	0.002181	5.25	2.80	0.004	ok
Story1	SISMO X	0.00099	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001815	5.25	2.80	0.003	ok
Story11	SISMO Y	0.002104	5.25	2.80	0.004	ok
Story10	SISMO Y	0.002467	5.25	2.80	0.005	ok
Story9	SISMO Y	0.002843	5.25	2.80	0.005	ok
Story8	SISMO Y	0.003191	5.25	2.80	0.006	ok
Story7	SISMO Y	0.003482	5.25	2.80	0.007	ok
Story6	SISMO Y	0.003688	5.25	2.80	0.007	ok
Story5	SISMO Y	0.003769	5.25	2.80	0.007	ok
Story4	SISMO Y	0.003669	5.25	2.80	0.007	ok
Story3	SISMO Y	0.003301	5.25	2.80	0.006	ok
Story2	SISMO Y	0.002528	5.25	2.80	0.005	ok
Story1	SISMO Y	0.001127	5.25	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	156.56	0.003112	50307.87	0.89
Y-Y	SISMO Y	155.21	0.003467	44767.44	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	

X-X	SISMO X	304.53	0.018928	16089.00	0.97
Y-Y	SISMO Y	299.85	0.019270	15560.47	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	288.17	0.031029	9287.10	0.99
Y-Y	SISMO Y	286.95	0.031059	9238.86	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story2	D2	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story3	D3	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story4	D4	8.73	8.73	8.023	8.200	8.000	8.200	0.023	0.000

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story2	D2	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story3	D3	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story4	D4	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story5	D5	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story6	D6	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story7	D7	13.20	13.20	8.015	8.200	8.000	8.200	0.015	0.000
Story8	D8	8.73	8.73	8.023	8.200	8.000	8.200	0.023	0.000

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story2	D2	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story3	D3	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story4	D4	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story5	D5	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story6	D6	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story7	D7	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story8	D8	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story9	D9	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story10	D10	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story11	D11	13.20	13.20	8.015	8.20	8.00	8.20	0.015	0.00
Story12	D12	8.73	8.73	8.023	8.20	8.00	8.20	0.023	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	64.47	41.17%	**DUAL**
	Muros	92.12	58.83%	
Y-Y	**Columnas**	67.55	43.52%	**DUAL**

	Muros	87.67	56.48%	

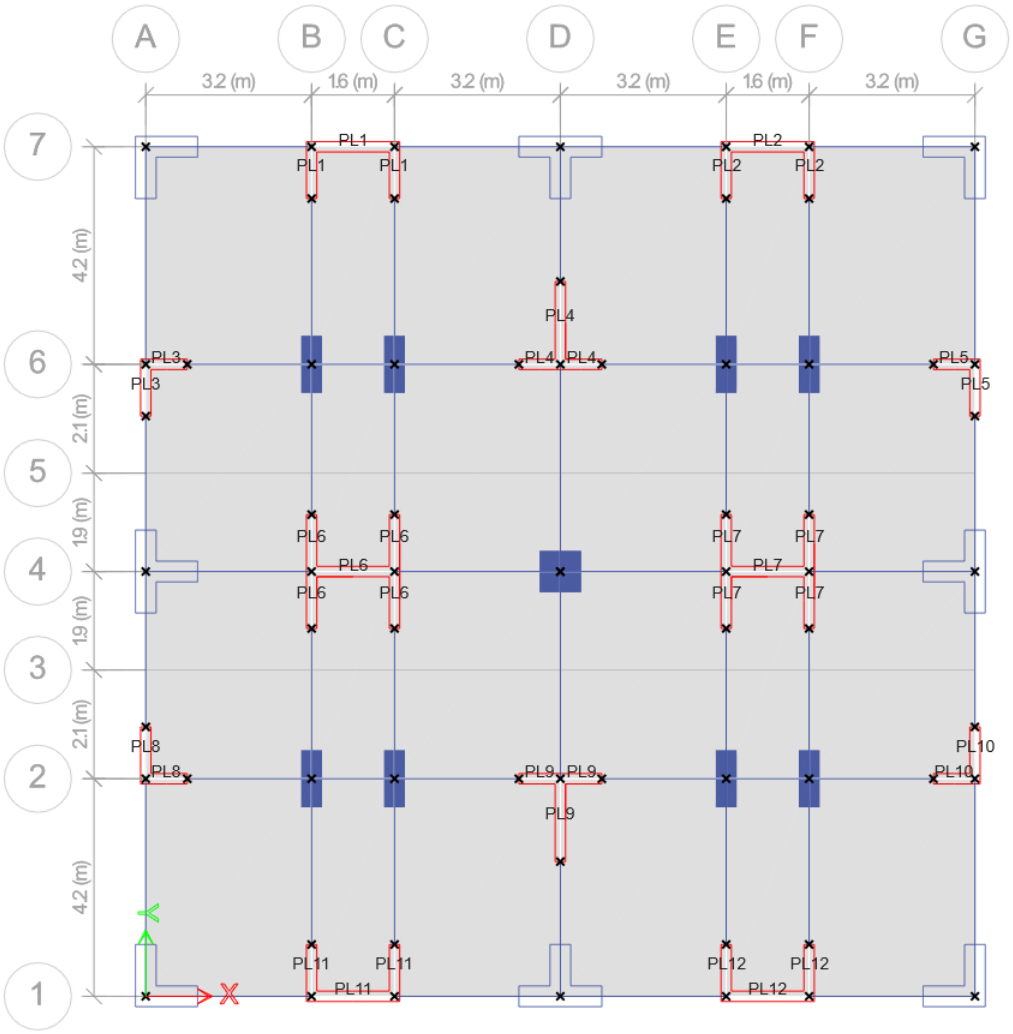
Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	124.16	40.77%	**DUAL**
	Muros	180.37	59.23%	
Y-Y	**Columnas**	128.85	42.97%	**DUAL**
	Muros	171.01	57.03%	

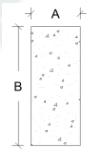
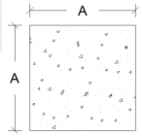
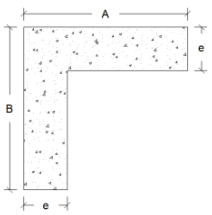
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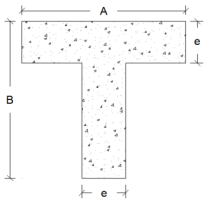
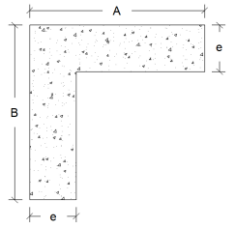
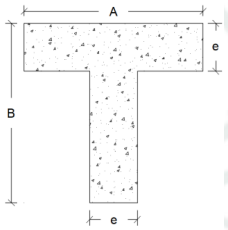
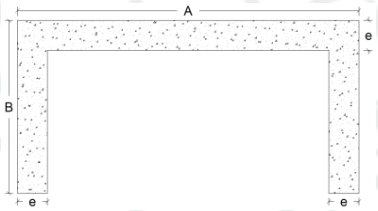
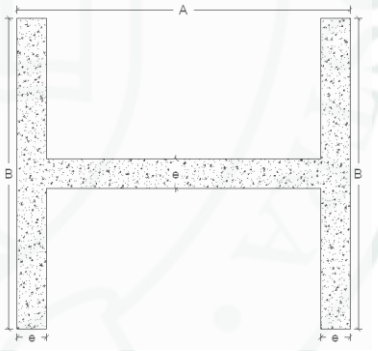
Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	117.44	40.75%	**DUAL**
	Muros	170.74	59.25%	
Y-Y	**Columnas**	122.90	42.83%	**DUAL**
	Muros	164.06	57.17%	

MODELO 7: REGULAR Ky/Kx = 1.00, e = 0.010

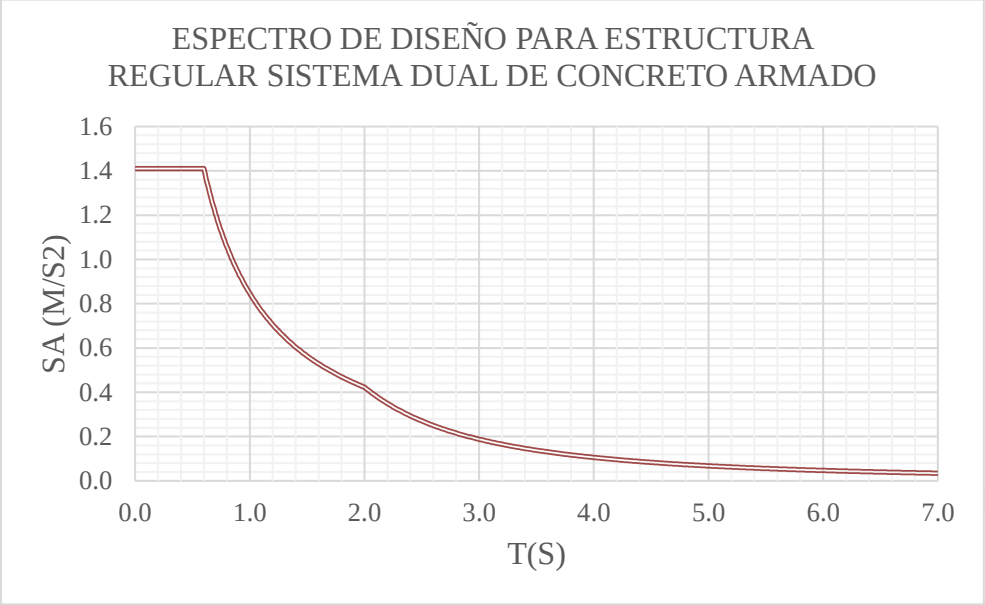


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	0.70 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	0.80 m	
		B	1.00 m	
		e	0.20 m	
PL4, PL9	02	A	1.60 m	
		B	1.60 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.26	0.0000	0.7384	0.0000	0.0000	0.7384	0.0000	0.3420	0.0000	0.0026	0.3420	0.0000	0.0026
Modal	2	0.247	0.7425	0.0000	0.0000	0.7425	0.7384	0.0000	0.0000	0.3414	0.0000	0.3420	0.3414	0.0026
Modal	3	0.217	0.0000	0.0026	0.0000	0.7425	0.7409	0.0000	0.0011	0.0000	0.7339	0.3431	0.3414	0.7365
Modal	4	0.062	0.0000	0.1803	0.0000	0.7425	0.9212	0.0000	0.4426	0.0000	0.0005	0.7857	0.3414	0.7370
Modal	5	0.06	0.1865	0.0000	0.0000	0.9290	0.9212	0.0000	0.0000	0.4601	0.0000	0.7857	0.8014	0.7370
Modal	6	0.051	0.0000	0.0005	0.0000	0.9290	0.9217	0.0000	0.0012	0.0000	0.1867	0.7869	0.8014	0.9237
Modal	7	0.028	0.0561	0.0000	0.0000	0.9851	0.9217	0.0000	0.0000	0.1505	0.0000	0.7869	0.9519	0.9237
Modal	8	0.027	0.0000	0.0613	0.0000	0.9851	0.9830	0.0000	0.1598	0.0000	0.0002	0.9466	0.9519	0.9239
Modal	9	0.023	0.0000	0.0002	0.0000	0.9851	0.9832	0.0000	0.0005	0.0000	0.0598	0.9471	0.9519	0.9837
Modal	10	0.019	0.0149	0.0000	0.0000	1.0000	0.9832	0.0000	0.0000	0.0479	0.0000	0.9471	0.9999	0.9837
Modal	11	0.018	0.0000	0.0167	0.0000	1.0000	0.9999	0.0000	0.0526	0.0000	0.0001	0.9997	0.9999	0.9838
Modal	12	0.015	0.0000	0.0001	0.0000	1.0000	1.0000	0.0000	0.0002	0.0000	0.0161	0.9999	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.623	0.0000	0.7349	0.0000	0.0000	0.7349	0.0000	0.2962	0.0000	0.0031	0.2962	0.0000	0.0031
Modal	2	0.61	0.7272	0.0000	0.0000	0.7272	0.7349	0.0000	0.0000	0.3092	0.0000	0.2962	0.3092	0.0031
Modal	3	0.534	0.0000	0.0031	0.0000	0.7272	0.7381	0.0000	0.0012	0.0000	0.7264	0.2974	0.3092	0.7295
Modal	4	0.171	0.0000	0.1353	0.0000	0.7272	0.8734	0.0000	0.3923	0.0000	0.0004	0.6897	0.3092	0.7299
Modal	5	0.162	0.1497	0.0000	0.0000	0.8769	0.8734	0.0000	0.0000	0.3847	0.0000	0.6897	0.6939	0.7299
Modal	6	0.143	0.0000	0.0004	0.0000	0.8769	0.8738	0.0000	0.0012	0.0000	0.1432	0.6908	0.6939	0.8732
Modal	7	0.078	0.0000	0.0589	0.0000	0.8769	0.9327	0.0000	0.1189	0.0000	0.0001	0.8097	0.6939	0.8733
Modal	8	0.074	0.0606	0.0000	0.0000	0.9375	0.9327	0.0000	0.0000	0.1274	0.0000	0.8097	0.8212	0.8733
Modal	9	0.064	0.0000	0.0001	0.0000	0.9375	0.9328	0.0000	0.0003	0.0000	0.0607	0.8100	0.8212	0.9341
Modal	10	0.045	0.0000	0.0317	0.0000	0.9375	0.9646	0.0000	0.0882	0.0000	0.0001	0.8982	0.8212	0.9341
Modal	11	0.044	0.0306	0.0000	0.0000	0.9682	0.9646	0.0000	0.0000	0.0860	0.0000	0.8982	0.9073	0.9341
Modal	12	0.037	0.0000	0.0001	0.0000	0.9682	0.9646	0.0000	0.0002	0.0000	0.0316	0.8985	0.9073	0.9658
Modal	13	0.03	0.0169	0.0000	0.0000	0.9850	0.9646	0.0000	0.0000	0.0473	0.0000	0.8985	0.9545	0.9658
Modal	14	0.03	0.0000	0.0184	0.0000	0.9850	0.9830	0.0000	0.0506	0.0000	0.0001	0.9490	0.9545	0.9658
Modal	15	0.025	0.0000	0.0001	0.0000	0.9850	0.9831	0.0000	0.0001	0.0000	0.0179	0.9492	0.9545	0.9837
Modal	16	0.023	0.0093	0.0000	0.0000	0.9943	0.9831	0.0000	0.0000	0.0283	0.0000	0.9492	0.9828	0.9837
Modal	17	0.022	0.0000	0.0104	0.0000	0.9943	0.9935	0.0000	0.0313	0.0000	0.0000	0.9805	0.9828	0.9838
Modal	18	0.019	0.0044	0.0000	0.0000	0.9988	0.9935	0.0000	0.0000	0.0134	0.0000	0.9805	0.9962	0.9838
Modal	19	0.019	0.0000	0.0000	0.0000	0.9988	0.9936	0.0000	0.0001	0.0000	0.0100	0.9806	0.9962	0.9938

Modal	20	0.018	0.0000	0.0050	0.0000	0.9988	0.9986	0.0000	0.0150	0.0000	0.0000	0.9956	0.9962	0.9938
Modal	21	0.017	0.0012	0.0000	0.0000	1.0000	0.9986	0.0000	0.0000	0.0038	0.0000	0.9956	0.9999	0.9938
Modal	22	0.016	0.0000	0.0014	0.0000	1.0000	1.0000	0.0000	0.0043	0.0000	0.0000	0.9999	0.9999	0.9938
Modal	23	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0001	0.0000	0.0048	0.9999	0.9999	0.9986
Modal	24	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0013	1.0000	0.9999	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	1.02	0.0000	0.7437	0.0000	0.0000	0.7437	0.0000	0.2724	0.0000	0.0031	0.2724	0.0000	0.0031
Modal	2	1.013	0.7342	0.0000	0.0000	0.7342	0.7437	0.0000	0.0000	0.2876	0.0000	0.2724	0.2876	0.0031
Modal	3	0.877	0.0000	0.0031	0.0000	0.7342	0.7469	0.0000	0.0011	0.0000	0.7379	0.2735	0.2876	0.7411
Modal	4	0.298	0.0000	0.1176	0.0000	0.7342	0.8645	0.0000	0.4016	0.0000	0.0004	0.6751	0.2876	0.7415
Modal	5	0.287	0.1292	0.0000	0.0000	0.8634	0.8645	0.0000	0.0000	0.3837	0.0000	0.6751	0.6714	0.7415
Modal	6	0.252	0.0000	0.0004	0.0000	0.8634	0.8649	0.0000	0.0014	0.0000	0.1205	0.6765	0.6714	0.8620
Modal	7	0.146	0.0000	0.0514	0.0000	0.8634	0.9163	0.0000	0.0918	0.0000	0.0001	0.7682	0.6714	0.8621
Modal	8	0.136	0.0554	0.0000	0.0000	0.9188	0.9163	0.0000	0.0000	0.1037	0.0000	0.7682	0.7751	0.8621
Modal	9	0.121	0.0000	0.0001	0.0000	0.9188	0.9164	0.0000	0.0002	0.0000	0.0542	0.7685	0.7751	0.9163
Modal	10	0.086	0.0000	0.0295	0.0000	0.9188	0.9459	0.0000	0.0813	0.0000	0.0001	0.8498	0.7751	0.9164
Modal	11	0.08	0.0305	0.0000	0.0000	0.9493	0.9459	0.0000	0.0000	0.0826	0.0000	0.8498	0.8577	0.9164
Modal	12	0.07	0.0000	0.0001	0.0000	0.9493	0.9460	0.0000	0.0002	0.0000	0.0304	0.8500	0.8577	0.9468
Modal	13	0.057	0.0000	0.0187	0.0000	0.9493	0.9647	0.0000	0.0476	0.0000	0.0000	0.8976	0.8577	0.9468
Modal	14	0.054	0.0185	0.0000	0.0000	0.9678	0.9647	0.0000	0.0000	0.0480	0.0000	0.8976	0.9057	0.9468
Modal	15	0.047	0.0000	0.0000	0.0000	0.9678	0.9648	0.0000	0.0001	0.0000	0.0189	0.8977	0.9057	0.9657
Modal	16	0.04	0.0000	0.0126	0.0000	0.9678	0.9774	0.0000	0.0362	0.0000	0.0000	0.9339	0.9057	0.9657
Modal	17	0.04	0.0120	0.0000	0.0000	0.9797	0.9774	0.0000	0.0000	0.0346	0.0000	0.9339	0.9403	0.9657
Modal	18	0.033	0.0000	0.0000	0.0000	0.9797	0.9774	0.0000	0.0001	0.0000	0.0125	0.9340	0.9403	0.9782
Modal	19	0.031	0.0080	0.0000	0.0000	0.9877	0.9774	0.0000	0.0000	0.0229	0.0000	0.9340	0.9631	0.9782
Modal	20	0.031	0.0000	0.0087	0.0000	0.9877	0.9861	0.0000	0.0246	0.0000	0.0000	0.9586	0.9631	0.9782
Modal	21	0.026	0.0000	0.0000	0.0000	0.9877	0.9861	0.0000	0.0001	0.0000	0.0085	0.9587	0.9631	0.9867
Modal	22	0.025	0.0054	0.0000	0.0000	0.9931	0.9861	0.0000	0.0000	0.0162	0.0000	0.9587	0.9793	0.9867
Modal	23	0.025	0.0000	0.0060	0.0000	0.9931	0.9921	0.0000	0.0178	0.0000	0.0000	0.9765	0.9793	0.9867
Modal	24	0.022	0.0035	0.0000	0.0000	0.9966	0.9921	0.0000	0.0000	0.0105	0.0000	0.9765	0.9898	0.9867
Modal	25	0.021	0.0000	0.0000	0.0000	0.9966	0.9922	0.0000	0.0000	0.0000	0.0058	0.9765	0.9898	0.9925
Modal	26	0.021	0.0000	0.0040	0.0000	0.9966	0.9961	0.0000	0.0118	0.0000	0.0000	0.9883	0.9898	0.9925
Modal	27	0.019	0.0021	0.0000	0.0000	0.9987	0.9961	0.0000	0.0000	0.0064	0.0000	0.9883	0.9961	0.9925
Modal	28	0.018	0.0000	0.0024	0.0000	0.9987	0.9985	0.0000	0.0072	0.0000	0.0000	0.9955	0.9961	0.9925
Modal	29	0.018	0.0000	0.0000	0.0000	0.9987	0.9985	0.0000	0.0000	0.0000	0.0038	0.9956	0.9961	0.9963
Modal	30	0.018	0.0010	0.0000	0.0000	0.9997	0.9985	0.0000	0.0000	0.0030	0.0000	0.9956	0.9991	0.9963
Modal	31	0.017	0.0003	0.0000	0.0000	1.0000	0.9985	0.0000	0.0000	0.0008	0.0000	0.9956	1.0000	0.9963
Modal	32	0.016	0.0000	0.0011	0.0000	1.0000	0.9997	0.0000	0.0034	0.0000	0.0000	0.9990	1.0000	0.9963
Modal	33	0.016	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0009	0.0000	0.0000	0.9999	1.0000	0.9963
Modal	34	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0023	1.0000	1.0000	0.9986
Modal	35	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0011	1.0000	1.0000	0.9997
Modal	36	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0003	1.0000	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.000913	5.25	2.80	0.002	ok
Story3	SISMO X	0.00095	5.25	2.80	0.002	ok
Story2	SISMO X	0.000826	5.25	2.80	0.002	ok
Story1	SISMO X	0.000418	5.25	2.80	0.001	ok
Story4	SISMO Y	0.001051	5.25	2.80	0.002	ok
Story3	SISMO Y	0.001104	5.25	2.80	0.002	ok
Story2	SISMO Y	0.000964	5.25	2.80	0.002	ok
Story1	SISMO Y	0.000473	5.25	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002202	5.25	2.80	0.004	ok

Story7	SISMO X	0.002477	5.25	2.80	0.005	ok
Story6	SISMO X	0.002752	5.25	2.80	0.005	ok
Story5	SISMO X	0.002937	5.25	2.80	0.006	ok
Story4	SISMO X	0.002951	5.25	2.80	0.006	ok
Story3	SISMO X	0.00271	5.25	2.80	0.005	ok
Story2	SISMO X	0.002114	5.25	2.80	0.004	ok
Story1	SISMO X	0.000981	5.25	2.80	0.002	ok
Story8	SISMO Y	0.00211	5.25	2.80	0.004	ok
Story7	SISMO Y	0.00245	5.25	2.80	0.005	ok
Story6	SISMO Y	0.002828	5.25	2.80	0.005	ok
Story5	SISMO Y	0.003123	5.25	2.80	0.006	ok
Story4	SISMO Y	0.003231	5.25	2.80	0.006	ok
Story3	SISMO Y	0.003038	5.25	2.80	0.006	ok
Story2	SISMO Y	0.002399	5.25	2.80	0.004	ok
Story1	SISMO Y	0.001092	5.25	2.80	0.002	ok

Para 12 pisos:

Story	**Load Case/Combo**	**Max Drift**	**0.75 R**	**H**	**0.75R*D/H**	**< 0.007**
		m		**m**		
Story12	SISMO X	0.001952	5.25	2.80	0.004	ok
Story11	SISMO X	0.002196	5.25	2.80	0.004	ok
Story10	SISMO X	0.002486	5.25	2.80	0.005	ok
Story9	SISMO X	0.002779	5.25	2.80	0.005	ok
Story8	SISMO X	0.003044	5.25	2.80	0.006	ok
Story7	SISMO X	0.003252	5.25	2.80	0.006	ok
Story6	SISMO X	0.003376	5.25	2.80	0.006	ok
Story5	SISMO X	0.003383	5.25	2.80	0.006	ok
Story4	SISMO X	0.003229	5.25	2.80	0.006	ok
Story3	SISMO X	0.00285	5.25	2.80	0.005	ok
Story2	SISMO X	0.002158	5.25	2.80	0.004	ok
Story1	SISMO X	0.000979	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001753	5.25	2.80	0.003	ok
Story11	SISMO Y	0.002034	5.25	2.80	0.004	ok
Story10	SISMO Y	0.002387	5.25	2.80	0.004	ok
Story9	SISMO Y	0.002753	5.25	2.80	0.005	ok
Story8	SISMO Y	0.003092	5.25	2.80	0.006	ok
Story7	SISMO Y	0.003376	5.25	2.80	0.006	ok
Story6	SISMO Y	0.003576	5.25	2.80	0.007	ok
Story5	SISMO Y	0.003656	5.25	2.80	0.007	ok
Story4	SISMO Y	0.00356	5.25	2.80	0.007	ok
Story3	SISMO Y	0.003203	5.25	2.80	0.006	ok
Story2	SISMO Y	0.002453	5.25	2.80	0.005	ok
Story1	SISMO Y	0.001094	5.25	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	153.42	0.003048	50335.30	0.89
Y-Y	SISMO Y	152.53	0.003403	44822.86	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	

X-X	SISMO X	301.18	0.018726	16083.63	0.97
Y-Y	SISMO Y	297.84	0.019120	15577.23	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	284.78	0.030690	9279.09	1.00
Y-Y	SISMO Y	284.66	0.030785	9246.63	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story2	D2	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story3	D3	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story4	D4	8.72	8.72	8.015	8.200	8.000	8.200	0.015	0.000

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story2	D2	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story3	D3	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story4	D4	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story5	D5	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story6	D6	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story7	D7	13.18	13.18	8.010	8.200	8.000	8.200	0.010	0.000
Story8	D8	8.72	8.72	8.015	8.200	8.000	8.200	0.015	0.000

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story2	D2	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story3	D3	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story4	D4	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story5	D5	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story6	D6	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story7	D7	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story8	D8	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story9	D9	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story10	D10	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story11	D11	13.18	13.18	8.010	8.20	8.00	8.20	0.010	0.00
Story12	D12	8.72	8.72	8.015	8.20	8.00	8.20	0.015	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	63.18	41.17%	**DUAL**
	Muros	90.27	58.83%	
Y-Y	**Columnas**	66.39	43.52%	**DUAL**

	Muros	86.16	56.48%	

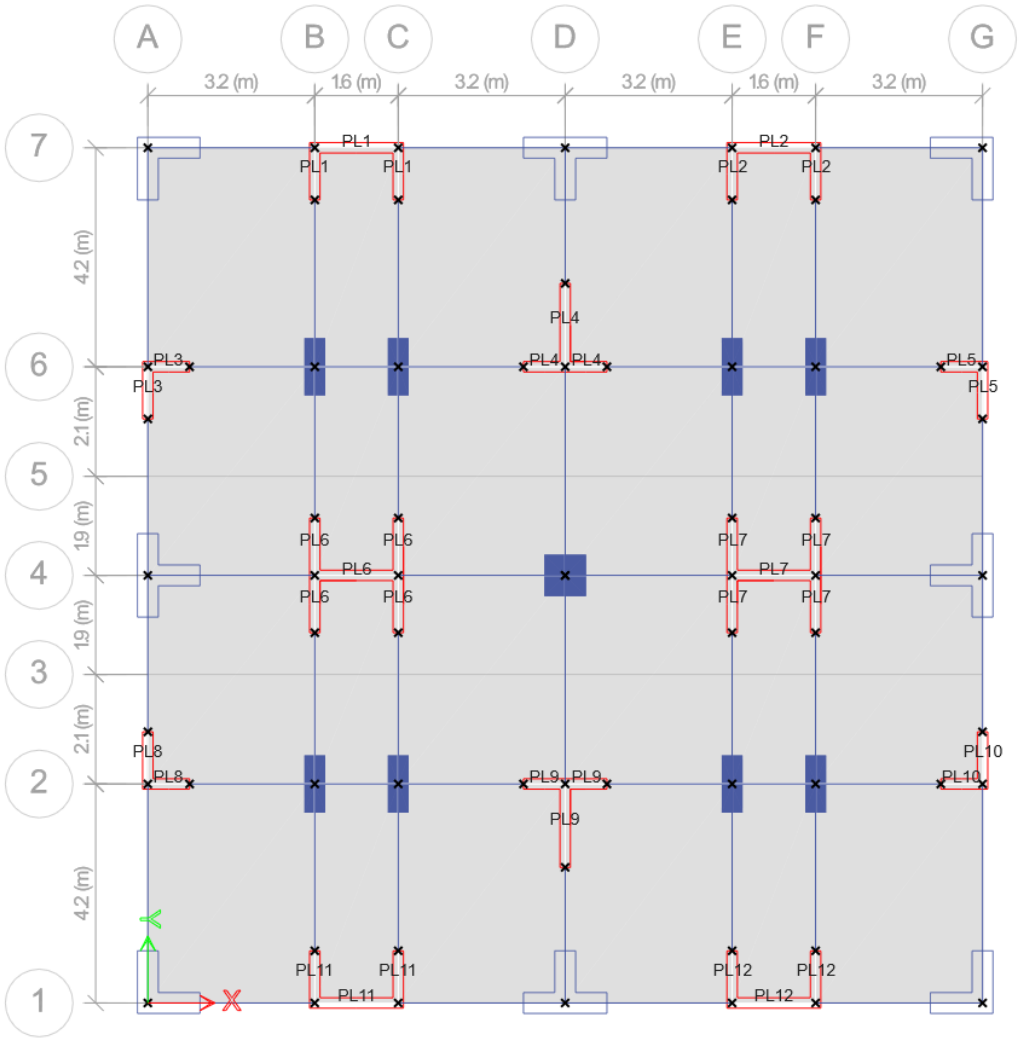
Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	122.78	40.77%	**DUAL**
	Muros	178.38	59.23%	
Y-Y	**Columnas**	127.96	42.97%	**DUAL**
	Muros	169.85	57.03%	

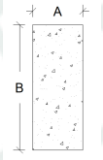
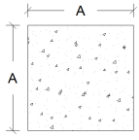
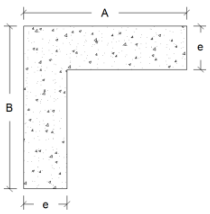
Para 12 pisos:

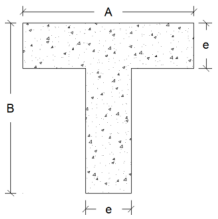
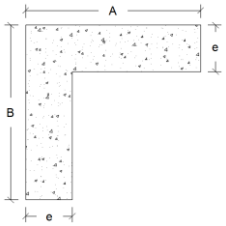
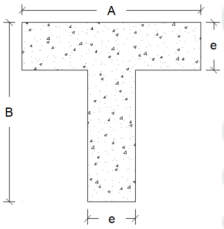
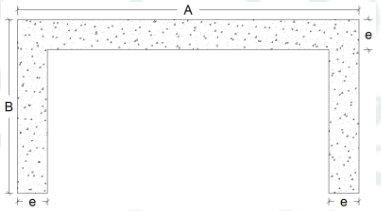
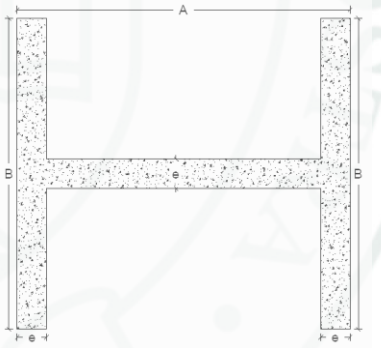
Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	116.05	40.75%	**DUAL**
	Muros	168.73	59.25%	
Y-Y	**Columnas**	121.91	42.83%	**DUAL**
	Muros	162.75	57.17%	

MODELO 8: REGULAR Ky/Kx = 1.00, e = 0.005

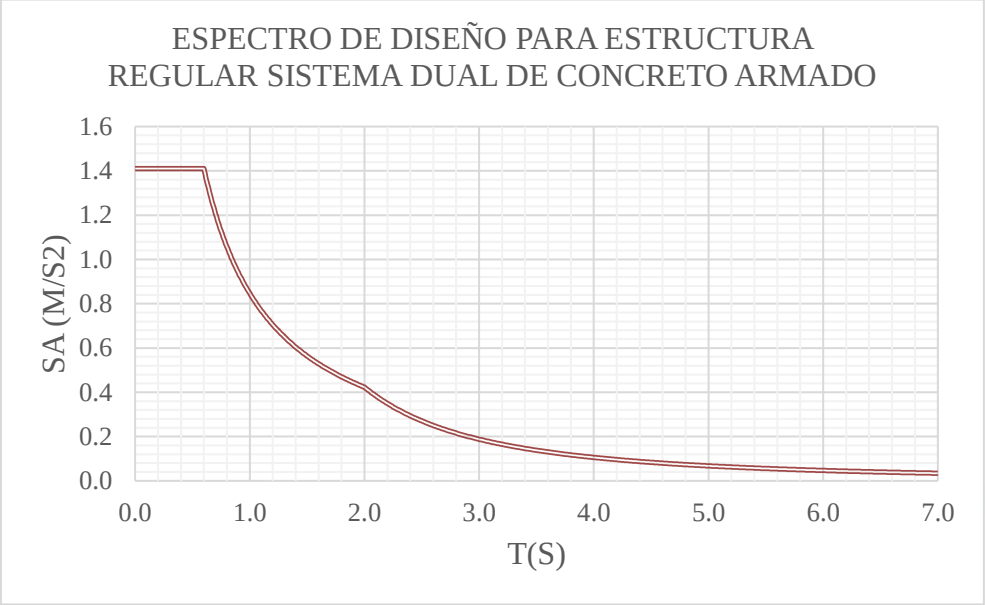


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	0.70 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	0.80 m	
		B	1.00 m	
		e	0.20 m	
PL4, PL9	02	A	1.60 m	
		B	1.60 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.257	0.0000	0.7402	0.0000	0.0000	0.7402	0.0000	0.3446	0.0000	0.0007	0.3446	0.0000	0.0007
Modal	2	0.244	0.7424	0.0000	0.0000	0.7424	0.7402	0.0000	0.0000	0.3431	0.0000	0.3446	0.3431	0.0007
Modal	3	0.216	0.0000	0.0007	0.0000	0.7424	0.7409	0.0000	0.0003	0.0000	0.7358	0.3449	0.3431	0.7365
Modal	4	0.061	0.0000	0.1807	0.0000	0.7424	0.9216	0.0000	0.4423	0.0000	0.0001	0.7872	0.3431	0.7366
Modal	5	0.059	0.1865	0.0000	0.0000	0.9290	0.9216	0.0000	0.0000	0.4589	0.0000	0.7872	0.8020	0.7366
Modal	6	0.051	0.0000	0.0001	0.0000	0.9290	0.9217	0.0000	0.0003	0.0000	0.1871	0.7875	0.8020	0.9237
Modal	7	0.027	0.0561	0.0000	0.0000	0.9851	0.9217	0.0000	0.0000	0.1500	0.0000	0.7875	0.9520	0.9237
Modal	8	0.027	0.0000	0.0615	0.0000	0.9851	0.9831	0.0000	0.1597	0.0000	0.0001	0.9471	0.9520	0.9238
Modal	9	0.023	0.0000	0.0001	0.0000	0.9851	0.9832	0.0000	0.0001	0.0000	0.0599	0.9473	0.9520	0.9837
Modal	10	0.018	0.0149	0.0000	0.0000	1.0000	0.9832	0.0000	0.0000	0.0478	0.0000	0.9473	0.9999	0.9837
Modal	11	0.017	0.0000	0.0168	0.0000	1.0000	1.0000	0.0000	0.0526	0.0000	0.0000	0.9999	0.9999	0.9837
Modal	12	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0001	0.0000	0.0162	0.9999	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.617	0.0000	0.7372	0.0000	0.0000	0.7372	0.0000	0.2978	0.0000	0.0008	0.2978	0.0000	0.0008
Modal	2	0.604	0.7272	0.0000	0.0000	0.7272	0.7372	0.0000	0.0000	0.3099	0.0000	0.2978	0.3099	0.0008
Modal	3	0.53	0.0000	0.0008	0.0000	0.7272	0.7381	0.0000	0.0003	0.0000	0.7287	0.2981	0.3099	0.7295
Modal	4	0.169	0.0000	0.1356	0.0000	0.7272	0.8737	0.0000	0.3928	0.0000	0.0001	0.6909	0.3099	0.7296
Modal	5	0.16	0.1497	0.0000	0.0000	0.8769	0.8737	0.0000	0.0000	0.3843	0.0000	0.6909	0.6942	0.7296
Modal	6	0.142	0.0000	0.0001	0.0000	0.8769	0.8738	0.0000	0.0003	0.0000	0.1436	0.6912	0.6942	0.8732
Modal	7	0.077	0.0000	0.0590	0.0000	0.8769	0.9328	0.0000	0.1189	0.0000	0.0000	0.8101	0.6942	0.8732
Modal	8	0.073	0.0606	0.0000	0.0000	0.9375	0.9328	0.0000	0.0000	0.1272	0.0000	0.8101	0.8214	0.8732
Modal	9	0.064	0.0000	0.0000	0.0000	0.9375	0.9328	0.0000	0.0001	0.0000	0.0608	0.8102	0.8214	0.9340
Modal	10	0.044	0.0000	0.0318	0.0000	0.9375	0.9646	0.0000	0.0883	0.0000	0.0000	0.8985	0.8214	0.9341
Modal	11	0.043	0.0306	0.0000	0.0000	0.9682	0.9646	0.0000	0.0000	0.0860	0.0000	0.8985	0.9074	0.9341
Modal	12	0.037	0.0000	0.0000	0.0000	0.9682	0.9646	0.0000	0.0001	0.0000	0.0317	0.8986	0.9074	0.9658
Modal	13	0.03	0.0169	0.0000	0.0000	0.9850	0.9646	0.0000	0.0000	0.0472	0.0000	0.8986	0.9546	0.9658
Modal	14	0.029	0.0000	0.0184	0.0000	0.9850	0.9831	0.0000	0.0506	0.0000	0.0000	0.9492	0.9546	0.9658
Modal	15	0.025	0.0000	0.0000	0.0000	0.9850	0.9831	0.0000	0.0000	0.0000	0.0179	0.9492	0.9546	0.9837
Modal	16	0.023	0.0093	0.0000	0.0000	0.9943	0.9831	0.0000	0.0000	0.0283	0.0000	0.9492	0.9828	0.9837
Modal	17	0.022	0.0000	0.0105	0.0000	0.9943	0.9935	0.0000	0.0313	0.0000	0.0000	0.9806	0.9828	0.9837
Modal	18	0.019	0.0044	0.0000	0.0000	0.9988	0.9935	0.0000	0.0000	0.0134	0.0000	0.9806	0.9962	0.9837
Modal	19	0.019	0.0000	0.0000	0.0000	0.9988	0.9936	0.0000	0.0000	0.0000	0.0101	0.9806	0.9962	0.9938

Modal	20	0.018	0.0000	0.0050	0.0000	0.9988	0.9986	0.0000	0.0151	0.0000	0.0000	0.9957	0.9962	0.9938
Modal	21	0.017	0.0012	0.0000	0.0000	1.0000	0.9986	0.0000	0.0000	0.0038	0.0000	0.9957	0.9999	0.9938
Modal	22	0.016	0.0000	0.0014	0.0000	1.0000	1.0000	0.0000	0.0043	0.0000	0.0000	0.9999	0.9999	0.9938
Modal	23	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0048	0.9999	0.9999	0.9986
Modal	24	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0013	1.0000	0.9999	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	1.01	0.0000	0.7460	0.0000	0.0000	0.7460	0.0000	0.2737	0.0000	0.0008	0.2737	0.0000	0.0008
Modal	2	1.003	0.7342	0.0000	0.0000	0.7342	0.7460	0.0000	0.0000	0.2881	0.0000	0.2737	0.2881	0.0008
Modal	3	0.87	0.0000	0.0008	0.0000	0.7342	0.7469	0.0000	0.0003	0.0000	0.7402	0.2740	0.2881	0.7411
Modal	4	0.295	0.0000	0.1179	0.0000	0.7342	0.8648	0.0000	0.4024	0.0000	0.0001	0.6764	0.2881	0.7412
Modal	5	0.284	0.1292	0.0000	0.0000	0.8634	0.8648	0.0000	0.0000	0.3835	0.0000	0.6764	0.6716	0.7412
Modal	6	0.25	0.0000	0.0001	0.0000	0.8634	0.8649	0.0000	0.0004	0.0000	0.1208	0.6767	0.6716	0.8620
Modal	7	0.144	0.0000	0.0515	0.0000	0.8634	0.9164	0.0000	0.0919	0.0000	0.0000	0.7686	0.6716	0.8620
Modal	8	0.135	0.0554	0.0000	0.0000	0.9188	0.9164	0.0000	0.0000	0.1036	0.0000	0.7686	0.7752	0.8620
Modal	9	0.12	0.0000	0.0000	0.0000	0.9188	0.9164	0.0000	0.0001	0.0000	0.0543	0.7686	0.7752	0.9163
Modal	10	0.085	0.0000	0.0296	0.0000	0.9188	0.9460	0.0000	0.0814	0.0000	0.0000	0.8501	0.7752	0.9163
Modal	11	0.08	0.0305	0.0000	0.0000	0.9493	0.9460	0.0000	0.0000	0.0826	0.0000	0.8501	0.8578	0.9163
Modal	12	0.07	0.0000	0.0000	0.0000	0.9493	0.9460	0.0000	0.0000	0.0000	0.0305	0.8501	0.8578	0.9468
Modal	13	0.056	0.0000	0.0188	0.0000	0.9493	0.9648	0.0000	0.0477	0.0000	0.0000	0.8978	0.8578	0.9468
Modal	14	0.053	0.0185	0.0000	0.0000	0.9678	0.9648	0.0000	0.0000	0.0479	0.0000	0.8978	0.9057	0.9468
Modal	15	0.046	0.0000	0.0000	0.0000	0.9678	0.9648	0.0000	0.0000	0.0000	0.0189	0.8978	0.9057	0.9657
Modal	16	0.04	0.0000	0.0126	0.0000	0.9678	0.9774	0.0000	0.0362	0.0000	0.0000	0.9340	0.9057	0.9657
Modal	17	0.039	0.0120	0.0000	0.0000	0.9797	0.9774	0.0000	0.0000	0.0346	0.0000	0.9340	0.9403	0.9657
Modal	18	0.033	0.0000	0.0000	0.0000	0.9797	0.9774	0.0000	0.0000	0.0000	0.0125	0.9340	0.9403	0.9782
Modal	19	0.031	0.0080	0.0000	0.0000	0.9877	0.9774	0.0000	0.0000	0.0228	0.0000	0.9340	0.9631	0.9782
Modal	20	0.03	0.0000	0.0087	0.0000	0.9877	0.9861	0.0000	0.0246	0.0000	0.0000	0.9587	0.9631	0.9782
Modal	21	0.026	0.0000	0.0000	0.0000	0.9877	0.9861	0.0000	0.0000	0.0000	0.0085	0.9587	0.9631	0.9867
Modal	22	0.025	0.0054	0.0000	0.0000	0.9931	0.9861	0.0000	0.0000	0.0161	0.0000	0.9587	0.9793	0.9867
Modal	23	0.024	0.0000	0.0060	0.0000	0.9931	0.9922	0.0000	0.0179	0.0000	0.0000	0.9766	0.9793	0.9867
Modal	24	0.021	0.0035	0.0000	0.0000	0.9966	0.9922	0.0000	0.0000	0.0105	0.0000	0.9766	0.9898	0.9867
Modal	25	0.021	0.0000	0.0000	0.0000	0.9966	0.9922	0.0000	0.0000	0.0000	0.0058	0.9766	0.9898	0.9925
Modal	26	0.02	0.0000	0.0040	0.0000	0.9966	0.9961	0.0000	0.0118	0.0000	0.0000	0.9883	0.9898	0.9925
Modal	27	0.019	0.0021	0.0000	0.0000	0.9987	0.9961	0.0000	0.0000	0.0064	0.0000	0.9883	0.9961	0.9925
Modal	28	0.018	0.0000	0.0024	0.0000	0.9987	0.9985	0.0000	0.0072	0.0000	0.0000	0.9956	0.9961	0.9925
Modal	29	0.017	0.0000	0.0000	0.0000	0.9987	0.9985	0.0000	0.0000	0.0000	0.0038	0.9956	0.9961	0.9963
Modal	30	0.017	0.0010	0.0000	0.0000	0.9997	0.9985	0.0000	0.0000	0.0030	0.0000	0.9956	0.9991	0.9963
Modal	31	0.016	0.0003	0.0000	0.0000	1.0000	0.9985	0.0000	0.0000	0.0008	0.0000	0.9956	1.0000	0.9963
Modal	32	0.016	0.0000	0.0011	0.0000	1.0000	0.9997	0.0000	0.0034	0.0000	0.0000	0.9990	1.0000	0.9963
Modal	33	0.015	0.0000	0.0003	0.0000	1.0000	1.0000	0.0000	0.0009	0.0000	0.0000	1.0000	1.0000	0.9963
Modal	34	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0023	1.0000	1.0000	0.9986
Modal	35	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0011	1.0000	1.0000	0.9997
Modal	36	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0003	1.0000	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story4	SISMO X	0.000894	5.25	2.80	0.002	ok
Story3	SISMO X	0.000931	5.25	2.80	0.002	ok
Story2	SISMO X	0.00081	5.25	2.80	0.002	ok
Story1	SISMO X	0.000409	5.25	2.80	0.001	ok
Story4	SISMO Y	0.001005	5.25	2.80	0.002	ok
Story3	SISMO Y	0.001056	5.25	2.80	0.002	ok
Story2	SISMO Y	0.000923	5.25	2.80	0.002	ok
Story1	SISMO Y	0.000453	5.25	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.75 R	H m	0.75R*D/H	< 0.007
Story8	SISMO X	0.002177	5.25	2.80	0.004	ok

Story7	SISMO X	0.002449	5.25	2.80	0.005	ok
Story6	SISMO X	0.002721	5.25	2.80	0.005	ok
Story5	SISMO X	0.002905	5.25	2.80	0.005	ok
Story4	SISMO X	0.00292	5.25	2.80	0.005	ok
Story3	SISMO X	0.002682	5.25	2.80	0.005	ok
Story2	SISMO X	0.002092	5.25	2.80	0.004	ok
Story1	SISMO X	0.000971	5.25	2.80	0.002	ok
Story8	SISMO Y	0.002033	5.25	2.80	0.004	ok
Story7	SISMO Y	0.002362	5.25	2.80	0.004	ok
Story6	SISMO Y	0.002729	5.25	2.80	0.005	ok
Story5	SISMO Y	0.003018	5.25	2.80	0.006	ok
Story4	SISMO Y	0.003124	5.25	2.80	0.006	ok
Story3	SISMO Y	0.002939	5.25	2.80	0.006	ok
Story2	SISMO Y	0.002321	5.25	2.80	0.004	ok
Story1	SISMO Y	0.001057	5.25	2.80	0.002	ok

Para 12 pisos:

Story	**Load Case/Combo**	**Max Drift**	**0.75 R**	**H**	**0.75R*D/H**	**< 0.007**
		m		**m**		
Story12	SISMO X	0.001928	5.25	2.80	0.004	ok
Story11	SISMO X	0.002169	5.25	2.80	0.004	ok
Story10	SISMO X	0.002456	5.25	2.80	0.005	ok
Story9	SISMO X	0.002747	5.25	2.80	0.005	ok
Story8	SISMO X	0.00301	5.25	2.80	0.006	ok
Story7	SISMO X	0.003216	5.25	2.80	0.006	ok
Story6	SISMO X	0.003339	5.25	2.80	0.006	ok
Story5	SISMO X	0.003347	5.25	2.80	0.006	ok
Story4	SISMO X	0.003194	5.25	2.80	0.006	ok
Story3	SISMO X	0.002819	5.25	2.80	0.005	ok
Story2	SISMO X	0.002134	5.25	2.80	0.004	ok
Story1	SISMO X	0.000968	5.25	2.80	0.002	ok
Story12	SISMO Y	0.001688	5.25	2.80	0.003	ok
Story11	SISMO Y	0.001961	5.25	2.80	0.004	ok
Story10	SISMO Y	0.002303	5.25	2.80	0.004	ok
Story9	SISMO Y	0.002658	5.25	2.80	0.005	ok
Story8	SISMO Y	0.002987	5.25	2.80	0.006	ok
Story7	SISMO Y	0.003263	5.25	2.80	0.006	ok
Story6	SISMO Y	0.003458	5.25	2.80	0.006	ok
Story5	SISMO Y	0.003535	5.25	2.80	0.007	ok
Story4	SISMO Y	0.003443	5.25	2.80	0.006	ok
Story3	SISMO Y	0.003099	5.25	2.80	0.006	ok
Story2	SISMO Y	0.002374	5.25	2.80	0.004	ok
Story1	SISMO Y	0.001059	5.25	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	150.29	0.002985	50347.10	0.89
Y-Y	SISMO Y	149.70	0.003333	44913.59	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	

X-X	SISMO X	297.76	0.018518	16079.26	0.97
Y-Y	SISMO Y	295.33	0.018916	15612.85	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	281.32	0.030344	9270.97	1.00
Y-Y	SISMO Y	281.93	0.030384	9278.97	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story2	D2	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story3	D3	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story4	D4	8.70	8.70	8.008	8.200	8.000	8.200	0.008	0.000

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story2	D2	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story3	D3	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story4	D4	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story5	D5	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story6	D6	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story7	D7	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story8	D8	8.70	8.70	8.008	8.200	8.000	8.200	0.008	0.000

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story2	D2	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story3	D3	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story4	D4	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story5	D5	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story6	D6	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story7	D7	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story8	D8	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story9	D9	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story10	D10	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story11	D11	13.17	13.17	8.005	8.200	8.000	8.200	0.005	0.000
Story12	D12	8.70	8.70	8.008	8.200	8.000	8.200	0.008	0.000

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	61.89	41.17%	**DUAL**
	Muros	88.42	58.83%	
Y-Y	**Columnas**	65.16	43.52%	**DUAL**

	Muros	84.56	56.48%	

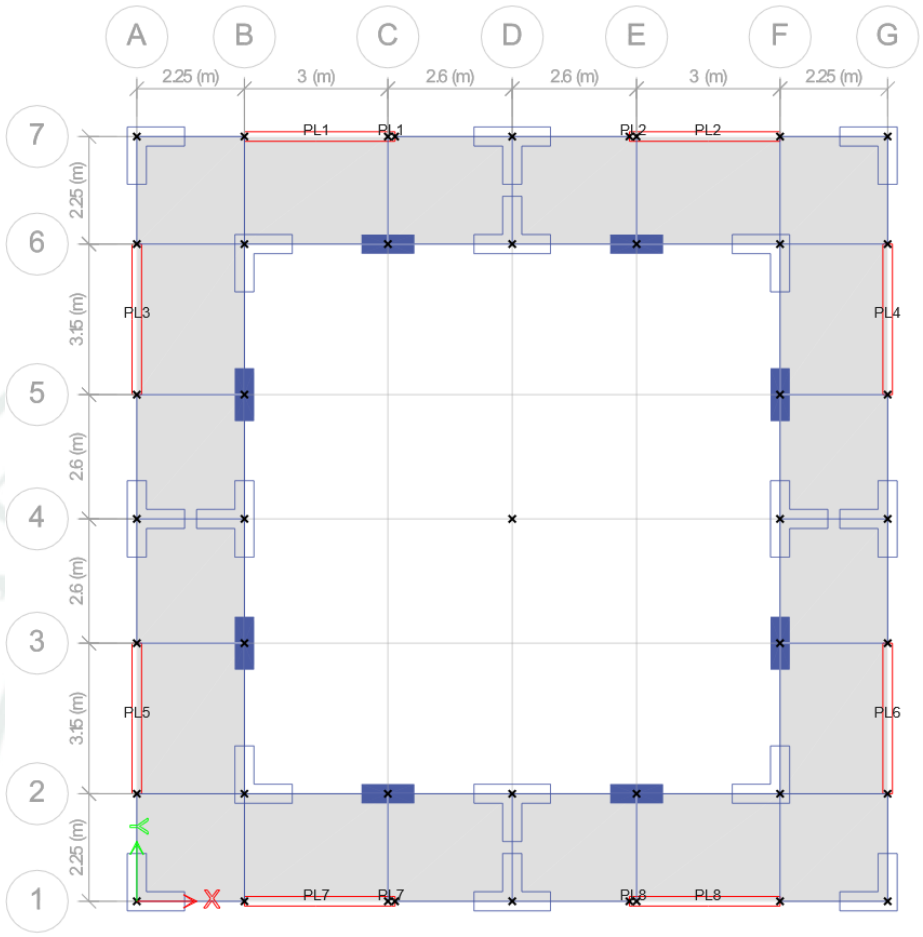
Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	121.39	40.77%	**DUAL**
	Muros	176.37	59.23%	
Y-Y	**Columnas**	126.90	42.97%	**DUAL**
	Muros	168.44	57.03%	

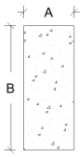
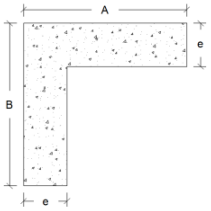
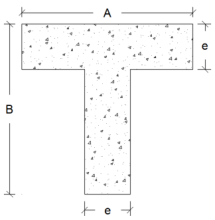
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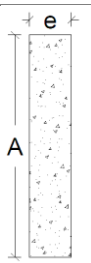
Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	114.64	40.75%	**DUAL**
	Muros	166.68	59.25%	
Y-Y	**Columnas**	120.72	42.83%	**DUAL**
	Muros	161.16	57.17%	

MODELO 9: IRREGULAR DIAFRAGMA DISCONTINUO

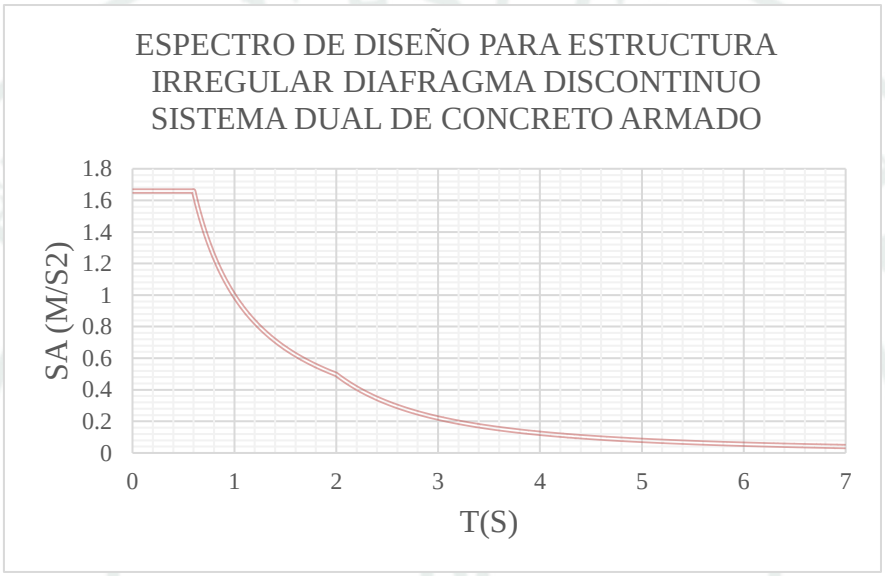


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	1.10 m	
CL	08	A	1.20 m	
		B	1.20 m	
		e	0.40 m	
CT	08	A	1.60 m	
		B	1.20 m	
		e	0.40 m	

PL1, PL2, PL3, PL4. PL5, PL6, PL7, PL8	08	A	3.15 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.172	0.0000	0.7465	0.0000	0.0000	0.7465	0.0000	0.4000	0.0000	0.0000	0.4000	0.0000	0.0000
Modal	2	0.172	0.7468	0.0000	0.0000	0.7468	0.7465	0.0000	0.0000	0.3997	0.0000	0.4000	0.3997	0.0000
Modal	3	0.142	0.0000	0.0000	0.0000	0.7468	0.7465	0.0000	0.0000	0.0000	0.7483	0.4000	0.3997	0.7483
Modal	4	0.043	0.0000	0.1788	0.0000	0.7468	0.9253	0.0000	0.4174	0.0000	0.0000	0.8174	0.3997	0.7483
Modal	5	0.043	0.1786	0.0000	0.0000	0.9254	0.9253	0.0000	0.0000	0.4178	0.0000	0.8174	0.8175	0.7483
Modal	6	0.036	0.0000	0.0000	0.0000	0.9254	0.9253	0.0000	0.0000	0.0000	0.1793	0.8174	0.8175	0.9276
Modal	7	0.02	0.0000	0.0585	0.0000	0.9254	0.9838	0.0000	0.1358	0.0000	0.0000	0.9532	0.8175	0.9276
Modal	8	0.02	0.0585	0.0000	0.0000	0.9839	0.9838	0.0000	0.0000	0.1358	0.0000	0.9532	0.9533	0.9276
Modal	9	0.017	0.0000	0.0000	0.0000	0.9839	0.9838	0.0000	0.0000	0.0000	0.0571	0.9532	0.9533	0.9847
Modal	10	0.013	0.0159	0.0000	0.0000	0.9998	0.9838	0.0000	0.0000	0.0461	0.0000	0.9532	0.9994	0.9847
Modal	11	0.013	0.0000	0.0160	0.0000	0.9998	0.9998	0.0000	0.0462	0.0000	0.0000	0.9994	0.9994	0.9847
Modal	12	0.011	0.0000	0.0000	0.0000	0.9998	0.9998	0.0000	0.0000	0.0000	0.0150	0.9994	0.9994	0.9997

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.427	0.0000	0.7372	0.0000	0.0000	0.7372	0.0000	0.3255	0.0000	0.0000	0.3255	0.0000	0.0000
Modal	2	0.425	0.7377	0.0000	0.0000	0.7377	0.7372	0.0000	0.0000	0.3249	0.0000	0.3255	0.3249	0.0000
Modal	3	0.346	0.0000	0.0000	0.0000	0.7377	0.7372	0.0000	0.0000	0.0000	0.7421	0.3255	0.3249	0.7421
Modal	4	0.116	0.0000	0.1399	0.0000	0.7377	0.8771	0.0000	0.3846	0.0000	0.0000	0.7102	0.3249	0.7421
Modal	5	0.116	0.1394	0.0000	0.0000	0.8772	0.8771	0.0000	0.0000	0.3855	0.0000	0.7102	0.7104	0.7421
Modal	6	0.096	0.0000	0.0000	0.0000	0.8772	0.8771	0.0000	0.0000	0.0000	0.1361	0.7102	0.7104	0.8782
Modal	7	0.054	0.0000	0.0585	0.0000	0.8772	0.9355	0.0000	0.1127	0.0000	0.0000	0.8229	0.7104	0.8782
Modal	8	0.054	0.0584	0.0000	0.0000	0.9356	0.9355	0.0000	0.0000	0.1125	0.0000	0.8229	0.8229	0.8782
Modal	9	0.045	0.0000	0.0000	0.0000	0.9356	0.9355	0.0000	0.0000	0.0000	0.0587	0.8229	0.8229	0.9369

Modal	10	0.032	0.0000	0.0309	0.0000	0.9356	0.9664	0.0000	0.0841	0.0000	0.0000	0.9069	0.8229	0.9369
Modal	11	0.032	0.0309	0.0000	0.0000	0.9664	0.9664	0.0000	0.0000	0.0841	0.0000	0.9069	0.9070	0.9369
Modal	12	0.027	0.0000	0.0000	0.0000	0.9664	0.9664	0.0000	0.0000	0.0000	0.0307	0.9069	0.9070	0.9676
Modal	13	0.021	0.0000	0.0175	0.0000	0.9664	0.9839	0.0000	0.0463	0.0000	0.0000	0.9533	0.9070	0.9676
Modal	14	0.021	0.0175	0.0000	0.0000	0.9840	0.9839	0.0000	0.0000	0.0463	0.0000	0.9533	0.9533	0.9676
Modal	15	0.018	0.0000	0.0000	0.0000	0.9840	0.9839	0.0000	0.0000	0.0000	0.0172	0.9533	0.9533	0.9847
Modal	16	0.016	0.0099	0.0000	0.0000	0.9938	0.9839	0.0000	0.0000	0.0288	0.0000	0.9533	0.9821	0.9847
Modal	17	0.016	0.0000	0.0099	0.0000	0.9938	0.9938	0.0000	0.0288	0.0000	0.0000	0.9821	0.9821	0.9847
Modal	18	0.014	0.0000	0.0000	0.0000	0.9938	0.9938	0.0000	0.0000	0.0000	0.0095	0.9821	0.9821	0.9942
Modal	19	0.013	0.0047	0.0000	0.0000	0.9986	0.9938	0.0000	0.0000	0.0136	0.0000	0.9821	0.9958	0.9942
Modal	20	0.013	0.0000	0.0048	0.0000	0.9986	0.9986	0.0000	0.0137	0.0000	0.0000	0.9958	0.9958	0.9942
Modal	21	0.012	0.0013	0.0000	0.0000	0.9999	0.9986	0.0000	0.0000	0.0039	0.0000	0.9958	0.9997	0.9942
Modal	22	0.012	0.0000	0.0013	0.0000	0.9999	0.9999	0.0000	0.0039	0.0000	0.0000	0.9997	0.9997	0.9942
Modal	23	0.012	0.0000	0.0000	0.0000	0.9999	0.9999	0.0000	0.0000	0.0000	0.0045	0.9997	0.9997	0.9987
Modal	24	0.01	0.0000	0.0000	0.0000	0.9999	0.9999	0.0000	0.0000	0.0000	0.0012	0.9997	0.9997	0.9999

Para 12 pisos:

Case	Mode	Period	UX	UY	UZ	SumU	SumU	SumU	RX	RY	RZ	SumR	SumR	SumR
		sec				X	Y	Z				X	Y	Z
Modal	1	0.713	0.0000	0.7414	0.0000	0.0000	0.7414	0.0000	0.2968	0.0000	0.0000	0.2968	0.0000	0.0000
Modal	2	0.709	0.7420	0.0000	0.0000	0.7420	0.7414	0.0000	0.0000	0.2961	0.0000	0.2968	0.2961	0.0000
Modal	3	0.565	0.0000	0.0000	0.0000	0.7420	0.7414	0.0000	0.0000	0.0000	0.7516	0.2968	0.2961	0.7516
Modal	4	0.205	0.0000	0.1252	0.0000	0.7420	0.8666	0.0000	0.3902	0.0000	0.0000	0.6870	0.2961	0.7516
Modal	5	0.204	0.1247	0.0000	0.0000	0.8667	0.8666	0.0000	0.0000	0.3913	0.0000	0.6870	0.6874	0.7516
Modal	6	0.166	0.0000	0.0000	0.0000	0.8667	0.8666	0.0000	0.0000	0.0000	0.1160	0.6870	0.6874	0.8676
Modal	7	0.099	0.0000	0.0520	0.0000	0.8667	0.9185	0.0000	0.0917	0.0000	0.0000	0.7787	0.6874	0.8676
Modal	8	0.099	0.0519	0.0000	0.0000	0.9186	0.9185	0.0000	0.0000	0.0914	0.0000	0.7787	0.7788	0.8676
Modal	9	0.082	0.0000	0.0000	0.0000	0.9186	0.9185	0.0000	0.0000	0.0000	0.0518	0.7787	0.7788	0.9194
Modal	10	0.059	0.0000	0.0295	0.0000	0.9186	0.9480	0.0000	0.0797	0.0000	0.0000	0.8584	0.7788	0.9194
Modal	11	0.059	0.0294	0.0000	0.0000	0.9480	0.9480	0.0000	0.0000	0.0797	0.0000	0.8584	0.8585	0.9194
Modal	12	0.049	0.0000	0.0000	0.0000	0.9480	0.9480	0.0000	0.0000	0.0000	0.0294	0.8584	0.8585	0.9489
Modal	13	0.039	0.0000	0.0184	0.0000	0.9480	0.9664	0.0000	0.0457	0.0000	0.0000	0.9041	0.8585	0.9489
Modal	14	0.039	0.0184	0.0000	0.0000	0.9664	0.9664	0.0000	0.0000	0.0457	0.0000	0.9041	0.9042	0.9489
Modal	15	0.033	0.0000	0.0000	0.0000	0.9664	0.9664	0.0000	0.0000	0.0000	0.0184	0.9041	0.9042	0.9673
Modal	16	0.029	0.0000	0.0122	0.0000	0.9664	0.9786	0.0000	0.0345	0.0000	0.0000	0.9386	0.9042	0.9673
Modal	17	0.029	0.0122	0.0000	0.0000	0.9786	0.9786	0.0000	0.0000	0.0345	0.0000	0.9386	0.9387	0.9673
Modal	18	0.024	0.0000	0.0000	0.0000	0.9786	0.9786	0.0000	0.0000	0.0000	0.0121	0.9386	0.9387	0.9793
Modal	19	0.022	0.0000	0.0083	0.0000	0.9786	0.9869	0.0000	0.0229	0.0000	0.0000	0.9616	0.9387	0.9793
Modal	20	0.022	0.0083	0.0000	0.0000	0.9869	0.9869	0.0000	0.0000	0.0229	0.0000	0.9616	0.9616	0.9793
Modal	21	0.019	0.0000	0.0000	0.0000	0.9869	0.9869	0.0000	0.0000	0.0000	0.0081	0.9616	0.9616	0.9875
Modal	22	0.018	0.0000	0.0057	0.0000	0.9869	0.9926	0.0000	0.0166	0.0000	0.0000	0.9782	0.9616	0.9875
Modal	23	0.018	0.0057	0.0000	0.0000	0.9926	0.9926	0.0000	0.0000	0.0166	0.0000	0.9782	0.9783	0.9875
Modal	24	0.015	0.0000	0.0000	0.0000	0.9926	0.9926	0.0000	0.0000	0.0000	0.0055	0.9782	0.9783	0.9930
Modal	25	0.015	0.0037	0.0000	0.0000	0.9963	0.9926	0.0000	0.0000	0.0108	0.0000	0.9782	0.9891	0.9930
Modal	26	0.015	0.0000	0.0038	0.0000	0.9963	0.9963	0.0000	0.0108	0.0000	0.0000	0.9891	0.9891	0.9930
Modal	27	0.013	0.0022	0.0000	0.0000	0.9986	0.9963	0.0000	0.0000	0.0067	0.0000	0.9891	0.9958	0.9930
Modal	28	0.013	0.0000	0.0022	0.0000	0.9986	0.9986	0.0000	0.0067	0.0000	0.0000	0.9958	0.9958	0.9930
Modal	29	0.013	0.0000	0.0000	0.0000	0.9986	0.9986	0.0000	0.0000	0.0000	0.0036	0.9958	0.9958	0.9965
Modal	30	0.012	0.0011	0.0000	0.0000	0.9996	0.9986	0.0000	0.0000	0.0032	0.0000	0.9958	0.9989	0.9965
Modal	31	0.012	0.0000	0.0011	0.0000	0.9996	0.9996	0.0000	0.0032	0.0000	0.0000	0.9989	0.9989	0.9965
Modal	32	0.012	0.0000	0.0000	0.0000	0.9996	0.9996	0.0000	0.0000	0.0000	0.0021	0.9989	0.9989	0.9987
Modal	33	0.012	0.0003	0.0000	0.0000	0.9999	0.9996	0.0000	0.0000	0.0009	0.0000	0.9989	0.9998	0.9987
Modal	34	0.012	0.0000	0.0003	0.0000	0.9999	0.9999	0.0000	0.0009	0.0000	0.0000	0.9998	0.9998	0.9987
Modal	35	0.011	0.0000	0.0000	0.0000	0.9999	0.9999	0.0000	0.0000	0.0000	0.0010	0.9998	0.9998	0.9996
Modal	36	0.01	0.0000	0.0000	0.0000	0.9999	0.9999	0.0000	0.0000	0.0000	0.0003	0.9998	0.9998	0.9999

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift	0.85 R	H	0.85R*D/H	< 0.007
		m		m		
Story4	SISMO X	0.000507	5.06	2.80	0.001	ok
Story3	SISMO X	0.000551	5.06	2.80	0.001	ok
Story2	SISMO X	0.000494	5.06	2.80	0.001	ok
Story1	SISMO X	0.000252	5.06	2.80	0.000	ok
Story4	SISMO Y	0.000509	5.06	2.80	0.001	ok
Story3	SISMO Y	0.000553	5.06	2.80	0.001	ok

Story2	SISMO Y	0.000496	5.06	2.80	0.001	ok
Story1	SISMO Y	0.000253	5.06	2.80	0.000	ok

Para 8 pisos:

Story	**Load Case/Combo**	**Max Drift**	**0.85 R**	**H**	**0.85R*D/H**	**< 0.007**
		m		**m**		
Story8	SISMO X	0.001131	5.06	2.80	0.002	ok
Story7	SISMO X	0.00133	5.06	2.80	0.002	ok
Story6	SISMO X	0.001541	5.06	2.80	0.003	ok
Story5	SISMO X	0.001704	5.06	2.80	0.003	ok
Story4	SISMO X	0.001762	5.06	2.80	0.003	ok
Story3	SISMO X	0.001659	5.06	2.80	0.003	ok
Story2	SISMO X	0.001319	5.06	2.80	0.002	ok
Story1	SISMO X	0.000617	5.06	2.80	0.001	ok
Story8	SISMO Y	0.001144	5.06	2.80	0.002	ok
Story7	SISMO Y	0.001344	5.06	2.80	0.002	ok
Story6	SISMO Y	0.001555	5.06	2.80	0.003	ok
Story5	SISMO Y	0.001717	5.06	2.80	0.003	ok
Story4	SISMO Y	0.001773	5.06	2.80	0.003	ok
Story3	SISMO Y	0.001667	5.06	2.80	0.003	ok
Story2	SISMO Y	0.001324	5.06	2.80	0.002	ok
Story1	SISMO Y	0.000619	5.06	2.80	0.001	ok

Para 12 pisos:

Story	**Load Case/Combo**	**Max Drift**	**0.85 R**	**H**	**0.85R*D/H**	**< 0.007**
		m		**m**		
Story12	SISMO X	0.001398	5.06	2.80	0.003	ok
Story11	SISMO X	0.001622	5.06	2.80	0.003	ok
Story10	SISMO X	0.001898	5.06	2.80	0.003	ok
Story9	SISMO X	0.002181	5.06	2.80	0.004	ok
Story8	SISMO X	0.002442	5.06	2.80	0.004	ok
Story7	SISMO X	0.002654	5.06	2.80	0.005	ok
Story6	SISMO X	0.002795	5.06	2.80	0.005	ok
Story5	SISMO X	0.002838	5.06	2.80	0.005	ok
Story4	SISMO X	0.002743	5.06	2.80	0.005	ok
Story3	SISMO X	0.002453	5.06	2.80	0.004	ok
Story2	SISMO X	0.001879	5.06	2.80	0.003	ok
Story1	SISMO X	0.000855	5.06	2.80	0.002	ok
Story12	SISMO Y	0.001415	5.06	2.80	0.003	ok
Story11	SISMO Y	0.001639	5.06	2.80	0.003	ok
Story10	SISMO Y	0.001915	5.06	2.80	0.003	ok
Story9	SISMO Y	0.002197	5.06	2.80	0.004	ok
Story8	SISMO Y	0.002456	5.06	2.80	0.004	ok
Story7	SISMO Y	0.002667	5.06	2.80	0.005	ok
Story6	SISMO Y	0.002806	5.06	2.80	0.005	ok
Story5	SISMO Y	0.002846	5.06	2.80	0.005	ok
Story4	SISMO Y	0.002749	5.06	2.80	0.005	ok
Story3	SISMO Y	0.002456	5.06	2.80	0.004	ok
Story2	SISMO Y	0.001879	5.06	2.80	0.003	ok
Story1	SISMO Y	0.000854	5.06	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	

X-X	SISMO X	128.61	0.001768	72742.02	1.00
Y-Y	SISMO Y	128.58	0.001775	72437.80	

Para 8 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	261.94	0.010823	24202.43	0.99
Y-Y	SISMO Y	261.78	0.010910	23994.91	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	340.06	0.025128	13533.00	0.99
Y-Y	SISMO Y	338.37	0.025267	13391.95	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story2	D2	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story3	D3	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story4	D4	9.16	9.16	7.85	8.00	7.85	8.00	0.00	0.00

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story2	D2	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story3	D3	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story4	D4	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story5	D5	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story6	D6	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story7	D7	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story8	D8	9.16	9.16	7.85	8.00	7.85	8.00	0.00	0.00

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story2	D2	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story3	D3	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story4	D4	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story5	D5	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story6	D6	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story7	D7	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story8	D8	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story9	D9	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story10	D10	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story11	D11	15.50	15.50	7.85	8.00	7.85	8.00	0.00	0.00
Story12	D12	9.16	9.16	7.85	8.00	7.85	8.00	0.00	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	79.26	61.62%	**DUAL**
	Muros	49.38	38.38%	
Y-Y	**Columnas**	79.17	61.56%	**DUAL**
	Muros	49.43	38.44%	

Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	160.61	61.31%	**DUAL**
	Muros	101.34	38.69%	
Y-Y	**Columnas**	160.38	61.27%	**DUAL**
	Muros	101.40	38.73%	

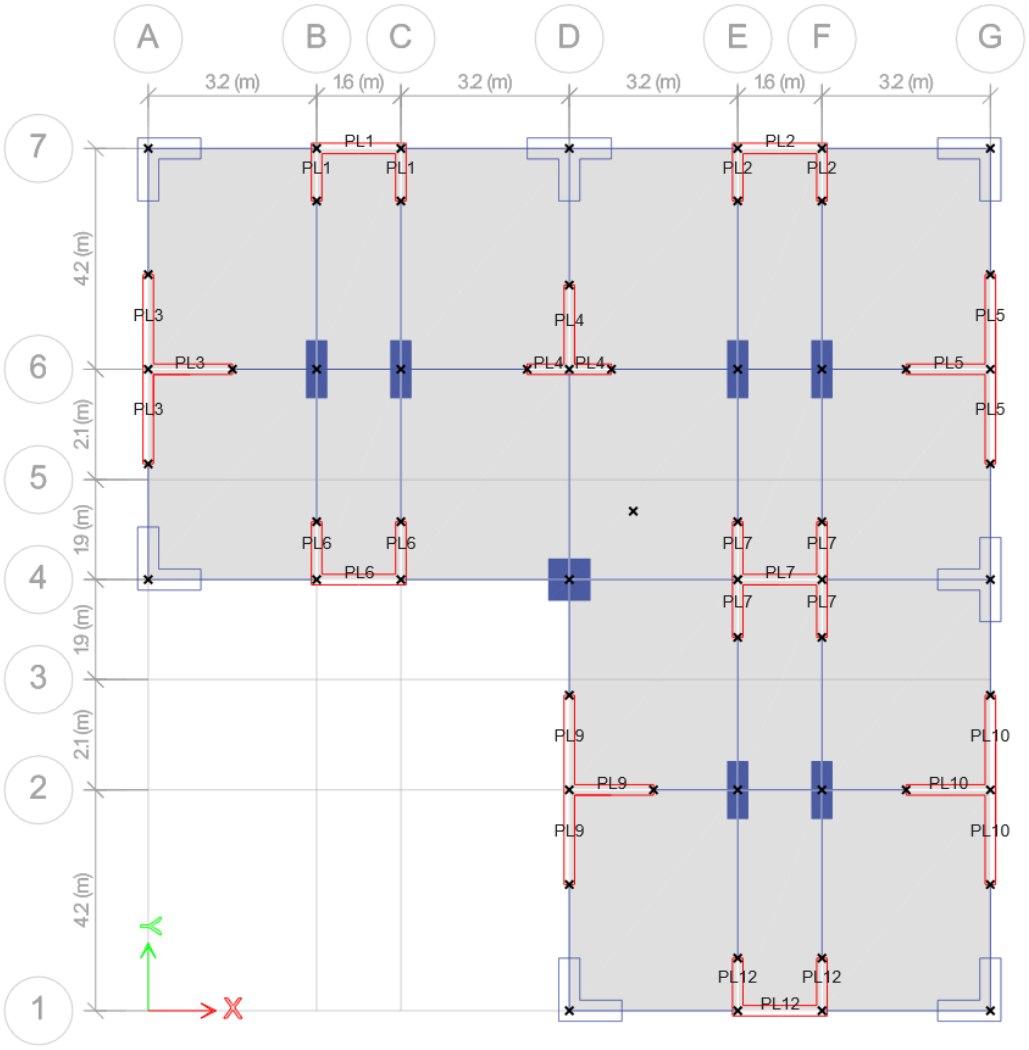
Para 12 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	208.42	61.29%	**DUAL**
	Muros	131.65	38.71%	
Y-Y	**Columnas**	207.24	61.25%	**DUAL**
	Muros	131.14	38.75%	

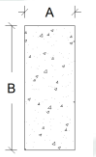
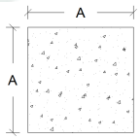
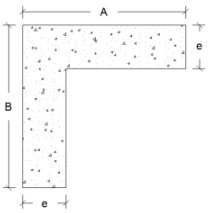
Verificación de Irregularidad

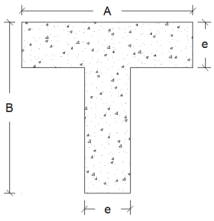
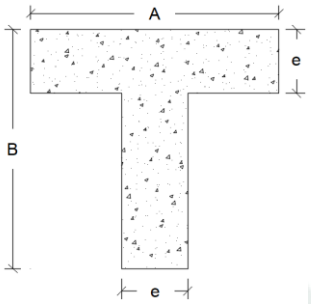
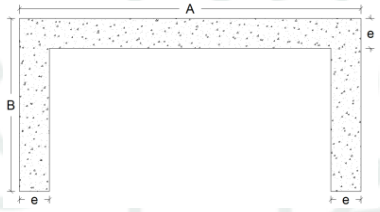
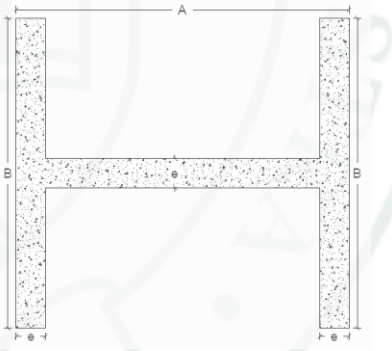
Área Bruta	Área Vacía	% A. Vacía/	Diafragma Discontinuo
m2	**m2**	**A. Bruta**	> 50%
251.20	128.80	51.27%	ok

MODELO 10: IRREGULAR ESQUINAS ENTRANTES

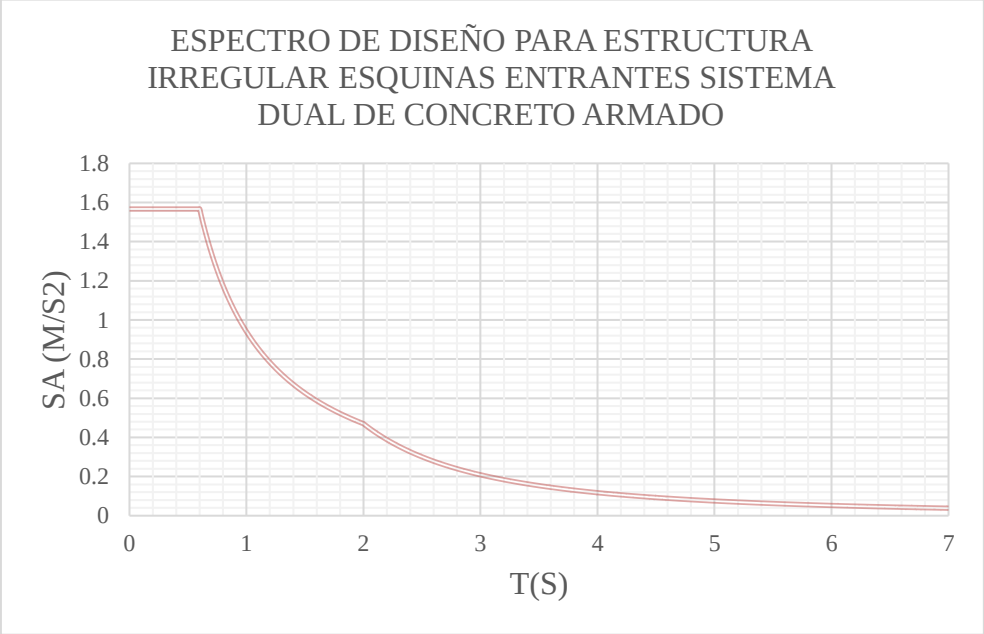


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	06	A	0.40 m	
		B	1.10 m	
C2	01	A	0.80 m	
CL	05	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	02	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL9, PL10	04	A	3.60 m	
		B	1.60 m	
		e	0.20 m	
PL4	01	A	1.60 m	
		B	1.60 m	
		e	0.20 m	
PL1, PL2, PL12	03	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6	01	A	1.60 m	
		B	1.10 m	
		e	0.20 m	
PL7	01	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.216	0.7430	0.0000	0.0000	0.7430	0.0000	0.0000	0.0000	0.3634	0.0002	0.0000	0.3634	0.0002
Modal	2	0.186	0.0001	0.6685	0.0000	0.7431	0.6685	0.0000	0.3313	0.0000	0.0714	0.3313	0.3634	0.0716
Modal	3	0.165	0.0002	0.0721	0.0000	0.7432	0.7406	0.0000	0.0351	0.0000	0.6673	0.3664	0.3635	0.7389
Modal	4	0.053	0.1864	0.0000	0.0000	0.9296	0.7406	0.0000	0.0000	0.4472	0.0000	0.3664	0.8107	0.7389
Modal	5	0.045	0.0000	0.1735	0.0000	0.9296	0.9140	0.0000	0.4075	0.0000	0.0145	0.7738	0.8107	0.7534
Modal	6	0.04	0.0000	0.0140	0.0000	0.9296	0.9281	0.0000	0.0338	0.0000	0.1757	0.8077	0.8108	0.9290
Modal	7	0.025	0.0559	0.0000	0.0000	0.9855	0.9281	0.0000	0.0000	0.1440	0.0000	0.8077	0.9548	0.9290
Modal	8	0.021	0.0000	0.0534	0.0000	0.9855	0.9815	0.0000	0.1368	0.0000	0.0038	0.9444	0.9548	0.9329
Modal	9	0.019	0.0000	0.0037	0.0000	0.9855	0.9852	0.0000	0.0096	0.0000	0.0526	0.9540	0.9548	0.9855
Modal	10	0.017	0.0144	0.0000	0.0000	1.0000	0.9852	0.0000	0.0000	0.0451	0.0000	0.9540	0.9999	0.9855
Modal	11	0.014	0.0000	0.0139	0.0000	1.0000	0.9991	0.0000	0.0432	0.0000	0.0009	0.9972	0.9999	0.9864
Modal	12	0.013	0.0000	0.0008	0.0000	1.0000	0.9999	0.0000	0.0026	0.0000	0.0135	0.9998	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.534	0.7289	0.0000	0.0000	0.7289	0.0000	0.0000	0.0000	0.3171	0.0001	0.0000	0.3171	0.0001
Modal	2	0.464	0.0001	0.6263	0.0000	0.7290	0.6263	0.0000	0.2751	0.0000	0.1000	0.2751	0.3171	0.1000
Modal	3	0.412	0.0000	0.1015	0.0000	0.7290	0.7278	0.0000	0.0433	0.0000	0.6259	0.3184	0.3171	0.7259
Modal	4	0.143	0.1482	0.0000	0.0000	0.8772	0.7278	0.0000	0.0000	0.3825	0.0000	0.3184	0.6997	0.7260
Modal	5	0.123	0.0000	0.1332	0.0000	0.8772	0.8610	0.0000	0.3395	0.0000	0.0157	0.6579	0.6997	0.7416
Modal	6	0.109	0.0000	0.0146	0.0000	0.8772	0.8756	0.0000	0.0392	0.0000	0.1339	0.6971	0.6997	0.8755
Modal	7	0.065	0.0605	0.0000	0.0000	0.9378	0.8756	0.0000	0.0000	0.1245	0.0000	0.6971	0.8242	0.8755
Modal	8	0.056	0.0000	0.0562	0.0000	0.9378	0.9318	0.0000	0.1149	0.0000	0.0049	0.8120	0.8243	0.8804
Modal	9	0.05	0.0000	0.0048	0.0000	0.9378	0.9366	0.0000	0.0098	0.0000	0.0567	0.8218	0.8243	0.9372
Modal	10	0.039	0.0308	0.0000	0.0000	0.9686	0.9366	0.0000	0.0000	0.0854	0.0000	0.8218	0.9097	0.9372
Modal	11	0.033	0.0000	0.0290	0.0000	0.9686	0.9656	0.0000	0.0799	0.0000	0.0023	0.9017	0.9097	0.9395
Modal	12	0.029	0.0000	0.0023	0.0000	0.9686	0.9679	0.0000	0.0063	0.0000	0.0289	0.9080	0.9097	0.9684
Modal	13	0.027	0.0168	0.0000	0.0000	0.9854	0.9679	0.0000	0.0000	0.0464	0.0000	0.9080	0.9562	0.9684
Modal	14	0.023	0.0000	0.0160	0.0000	0.9854	0.9839	0.0000	0.0441	0.0000	0.0012	0.9521	0.9562	0.9696
Modal	15	0.021	0.0091	0.0000	0.0000	0.9945	0.9839	0.0000	0.0000	0.0274	0.0000	0.9521	0.9836	0.9696
Modal	16	0.02	0.0000	0.0012	0.0000	0.9946	0.9851	0.0000	0.0032	0.0001	0.0158	0.9553	0.9836	0.9854
Modal	17	0.017	0.0000	0.0088	0.0000	0.9946	0.9938	0.0000	0.0262	0.0000	0.0006	0.9815	0.9837	0.9860
Modal	18	0.017	0.0043	0.0000	0.0000	0.9988	0.9938	0.0000	0.0000	0.0127	0.0000	0.9815	0.9964	0.9860

Modal	19	0.016	0.0000	0.0006	0.0000	0.9988	0.9944	0.0000	0.0018	0.0000	0.0085	0.9833	0.9964	0.9946
Modal	20	0.015	0.0012	0.0000	0.0000	1.0000	0.9944	0.0000	0.0000	0.0035	0.0000	0.9833	0.9999	0.9946
Modal	21	0.014	0.0000	0.0041	0.0000	1.0000	0.9985	0.0000	0.0122	0.0000	0.0003	0.9955	0.9999	0.9948
Modal	22	0.013	0.0000	0.0003	0.0000	1.0000	0.9988	0.0000	0.0008	0.0000	0.0040	0.9963	0.9999	0.9988
Modal	23	0.013	0.0000	0.0011	0.0000	1.0000	0.9999	0.0000	0.0034	0.0000	0.0001	0.9997	0.9999	0.9989
Modal	24	0.012	0.0000	0.0001	0.0000	1.0000	1.0000	0.0000	0.0002	0.0000	0.0011	0.9999	0.9999	0.9999

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.893	0.7344	0.0001	0.0000	0.7344	0.0001	0.0000	0.0000	0.2935	0.0000	0.0000	0.2935	0.0000
Modal	2	0.78	0.0001	0.6191	0.0000	0.7345	0.6191	0.0000	0.2506	0.0000	0.1122	0.2506	0.2935	0.1122
Modal	3	0.684	0.0000	0.1142	0.0000	0.7345	0.7334	0.0000	0.0440	0.0000	0.6221	0.2947	0.2935	0.7343
Modal	4	0.253	0.1295	0.0000	0.0000	0.8641	0.7334	0.0000	0.0000	0.3824	0.0000	0.2947	0.6759	0.7343
Modal	5	0.219	0.0000	0.1142	0.0000	0.8641	0.8476	0.0000	0.3307	0.0000	0.0169	0.6254	0.6759	0.7512
Modal	6	0.194	0.0000	0.0154	0.0000	0.8641	0.8630	0.0000	0.0488	0.0000	0.1110	0.6742	0.6759	0.8622
Modal	7	0.121	0.0548	0.0000	0.0000	0.9189	0.8630	0.0000	0.0000	0.1014	0.0000	0.6742	0.7773	0.8622
Modal	8	0.104	0.0000	0.0497	0.0000	0.9189	0.9127	0.0000	0.0918	0.0000	0.0053	0.7660	0.7773	0.8675
Modal	9	0.093	0.0000	0.0051	0.0000	0.9190	0.9179	0.0000	0.0092	0.0000	0.0504	0.7752	0.7774	0.9179
Modal	10	0.071	0.0305	0.0000	0.0000	0.9494	0.9179	0.0000	0.0000	0.0820	0.0000	0.7752	0.8594	0.9179
Modal	11	0.061	0.0000	0.0282	0.0000	0.9494	0.9460	0.0000	0.0753	0.0000	0.0025	0.8505	0.8594	0.9205
Modal	12	0.054	0.0000	0.0025	0.0000	0.9494	0.9485	0.0000	0.0068	0.0000	0.0284	0.8573	0.8594	0.9489
Modal	13	0.048	0.0186	0.0000	0.0000	0.9680	0.9485	0.0000	0.0000	0.0477	0.0000	0.8573	0.9071	0.9489
Modal	14	0.041	0.0000	0.0174	0.0000	0.9680	0.9659	0.0000	0.0445	0.0000	0.0014	0.9018	0.9071	0.9503
Modal	15	0.036	0.0000	0.0014	0.0000	0.9680	0.9673	0.0000	0.0036	0.0000	0.0174	0.9054	0.9071	0.9678
Modal	16	0.035	0.0120	0.0000	0.0000	0.9800	0.9673	0.0000	0.0000	0.0345	0.0000	0.9054	0.9416	0.9678
Modal	17	0.03	0.0000	0.0113	0.0000	0.9800	0.9787	0.0000	0.0324	0.0000	0.0009	0.9378	0.9416	0.9687
Modal	18	0.028	0.0080	0.0000	0.0000	0.9880	0.9787	0.0000	0.0000	0.0226	0.0000	0.9378	0.9642	0.9687
Modal	19	0.027	0.0000	0.0009	0.0000	0.9880	0.9796	0.0000	0.0025	0.0000	0.0113	0.9404	0.9642	0.9800
Modal	20	0.023	0.0000	0.0076	0.0000	0.9880	0.9872	0.0000	0.0215	0.0000	0.0006	0.9619	0.9642	0.9805
Modal	21	0.023	0.0053	0.0000	0.0000	0.9933	0.9872	0.0000	0.0000	0.0159	0.0000	0.9619	0.9801	0.9805
Modal	22	0.021	0.0000	0.0006	0.0000	0.9933	0.9877	0.0000	0.0016	0.0000	0.0075	0.9634	0.9801	0.9880
Modal	23	0.019	0.0034	0.0000	0.0000	0.9968	0.9877	0.0000	0.0000	0.0101	0.0000	0.9634	0.9902	0.9880
Modal	24	0.019	0.0000	0.0051	0.0000	0.9968	0.9928	0.0000	0.0151	0.0000	0.0004	0.9786	0.9902	0.9884
Modal	25	0.017	0.0020	0.0000	0.0000	0.9988	0.9928	0.0000	0.0000	0.0061	0.0000	0.9786	0.9963	0.9884
Modal	26	0.017	0.0000	0.0004	0.0000	0.9988	0.9932	0.0000	0.0011	0.0000	0.0050	0.9796	0.9963	0.9934
Modal	27	0.016	0.0000	0.0033	0.0000	0.9988	0.9965	0.0000	0.0097	0.0000	0.0002	0.9894	0.9963	0.9936
Modal	28	0.016	0.0009	0.0000	0.0000	0.9997	0.9965	0.0000	0.0000	0.0029	0.0000	0.9894	0.9992	0.9936
Modal	29	0.015	0.0002	0.0000	0.0000	1.0000	0.9965	0.0000	0.0000	0.0008	0.0000	0.9894	1.0000	0.9936
Modal	30	0.015	0.0000	0.0002	0.0000	1.0000	0.9967	0.0000	0.0007	0.0000	0.0032	0.9900	1.0000	0.9968
Modal	31	0.014	0.0000	0.0019	0.0000	1.0000	0.9986	0.0000	0.0059	0.0000	0.0001	0.9959	1.0000	0.9969
Modal	32	0.013	0.0000	0.0009	0.0000	1.0000	0.9996	0.0000	0.0028	0.0000	0.0001	0.9986	1.0000	0.9970
Modal	33	0.013	0.0000	0.0001	0.0000	1.0000	0.9997	0.0000	0.0003	0.0000	0.0019	0.9990	1.0000	0.9988
Modal	34	0.013	0.0000	0.0002	0.0000	1.0000	0.9999	0.0000	0.0007	0.0000	0.0000	0.9997	1.0000	0.9989
Modal	35	0.012	0.0000	0.0001	0.0000	1.0000	1.0000	0.0000	0.0002	0.0000	0.0009	0.9999	1.0000	0.9997
Modal	36	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0002	0.9999	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story4	SISMO X	0.00078	5.355	2.80	0.001	ok
Story3	SISMO X	0.00082	5.355	2.80	0.002	ok
Story2	SISMO X	0.00071	5.355	2.80	0.001	ok
Story1	SISMO X	0.00036	5.355	2.80	0.001	ok
Story4	SISMO Y	0.00071	5.355	2.80	0.001	ok
Story3	SISMO Y	0.00074	5.355	2.80	0.001	ok
Story2	SISMO Y	0.00064	5.355	2.80	0.001	ok
Story1	SISMO Y	0.00032	5.355	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story8	SISMO X	0.00187	5.355	2.80	0.004	ok

Story7	SISMO X	0.00211	5.355	2.80	0.004	ok
Story6	SISMO X	0.00237	5.355	2.80	0.005	ok
Story5	SISMO X	0.00254	5.355	2.80	0.005	ok
Story4	SISMO X	0.00257	5.355	2.80	0.005	ok
Story3	SISMO X	0.00237	5.355	2.80	0.005	ok
Story2	SISMO X	0.00186	5.355	2.80	0.004	ok
Story1	SISMO X	0.00087	5.355	2.80	0.002	ok
Story8	SISMO Y	0.00180	5.355	2.80	0.003	ok
Story7	SISMO Y	0.00202	5.355	2.80	0.004	ok
Story6	SISMO Y	0.00225	5.355	2.80	0.004	ok
Story5	SISMO Y	0.00240	5.355	2.80	0.005	ok
Story4	SISMO Y	0.00241	5.355	2.80	0.005	ok
Story3	SISMO Y	0.00221	5.355	2.80	0.004	ok
Story2	SISMO Y	0.00171	5.355	2.80	0.003	ok
Story1	SISMO Y	0.00079	5.355	2.80	0.002	ok

Para 12 pisos:

Story	**Load Case/Combo**	**Max Drift**	**0.85 R**	**H**	**0.85R*D/H**	**< 0.007**
		m		**m**		
Story12	SISMO X	0.00192	5.355	2.80	0.004	ok
Story11	SISMO X	0.00216	5.355	2.80	0.004	ok
Story10	SISMO X	0.00244	5.355	2.80	0.005	ok
Story9	SISMO X	0.00273	5.355	2.80	0.005	ok
Story8	SISMO X	0.00300	5.355	2.80	0.006	ok
Story7	SISMO X	0.00320	5.355	2.80	0.006	ok
Story6	SISMO X	0.00332	5.355	2.80	0.006	ok
Story5	SISMO X	0.00332	5.355	2.80	0.006	ok
Story4	SISMO X	0.00317	5.355	2.80	0.006	ok
Story3	SISMO X	0.00279	5.355	2.80	0.005	ok
Story2	SISMO X	0.00211	5.355	2.80	0.004	ok
Story1	SISMO X	0.00096	5.355	2.80	0.002	ok
Story12	SISMO Y	0.00215	5.355	2.80	0.004	ok
Story11	SISMO Y	0.00240	5.355	2.80	0.005	ok
Story10	SISMO Y	0.00271	5.355	2.80	0.005	ok
Story9	SISMO Y	0.00302	5.355	2.80	0.006	ok
Story8	SISMO Y	0.00330	5.355	2.80	0.006	ok
Story7	SISMO Y	0.00352	5.355	2.80	0.007	ok
Story6	SISMO Y	0.00364	5.355	2.80	0.007	ok
Story5	SISMO Y	0.00364	5.355	2.80	0.007	ok
Story4	SISMO Y	0.00345	5.355	2.80	0.007	ok
Story3	SISMO Y	0.00302	5.355	2.80	0.006	ok
Story2	SISMO Y	0.00226	5.355	2.80	0.004	ok
Story1	SISMO Y	0.00101	5.355	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	
X-X	SISMO X	134.89	0.002611	51663.96	1.25
Y-Y	SISMO Y	127.63	0.001979	64492.82	

Para 8 pisos:

Eje	**Load Case**	**Fuerza Cortante**	**Desplazamiento ultimo nivel**	**Rigidez Lateral (k)**	**Ky/Kx**
		tonf	**m**	**tonf/m**	

X-X	SISMO X	270.32	0.016217	16669.11	1.20
Y-Y	SISMO Y	250.57	0.012492	20058.69	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	282.62	0.030180	9364.63	1.16
Y-Y	SISMO Y	296.51	0.027267	10874.42	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	11.05	11.05	9.23	9.47	9.72	9.46	-0.49	0.01
Story2	D2	11.05	11.05	9.23	9.47	9.80	9.42	-0.56	0.05
Story3	D3	11.05	11.05	9.23	9.47	9.83	9.42	-0.60	0.06
Story4	D4	6.96	6.96	9.22	9.50	9.85	9.42	-0.63	0.08

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	11.05	11.05	9.23	9.47	9.72	9.46	-0.49	0.01
Story2	D2	11.05	11.05	9.23	9.47	9.80	9.42	-0.56	0.05
Story3	D3	11.05	11.05	9.23	9.47	9.83	9.42	-0.60	0.06
Story4	D4	11.05	11.05	9.23	9.47	9.86	9.42	-0.63	0.06
Story5	D5	11.05	11.05	9.23	9.47	9.89	9.43	-0.66	0.05
Story6	D6	11.05	11.05	9.23	9.47	9.92	9.44	-0.69	0.04
Story7	D7	11.05	11.05	9.23	9.47	9.94	9.45	-0.71	0.03
Story8	D8	6.96	6.96	9.22	9.50	9.96	9.46	-0.75	0.04

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	11.05	11.05	9.23	9.47	9.72	9.46	-0.49	0.01
Story2	D2	11.05	11.05	9.23	9.47	9.80	9.42	-0.56	0.05
Story3	D3	11.05	11.05	9.23	9.47	9.83	9.41	-0.60	0.06
Story4	D4	11.05	11.05	9.23	9.47	9.86	9.42	-0.63	0.06
Story5	D5	11.05	11.05	9.23	9.47	9.89	9.43	-0.66	0.05
Story6	D6	11.05	11.05	9.23	9.47	9.92	9.44	-0.69	0.04
Story7	D7	11.05	11.05	9.23	9.47	9.95	9.45	-0.72	0.03
Story8	D8	11.05	11.05	9.23	9.47	9.98	9.46	-0.75	0.01
Story9	D9	11.05	11.05	9.23	9.47	10.01	9.48	-0.78	0.00
Story10	D10	11.05	11.05	9.23	9.47	10.05	9.49	-0.82	-0.01
Story11	D11	11.05	11.05	9.23	9.47	10.08	9.50	-0.85	-0.03
Story12	D12	6.96	6.96	9.22	9.50	10.11	9.51	-0.89	-0.01

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	48.18	35.69%	**DUAL**
	Muros	86.81	64.31%	
Y-Y	**Columnas**	40.39	31.63%	**DUAL**

	Muros	87.33	68.37%	

Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	95.87	35.44%	**DUAL**
	Muros	174.61	64.56%	
Y-Y	**Columnas**	78.62	31.36%	**DUAL**
	Muros	172.11	68.64%	

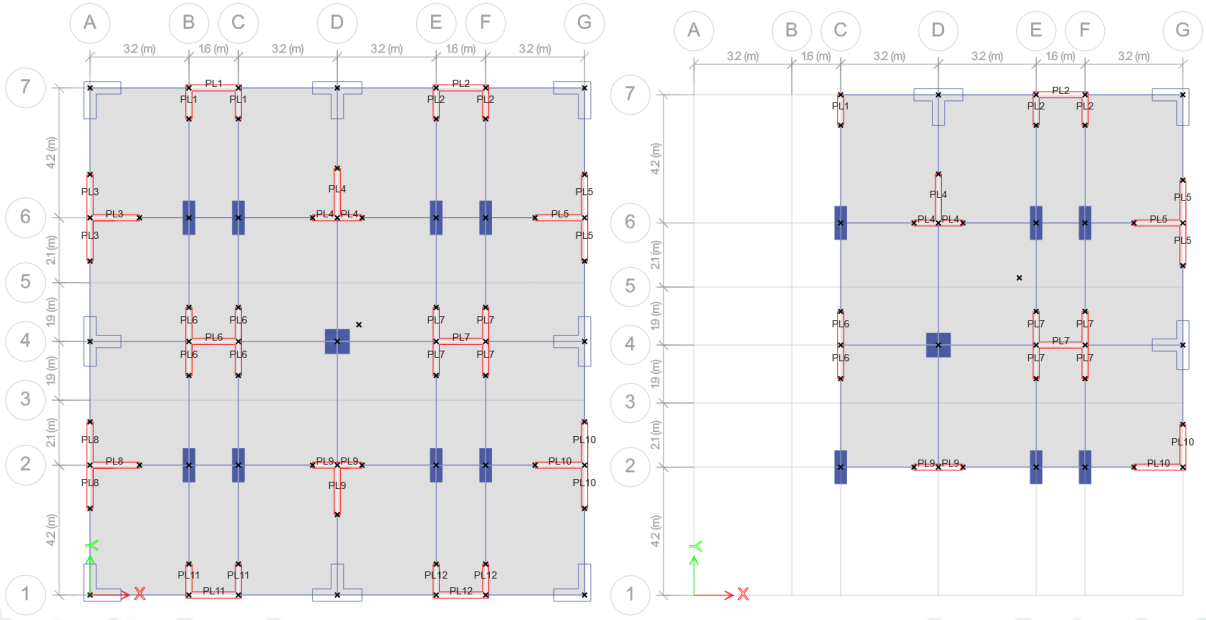
Para 12 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	100.23	35.44%	**DUAL**
	Muros	182.58	64.56%	
Y-Y	**Columnas**	92.88	31.31%	**DUAL**
	Muros	203.82	68.69%	

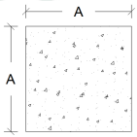
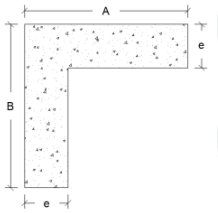
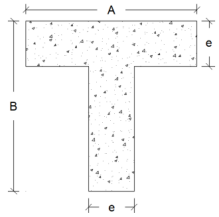
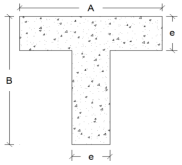
Verificación de Irregularidad

Eje	Ancho Mayor	Ancho Menor	% Ancho Menor/Ancho Mayor	Esquina Entrante
	m	**m**		**> 20%**
A - G	16	8	50%	ok
1 - 7	16.4	8.2	50%	ok

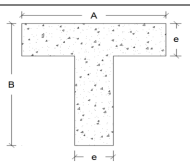
MODELO 11: IRREGULAR GEOMETRIA VERTICAL

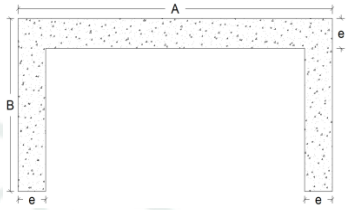


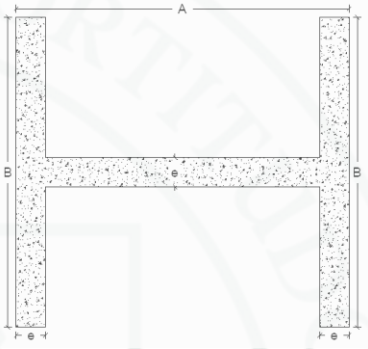
Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	1.10 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	
CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	2.80 m	
		B	1.60 m	
		e	0.20 m	

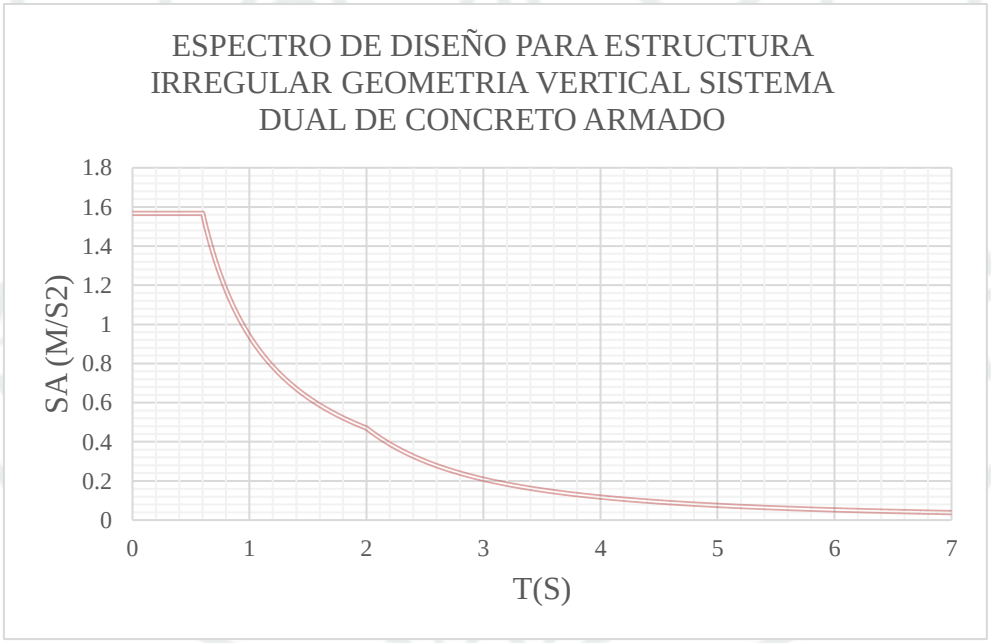
PL4, PL9	02	A	1.60 m
		B	1.60 m
		e	0.20 m
PL1, PL2, PL11, PL12	04	A	1.60 m
		B	1.00 m
		e	0.20 m
PL6, PL7	02	A	1.60 m
		B	2.20 m
		e	0.20 m







Espectro de Diseño (Norma E030)



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumU X	SumU Y	SumU Z	RX	RY	RZ	SumR X	SumR Y	SumR Z
Modal	1	0.194	0.4208	0.1624	0.0000	0.4208	0.1624	0.0000	0.1401	0.3433	0.0928	0.1401	0.3433	0.0928
Modal	2	0.184	0.1875	0.4499	0.0000	0.6083	0.6123	0.0000	0.3482	0.1354	0.0049	0.4883	0.4787	0.0977
Modal	3	0.13	0.0303	0.0152	0.0000	0.6385	0.6275	0.0000	0.0042	0.0069	0.4582	0.4925	0.4855	0.5559
Modal	4	0.064	0.1613	0.0754	0.0000	0.7998	0.7029	0.0000	0.0587	0.1669	0.0755	0.5513	0.6525	0.6314

Modal	5	0.06	0.0930	0.1360	0.0000	0.8928	0.8388	0.0000	0.1346	0.1205	0.0447	0.6858	0.7730	0.6762
Modal	6	0.049	0.0013	0.0491	0.0000	0.8941	0.8879	0.0000	0.0858	0.0033	0.1934	0.7717	0.7763	0.8695
Modal	7	0.027	0.0597	0.0011	0.0000	0.9537	0.8890	0.0000	0.0020	0.1128	0.0000	0.7736	0.8891	0.8695
Modal	8	0.024	0.0037	0.0573	0.0000	0.9574	0.9464	0.0000	0.1061	0.0078	0.0024	0.8797	0.8969	0.8719
Modal	9	0.02	0.0122	0.0135	0.0000	0.9695	0.9599	0.0000	0.0276	0.0292	0.0195	0.9073	0.9260	0.8914
Modal	10	0.02	0.0292	0.0000	0.0000	0.9987	0.9599	0.0000	0.0001	0.0708	0.0489	0.9074	0.9969	0.9403
Modal	11	0.018	0.0011	0.0355	0.0000	0.9998	0.9954	0.0000	0.0818	0.0026	0.0347	0.9892	0.9995	0.9750
Modal	12	0.015	0.0002	0.0045	0.0000	0.9999	0.9999	0.0000	0.0107	0.0004	0.0248	0.9999	0.9999	0.9999

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.488	0.5586	0.0927	0.0000	0.5586	0.0927	0.0000	0.0540	0.2861	0.0636	0.0540	0.2861	0.0636
Modal	2	0.472	0.1221	0.5720	0.0000	0.6807	0.6647	0.0000	0.2851	0.0532	0.0181	0.3391	0.3393	0.0817
Modal	3	0.371	0.0321	0.0483	0.0000	0.7128	0.7131	0.0000	0.0030	0.0015	0.6277	0.3421	0.3408	0.7094
Modal	4	0.143	0.1369	0.0003	0.0000	0.8497	0.7134	0.0000	0.0005	0.3196	0.0060	0.3426	0.6605	0.7154
Modal	5	0.139	0.0000	0.1336	0.0000	0.8497	0.8470	0.0000	0.3159	0.0000	0.0029	0.6585	0.6605	0.7183
Modal	6	0.112	0.0033	0.0002	0.0000	0.8530	0.8472	0.0000	0.0003	0.0085	0.1208	0.6588	0.6690	0.8391
Modal	7	0.075	0.0457	0.0184	0.0000	0.8987	0.8656	0.0000	0.0362	0.0878	0.0090	0.6950	0.7569	0.8481
Modal	8	0.071	0.0220	0.0413	0.0000	0.9207	0.9069	0.0000	0.0797	0.0422	0.0079	0.7747	0.7991	0.8560
Modal	9	0.06	0.0006	0.0107	0.0000	0.9213	0.9176	0.0000	0.0190	0.0011	0.0554	0.7937	0.8002	0.9114
Modal	10	0.042	0.0409	0.0004	0.0000	0.9623	0.9180	0.0000	0.0009	0.0985	0.0009	0.7946	0.8987	0.9123
Modal	11	0.039	0.0003	0.0404	0.0000	0.9626	0.9584	0.0000	0.0951	0.0008	0.0042	0.8896	0.8995	0.9165
Modal	12	0.034	0.0000	0.0011	0.0000	0.9626	0.9594	0.0000	0.0029	0.0000	0.0425	0.8926	0.8995	0.9590
Modal	13	0.028	0.0183	0.0001	0.0000	0.9809	0.9596	0.0000	0.0003	0.0470	0.0000	0.8929	0.9465	0.9591
Modal	14	0.025	0.0004	0.0188	0.0000	0.9813	0.9783	0.0000	0.0476	0.0011	0.0001	0.9405	0.9476	0.9592
Modal	15	0.023	0.0079	0.0012	0.0000	0.9891	0.9795	0.0000	0.0032	0.0223	0.0010	0.9437	0.9699	0.9601
Modal	16	0.022	0.0000	0.0007	0.0000	0.9892	0.9802	0.0000	0.0018	0.0000	0.0184	0.9455	0.9699	0.9785
Modal	17	0.021	0.0012	0.0065	0.0000	0.9903	0.9867	0.0000	0.0179	0.0033	0.0037	0.9635	0.9731	0.9822
Modal	18	0.019	0.0070	0.0008	0.0000	0.9974	0.9875	0.0000	0.0021	0.0193	0.0000	0.9656	0.9924	0.9822
Modal	19	0.018	0.0003	0.0042	0.0000	0.9976	0.9917	0.0000	0.0116	0.0008	0.0044	0.9772	0.9932	0.9866
Modal	20	0.016	0.0004	0.0047	0.0000	0.9980	0.9965	0.0000	0.0128	0.0012	0.0026	0.9900	0.9944	0.9893
Modal	21	0.016	0.0019	0.0007	0.0000	1.0000	0.9971	0.0000	0.0018	0.0056	0.0011	0.9918	0.9999	0.9903
Modal	22	0.015	0.0000	0.0006	0.0000	1.0000	0.9978	0.0000	0.0018	0.0000	0.0066	0.9936	0.9999	0.9969
Modal	23	0.014	0.0000	0.0022	0.0000	1.0000	1.0000	0.0000	0.0063	0.0000	0.0004	0.9999	0.9999	0.9973
Modal	24	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0026	0.9999	0.9999	1.0000

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.836	0.6861	0.0181	0.0000	0.6861	0.0181	0.0000	0.0091	0.2922	0.0248	0.0091	0.2922	0.0248
Modal	2	0.807	0.0261	0.6827	0.0000	0.7122	0.7008	0.0000	0.2864	0.0091	0.0243	0.2955	0.3012	0.0491
Modal	3	0.666	0.0163	0.0323	0.0000	0.7285	0.7331	0.0000	0.0022	0.0007	0.6814	0.2978	0.3019	0.7305
Modal	4	0.244	0.1237	0.0002	0.0000	0.8522	0.7333	0.0000	0.0005	0.3556	0.0049	0.2983	0.6575	0.7354
Modal	5	0.239	0.0007	0.1171	0.0000	0.8529	0.8503	0.0000	0.3574	0.0019	0.0044	0.6557	0.6594	0.7398
Modal	6	0.193	0.0049	0.0048	0.0000	0.8577	0.8551	0.0000	0.0129	0.0130	0.1150	0.6686	0.6724	0.8548
Modal	7	0.123	0.0508	0.0002	0.0000	0.9085	0.8553	0.0000	0.0003	0.0887	0.0014	0.6689	0.7610	0.8562
Modal	8	0.121	0.0000	0.0498	0.0000	0.9085	0.9051	0.0000	0.0861	0.0000	0.0002	0.7550	0.7611	0.8565
Modal	9	0.1	0.0004	0.0002	0.0000	0.9089	0.9053	0.0000	0.0003	0.0006	0.0460	0.7553	0.7617	0.9024
Modal	10	0.079	0.0252	0.0057	0.0000	0.9341	0.9110	0.0000	0.0132	0.0618	0.0019	0.7684	0.8236	0.9043
Modal	11	0.075	0.0066	0.0236	0.0000	0.9407	0.9346	0.0000	0.0566	0.0165	0.0030	0.8250	0.8401	0.9073
Modal	12	0.064	0.0003	0.0038	0.0000	0.9410	0.9384	0.0000	0.0103	0.0008	0.0275	0.8353	0.8409	0.9349
Modal	13	0.052	0.0218	0.0004	0.0000	0.9628	0.9387	0.0000	0.0009	0.0554	0.0007	0.8362	0.8962	0.9356
Modal	14	0.049	0.0004	0.0209	0.0000	0.9631	0.9596	0.0000	0.0525	0.0010	0.0025	0.8887	0.8972	0.9382
Modal	15	0.042	0.0001	0.0011	0.0000	0.9632	0.9607	0.0000	0.0026	0.0002	0.0217	0.8913	0.8974	0.9599
Modal	16	0.037	0.0144	0.0000	0.0000	0.9776	0.9607	0.0000	0.0001	0.0389	0.0001	0.8914	0.9363	0.9600
Modal	17	0.034	0.0000	0.0148	0.0000	0.9776	0.9755	0.0000	0.0395	0.0001	0.0005	0.9309	0.9364	0.9605
Modal	18	0.03	0.0001	0.0001	0.0000	0.9778	0.9756	0.0000	0.0002	0.0004	0.0152	0.9311	0.9367	0.9756
Modal	19	0.029	0.0085	0.0000	0.0000	0.9863	0.9756	0.0000	0.0001	0.0234	0.0003	0.9313	0.9602	0.9759
Modal	20	0.026	0.0001	0.0090	0.0000	0.9864	0.9846	0.0000	0.0245	0.0003	0.0000	0.9558	0.9605	0.9760
Modal	21	0.024	0.0042	0.0004	0.0000	0.9906	0.9849	0.0000	0.0010	0.0123	0.0003	0.9568	0.9728	0.9762
Modal	22	0.022	0.0000	0.0002	0.0000	0.9906	0.9852	0.0000	0.0006	0.0000	0.0088	0.9574	0.9728	0.9850
Modal	23	0.022	0.0018	0.0025	0.0000	0.9924	0.9877	0.0000	0.0072	0.0051	0.0007	0.9646	0.9779	0.9857
Modal	24	0.021	0.0026	0.0017	0.0000	0.9949	0.9894	0.0000	0.0049	0.0072	0.0002	0.9696	0.9851	0.9860
Modal	25	0.019	0.0004	0.0032	0.0000	0.9954	0.9926	0.0000	0.0091	0.0012	0.0010	0.9787	0.9863	0.9870
Modal	26	0.019	0.0027	0.0002	0.0000	0.9981	0.9928	0.0000	0.0006	0.0080	0.0002	0.9792	0.9943	0.9871
Modal	27	0.018	0.0000	0.0014	0.0000	0.9981	0.9942	0.0000	0.0040	0.0000	0.0042	0.9832	0.9943	0.9913
Modal	28	0.017	0.0011	0.0007	0.0000	0.9991	0.9949	0.0000	0.0019	0.0031	0.0009	0.9851	0.9974	0.9922
Modal	29	0.017	0.0005	0.0013	0.0000	0.9996	0.9962	0.0000	0.0038	0.0014	0.0012	0.9889	0.9987	0.9934

Modal	30	0.016	0.0000	0.0017	0.0000	0.9996	0.9979	0.0000	0.0049	0.0000	0.0014	0.9938	0.9988	0.9948
Modal	31	0.016	0.0004	0.0000	0.0000	1.0000	0.9979	0.0000	0.0000	0.0012	0.0001	0.9938	1.0000	0.9949
Modal	32	0.014	0.0000	0.0009	0.0000	1.0000	0.9988	0.0000	0.0027	0.0000	0.0016	0.9966	1.0000	0.9965
Modal	33	0.014	0.0000	0.0007	0.0000	1.0000	0.9995	0.0000	0.0021	0.0000	0.0014	0.9987	1.0000	0.9979
Modal	34	0.013	0.0000	0.0004	0.0000	1.0000	1.0000	0.0000	0.0013	0.0000	0.0000	0.9999	1.0000	0.9979
Modal	35	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0016	0.9999	1.0000	0.9995
Modal	36	0.012	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0004	0.9999	1.0000	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story4	SISMO X	0.0008	5.355	2.80	0.002	ok
Story3	SISMO X	0.0008	5.355	2.80	0.002	ok
Story2	SISMO X	0.0006	5.355	2.80	0.001	ok
Story1	SISMO X	0.0003	5.355	2.80	0.001	ok
Story4	SISMO Y	0.0007	5.355	2.80	0.001	ok
Story3	SISMO Y	0.0007	5.355	2.80	0.001	ok
Story2	SISMO Y	0.0006	5.355	2.80	0.001	ok
Story1	SISMO Y	0.0003	5.355	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story8	SISMO X	0.00200	5.355	2.80	0.004	ok
Story7	SISMO X	0.00224	5.355	2.80	0.004	ok
Story6	SISMO X	0.00239	5.355	2.80	0.005	ok
Story5	SISMO X	0.00253	5.355	2.80	0.005	ok
Story4	SISMO X	0.00256	5.355	2.80	0.005	ok
Story3	SISMO X	0.00236	5.355	2.80	0.005	ok
Story2	SISMO X	0.00185	5.355	2.80	0.004	ok
Story1	SISMO X	0.00087	5.355	2.80	0.002	ok
Story8	SISMO Y	0.00177	5.355	2.80	0.003	ok
Story7	SISMO Y	0.00200	5.355	2.80	0.004	ok
Story6	SISMO Y	0.00224	5.355	2.80	0.004	ok
Story5	SISMO Y	0.00241	5.355	2.80	0.005	ok
Story4	SISMO Y	0.00246	5.355	2.80	0.005	ok
Story3	SISMO Y	0.00229	5.355	2.80	0.004	ok
Story2	SISMO Y	0.00179	5.355	2.80	0.003	ok
Story1	SISMO Y	0.00081	5.355	2.80	0.002	ok

Para 12 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story12	SISMO X	0.00205	5.355	2.80	0.004	ok
Story11	SISMO X	0.00232	5.355	2.80	0.004	ok
Story10	SISMO X	0.00260	5.355	2.80	0.005	ok
Story9	SISMO X	0.00289	5.355	2.80	0.006	ok
Story8	SISMO X	0.00318	5.355	2.80	0.006	ok
Story7	SISMO X	0.00343	5.355	2.80	0.007	ok
Story6	SISMO X	0.00359	5.355	2.80	0.007	ok
Story5	SISMO X	0.00362	5.355	2.80	0.007	ok
Story4	SISMO X	0.00348	5.355	2.80	0.007	ok
Story3	SISMO X	0.00308	5.355	2.80	0.006	ok
Story2	SISMO X	0.00234	5.355	2.80	0.004	ok
Story1	SISMO X	0.00107	5.355	2.80	0.002	ok
Story12	SISMO Y	0.00182	5.355	2.80	0.003	ok

Story11	SISMO Y	0.00208	5.355	2.80	0.004	ok
Story10	SISMO Y	0.00241	5.355	2.80	0.005	ok
Story9	SISMO Y	0.00273	5.355	2.80	0.005	ok
Story8	SISMO Y	0.00305	5.355	2.80	0.006	ok
Story7	SISMO Y	0.00334	5.355	2.80	0.006	ok
Story6	SISMO Y	0.00353	5.355	2.80	0.007	ok
Story5	SISMO Y	0.00360	5.355	2.80	0.007	ok
Story4	SISMO Y	0.00348	5.355	2.80	0.007	ok
Story3	SISMO Y	0.00310	5.355	2.80	0.006	ok
Story2	SISMO Y	0.00235	5.355	2.80	0.004	ok
Story1	SISMO Y	0.00104	5.355	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	106.27	0.002140	49657.15	1.04
Y-Y	SISMO Y	105.58	0.002048	51551.17	

Para 8 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	279.89	0.014516	19281.50	1.04
Y-Y	SISMO Y	275.56	0.013689	20130.11	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	340.95	0.030154	11306.96	1.07
Y-Y	SISMO Y	347.60	0.028819	12061.41	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.87	13.87	8.00	8.20	8.10	8.25	-0.10	-0.05
Story2	D2	11.51	11.51	8.70	8.74	8.34	8.37	0.36	0.37
Story3	D3	7.46	7.46	10.79	10.46	9.52	9.06	1.27	1.39
Story4	D4	4.80	4.80	10.65	10.40	10.32	9.46	0.33	0.95

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.87	13.87	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.87	13.87	8.00	8.20	8.02	8.21	-0.02	-0.01
Story3	D3	13.87	13.87	8.00	8.20	8.04	8.22	-0.04	-0.02
Story4	D4	13.87	13.87	8.00	8.20	8.08	8.24	-0.08	-0.04
Story5	D5	13.87	13.87	8.00	8.20	8.15	8.28	-0.15	-0.08
Story6	D6	11.51	11.51	8.70	8.74	8.29	8.35	0.41	0.39
Story7	D7	7.46	7.46	10.79	10.46	8.62	8.52	2.17	1.94
Story8	D8	4.80	4.80	10.65	10.40	9.19	8.80	1.46	1.60

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	13.87	13.87	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	13.87	13.87	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.87	13.87	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	13.87	13.87	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	13.87	13.87	8.00	8.20	8.01	8.20	-0.01	0.00
Story6	D6	13.87	13.87	8.00	8.20	8.01	8.21	-0.01	-0.01
Story7	D7	13.87	13.87	8.00	8.20	8.02	8.22	-0.02	-0.02
Story8	D8	13.87	13.87	8.00	8.20	8.05	8.23	-0.05	-0.03
Story9	D9	13.87	13.87	8.00	8.20	8.09	8.25	-0.09	-0.05
Story10	D10	11.51	11.51	8.70	8.74	8.17	8.30	0.53	0.44
Story11	D11	7.46	7.46	10.79	10.46	8.38	8.40	2.41	2.06
Story12	D12	4.80	4.80	10.65	10.40	8.79	8.60	1.86	1.80

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	38.78	36.47%	**DUAL**
	Muros	67.55	63.53%	
Y-Y	**Columnas**	40.38	38.23%	**DUAL**
	Muros	65.23	61.77%	

Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	100.78	36.01%	**DUAL**
	Muros	179.09	63.99%	
Y-Y	**Columnas**	102.90	37.36%	**DUAL**
	Muros	172.50	62.64%	

Para 12 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	122.71	36.00%	**DUAL**
	Muros	218.17	64.00%	
Y-Y	**Columnas**	129.39	37.22%	**DUAL**
	Muros	218.22	62.78%	

Verificación de Irregularidad

Para 4 pisos:

Story	Ancho (X-X)	Piso i/ Piso i+1	Geometría Vertical	Ancho (Y-Y)	Piso i/ Piso i+1	Geometría Vertical
	m		> 1.30	m		> 1.30
Story4	11.2			12.2		
Story3	11.2	1.00	Regular	12.2	1.00	Regular
Story2	16	1.43	Irregular	16.4	1.34	Irregular
Story1	16	1.00	Regular	16.4	1.00	Regular

Para 8 pisos:

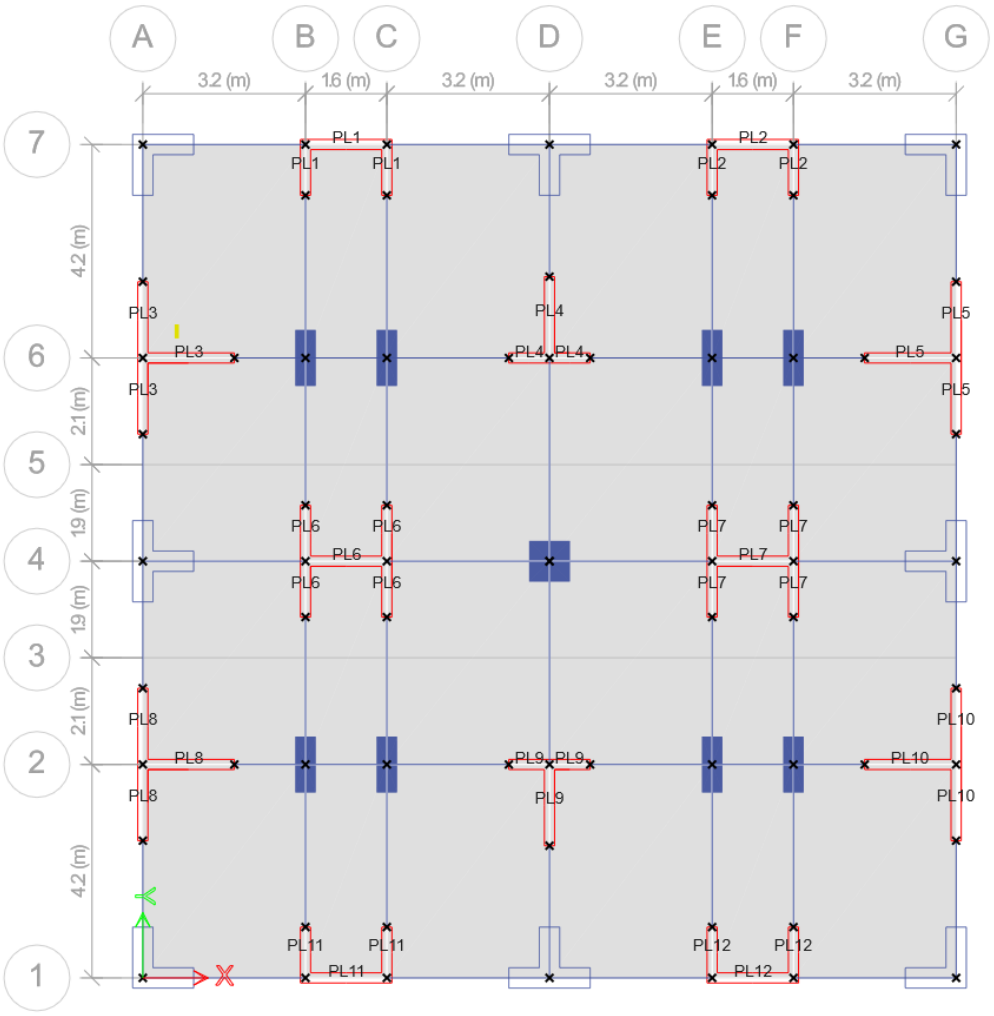
Story	Ancho (X-X)	Piso i/ Piso i+1	Geometría Vertical	Ancho (Y-Y)	Piso i/ Piso i+1	Geometría Vertical
	m		> 1.30	m		> 1.30
Story8	11.2			12.2		

Story7	11.2	1.00	Regular	12.2	1.00	Regular
Story6	16	1.43	Irregular	16.4	1.34	Irregular
Story5	16	1.00	Regular	16.4	1.00	Regular
Story4	16	1.00	Regular	16.4	1.00	Regular
Story3	16	1.00	Regular	16.4	1.00	Regular
Story2	16	1.00	Regular	16.4	1.00	Regular
Story1	16	1.00	Regular	16.4	1.00	Regular

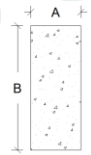
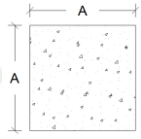
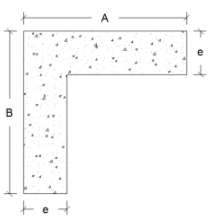
Para 12 pisos:

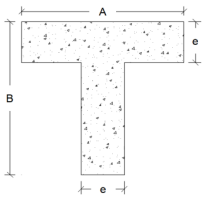
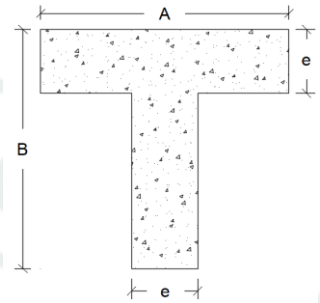
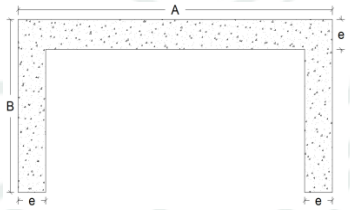
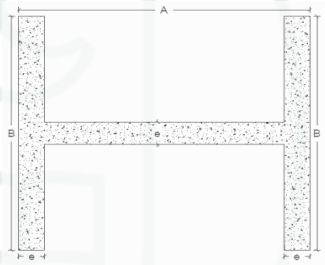
Story	**Ancho (X-X)**	**Piso i/ Piso i+1**	Geometría **Vertical**	**Ancho (Y-Y)**	**Piso i/ Piso i+1**	Geometría **Vertical**
	m		**> 1.30**	**m**		**> 1.30**
Story12	11.2			12.2		
Story11	11.2	1.00	Regular	12.2	1.00	Regular
Story10	16	1.43	Irregular	16.4	1.34	Irregular
Story9	16	1.00	Regular	16.4	1.00	Regular
Story8	16	1.00	Regular	16.4	1.00	Regular
Story7	16	1.00	Regular	16.4	1.00	Regular
Story6	16	1.00	Regular	16.4	1.00	Regular
Story5	16	1.00	Regular	16.4	1.00	Regular
Story4	16	1.00	Regular	16.4	1.00	Regular
Story3	16	1.00	Regular	16.4	1.00	Regular
Story2	16	1.00	Regular	16.4	1.00	Regular
Story1	16	1.00	Regular	16.4	1.00	Regular

MODELO 12: IRREGULAR MASA O PESO

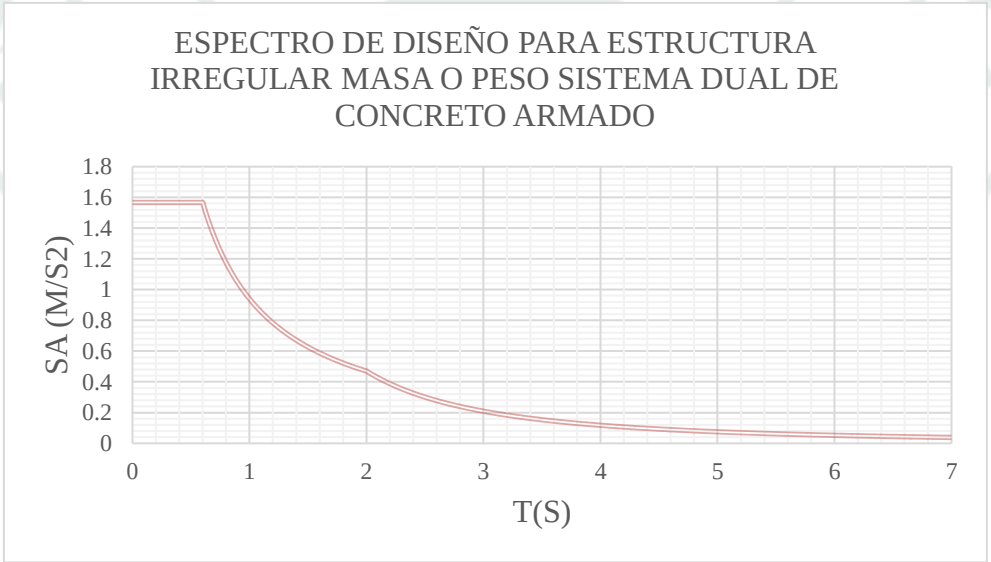


Secciones definidas

Elemento	Cantidad	Dimensión	Medidas	Imagen
C1	08	A	0.40 m	
		B	1.10 m	
C2	01	A	0.80 m	
CL	04	A	1.20 m	
		B	1.20 m	
		e	0.40 m	

CT	04	A	1.60 m	
		B	1.20 m	
		e	0.40 m	
PL3, PL5, PL8, PL10	04	A	2.80 m	
		B	1.60 m	
		e	0.20 m	
PL4, PL9	02	A	1.60 m	
		B	1.60 m	
		e	0.20 m	
PL1, PL2, PL11, PL12	04	A	1.60 m	
		B	1.00 m	
		e	0.20 m	
PL6, PL7	02	A	1.60 m	
		B	2.20 m	
		e	0.20 m	

<u>Espectro de Diseño (Norma E030)</u>



Modos de Vibración

Para 4 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.202	0.7209	0.0000	0.0000	0.7209	0.0000	0.0000	0.0000	0.3687	0.0000	0.0000	0.3687	0.0000
Modal	2	0.2	0.0000	0.7104	0.0000	0.7209	0.7104	0.0000	0.3798	0.0000	0.0000	0.3798	0.3687	0.0000
Modal	3	0.172	0.0000	0.0000	0.0000	0.7209	0.7104	0.0000	0.0000	0.0000	0.7136	0.3798	0.3687	0.7136
Modal	4	0.056	0.2090	0.0000	0.0000	0.9299	0.7104	0.0000	0.0000	0.4636	0.0000	0.3798	0.8323	0.7136
Modal	5	0.052	0.0000	0.2117	0.0000	0.9299	0.9221	0.0000	0.4382	0.0000	0.0000	0.8181	0.8323	0.7136
Modal	6	0.045	0.0000	0.0000	0.0000	0.9299	0.9221	0.0000	0.0000	0.0000	0.2118	0.8181	0.8323	0.9255
Modal	7	0.026	0.0624	0.0000	0.0000	0.9922	0.9221	0.0000	0.0000	0.1449	0.0000	0.8181	0.9772	0.9255
Modal	8	0.023	0.0000	0.0683	0.0000	0.9922	0.9905	0.0000	0.1551	0.0000	0.0000	0.9732	0.9772	0.9255
Modal	9	0.02	0.0000	0.0000	0.0000	0.9922	0.9905	0.0000	0.0000	0.0000	0.0650	0.9732	0.9772	0.9904
Modal	10	0.018	0.0077	0.0000	0.0000	0.9999	0.9905	0.0000	0.0000	0.0226	0.0000	0.9732	0.9998	0.9904
Modal	11	0.016	0.0000	0.0095	0.0000	0.9999	0.9999	0.0000	0.0266	0.0000	0.0000	0.9998	0.9998	0.9904
Modal	12	0.014	0.0000	0.0000	0.0000	0.9999	0.9999	0.0000	0.0000	0.0000	0.0094	0.9998	0.9998	0.9998

Para 8 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.542	0.7257	0.0000	0.0000	0.7257	0.0000	0.0000	0.0000	0.3101	0.0000	0.0000	0.3101	0.0000
Modal	2	0.532	0.0000	0.7263	0.0000	0.7257	0.7263	0.0000	0.3093	0.0000	0.0000	0.3093	0.3101	0.0000
Modal	3	0.459	0.0000	0.0000	0.0000	0.7257	0.7263	0.0000	0.0000	0.0000	0.7232	0.3093	0.3101	0.7232
Modal	4	0.149	0.1491	0.0000	0.0000	0.8747	0.7263	0.0000	0.0000	0.3940	0.0000	0.3093	0.7041	0.7232
Modal	5	0.146	0.0000	0.1427	0.0000	0.8747	0.8690	0.0000	0.3863	0.0000	0.0000	0.6956	0.7041	0.7232
Modal	6	0.125	0.0000	0.0000	0.0000	0.8747	0.8690	0.0000	0.0000	0.0000	0.1471	0.6956	0.7041	0.8702
Modal	7	0.071	0.0620	0.0000	0.0000	0.9367	0.8690	0.0000	0.0000	0.1206	0.0000	0.6956	0.8247	0.8702
Modal	8	0.068	0.0000	0.0627	0.0000	0.9367	0.9317	0.0000	0.1185	0.0000	0.0000	0.8141	0.8247	0.8702
Modal	9	0.057	0.0000	0.0000	0.0000	0.9367	0.9317	0.0000	0.0000	0.0000	0.0634	0.8141	0.8247	0.9337
Modal	10	0.042	0.0326	0.0000	0.0000	0.9693	0.9317	0.0000	0.0000	0.0892	0.0000	0.8141	0.9139	0.9337
Modal	11	0.039	0.0000	0.0343	0.0000	0.9693	0.9660	0.0000	0.0917	0.0000	0.0000	0.9058	0.9139	0.9337
Modal	12	0.034	0.0000	0.0000	0.0000	0.9693	0.9660	0.0000	0.0000	0.0000	0.0337	0.9058	0.9139	0.9674
Modal	13	0.029	0.0177	0.0000	0.0000	0.9870	0.9660	0.0000	0.0000	0.0478	0.0000	0.9058	0.9617	0.9674
Modal	14	0.026	0.0000	0.0193	0.0000	0.9870	0.9853	0.0000	0.0513	0.0000	0.0000	0.9572	0.9617	0.9674
Modal	15	0.023	0.0000	0.0000	0.0000	0.9870	0.9853	0.0000	0.0000	0.0000	0.0186	0.9572	0.9617	0.9859
Modal	16	0.022	0.0090	0.0000	0.0000	0.9960	0.9853	0.0000	0.0000	0.0268	0.0000	0.9572	0.9885	0.9859
Modal	17	0.02	0.0000	0.0101	0.0000	0.9960	0.9954	0.0000	0.0294	0.0000	0.0000	0.9866	0.9885	0.9859
Modal	18	0.019	0.0035	0.0000	0.0000	0.9995	0.9954	0.0000	0.0000	0.0100	0.0000	0.9866	0.9985	0.9859
Modal	19	0.017	0.0004	0.0000	0.0000	1.0000	0.9954	0.0000	0.0000	0.0014	0.0000	0.9866	0.9999	0.9859
Modal	20	0.017	0.0000	0.0000	0.0000	1.0000	0.9954	0.0000	0.0000	0.0000	0.0096	0.9866	0.9999	0.9955
Modal	21	0.017	0.0000	0.0040	0.0000	1.0000	0.9994	0.0000	0.0115	0.0000	0.0000	0.9980	0.9999	0.9955
Modal	22	0.015	0.0000	0.0006	0.0000	1.0000	1.0000	0.0000	0.0018	0.0000	0.0000	0.9999	0.9999	0.9955
Modal	23	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0038	0.9999	0.9999	0.9993
Modal	24	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0006	0.9999	0.9999	0.9999

Para 12 pisos:

Case	Mode	Period sec	UX	UY	UZ	SumUX	SumUY	SumUZ	RX	RY	RZ	SumRX	SumRY	SumRZ
Modal	1	0.94	0.7327	0.0000	0.0000	0.7327	0.0000	0.0000	0.0000	0.2881	0.0000	0.0000	0.2881	0.0000
Modal	2	0.914	0.0000	0.7378	0.0000	0.7327	0.7378	0.0000	0.2823	0.0000	0.0000	0.2823	0.2881	0.0000
Modal	3	0.783	0.0000	0.0000	0.0000	0.7327	0.7378	0.0000	0.0000	0.0000	0.7365	0.2823	0.2881	0.7365
Modal	4	0.267	0.1309	0.0000	0.0000	0.8636	0.7378	0.0000	0.0000	0.3911	0.0000	0.2823	0.6792	0.7365
Modal	5	0.262	0.0000	0.1232	0.0000	0.8636	0.8609	0.0000	0.3944	0.0000	0.0000	0.6767	0.6792	0.7365
Modal	6	0.223	0.0000	0.0000	0.0000	0.8636	0.8609	0.0000	0.0000	0.0000	0.1237	0.6767	0.6792	0.8602
Modal	7	0.13	0.0546	0.0000	0.0000	0.9183	0.8609	0.0000	0.0000	0.0968	0.0000	0.6767	0.7760	0.8602
Modal	8	0.127	0.0000	0.0536	0.0000	0.9183	0.9145	0.0000	0.0910	0.0000	0.0000	0.7677	0.7760	0.8602
Modal	9	0.108	0.0000	0.0000	0.0000	0.9183	0.9145	0.0000	0.0000	0.0000	0.0552	0.7677	0.7760	0.9154
Modal	10	0.078	0.0308	0.0000	0.0000	0.9490	0.9145	0.0000	0.0000	0.0836	0.0000	0.7677	0.8595	0.9154
Modal	11	0.075	0.0000	0.0309	0.0000	0.9490	0.9454	0.0000	0.0836	0.0000	0.0000	0.8513	0.8595	0.9154
Modal	12	0.064	0.0000	0.0000	0.0000	0.9490	0.9454	0.0000	0.0000	0.0000	0.0313	0.8513	0.8595	0.9467
Modal	13	0.053	0.0191	0.0000	0.0000	0.9681	0.9454	0.0000	0.0000	0.0482	0.0000	0.8513	0.9077	0.9467
Modal	14	0.05	0.0000	0.0197	0.0000	0.9681	0.9652	0.0000	0.0491	0.0000	0.0000	0.9004	0.9077	0.9467
Modal	15	0.042	0.0000	0.0000	0.0000	0.9681	0.9652	0.0000	0.0000	0.0000	0.0197	0.9004	0.9077	0.9663
Modal	16	0.039	0.0124	0.0000	0.0000	0.9805	0.9652	0.0000	0.0000	0.0356	0.0000	0.9004	0.9434	0.9663
Modal	17	0.036	0.0000	0.0132	0.0000	0.9805	0.9784	0.0000	0.0374	0.0000	0.0000	0.9377	0.9434	0.9663
Modal	18	0.031	0.0000	0.0000	0.0000	0.9805	0.9784	0.0000	0.0000	0.0000	0.0129	0.9377	0.9434	0.9793

Modal	19	0.031	0.0082	0.0000	0.0000	0.9887	0.9784	0.0000	0.0000	0.0232	0.0000	0.9377	0.9665	0.9793
Modal	20	0.028	0.0000	0.0090	0.0000	0.9887	0.9873	0.0000	0.0249	0.0000	0.0000	0.9627	0.9665	0.9793
Modal	21	0.025	0.0054	0.0000	0.0000	0.9941	0.9873	0.0000	0.0000	0.0160	0.0000	0.9627	0.9825	0.9793
Modal	22	0.024	0.0000	0.0000	0.0000	0.9941	0.9873	0.0000	0.0000	0.0000	0.0086	0.9627	0.9825	0.9879
Modal	23	0.022	0.0000	0.0060	0.0000	0.9941	0.9933	0.0000	0.0175	0.0000	0.0000	0.9802	0.9825	0.9879
Modal	24	0.022	0.0033	0.0000	0.0000	0.9974	0.9933	0.0000	0.0000	0.0097	0.0000	0.9802	0.9922	0.9879
Modal	25	0.02	0.0000	0.0000	0.0000	0.9974	0.9933	0.0000	0.0000	0.0000	0.0057	0.9802	0.9922	0.9936
Modal	26	0.019	0.0018	0.0000	0.0000	0.9992	0.9933	0.0000	0.0000	0.0054	0.0000	0.9802	0.9976	0.9936
Modal	27	0.019	0.0000	0.0037	0.0000	0.9992	0.9970	0.0000	0.0109	0.0000	0.0000	0.9911	0.9976	0.9936
Modal	28	0.018	0.0007	0.0000	0.0000	0.9999	0.9970	0.0000	0.0000	0.0020	0.0000	0.9911	0.9997	0.9936
Modal	29	0.017	0.0001	0.0000	0.0000	1.0000	0.9970	0.0000	0.0000	0.0003	0.0000	0.9911	0.9999	0.9936
Modal	30	0.017	0.0000	0.0020	0.0000	1.0000	0.9990	0.0000	0.0061	0.0000	0.0000	0.9972	0.9999	0.9936
Modal	31	0.017	0.0000	0.0000	0.0000	1.0000	0.9990	0.0000	0.0000	0.0000	0.0035	0.9972	0.9999	0.9971
Modal	32	0.016	0.0000	0.0008	0.0000	1.0000	0.9998	0.0000	0.0024	0.0000	0.0000	0.9995	0.9999	0.9971
Modal	33	0.015	0.0000	0.0001	0.0000	1.0000	1.0000	0.0000	0.0004	0.0000	0.0000	0.9999	0.9999	0.9971
Modal	34	0.015	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0019	0.9999	0.9999	0.9991
Modal	35	0.014	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0008	0.9999	0.9999	0.9998
Modal	36	0.013	0.0000	0.0000	0.0000	1.0000	1.0000	0.0000	0.0000	0.0000	0.0001	0.9999	0.9999	1.0000

Verificación de Distorsiones

Para 4 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story4	SISMO X	0.00250	5.355	2.80	0.005	ok
Story3	SISMO X	0.00179	5.355	2.80	0.003	ok
Story2	SISMO X	0.00104	5.355	2.80	0.002	ok
Story1	SISMO X	0.00036	5.355	2.80	0.001	ok
Story4	SISMO Y	0.00243	5.355	2.80	0.005	ok
Story3	SISMO Y	0.00172	5.355	2.80	0.003	ok
Story2	SISMO Y	0.00099	5.355	2.80	0.002	ok
Story1	SISMO Y	0.00033	5.355	2.80	0.001	ok

Para 8 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story8	SISMO X	0.00191	5.355	2.80	0.004	ok
Story7	SISMO X	0.00217	5.355	2.80	0.004	ok
Story6	SISMO X	0.00249	5.355	2.80	0.005	ok
Story5	SISMO X	0.00273	5.355	2.80	0.005	ok
Story4	SISMO X	0.00281	5.355	2.80	0.005	ok
Story3	SISMO X	0.00263	5.355	2.80	0.005	ok
Story2	SISMO X	0.00208	5.355	2.80	0.004	ok
Story1	SISMO X	0.00099	5.355	2.80	0.002	ok
Story8	SISMO Y	0.00177	5.355	2.80	0.003	ok
Story7	SISMO Y	0.00204	5.355	2.80	0.004	ok
Story6	SISMO Y	0.00236	5.355	2.80	0.005	ok
Story5	SISMO Y	0.00263	5.355	2.80	0.005	ok
Story4	SISMO Y	0.00273	5.355	2.80	0.005	ok
Story3	SISMO Y	0.00257	5.355	2.80	0.005	ok
Story2	SISMO Y	0.00202	5.355	2.80	0.004	ok
Story1	SISMO Y	0.00092	5.355	2.80	0.002	ok

Para 12 pisos:

Story	Load Case/Combo	Max Drift m	0.85 R	H m	0.85R*D/H	< 0.007
Story12	SISMO X	0.00193	5.355	2.80	0.004	ok
Story11	SISMO X	0.00218	5.355	2.80	0.004	ok
Story10	SISMO X	0.00252	5.355	2.80	0.005	ok
Story9	SISMO X	0.00287	5.355	2.80	0.005	ok

Story8	SISMO X	0.00319	5.355	2.80	0.006	ok
Story7	SISMO X	0.00345	5.355	2.80	0.007	ok
Story6	SISMO X	0.00362	5.355	2.80	0.007	ok
Story5	SISMO X	0.00365	5.355	2.80	0.007	ok
Story4	SISMO X	0.00350	5.355	2.80	0.007	ok
Story3	SISMO X	0.00311	5.355	2.80	0.006	ok
Story2	SISMO X	0.00237	5.355	2.80	0.005	ok
Story1	SISMO X	0.00109	5.355	2.80	0.002	ok
Story12	SISMO Y	0.00169	5.355	2.80	0.003	ok
Story11	SISMO Y	0.00194	5.355	2.80	0.004	ok
Story10	SISMO Y	0.00229	5.355	2.80	0.004	ok
Story9	SISMO Y	0.00267	5.355	2.80	0.005	ok
Story8	SISMO Y	0.00303	5.355	2.80	0.006	ok
Story7	SISMO Y	0.00333	5.355	2.80	0.006	ok
Story6	SISMO Y	0.00353	5.355	2.80	0.007	ok
Story5	SISMO Y	0.00361	5.355	2.80	0.007	ok
Story4	SISMO Y	0.00349	5.355	2.80	0.007	ok
Story3	SISMO Y	0.00311	5.355	2.80	0.006	ok
Story2	SISMO Y	0.00236	5.355	2.80	0.005	ok
Story1	SISMO Y	0.00105	5.355	2.80	0.002	ok

Relación de Rigideces Laterales (Ky/Kx)

Para 4 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	181.44	0.002451	74028.68	1.01
Y-Y	SISMO Y	179.34	0.002387	75132.30	

Para 8 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	405.56	0.017441	23253.19	1.04
Y-Y	SISMO Y	405.29	0.016684	24291.94	

Para 12 pisos:

Eje	Load Case	Fuerza Cortante	Desplazamiento ultimo nivel	Rigidez Lateral (k)	Ky/Kx
		tonf	m	tonf/m	
X-X	SISMO X	417.87	0.032533	12844.47	1.07
Y-Y	SISMO Y	429.05	0.031180	13760.36	

Excentricidades

Para 4 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	13.77	13.77	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	8.72	8.72	8.00	8.20	8.00	8.20	0.00	0.00

Para 8 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	13.77	13.77	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	8.72	8.72	8.00	8.20	8.00	8.20	0.00	0.00

Para 12 pisos:

Story	Diaphragm	Mass X	Mass Y	XCM	YCM	XCR	YCR	Exx	Eyy
		tonf-s²/m	tonf-s²/m	m	m	m	m	m	m
Story1	D1	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story2	D2	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story3	D3	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story4	D4	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story5	D5	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story6	D6	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story7	D7	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story8	D8	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story9	D9	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story10	D10	14.11	14.11	8.00	8.20	8.00	8.20	0.00	0.00
Story11	D11	13.77	13.77	8.00	8.20	8.00	8.20	0.00	0.00
Story12	D12	8.72	8.72	8.00	8.20	8.00	8.20	0.00	0.00

Verificación de sistema dual

Para 4 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	63.18	34.81%	**DUAL**
	Muros	118.30	65.19%	
Y-Y	**Columnas**	65.51	36.52%	**DUAL**
	Muros	113.86	63.48%	

Para 8 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	139.75	34.46%	**DUAL**
	Muros	265.81	65.54%	
Y-Y	**Columnas**	145.71	35.95%	**DUAL**
	Muros	259.58	64.05%	

Para 12 pisos:

Eje	Elementos	Cortante	% Cortante	Sistema
X-X	**Columnas**	144.14	34.49%	**DUAL**
	Muros	273.74	65.51%	
Y-Y	**Columnas**	153.81	35.85%	**DUAL**
	Muros	275.25	64.15%	

Verificación de Irregularidad

Para 4 pisos:

Story	Output Case	P acum	Pi	Pi/Pi+1	Masa o Peso
		tonf	tonf		> 1.50
Story4	PESO SISMICO	311.01	311.01		
Story3	PESO SISMICO	628.57	317.57	1.02	Regular
Story2	PESO SISMICO	1103.58	475.01	1.50	Irregular
Story1	PESO SISMICO	1578.58	475.01	1.00	Regular

Para 8 pisos:

Story	Output Case	P acum	Pi	Pi/Pi+1	Masa o Peso
		tonf	tonf		> 1.50
Story8	PESO SISMICO	311.01	311.01		
Story7	PESO SISMICO	628.57	317.57	1.02	Regular
Story6	PESO SISMICO	1103.58	475.01	1.50	Irregular
Story5	PESO SISMICO	1578.58	475.01	1.00	Regular
Story4	PESO SISMICO	2053.59	475.01	1.00	Regular
Story3	PESO SISMICO	2528.60	475.01	1.00	Regular
Story2	PESO SISMICO	3003.60	475.01	1.00	Regular
Story1	PESO SISMICO	3478.61	475.01	1.00	Regular

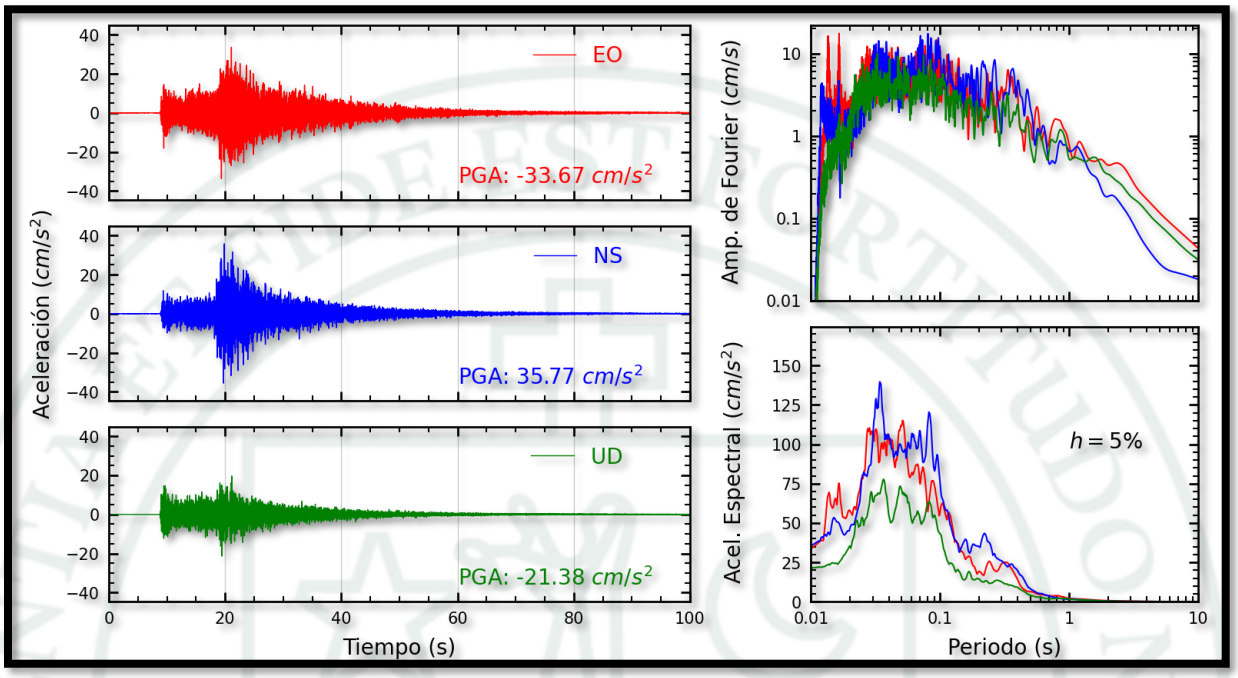
Para 12 pisos:

Story	Output Case	P acum	Pi	Pi/Pi+1	Masa o Peso
		tonf	tonf		> 1.50
Story12	PESO SISMICO	311.01	311.01		
Story11	PESO SISMICO	628.57	317.57	1.02	Regular
Story10	PESO SISMICO	1103.58	475.01	1.50	Irregular
Story9	PESO SISMICO	1578.58	475.01	1.00	Regular
Story8	PESO SISMICO	2053.59	475.01	1.00	Regular
Story7	PESO SISMICO	2528.60	475.01	1.00	Regular
Story6	PESO SISMICO	3003.60	475.01	1.00	Regular
Story5	PESO SISMICO	3478.61	475.01	1.00	Regular
Story4	PESO SISMICO	3953.61	475.01	1.00	Regular
Story3	PESO SISMICO	4428.62	475.01	1.00	Regular
Story2	PESO SISMICO	4903.63	475.01	1.00	Regular
Story1	PESO SISMICO	5378.63	475.01	1.00	Regular

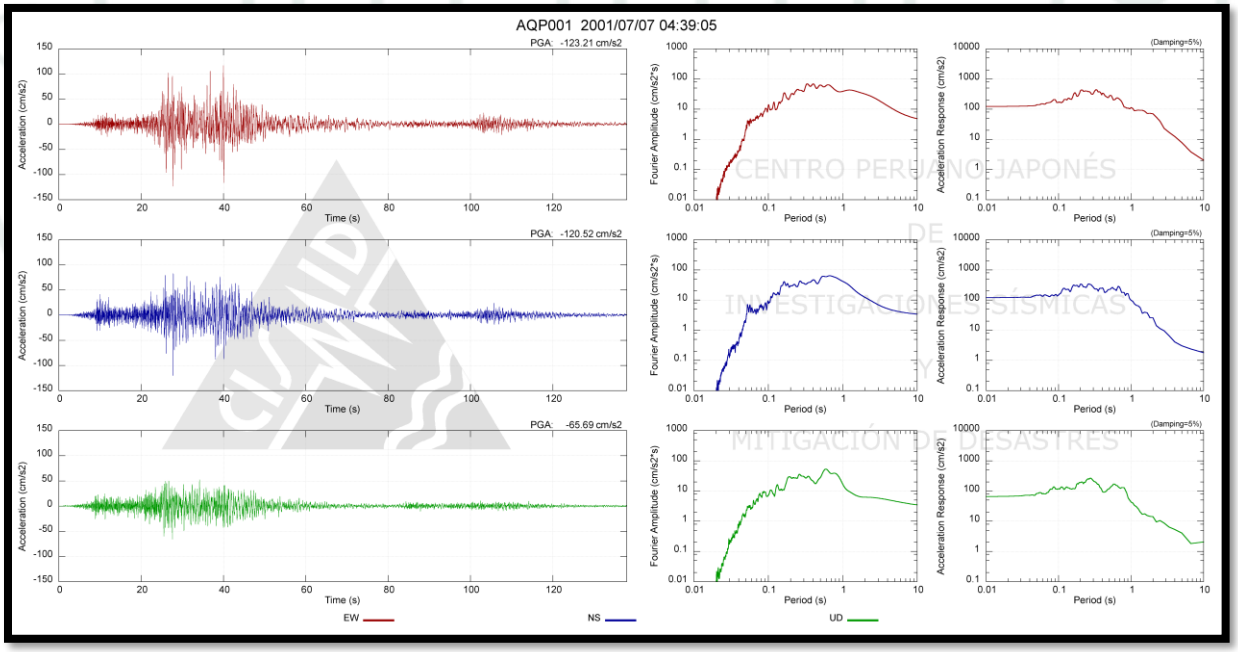
ANEXO B: REGISTROS ACELEROGRÁFICOS (SISMOS)

Registros acelerográficos seleccionados

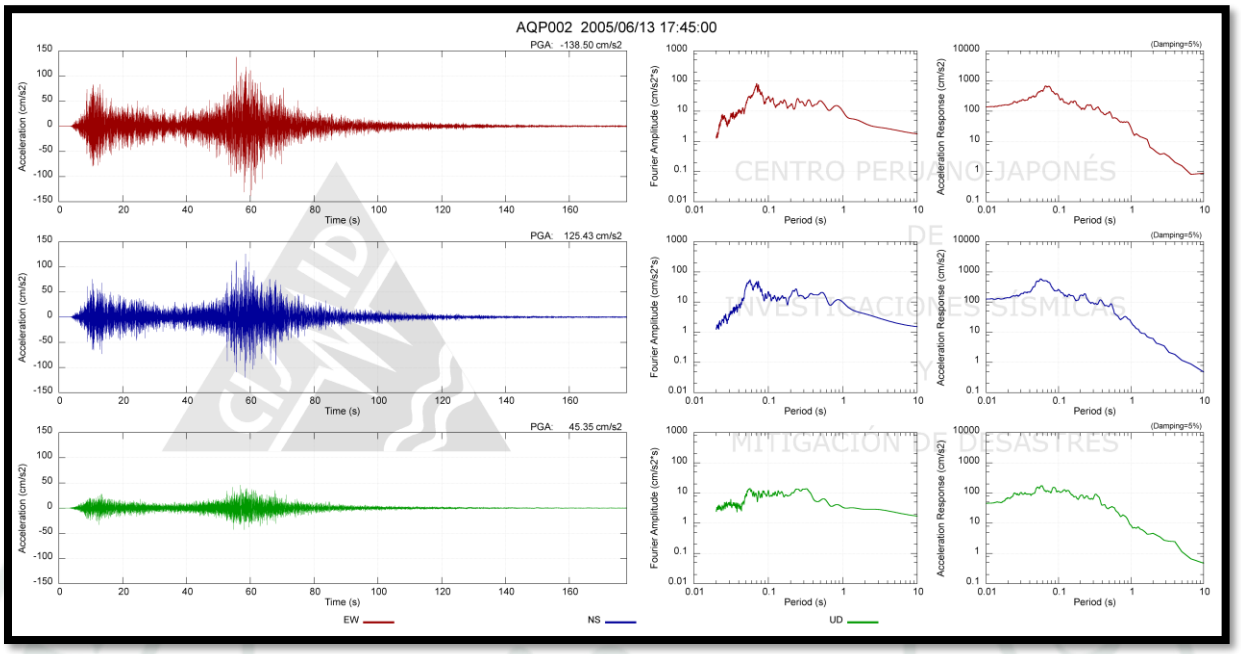
Sismo 1



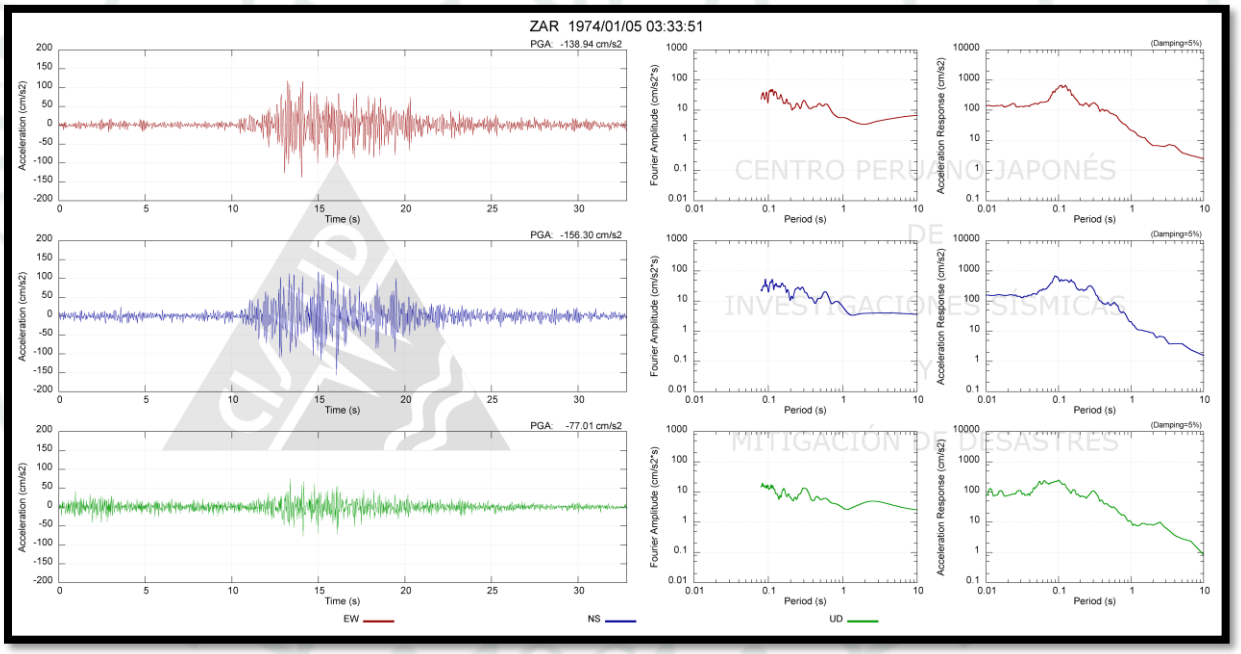
Sismo 2



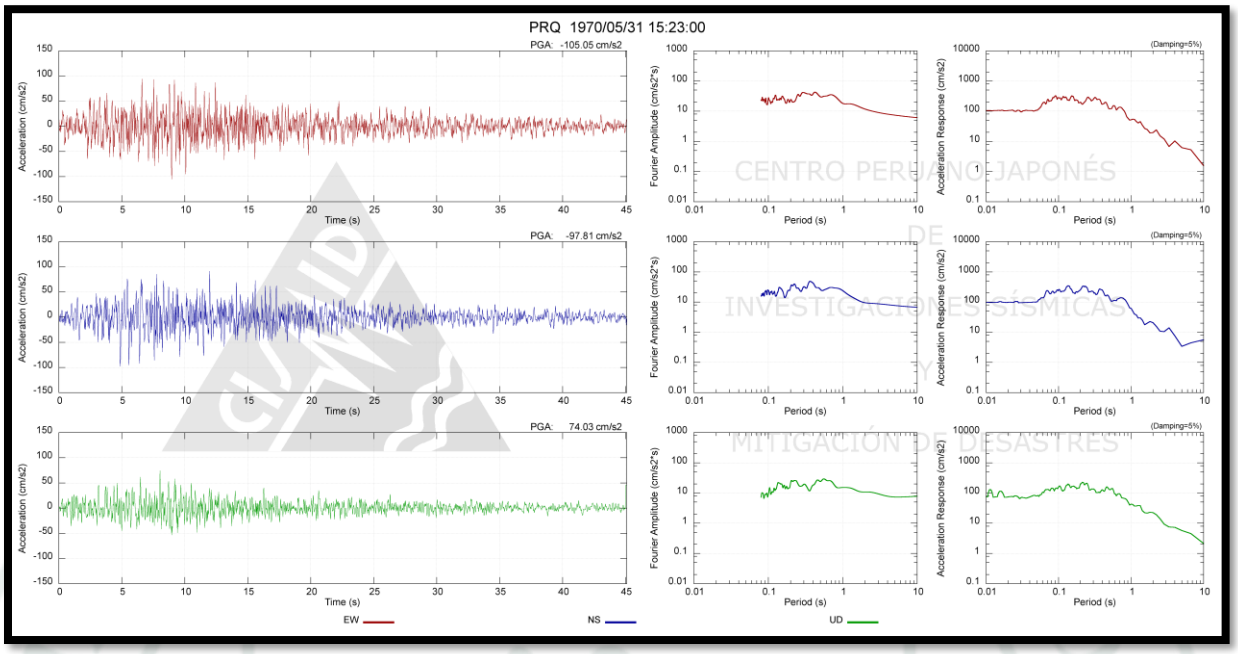
Sismo 3



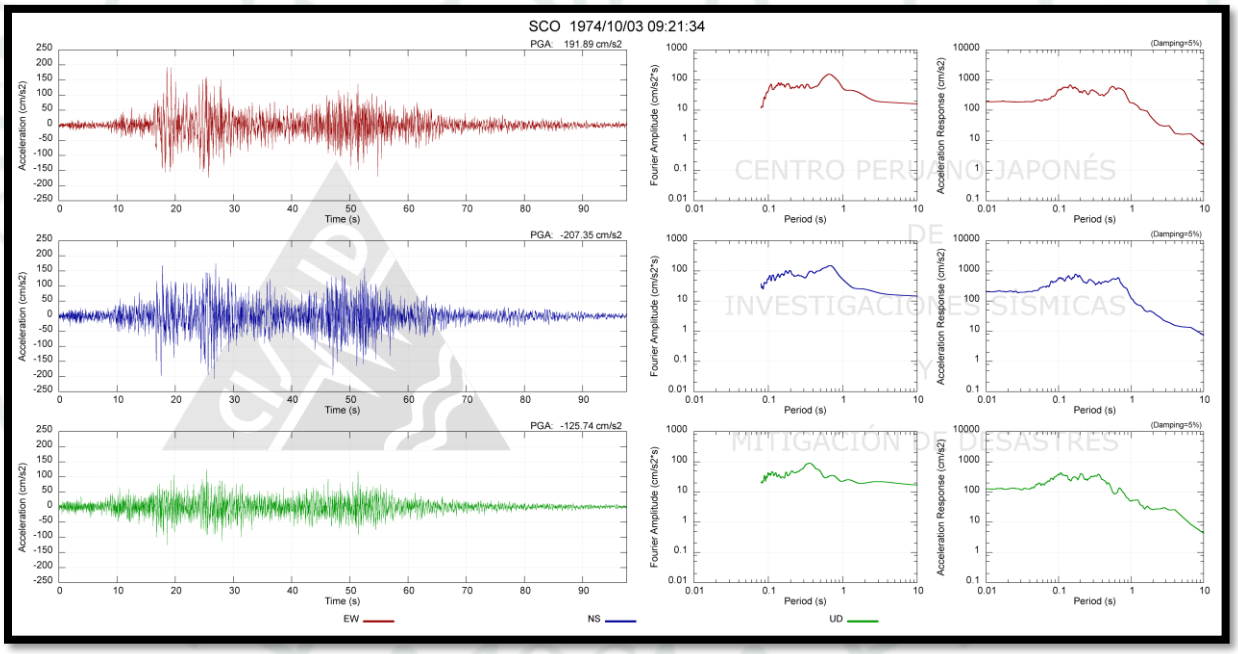
Sismo 4



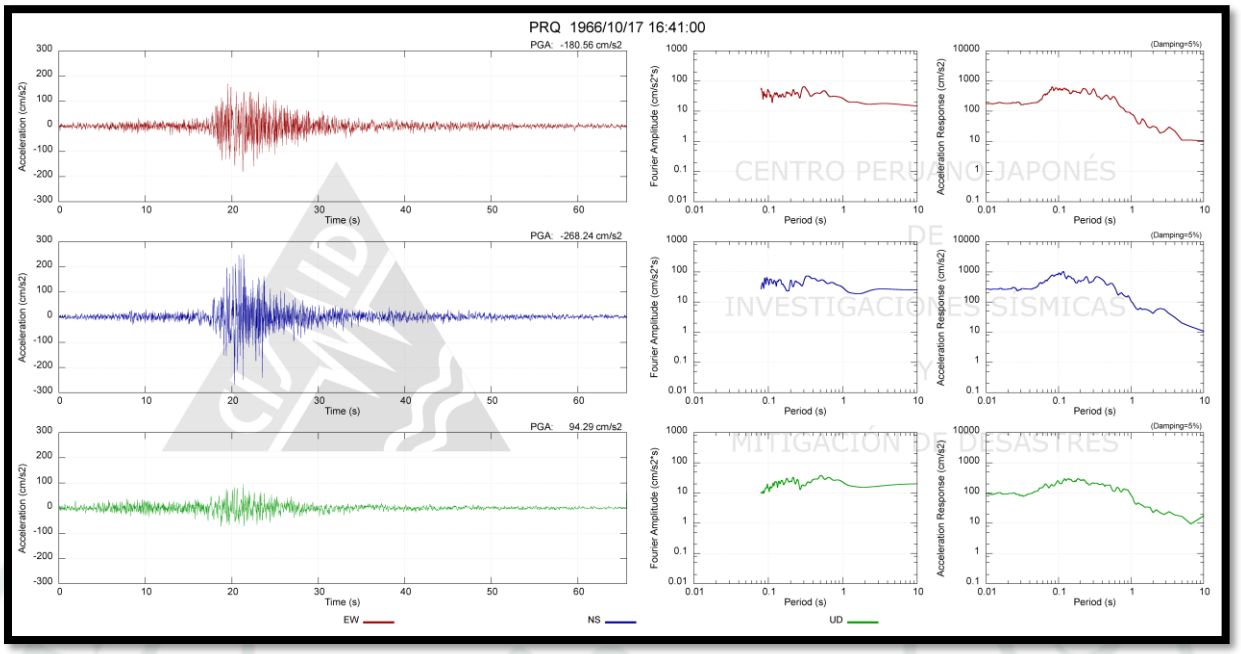
Sismo 5



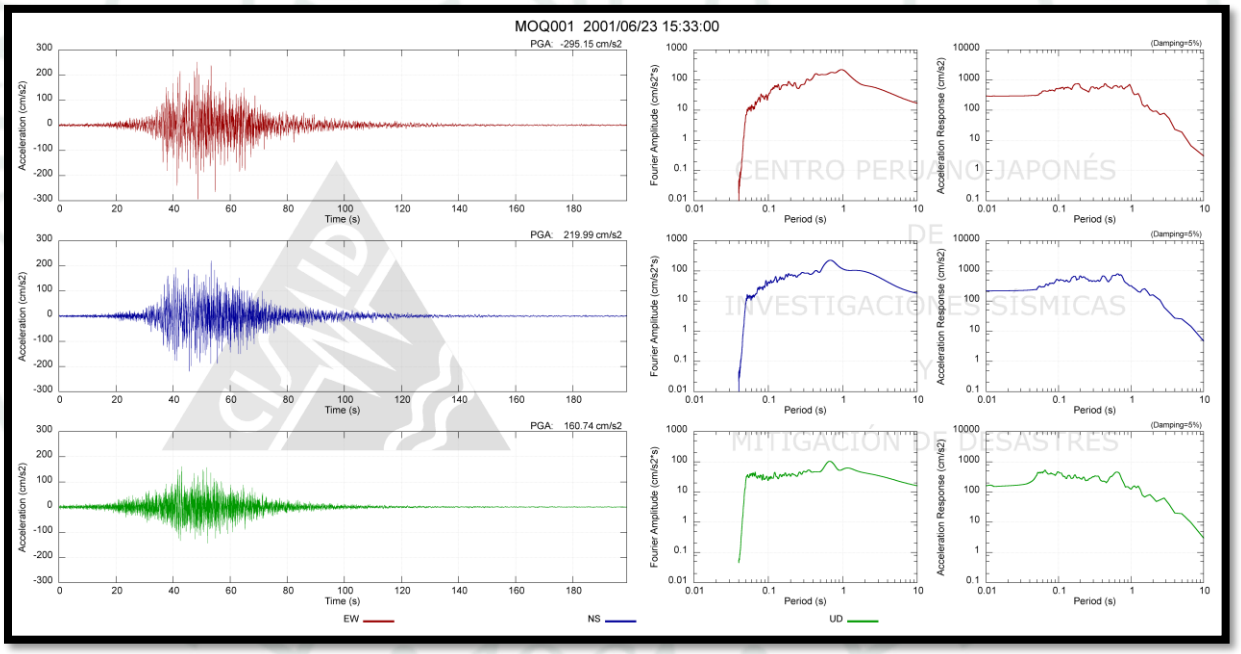
Sismo 6



Sismo 7



Sismo 8



Corrección por Línea Base

Codigo de Matlab para correccion por linea base

```
clc;
clear;
fexcel = 'archivo Excel de datos';
[X, txt] = xlsread(fexcel,4);
Ql = trapz(X(:,1),X(:,2).*X(:,1));
Q2 = trapz(X(:,1),(X(:,2).*X(:,1).*X(:,1))*0.5);
Q3 = trapz(X(:,1),(X(:,2).*X(:,1).*X(:,1).*X(:,1))/3);
t=max(X(:,1));

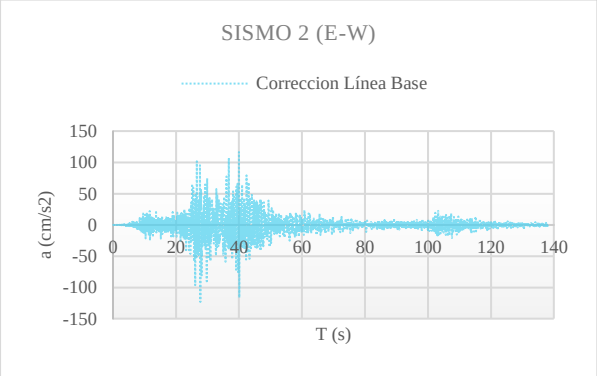
T=[t^3/3 t^4/8 t^5/15;t^4/8 t^5/20 t^6/36;t^5/15 t^6/36 t^7/63];
C=T\[Ql;Q2;Q3];

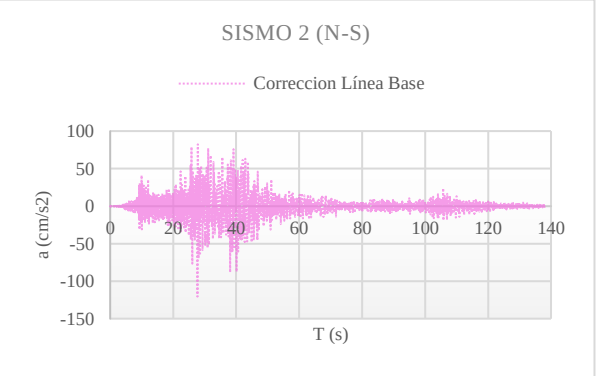
A0=C(1,1)*ones(3283,1)+C(2,1)*X(:,1)+C(3,1)*(X(:,1).*X(:,1));
V0=C(1,1)*X(:,1)+0.5*C(2,1)*(X(:,1).*X(:,1))+1/3*C(3,1)*(X(:,1).*X(:,1).*X(:,1));
ANC=X(:,3)-A0;

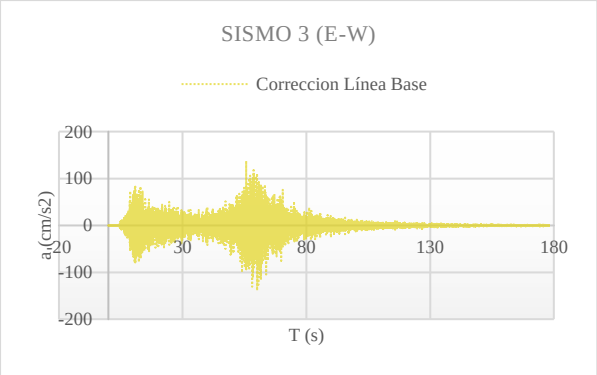
DeltaT=0.01;
VNC(1,1)=0;
for i=1:3282
   VNC(i+1,1)=VNC(i,1)+(ANC(i,1)+ANC(i+1,1))*DeltaT*0.5;%Tiempo
end

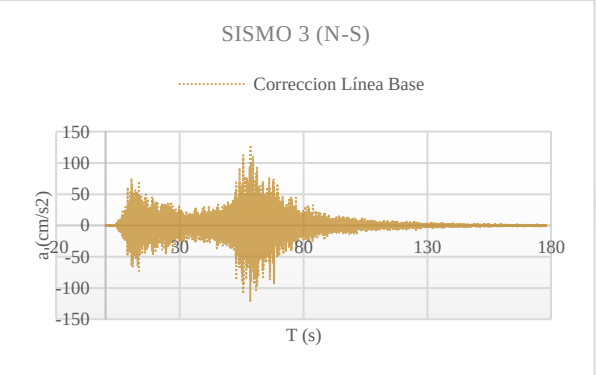
DNC(1,1)=0;
for i=1:3282
   DNC(i+1,1)=DNC(1,1)+VNC(i,1)*DeltaT+ANC(1,1)*DeltaT*DeltaT/3+ANC(i+1,1)*DeltaT*DeltaT/6;
end
```

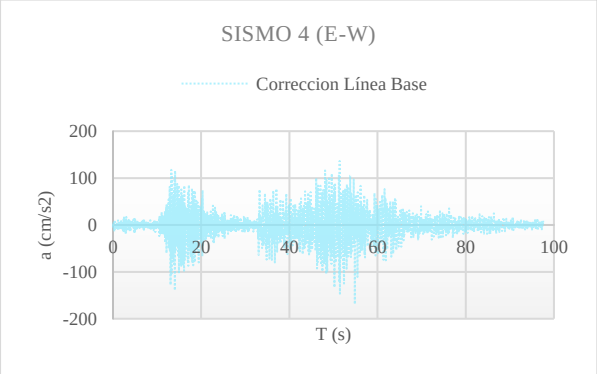
Graficos de los sismos corregidos por linea base

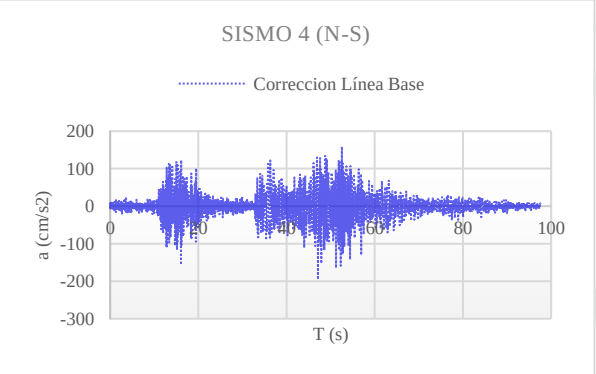


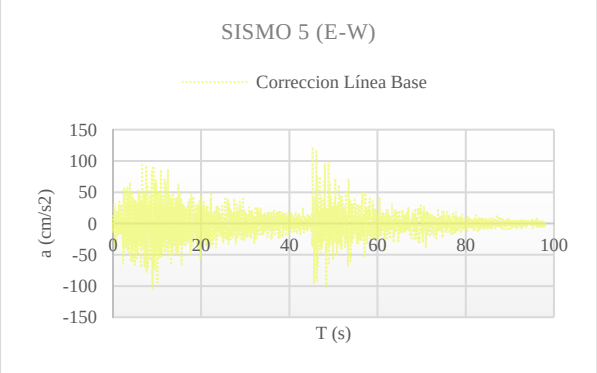


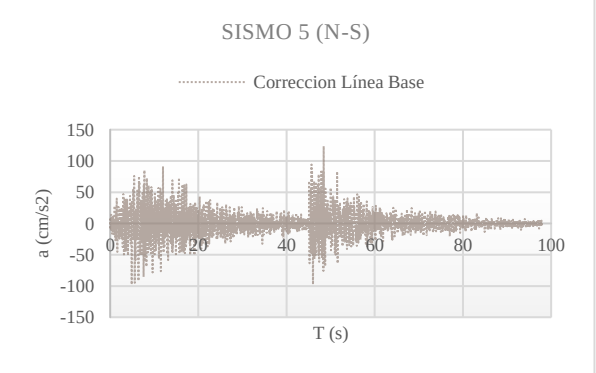


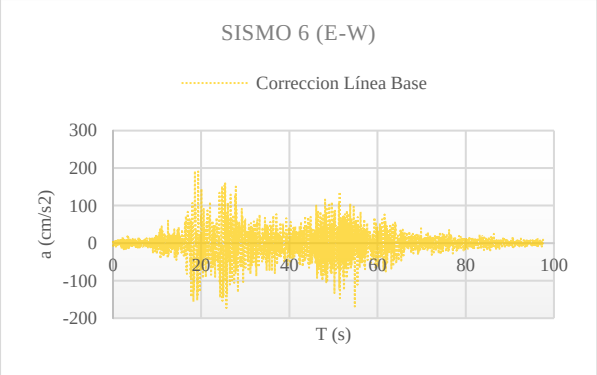


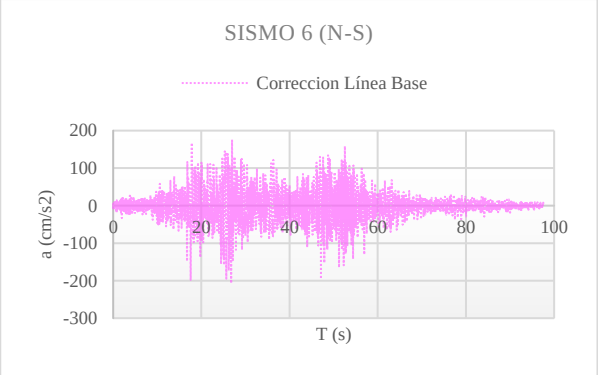


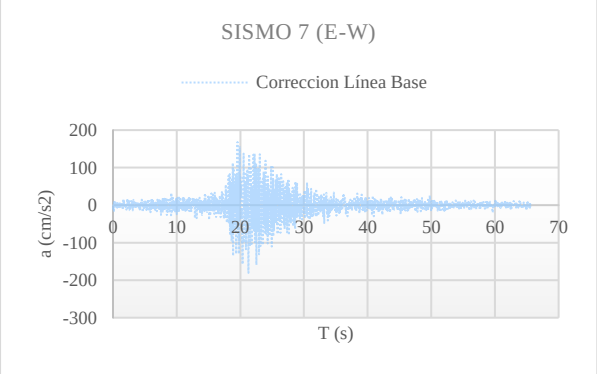


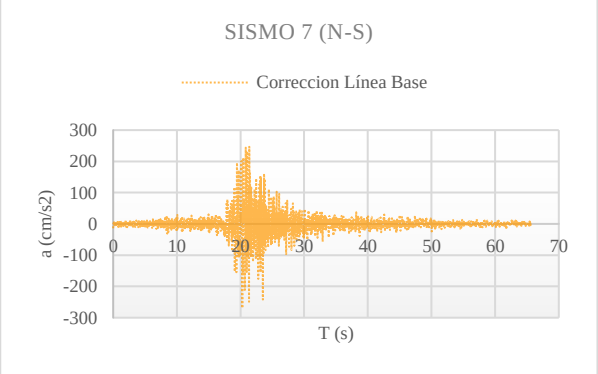


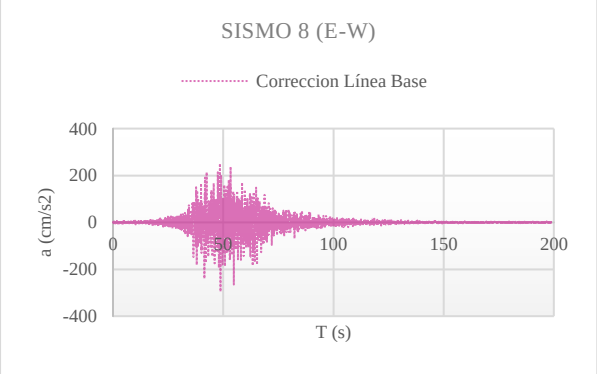


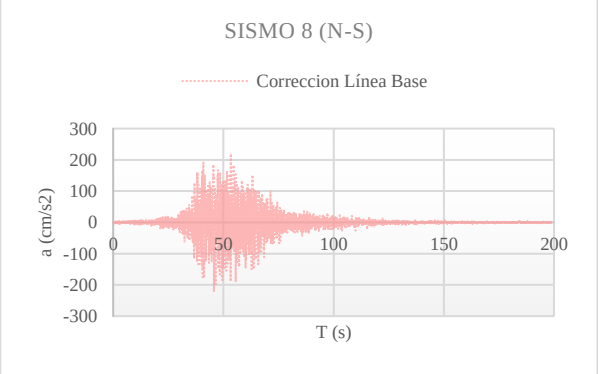












Corrección por Filtración Butterworth

Codigo de Matlab para correccion por Filtracion Butterworth

```
clear all
close all
clc

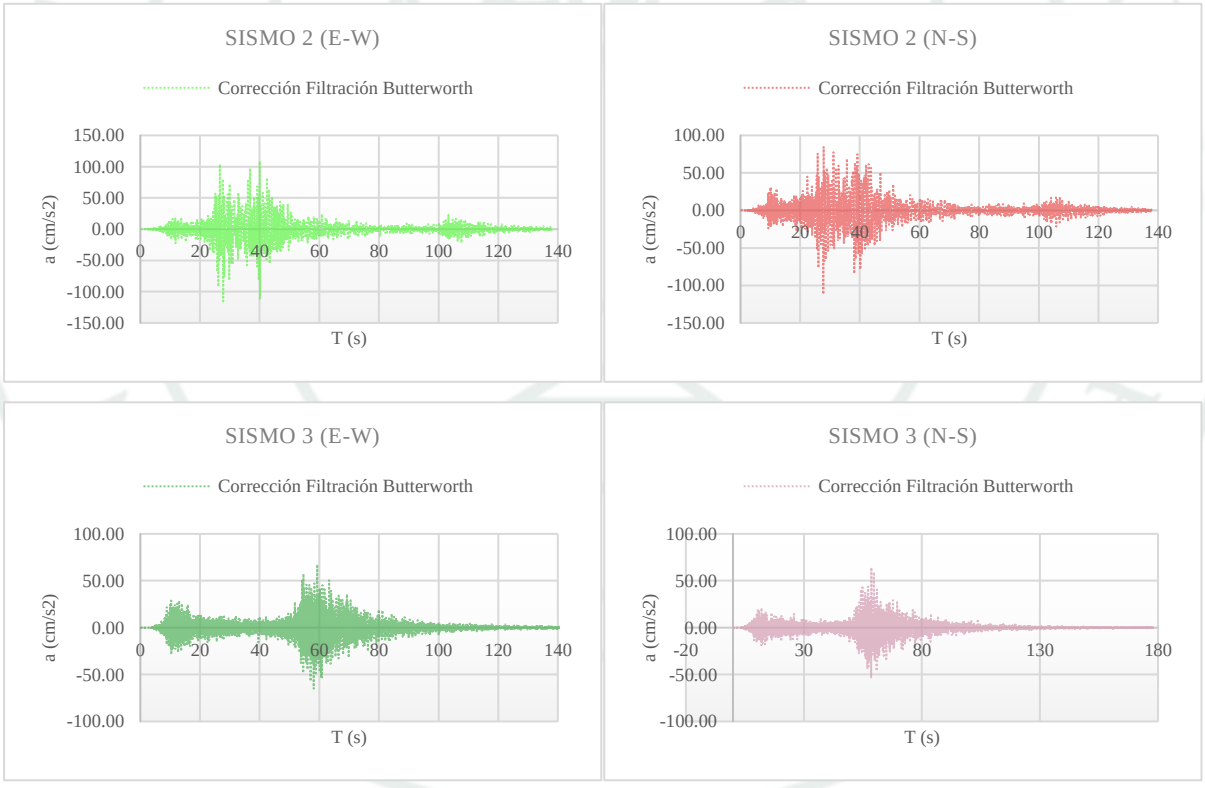
fexcel = 'archivo Excel de datos';
[X, txt] = xlsread(fexcel,7);
a=X(:,2);
dt=0.01;
deltat=dt;
Fs=1/dt;
```

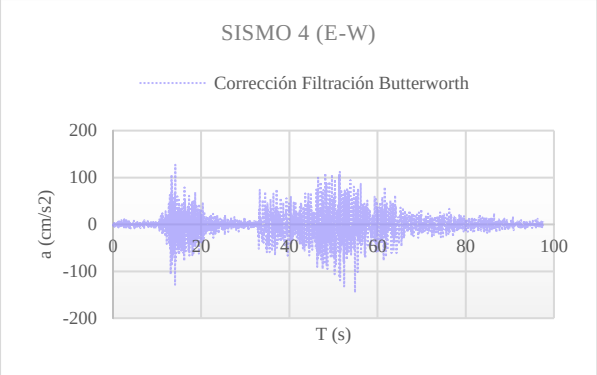
```
Fnyq=Fs/2;
aceler=a;
aceler=aceler(:);
N = length(aceler);
t=0:deltat:deltat*(N-1);
tiempon = 0:deltat:deltat*(2*N-2);

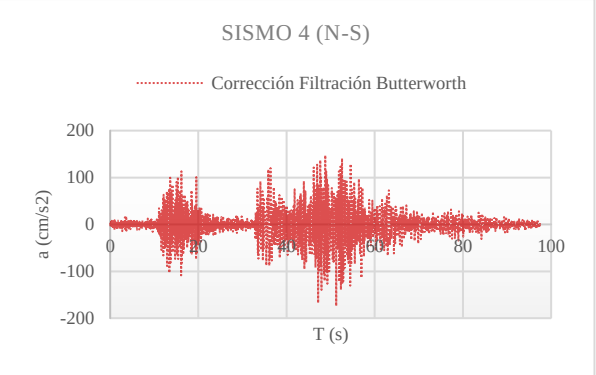
[b1,acelersr]= butter(4,[0.1/Fnyq, 10/Fnyq],'bandpass');
[d1,c1]= butter(4,[0.1/Fnyq, 10/Fnyq],'bandpass');

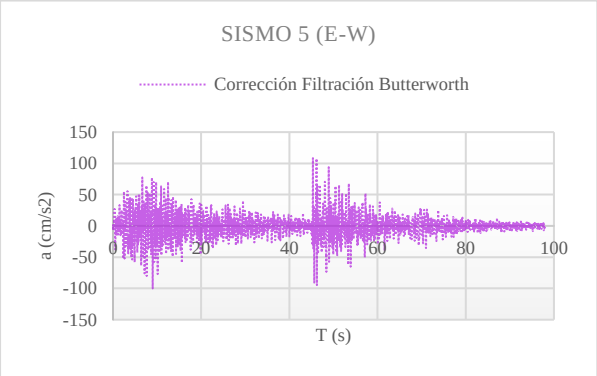
acelersr=filter(b1,acelersr,aceler);
veloc=cumtrapz(t,aceler);
veloc=filter(d1,c1,veloc);
despl=cumtrapz(t,veloc);
```

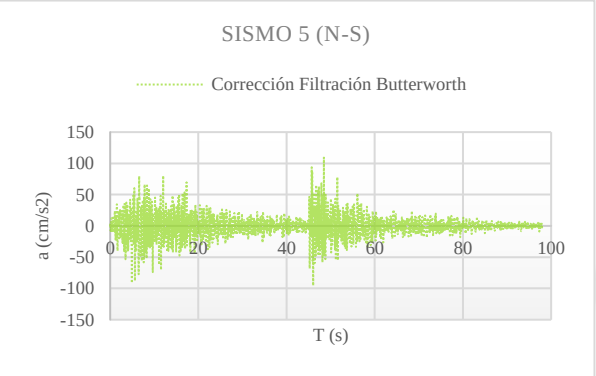
Graficos de los sismos corregidos por Filtracion Butterworth

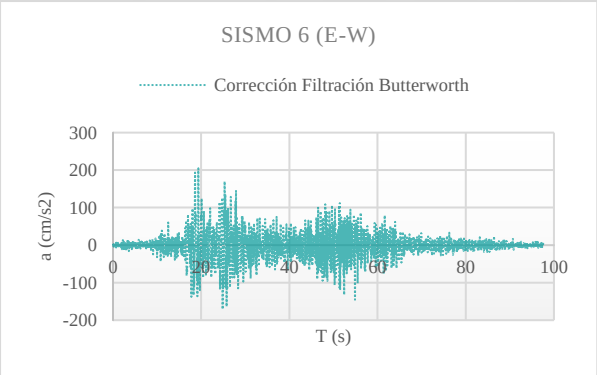


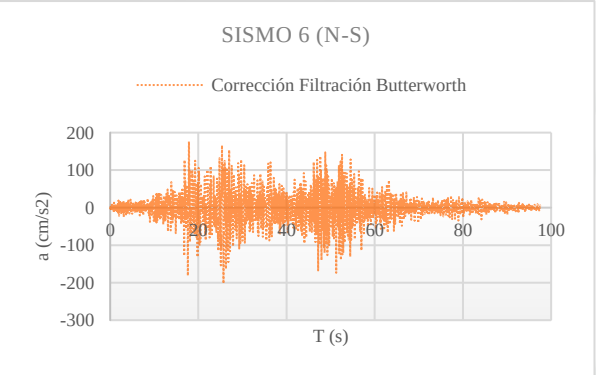

SISMO 4 (E-W)
Corrección Filtración Butterworth
a (cm/s2)
T (s)

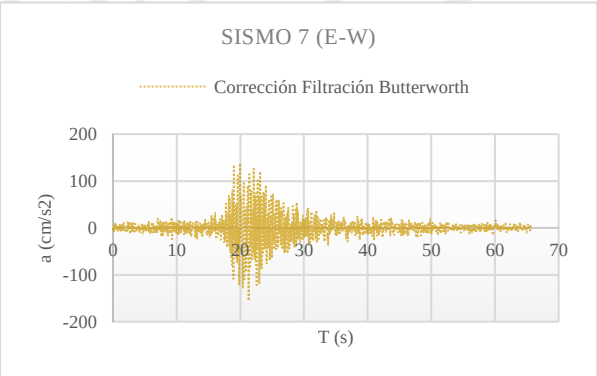

SISMO 4 (N-S)
Corrección Filtración Butterworth
a (cm/s2)
T (s)

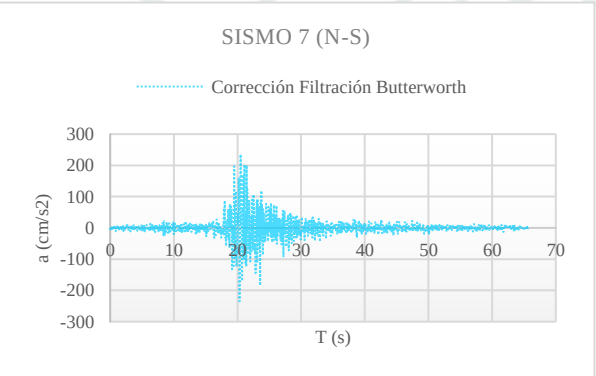

SISMO 5 (E-W)
Corrección Filtración Butterworth
a (cm/s2)
T (s)

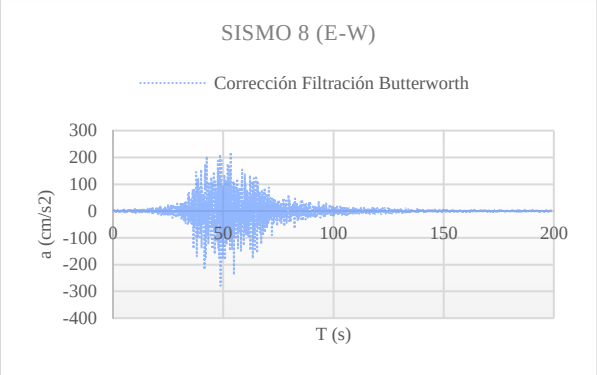

SISMO 5 (N-S)
Corrección Filtración Butterworth
a (cm/s2)
T (s)

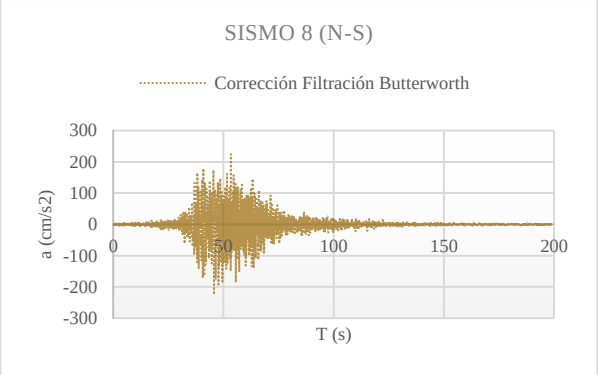

SISMO 6 (E-W)
Corrección Filtración Butterworth
a (cm/s2)
T (s)


SISMO 6 (N-S)
Corrección Filtración Butterworth
a (cm/s2)
T (s)


SISMO 7 (E-W)
Corrección Filtración Butterworth
a (cm/s2)
T (s)


SISMO 7 (N-S)
Corrección Filtración Butterworth
a (cm/s2)
T (s)

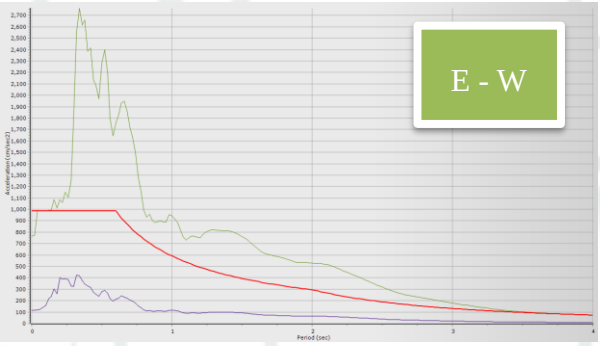


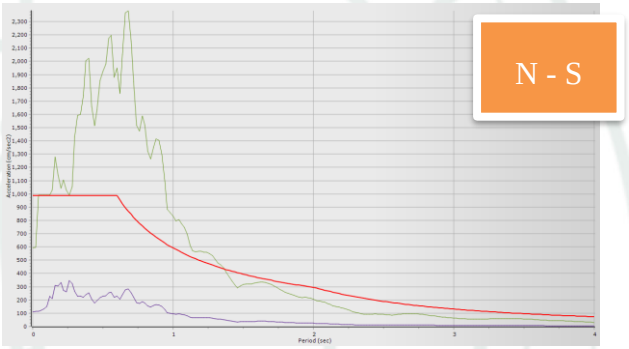


Escalamiento de los Registros Acelerográficos

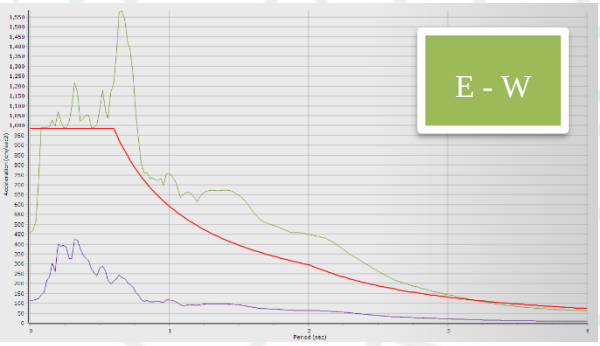
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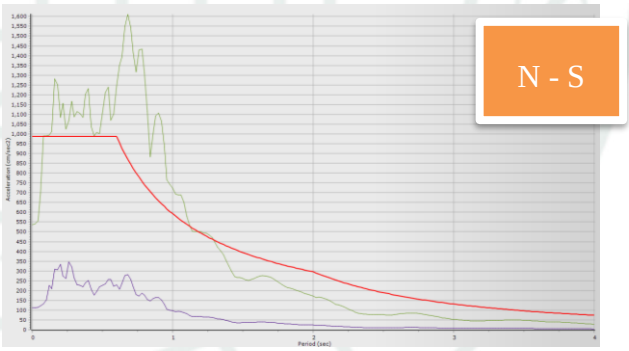
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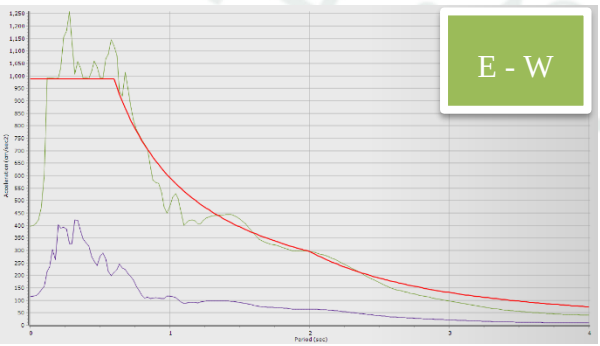


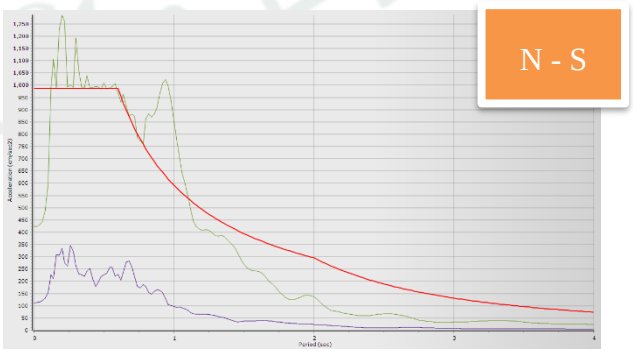
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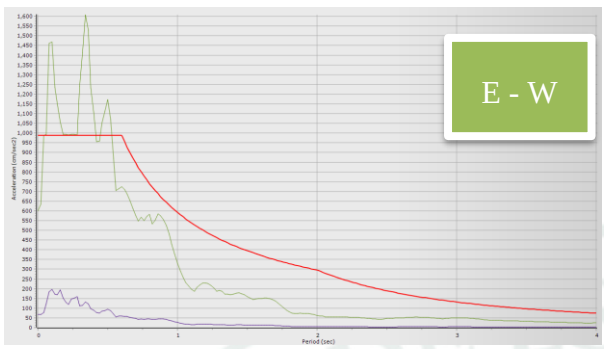
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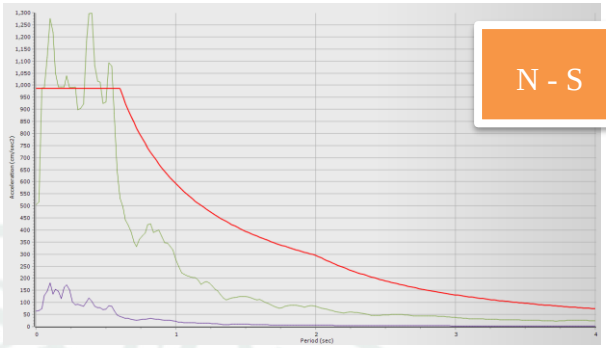




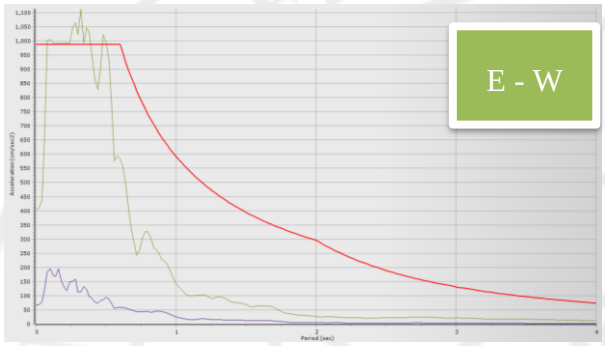
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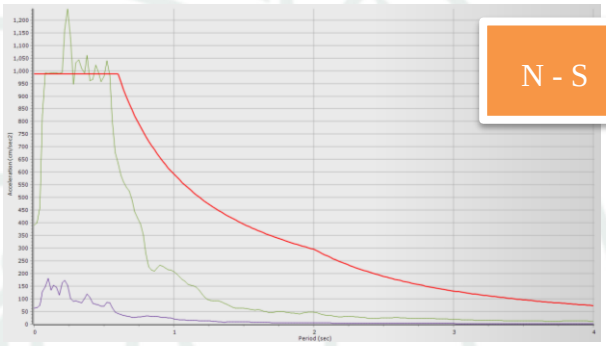
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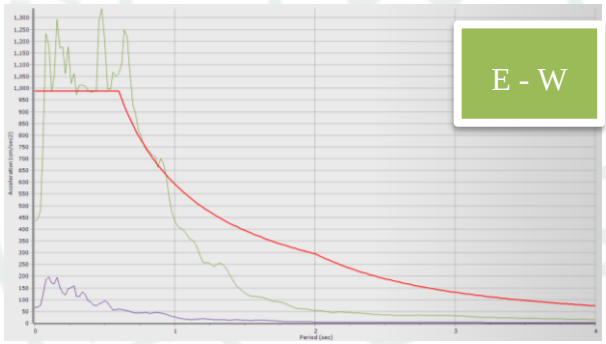


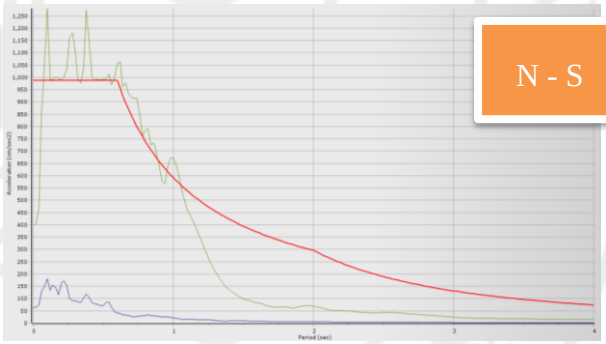
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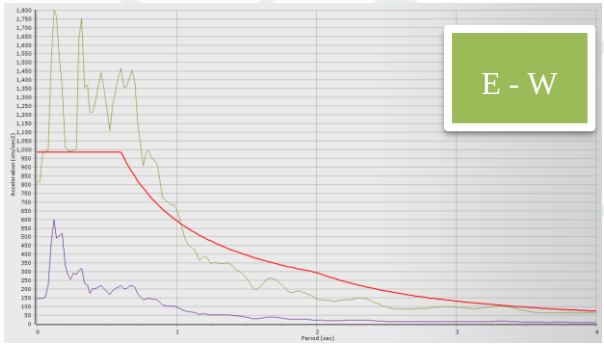
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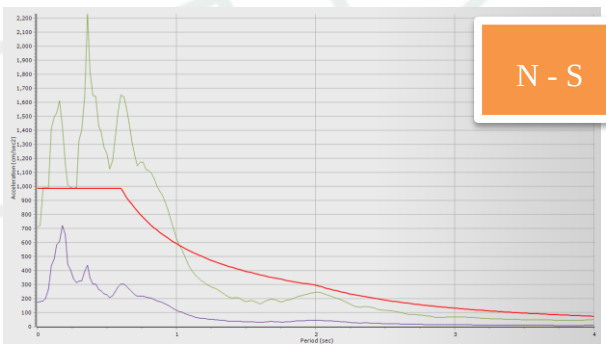




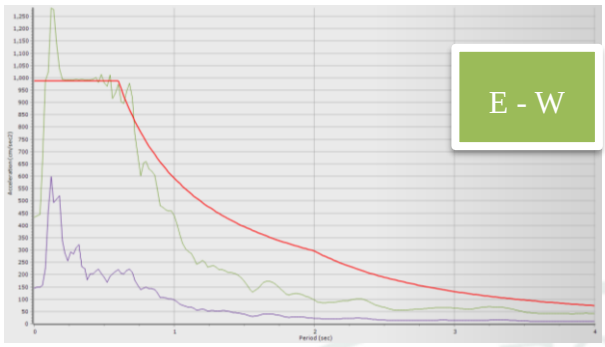
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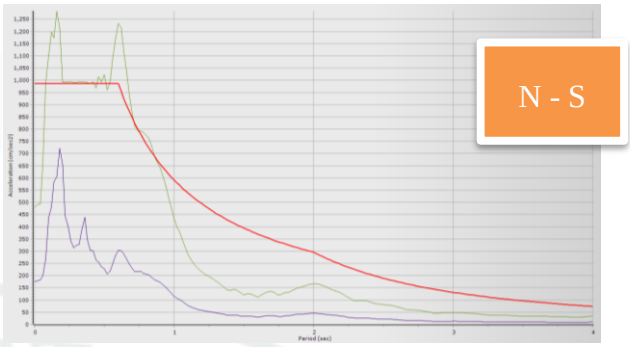
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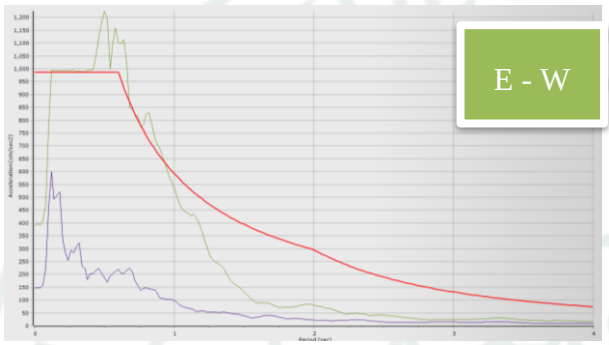


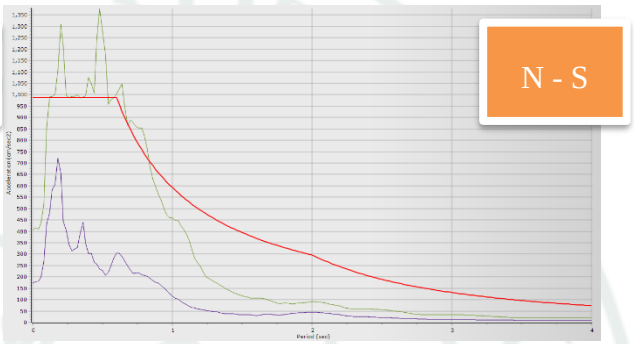
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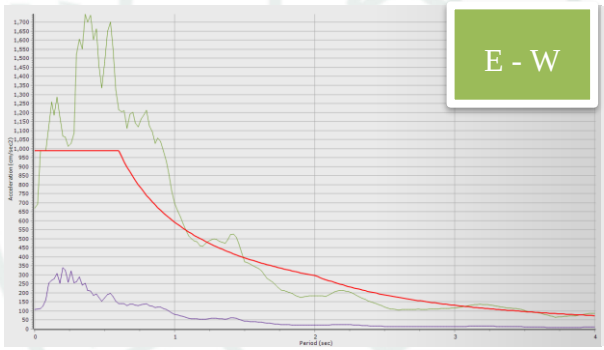
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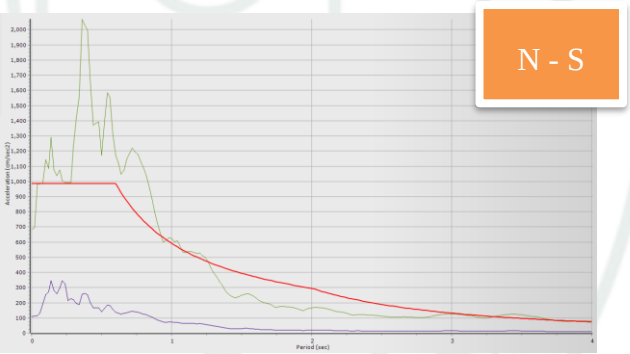




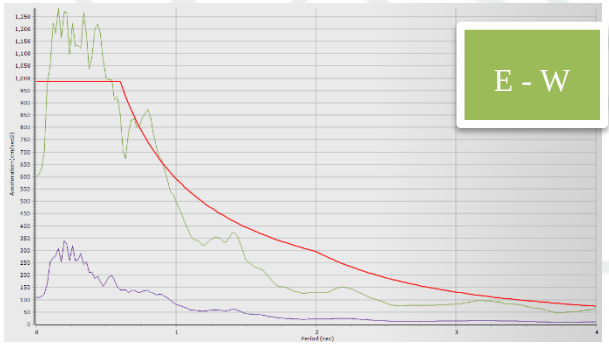
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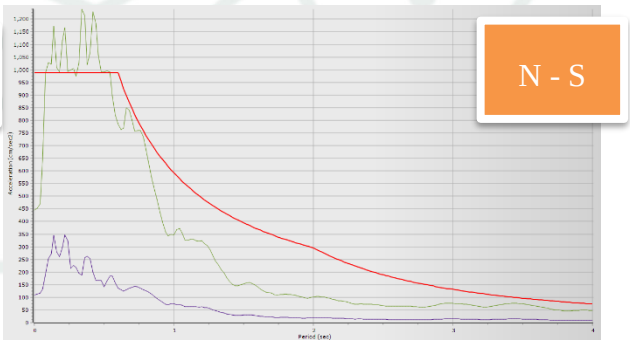
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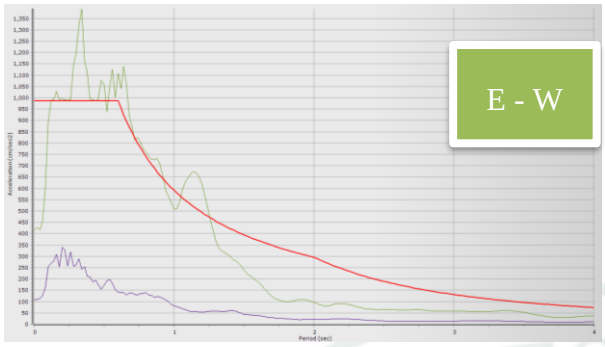


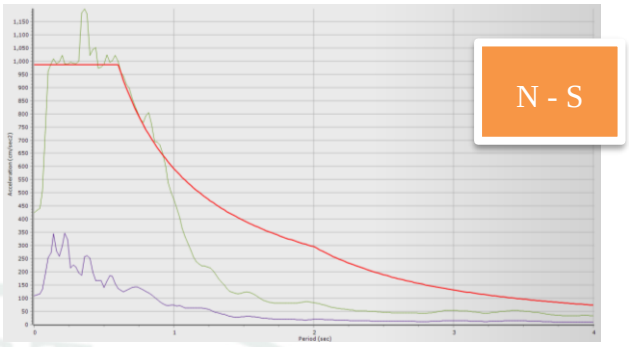
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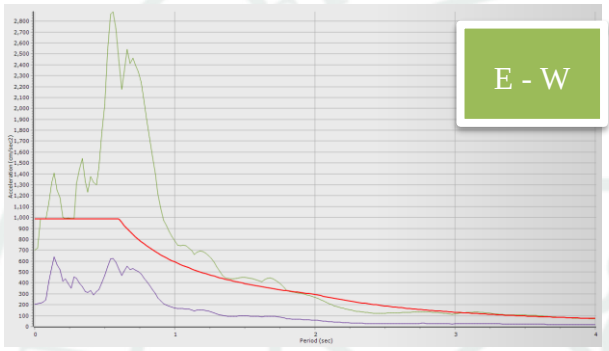
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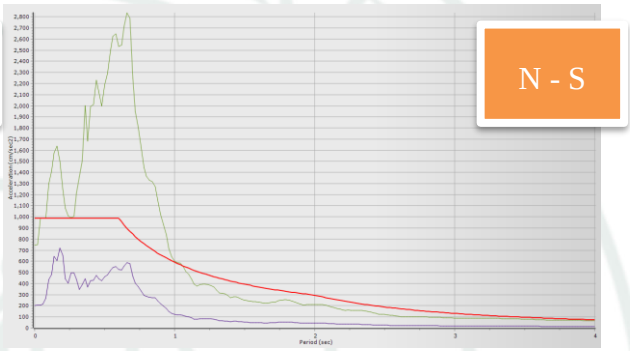




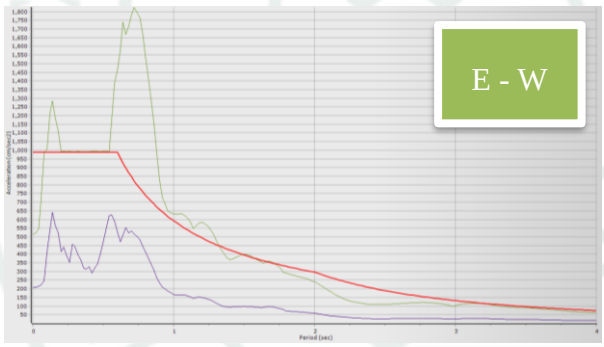
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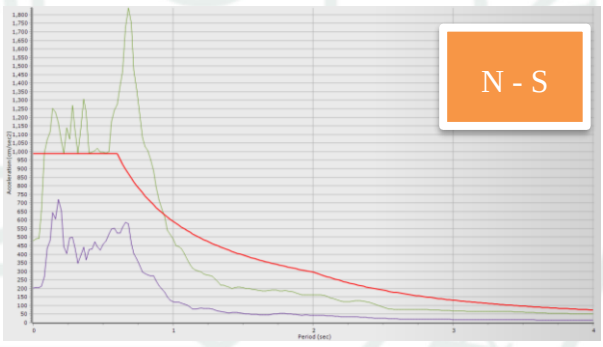
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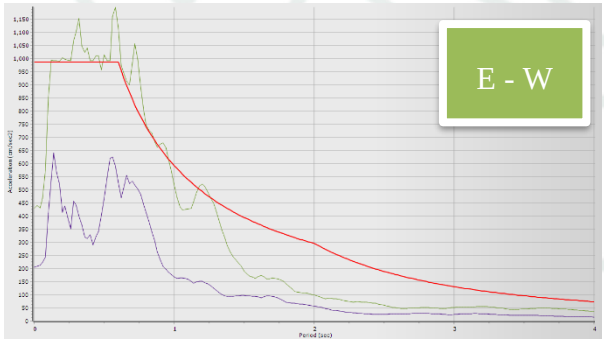


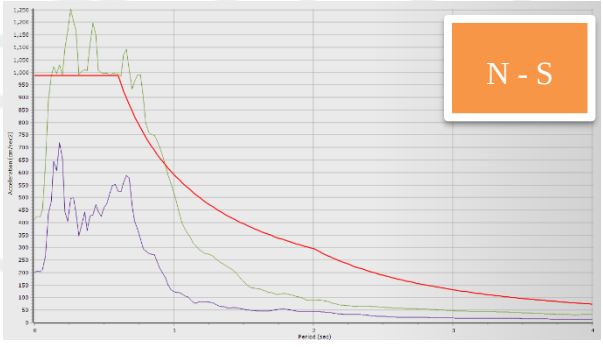
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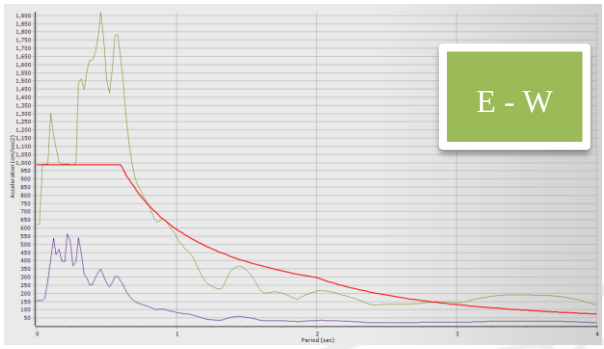
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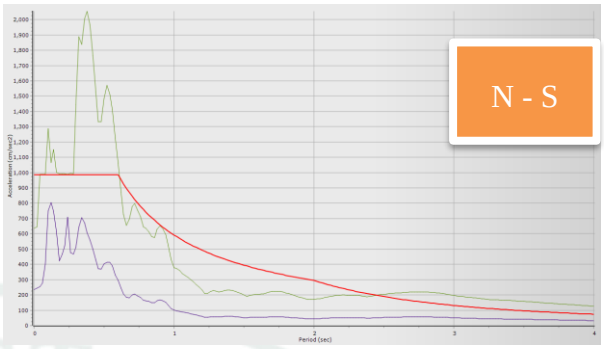




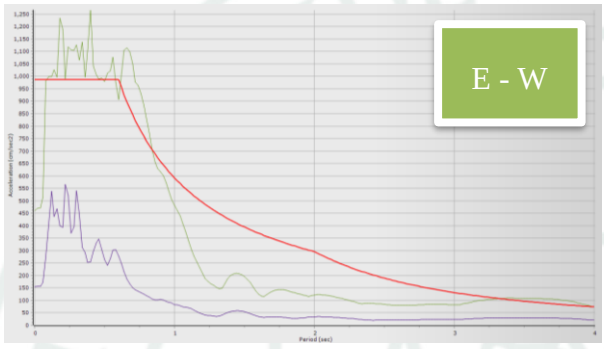
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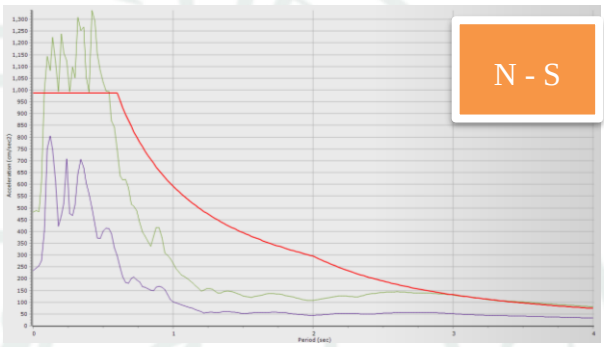
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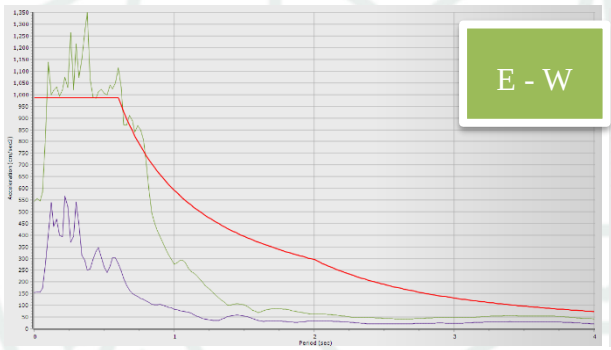


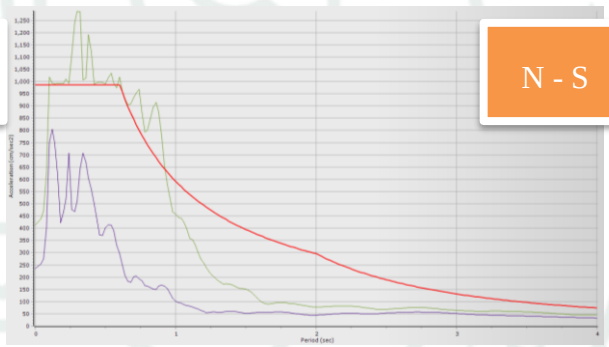
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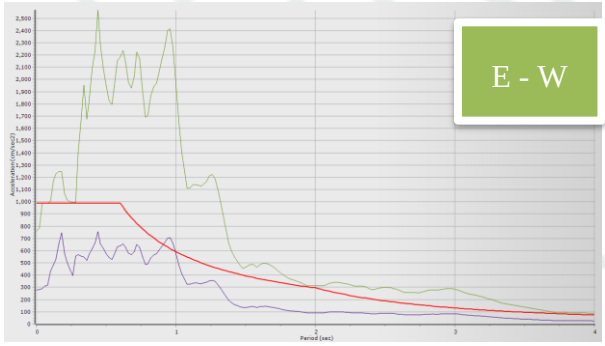
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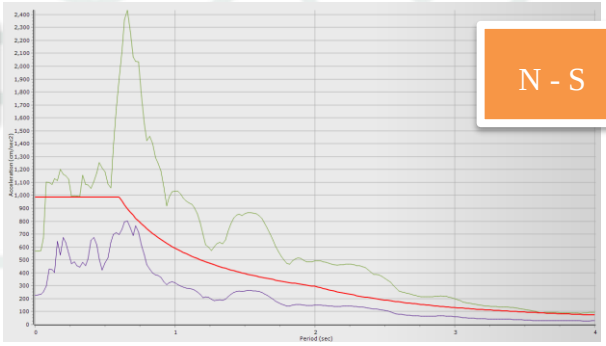




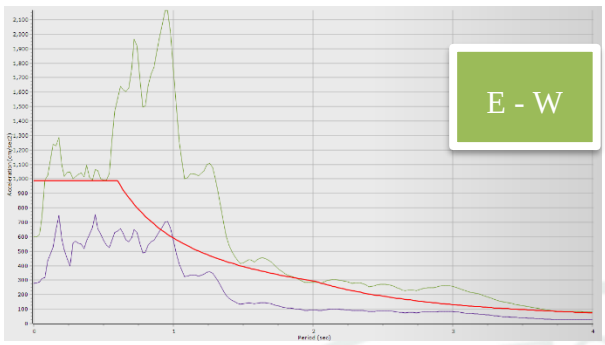
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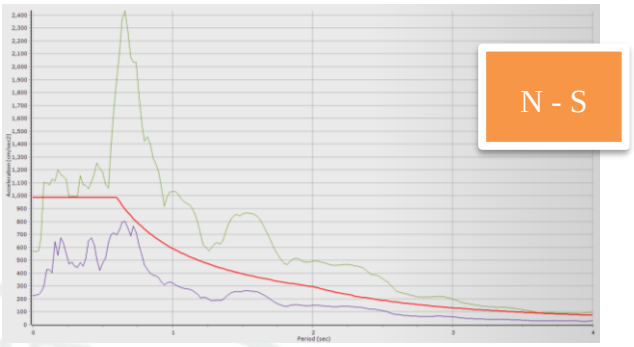
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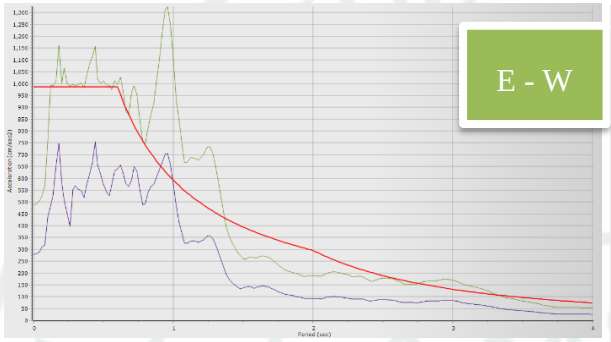


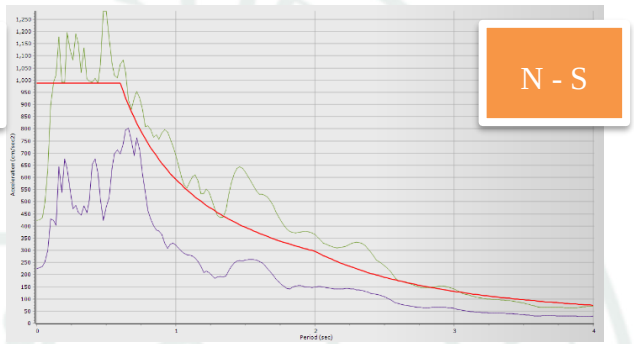
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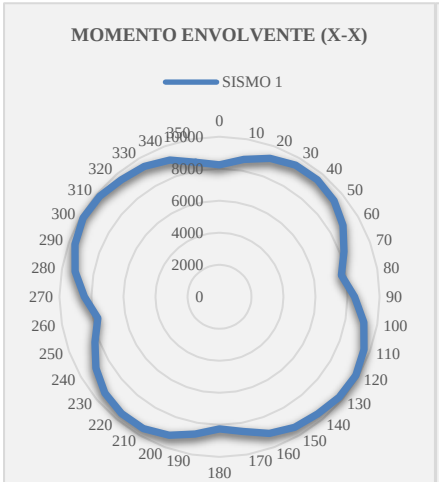


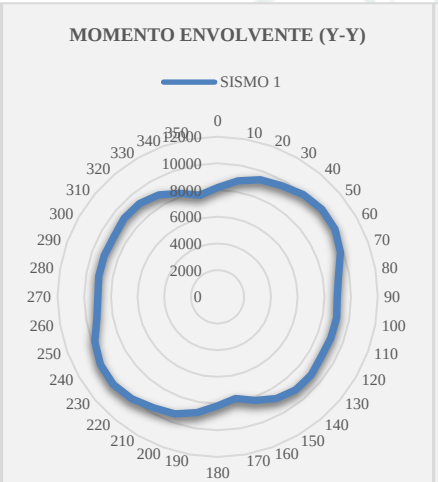


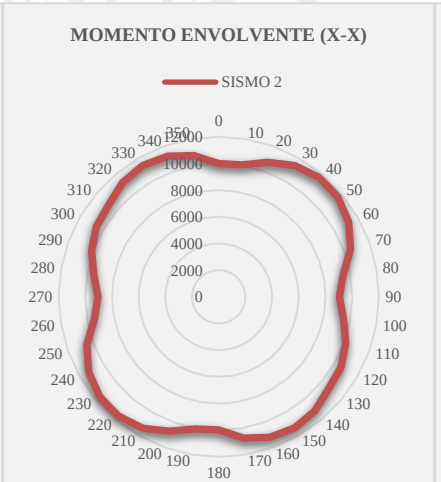
ANEXO C: RESULTADOS DEL ANALISIS TIEMPO HISTORIA

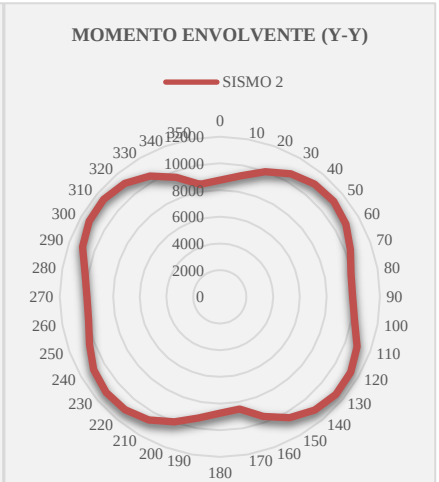
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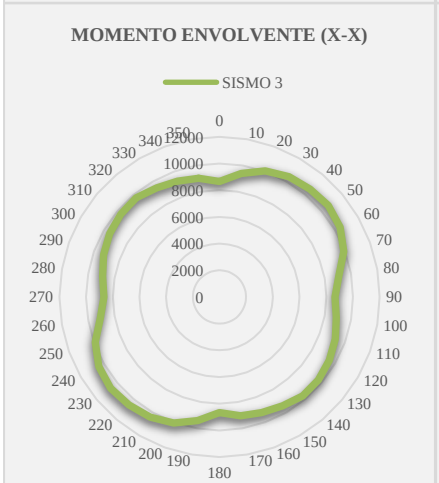
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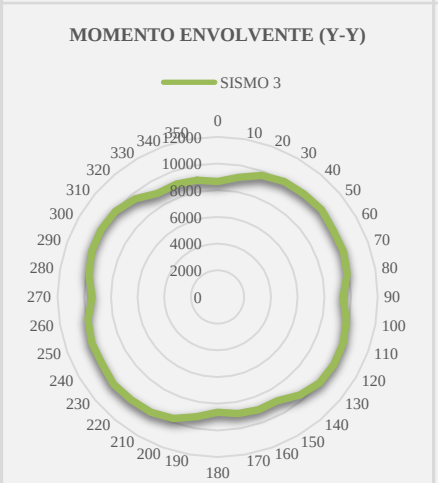


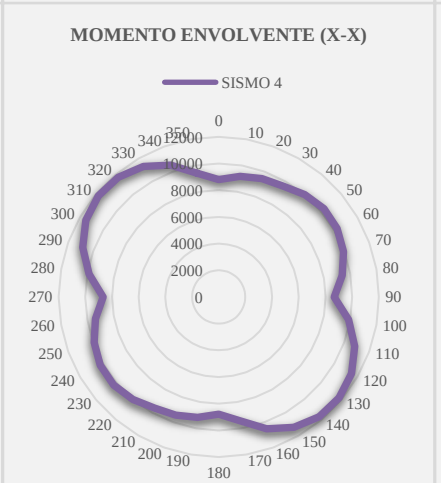


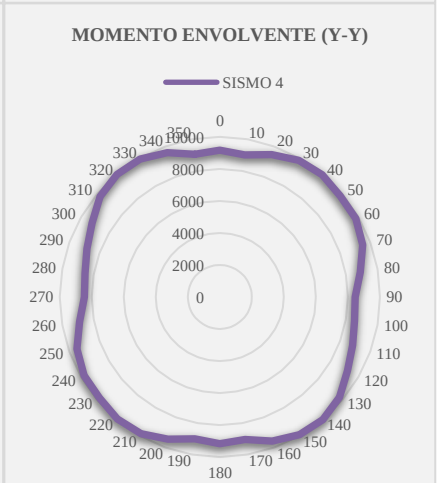




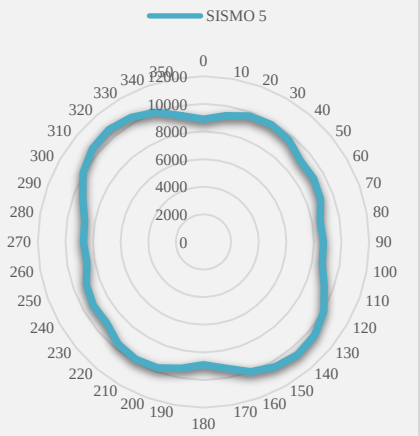




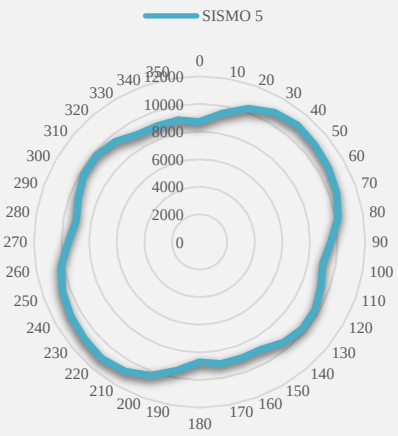




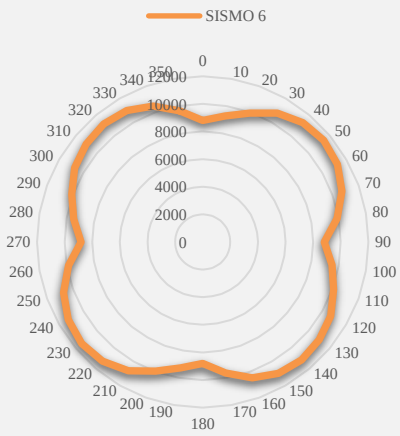
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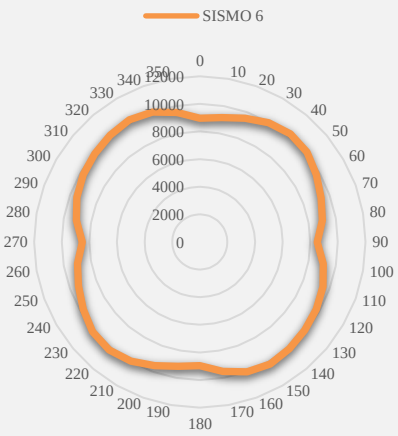
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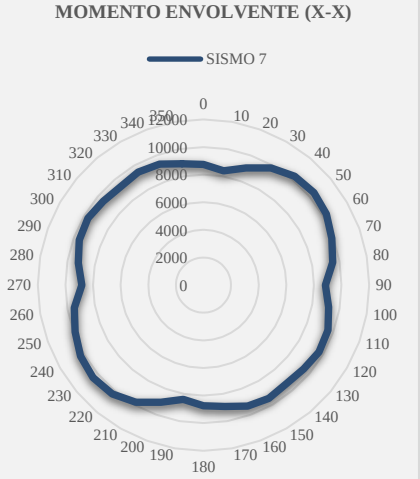
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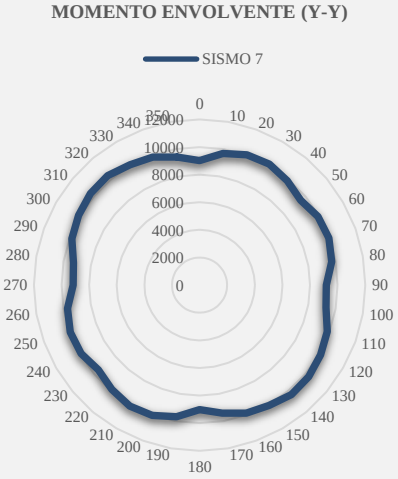
MOMENTO ENVOLVENTE (Y-Y)



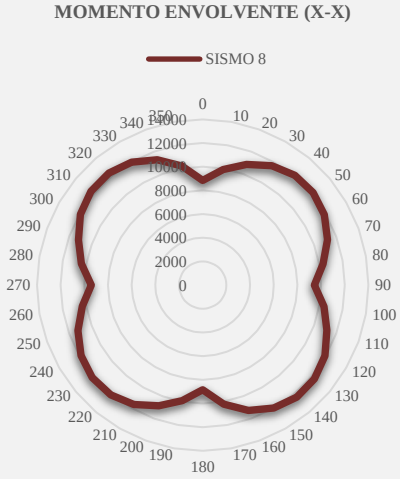
MOMENTO ENVOLVENTE (X-X)



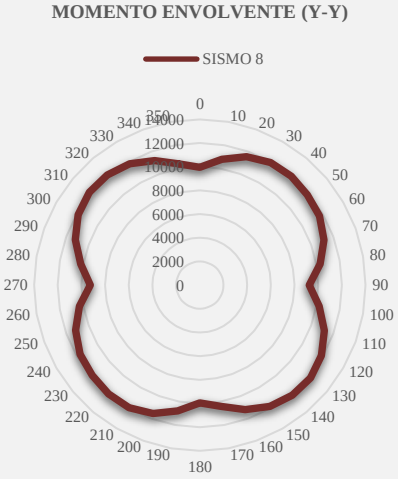
MOMENTO ENVOLVENTE (Y-Y)



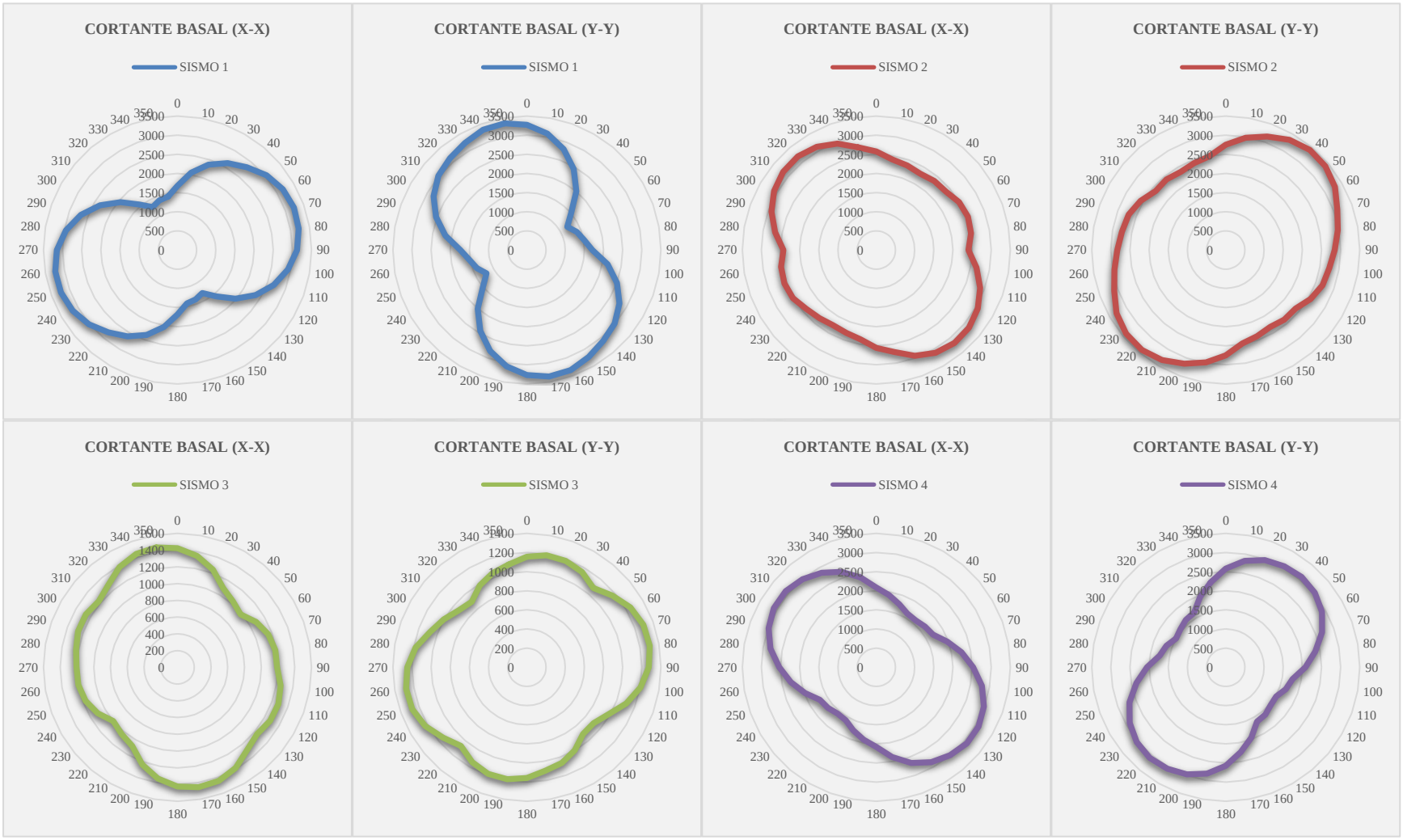
MOMENTO ENVOLVENTE (X-X)



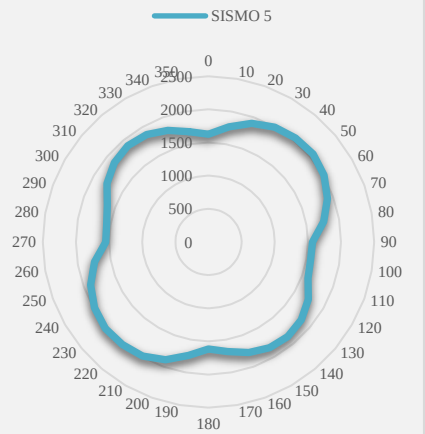
MOMENTO ENVOLVENTE (Y-Y)



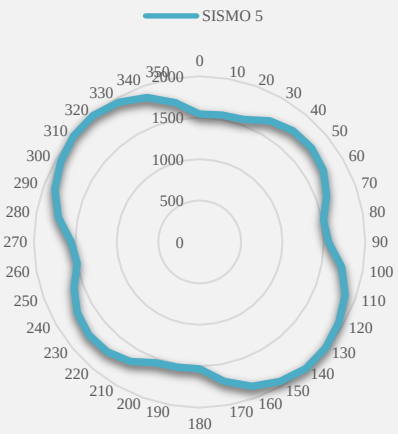
Para 8 pisos:


CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

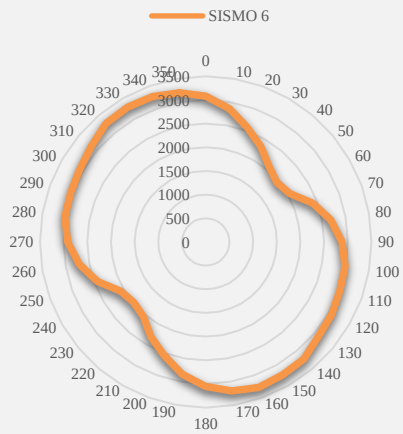
CORTANTE BASAL (X-X)



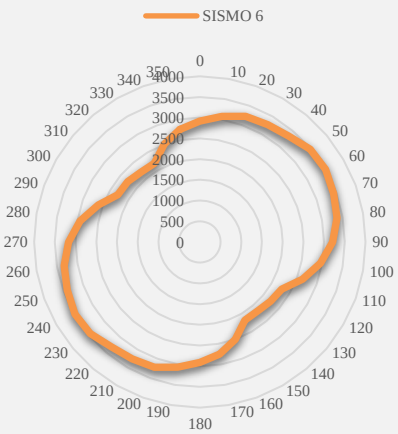
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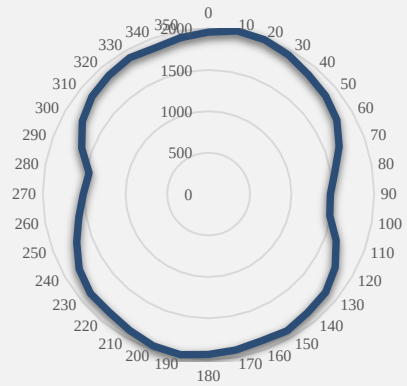
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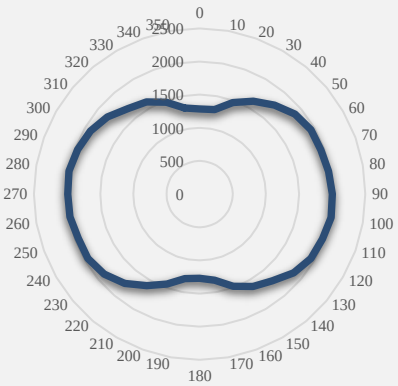
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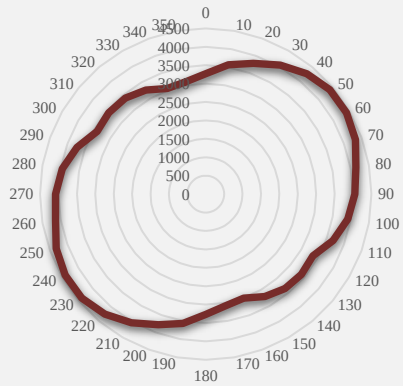
CORTANTE BASAL (X-X)



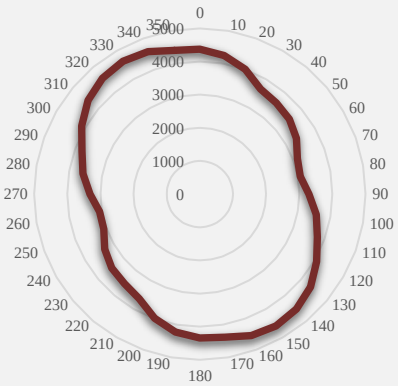
CORTANTE BASAL (Y-Y)

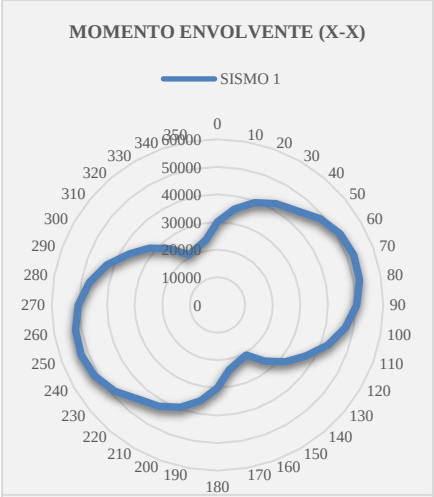


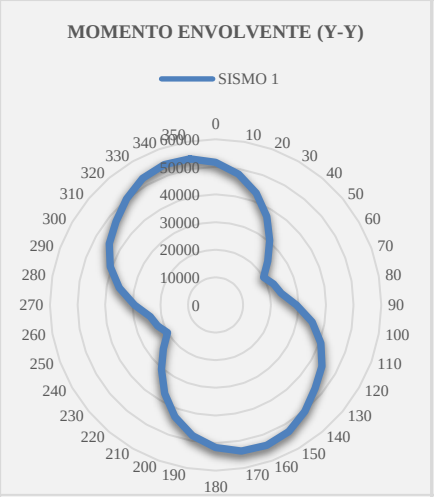
CORTANTE BASAL (X-X)

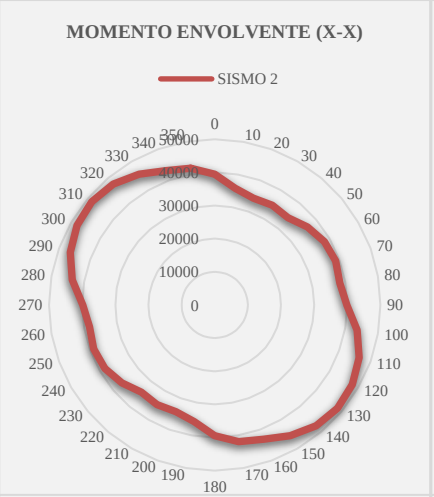


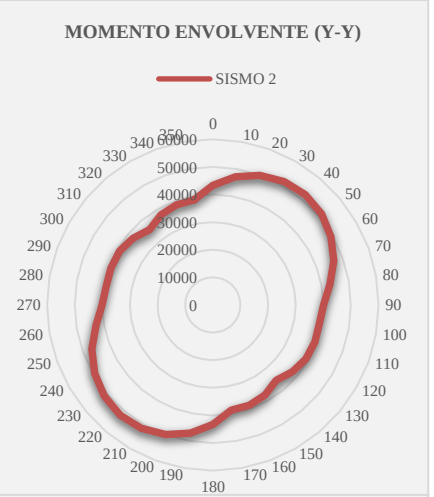
CORTANTE BASAL (Y-Y)

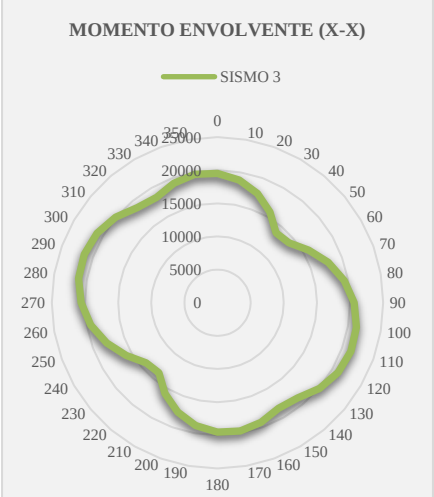


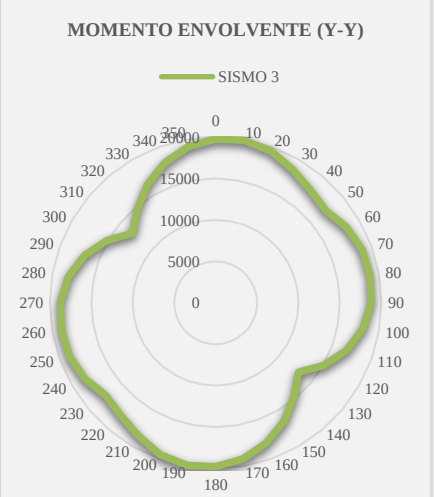

MOMENTO ENVOLVENTE (X-X)
SISMO 1

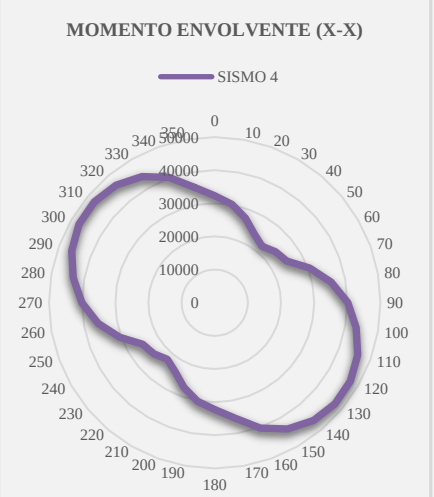

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

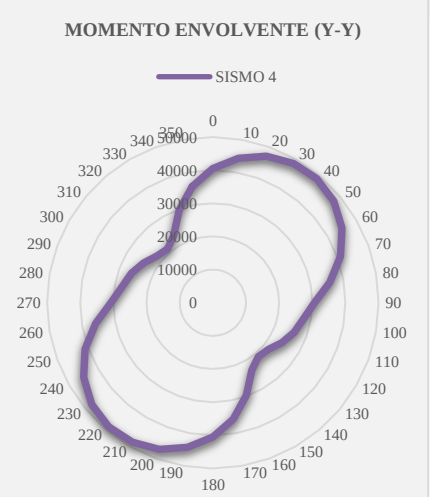

MOMENTO ENVOLVENTE (X-X)
SISMO 2

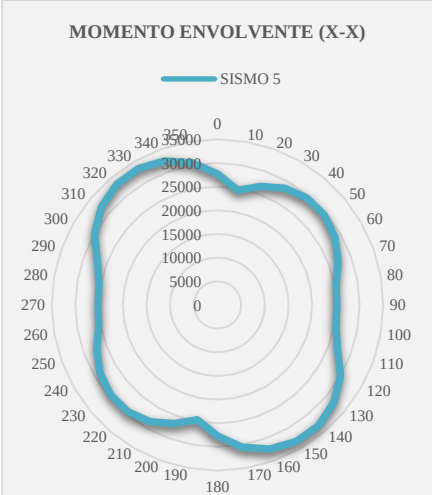

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

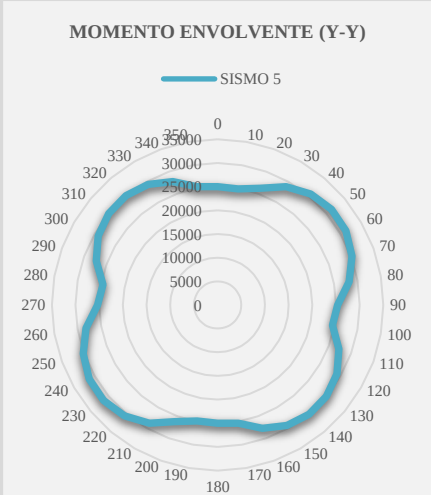

MOMENTO ENVOLVENTE (X-X)
SISMO 3

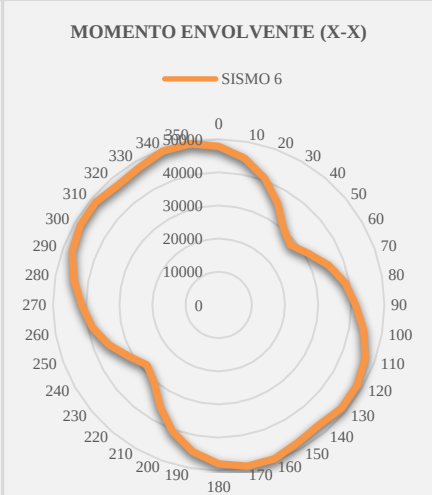

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

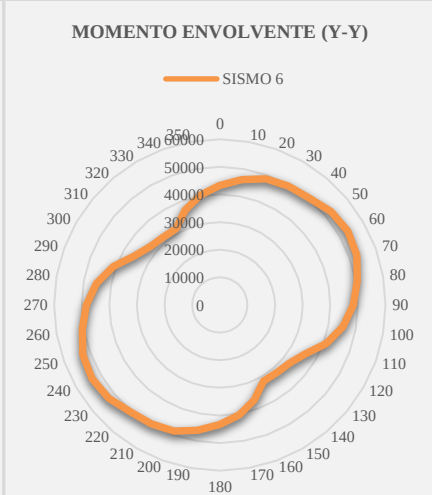

MOMENTO ENVOLVENTE (X-X)
SISMO 4

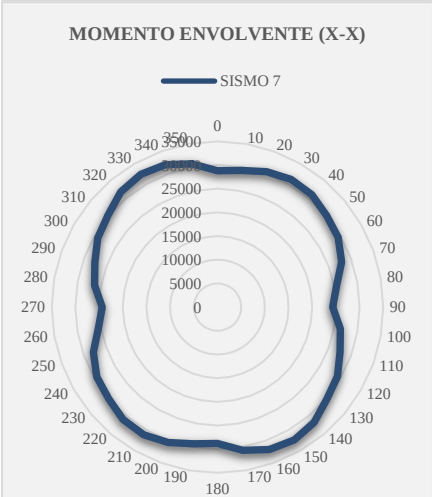

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

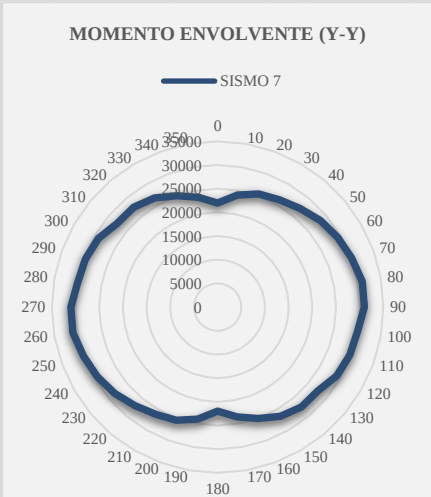

MOMENTO ENVOLVENTE (X-X)
SISMO 5

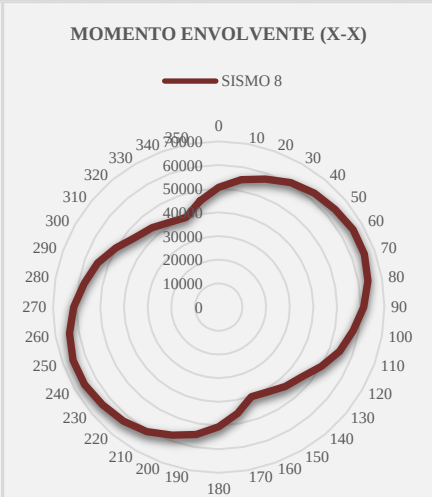

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

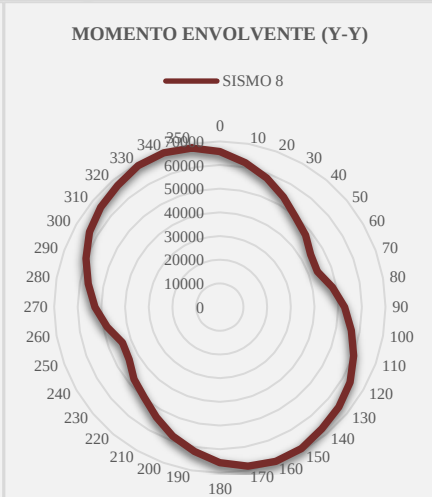

MOMENTO ENVOLVENTE (X-X)
SISMO 6

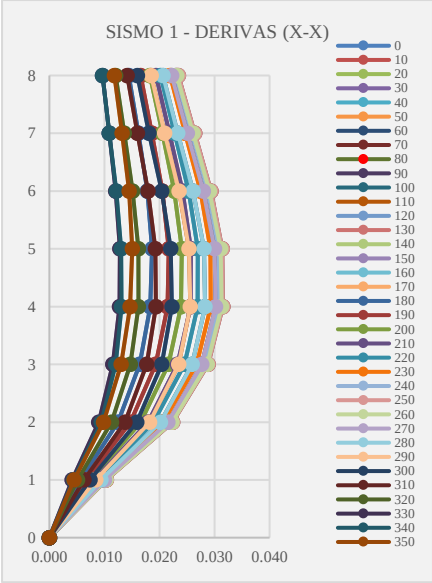

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

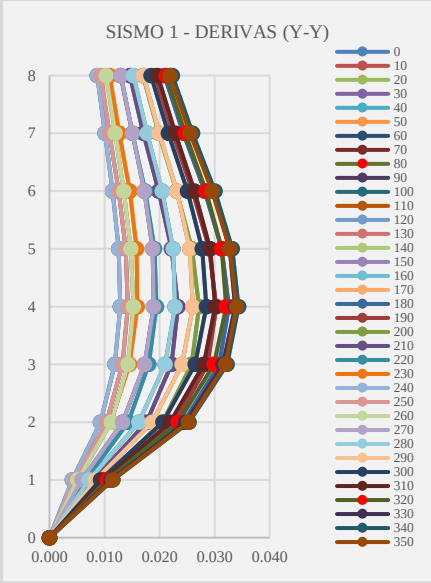

MOMENTO ENVOLVENTE (X-X)
SISMO 7

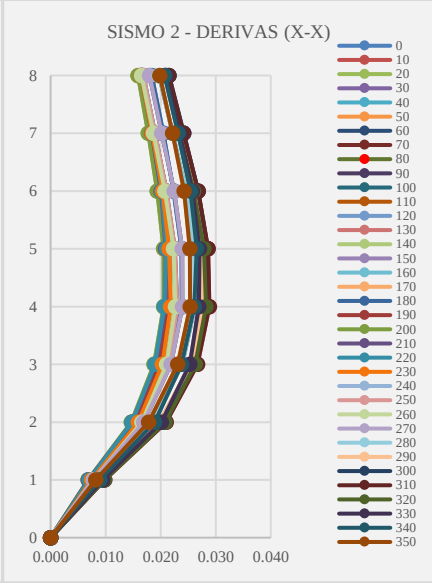

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

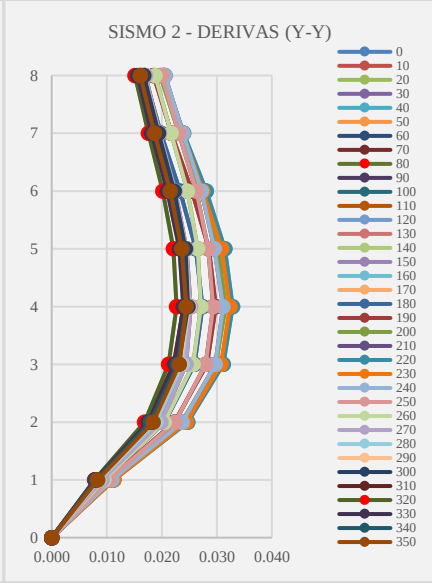

MOMENTO ENVOLVENTE (X-X)
SISMO 8

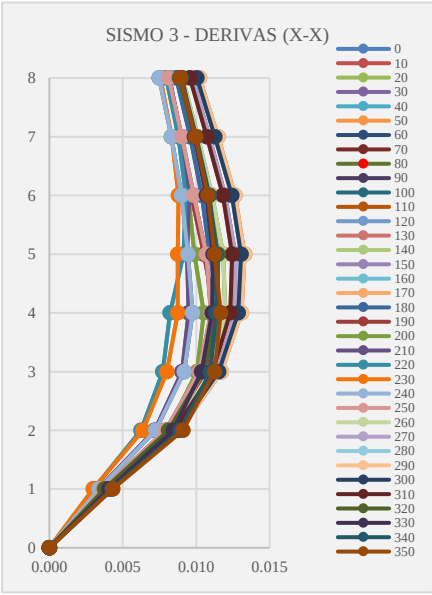

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

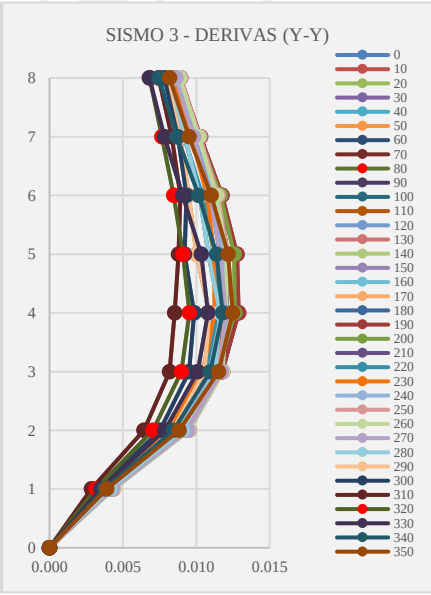

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

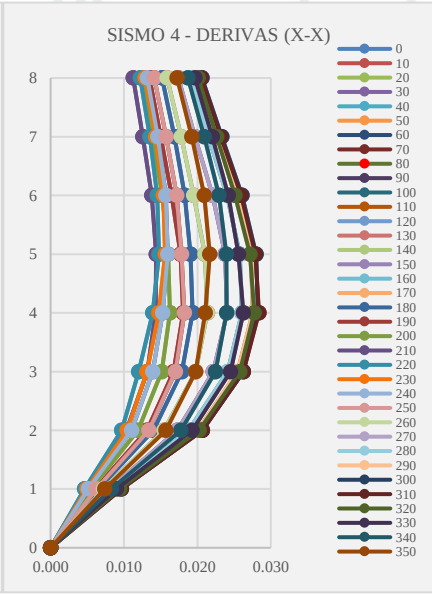

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

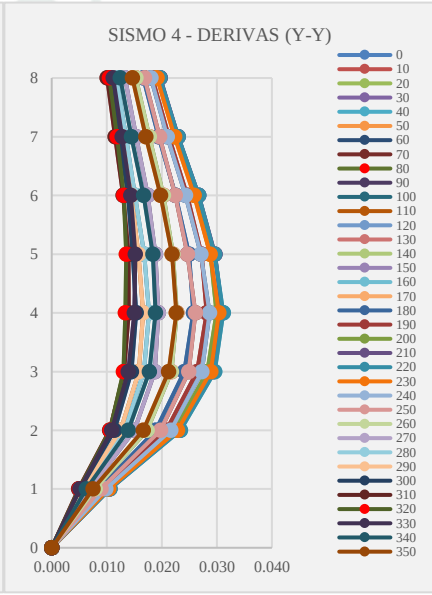

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

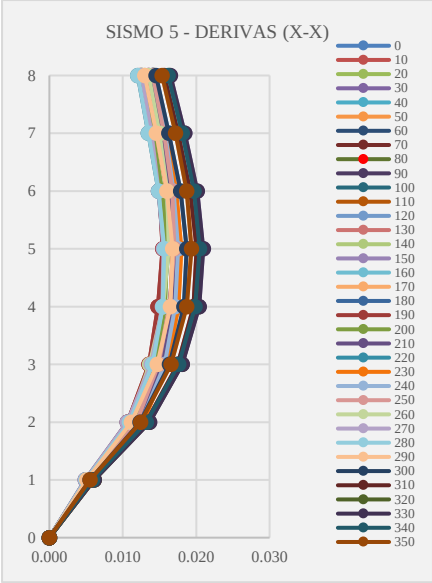

SISMO 2 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

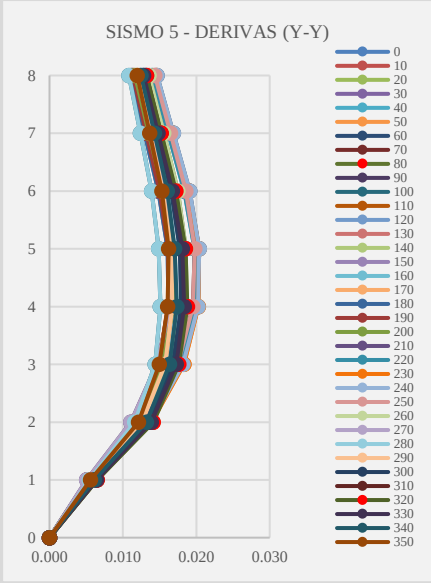

SISMO 3 - DERIVAS (X-X)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

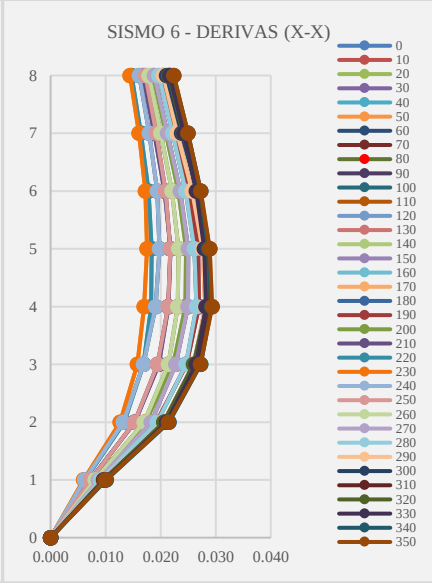

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

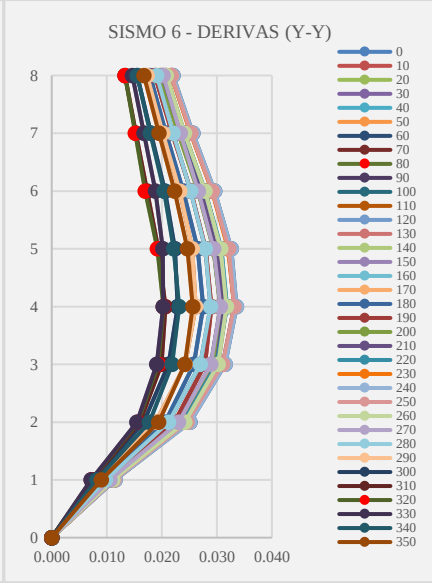

SISMO 4 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

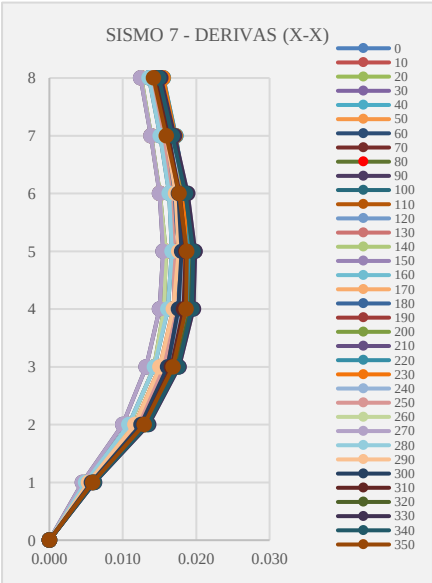

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

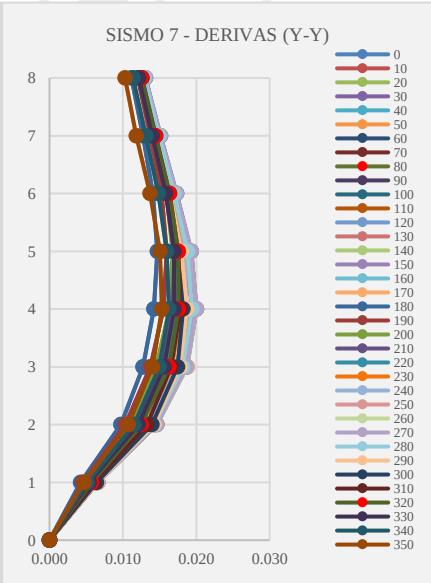

SISMO 5 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

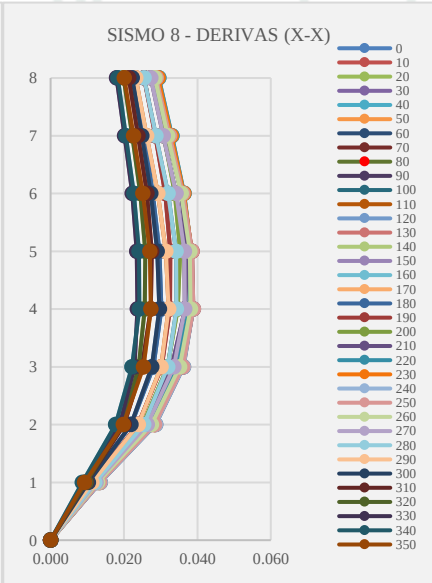

SISMO 5 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

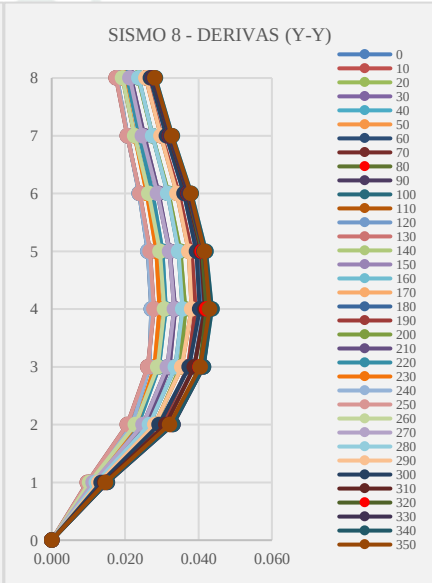

SISMO 6 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

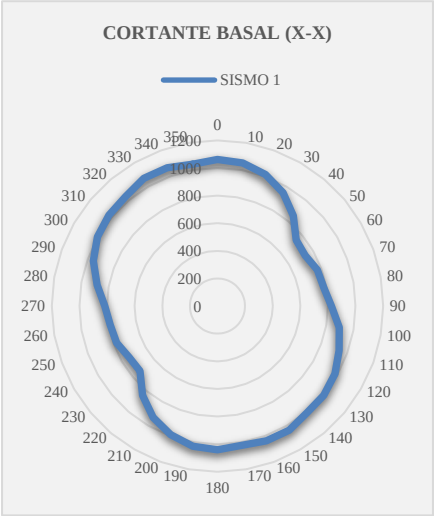

SISMO 7 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

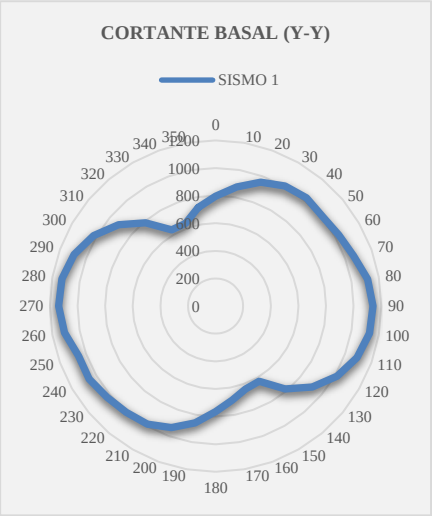

SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

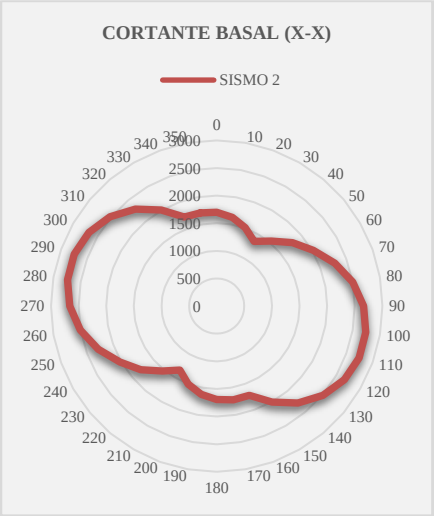

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

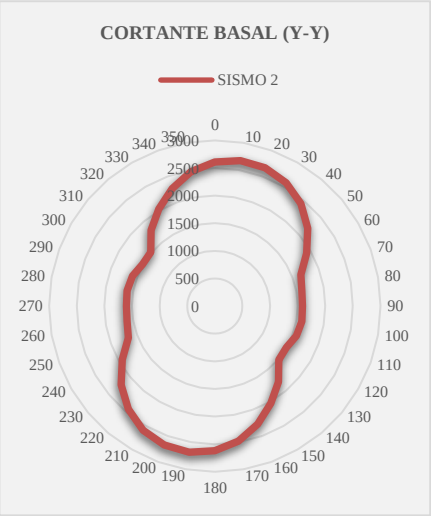

SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
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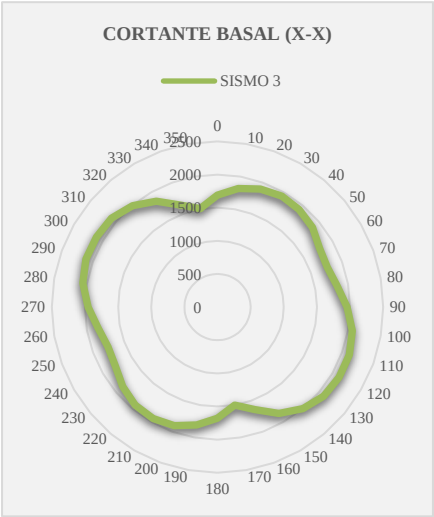
Para 12 pisos:

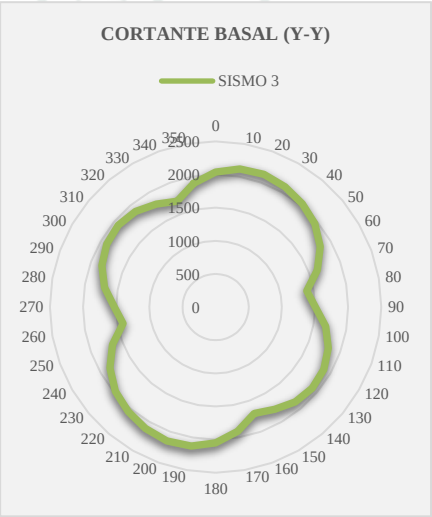


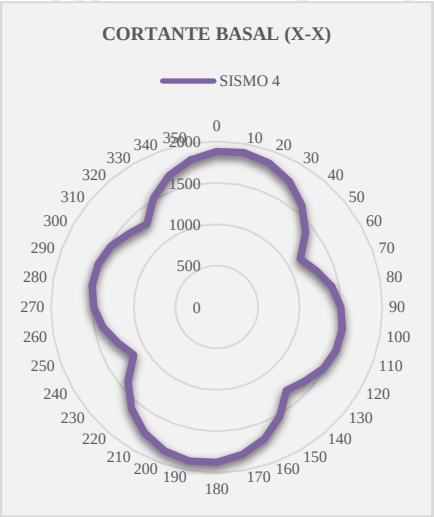


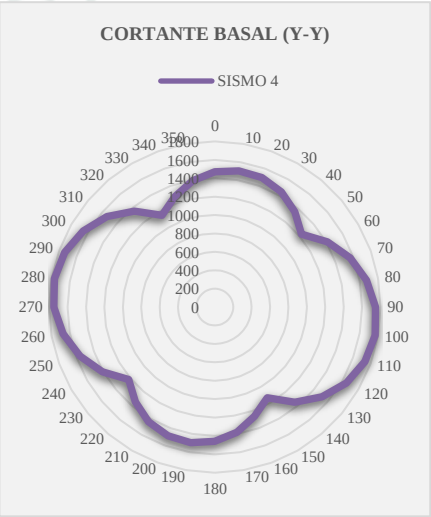


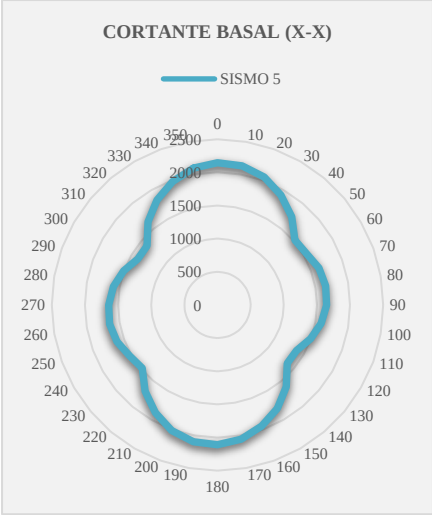


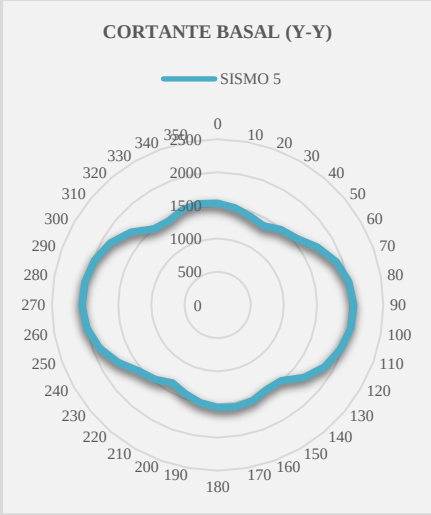


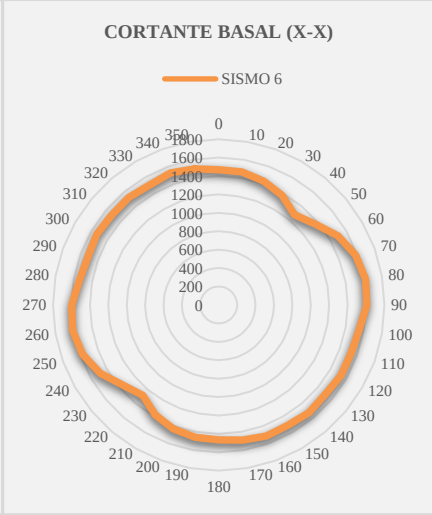


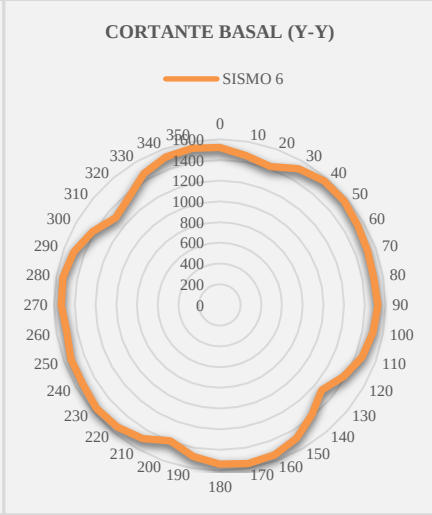


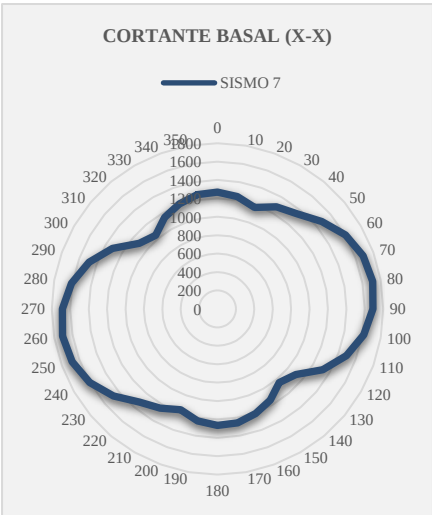


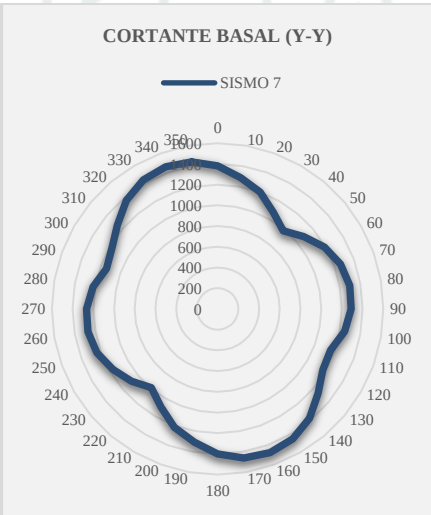

CORTANTE BASAL (X-X)
SISMO 5

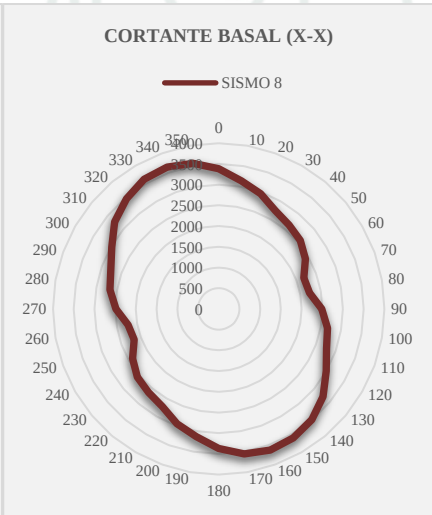

CORTANTE BASAL (Y-Y)
SISMO 5

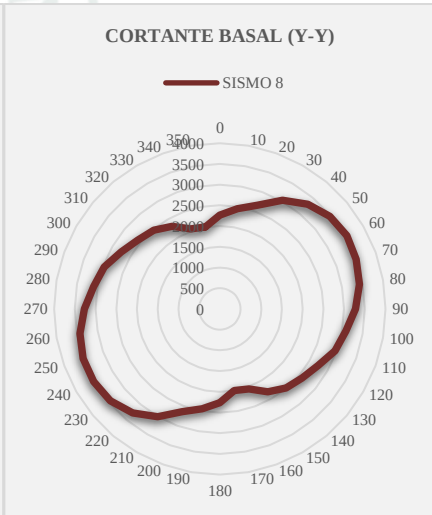

CORTANTE BASAL (X-X)
SISMO 6

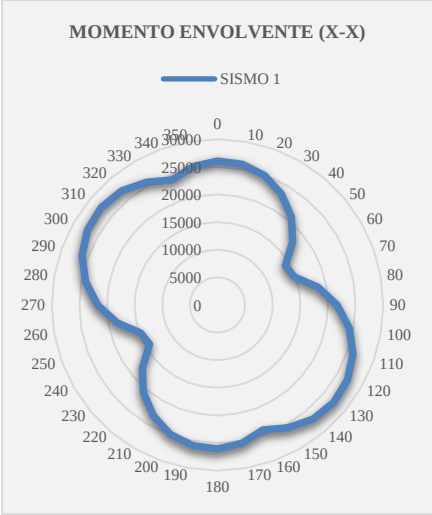

CORTANTE BASAL (Y-Y)
SISMO 6

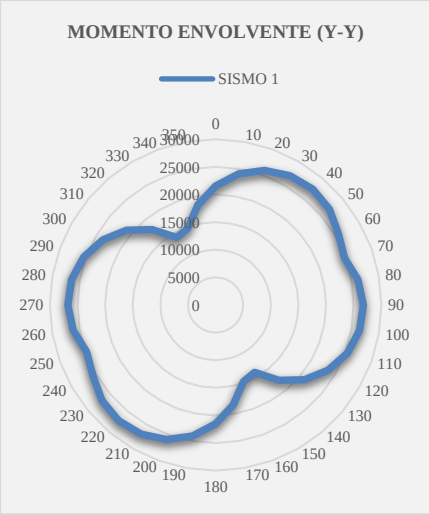

CORTANTE BASAL (X-X)
SISMO 7

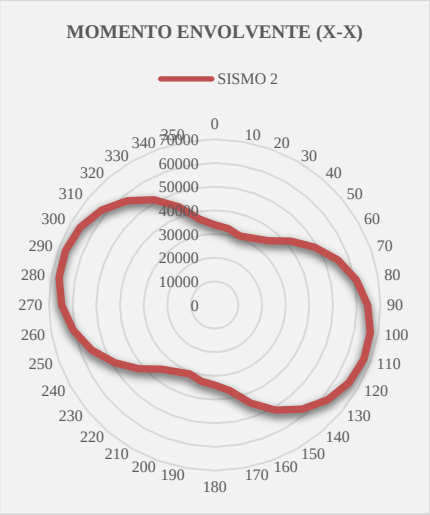

CORTANTE BASAL (Y-Y)
SISMO 7

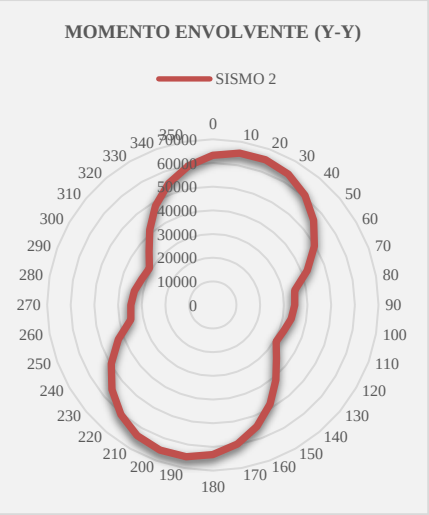

CORTANTE BASAL (X-X)
SISMO 8

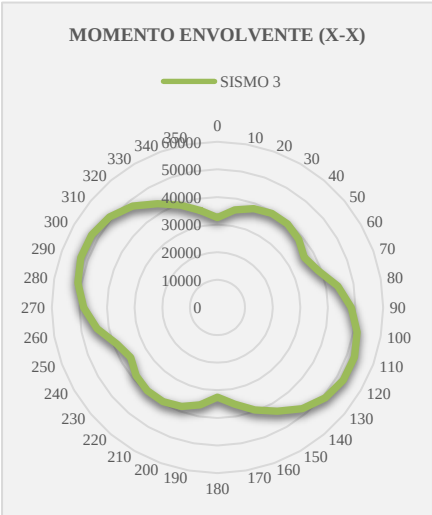

CORTANTE BASAL (Y-Y)
SISMO 8

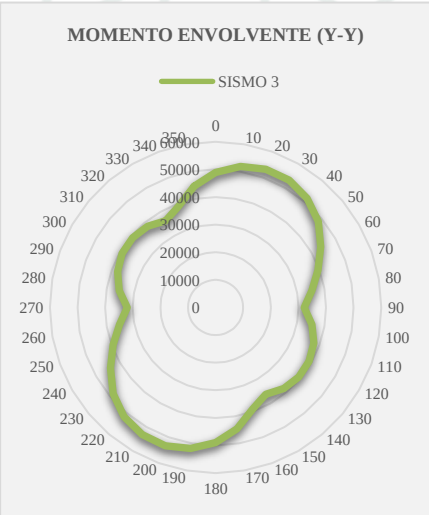

MOMENTO ENVOLVENTE (X-X)
SISMO 1

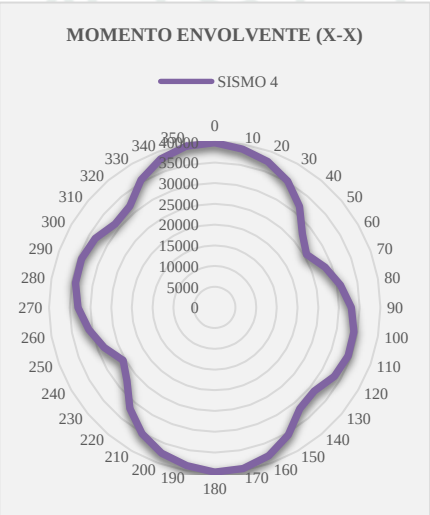

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

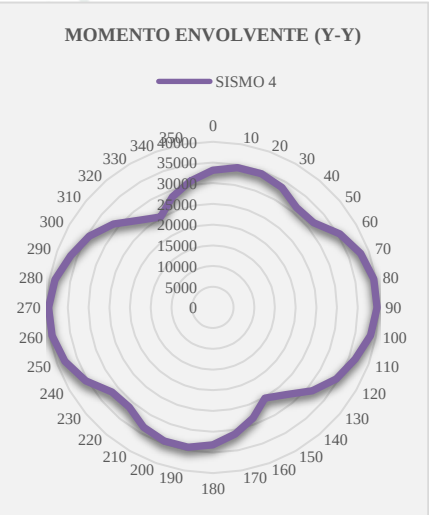

MOMENTO ENVOLVENTE (X-X)
SISMO 2

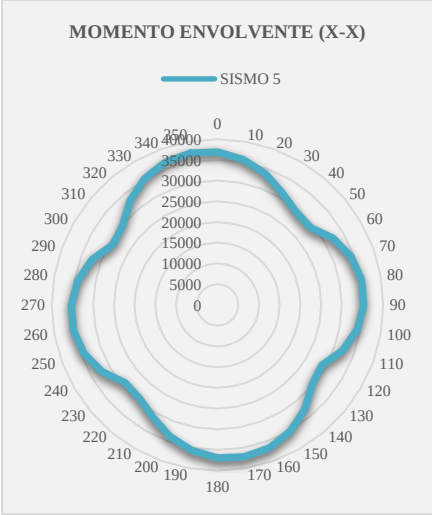

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

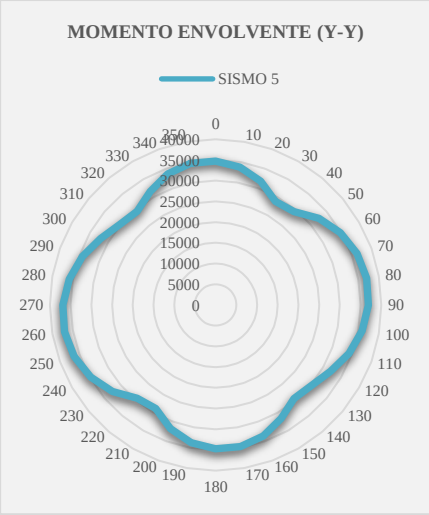

MOMENTO ENVOLVENTE (X-X)
SISMO 3

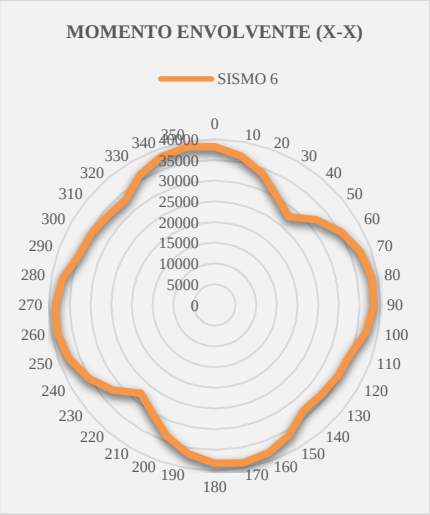

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

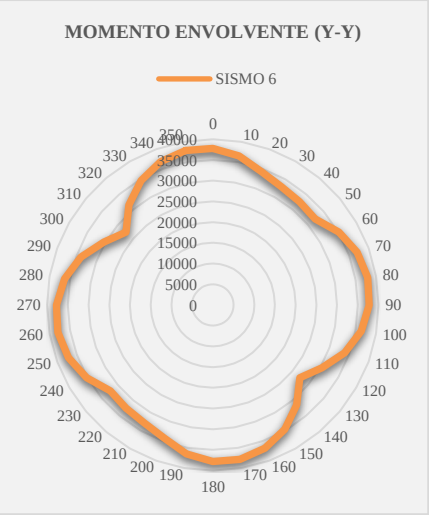

MOMENTO ENVOLVENTE (X-X)
SISMO 4

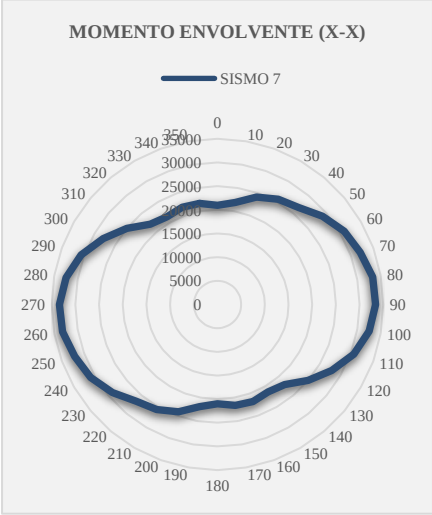

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

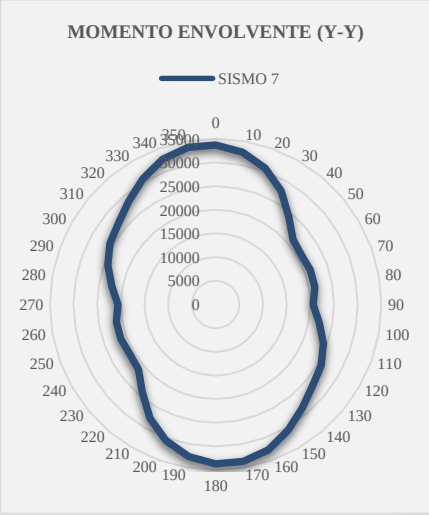

MOMENTO ENVOLVENTE (X-X)
SISMO 5

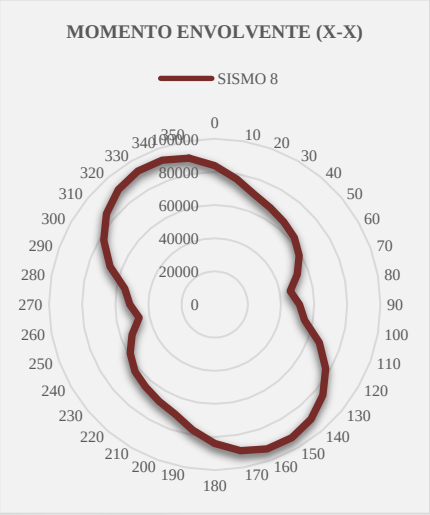

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

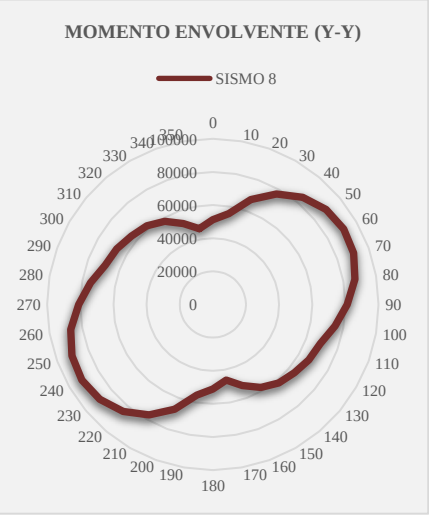

MOMENTO ENVOLVENTE (X-X)
SISMO 6

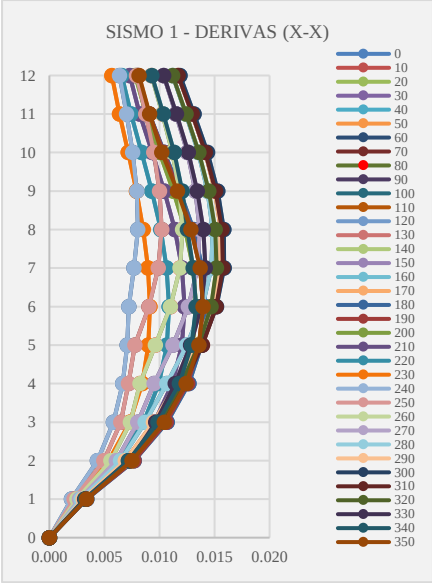

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

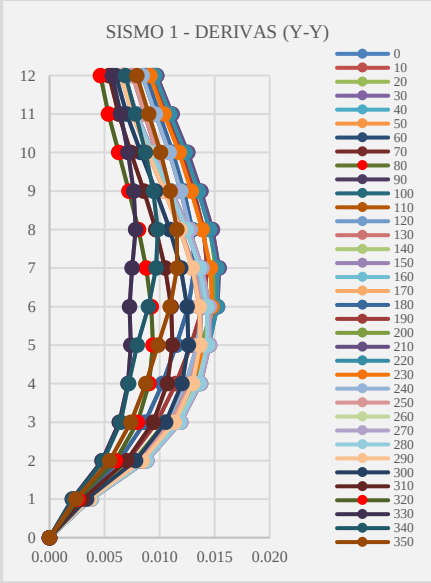

MOMENTO ENVOLVENTE (X-X)
SISMO 7

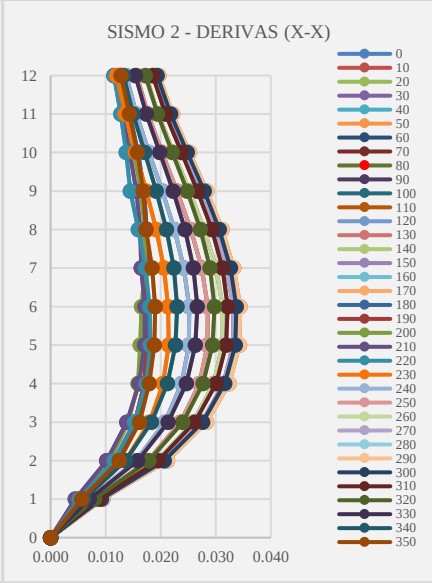

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

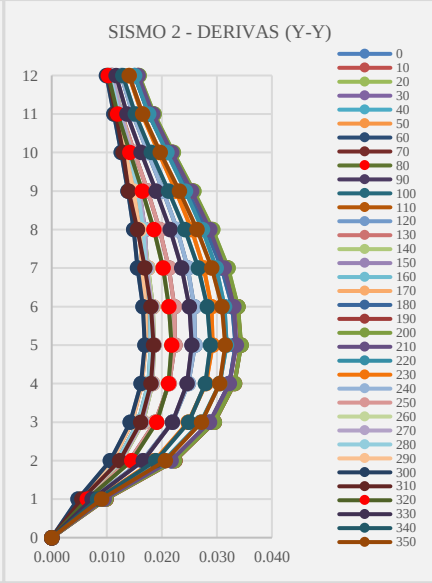

MOMENTO ENVOLVENTE (X-X)
SISMO 8

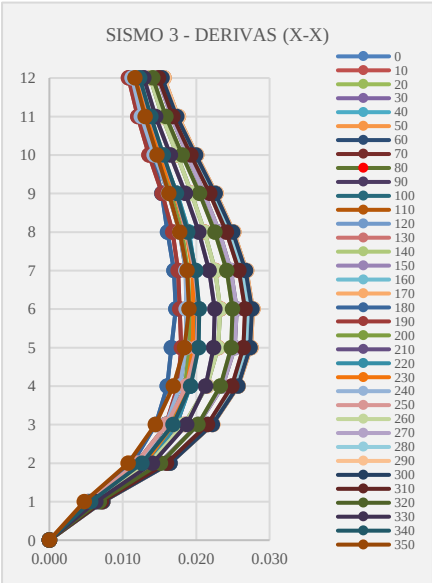

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

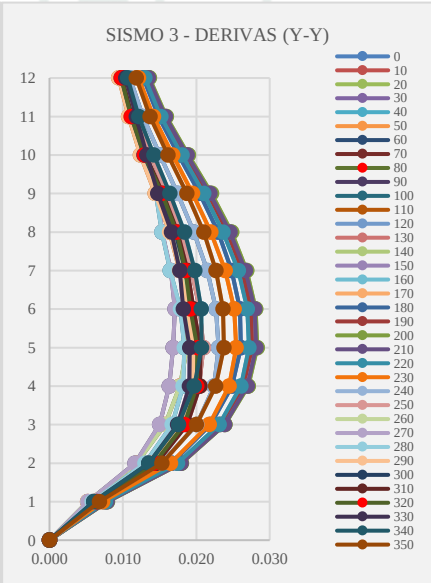

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

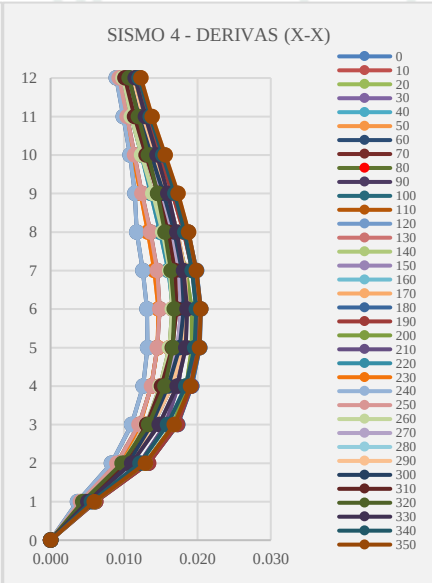

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

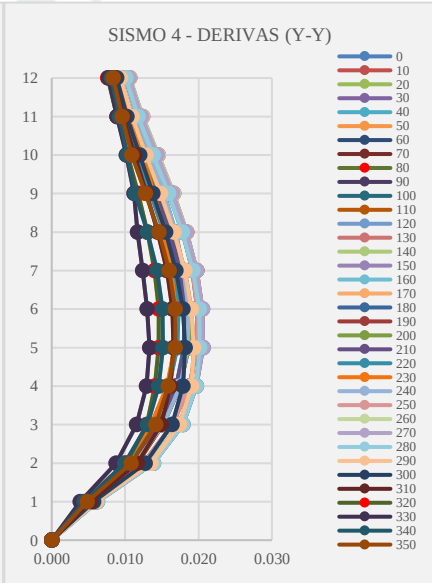

SISMO 2 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

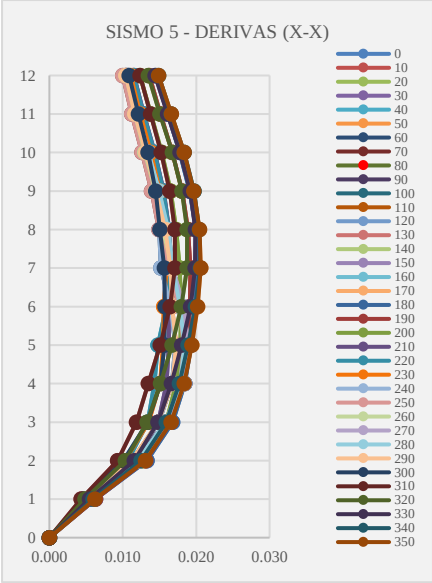

SISMO 2 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

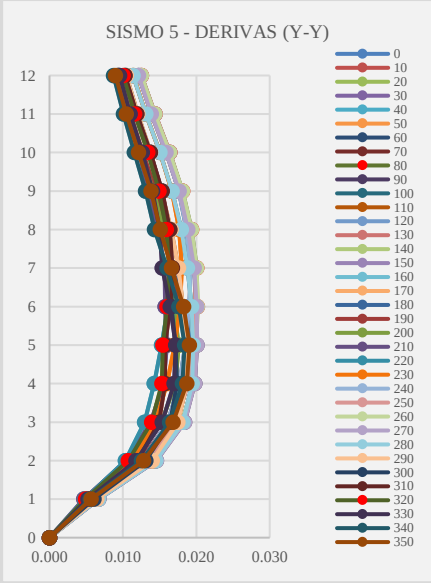

SISMO 3 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

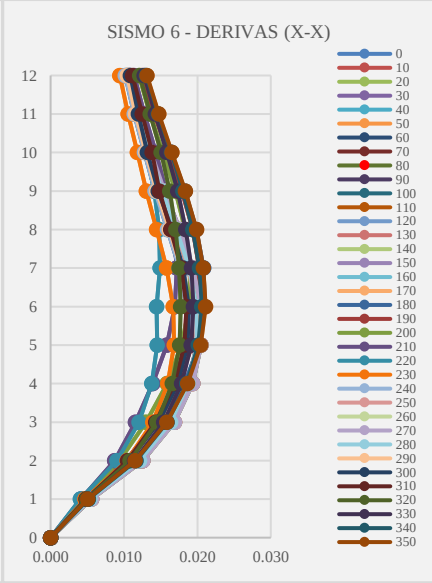

SISMO 3 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

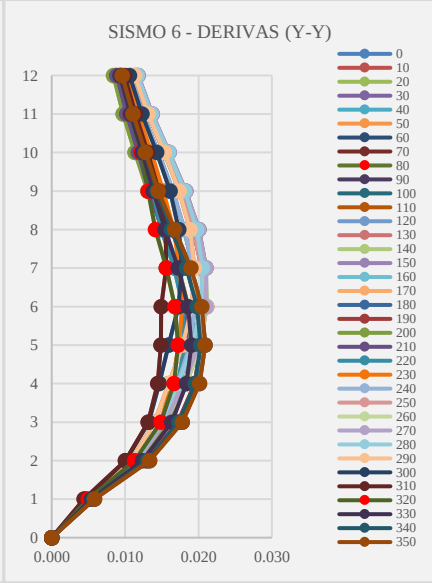

SISMO 4 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

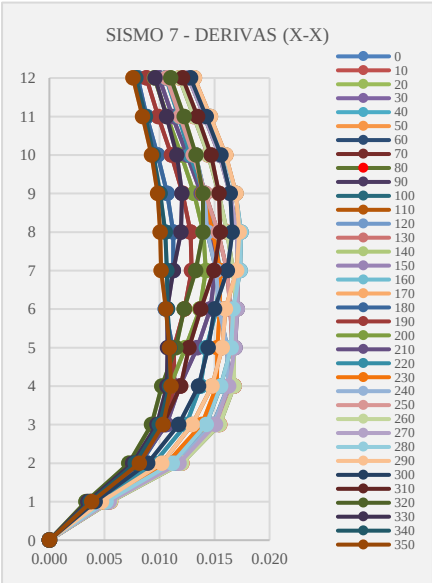

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

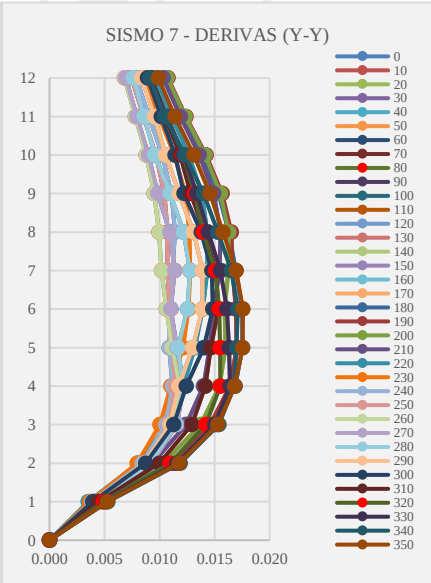

SISMO 5 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

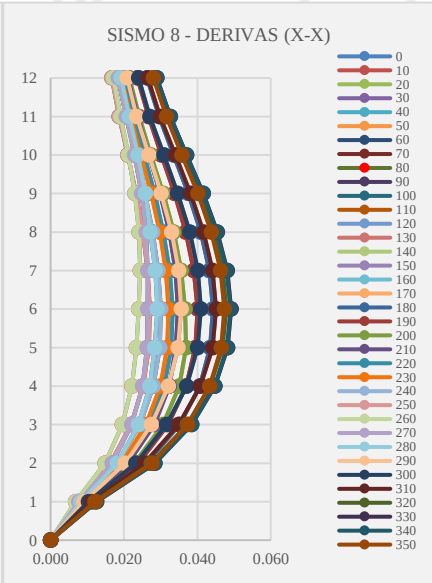

SISMO 5 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

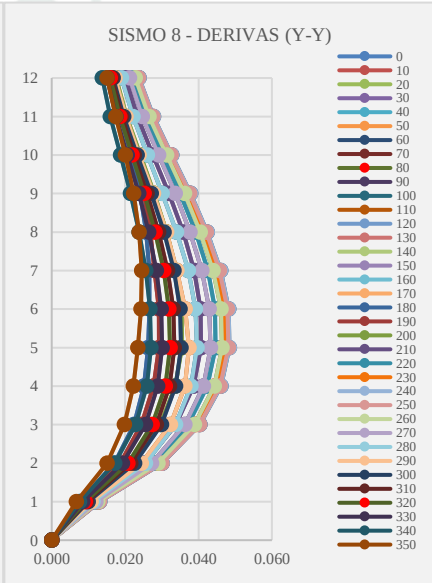

SISMO 6 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

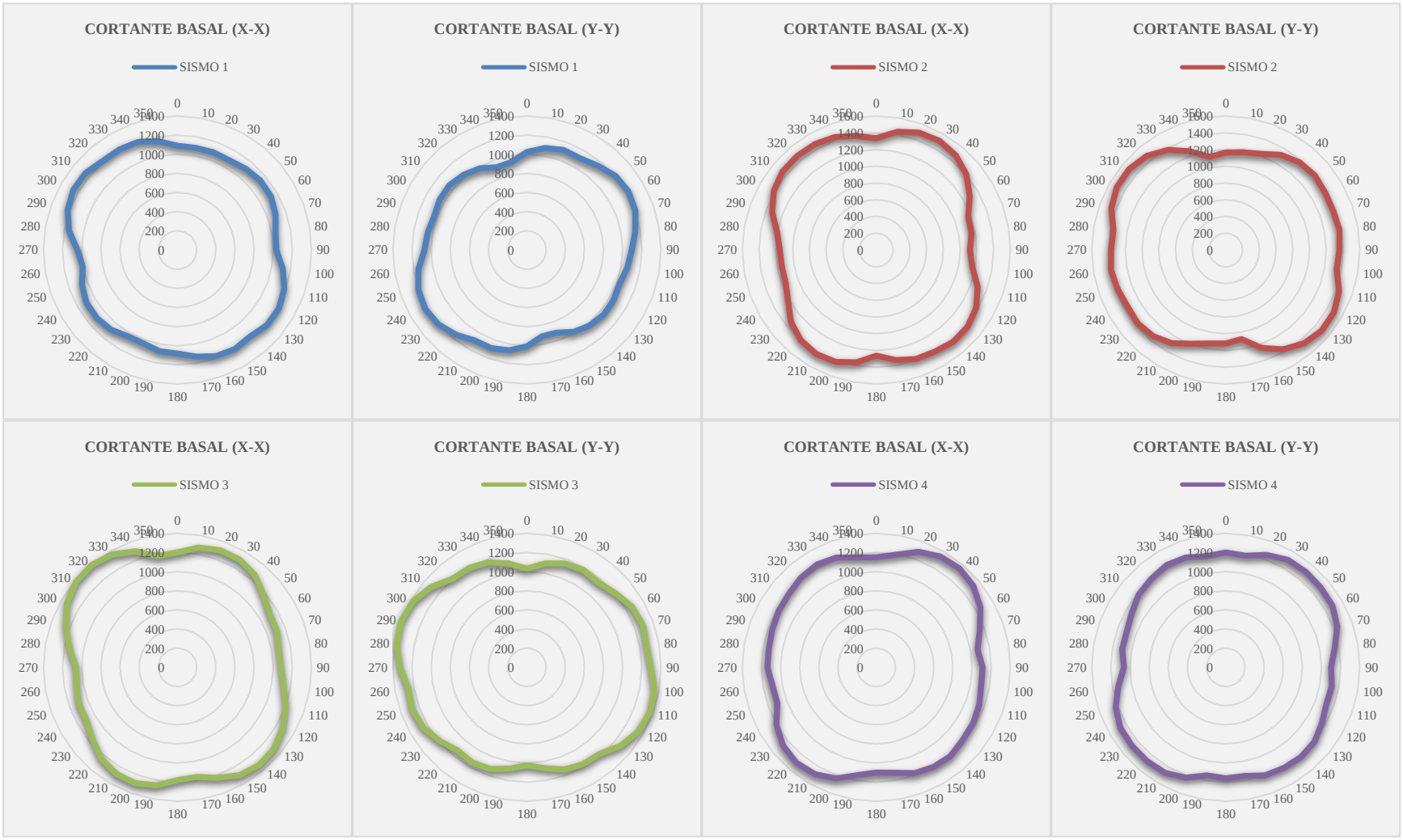

SISMO 7 - DERIVAS (Y-Y)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (X-X)
0.000 0.020 0.040 0.060
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

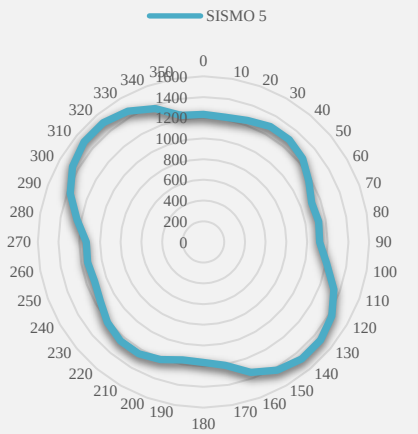

SISMO 8 - DERIVAS (Y-Y)
0.000 0.020 0.040 0.060
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

MODELO 2

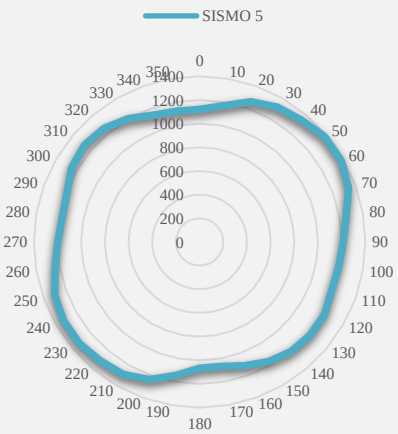
Para 4 pisos:



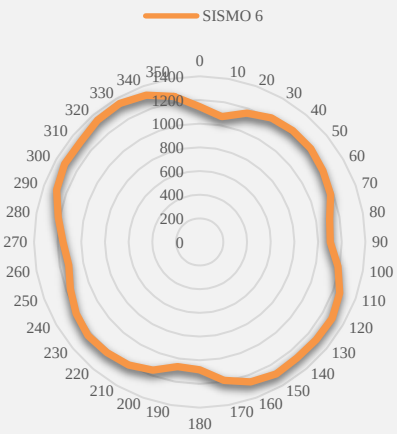
CORTANTE BASAL (X-X)



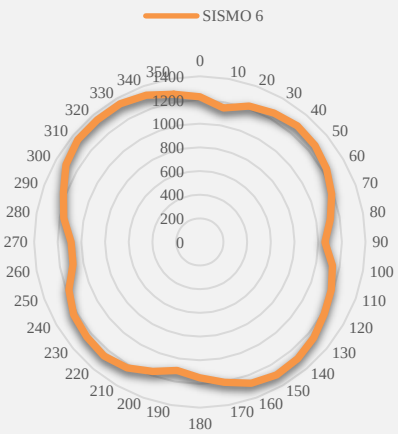
CORTANTE BASAL (Y-Y)



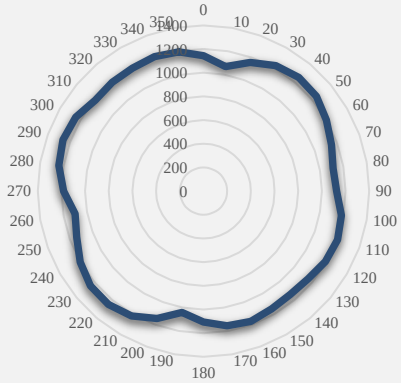
CORTANTE BASAL (X-X)



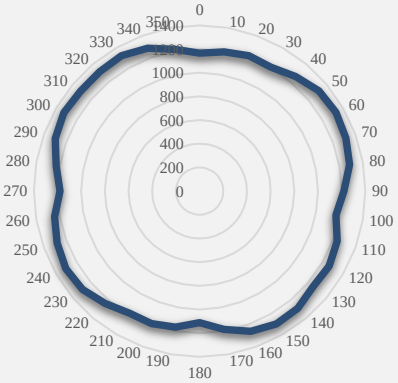
CORTANTE BASAL (Y-Y)



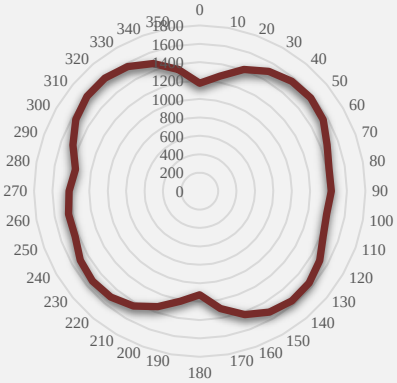
CORTANTE BASAL (X-X)



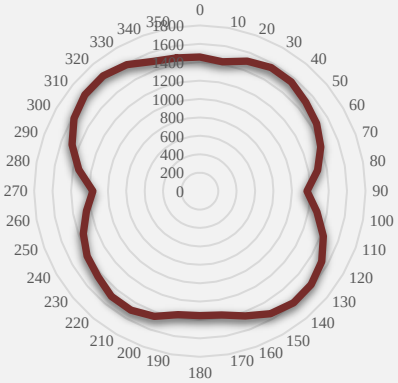
CORTANTE BASAL (Y-Y)

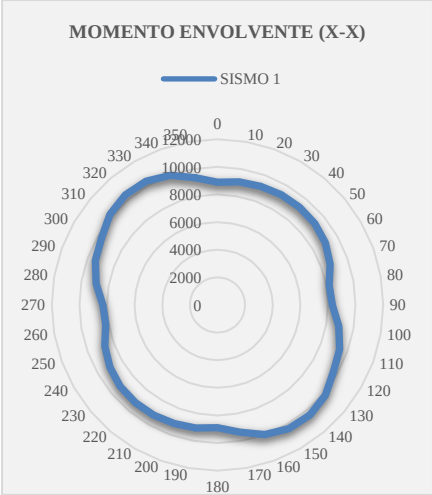


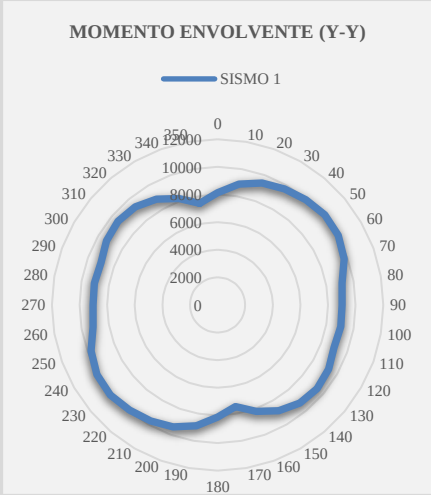
CORTANTE BASAL (X-X)

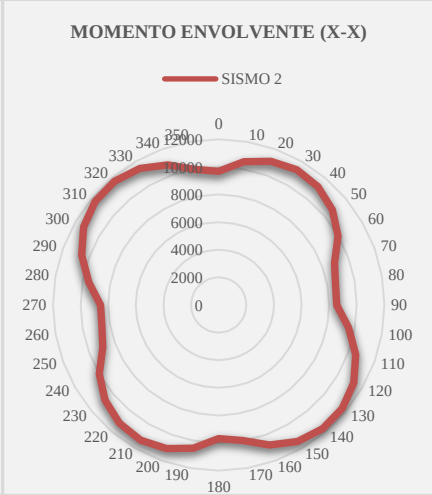


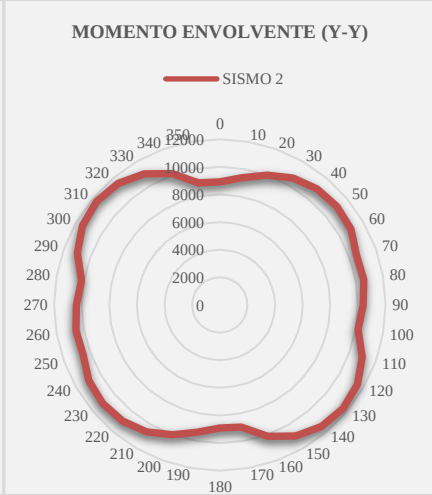
CORTANTE BASAL (Y-Y)

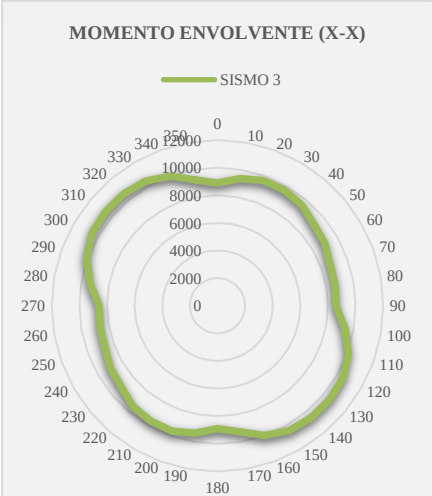


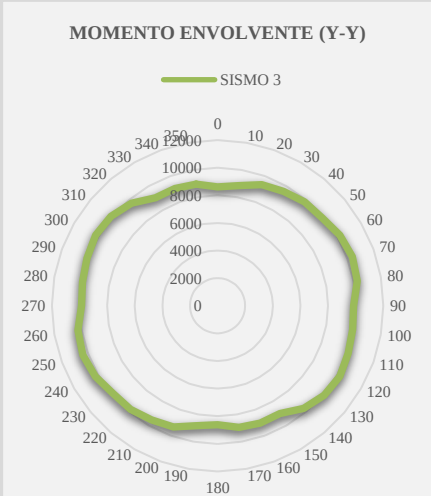

MOMENTO ENVOLVENTE (X-X)
SISMO 1

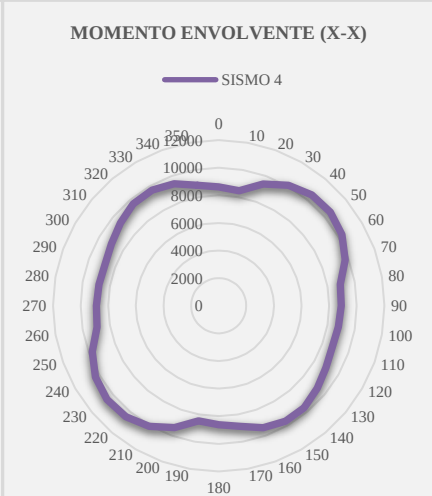

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

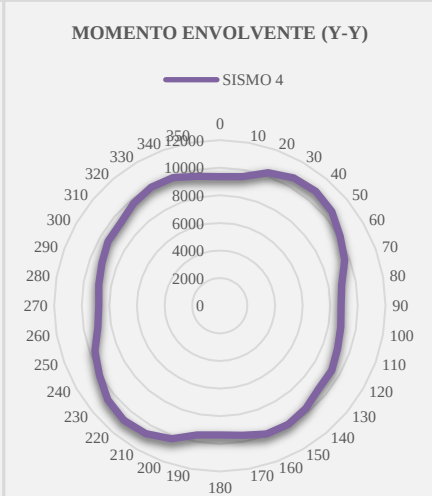

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

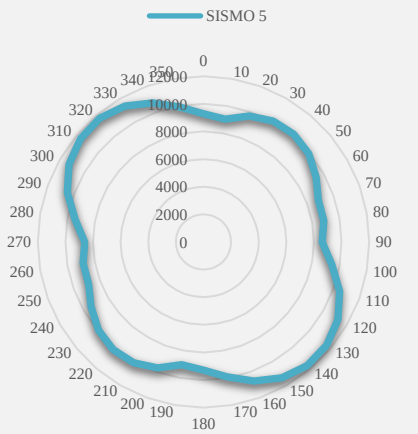

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

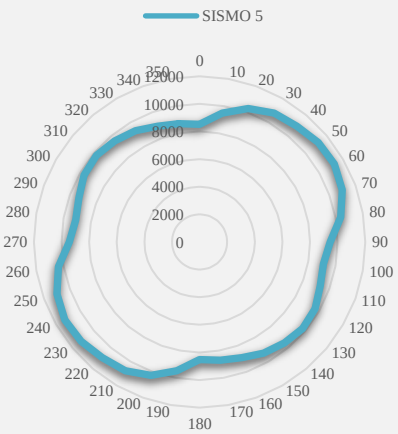

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

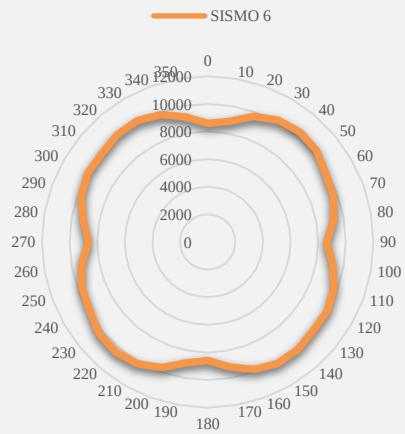
MOMENTO ENVOLVENTE (X-X)



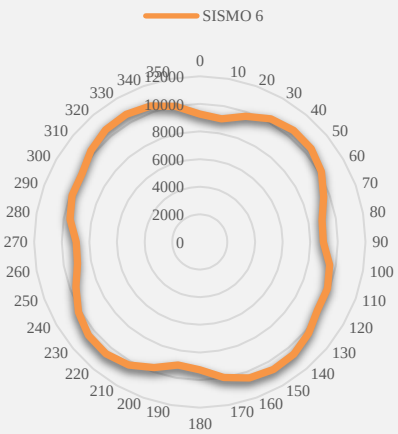
MOMENTO ENVOLVENTE (Y-Y)



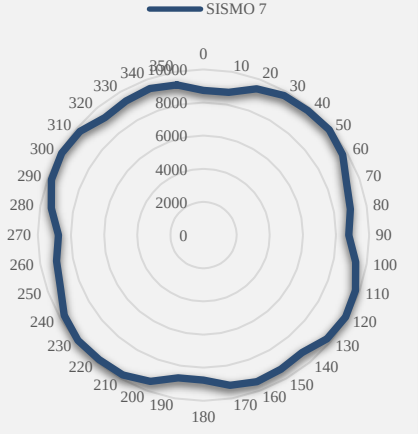
MOMENTO ENVOLVENTE (X-X)



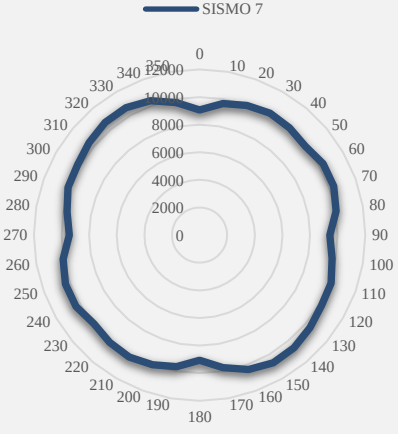
MOMENTO ENVOLVENTE (Y-Y)



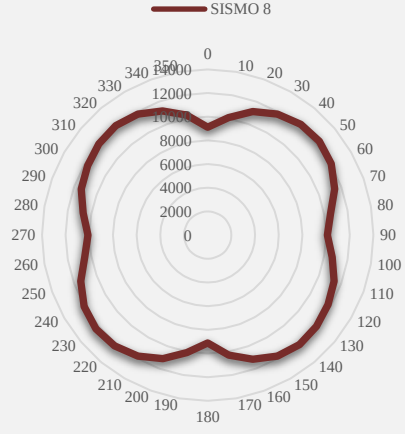
MOMENTO ENVOLVENTE (X-X)



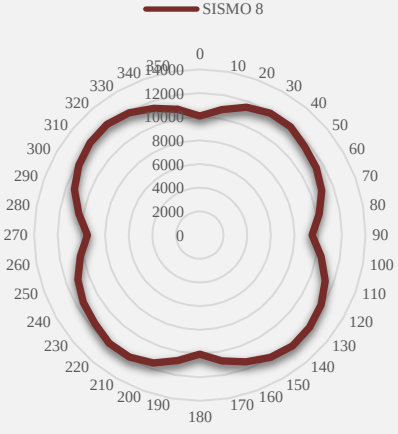
MOMENTO ENVOLVENTE (Y-Y)

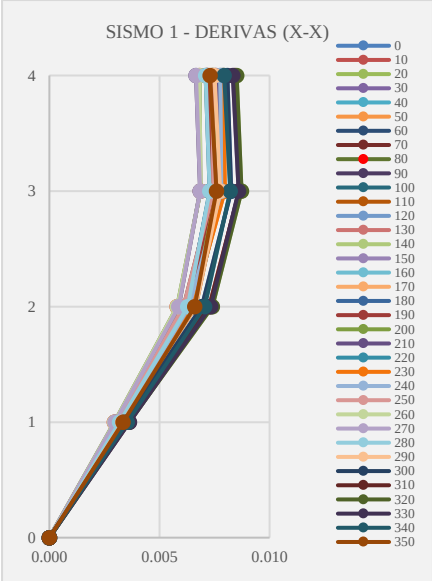


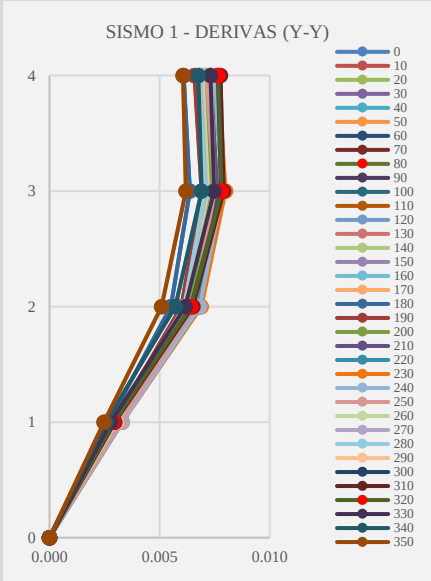
MOMENTO ENVOLVENTE (X-X)

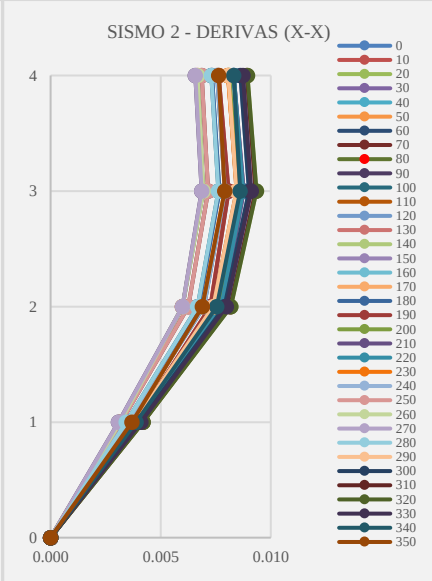


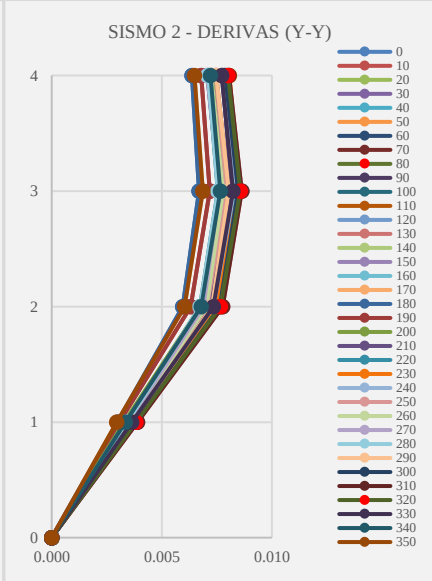
MOMENTO ENVOLVENTE (Y-Y)

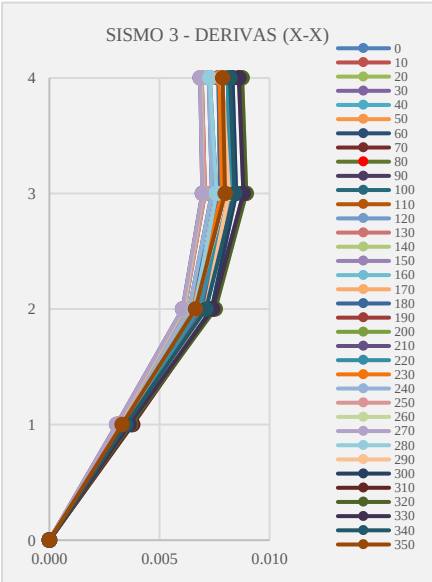


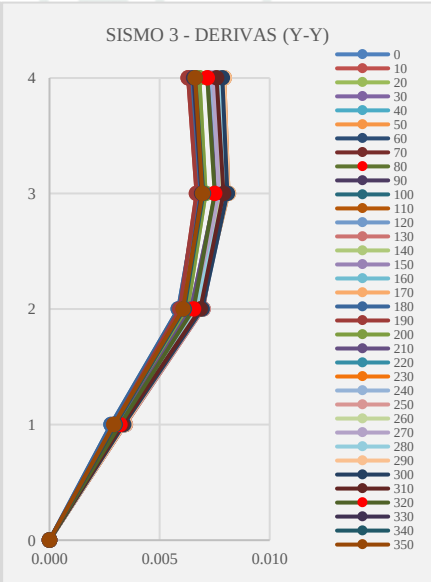

SISMO 1 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

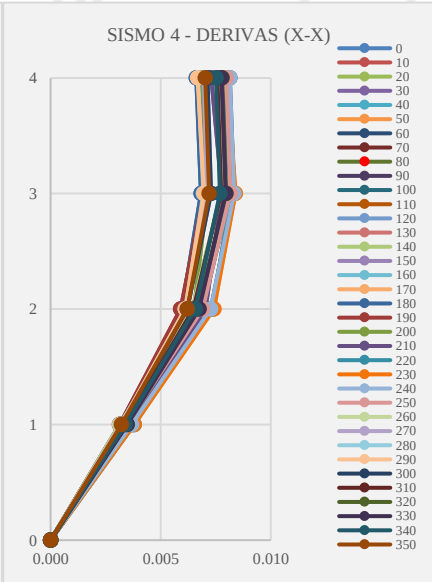

SISMO 1 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

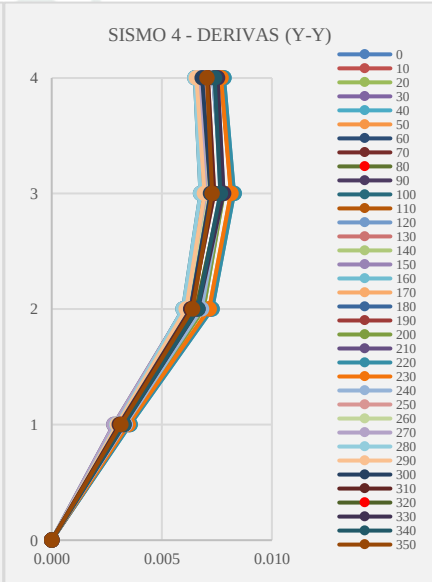

SISMO 2 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

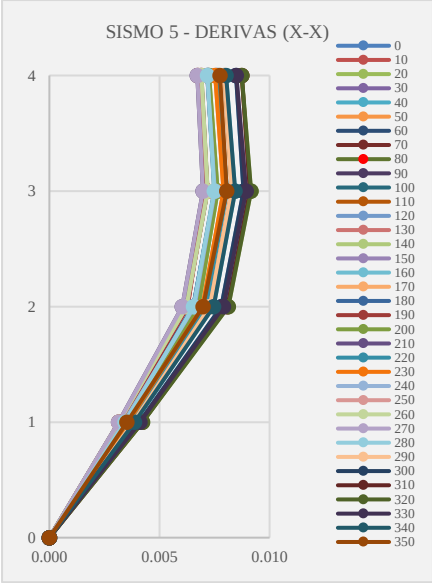

SISMO 2 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

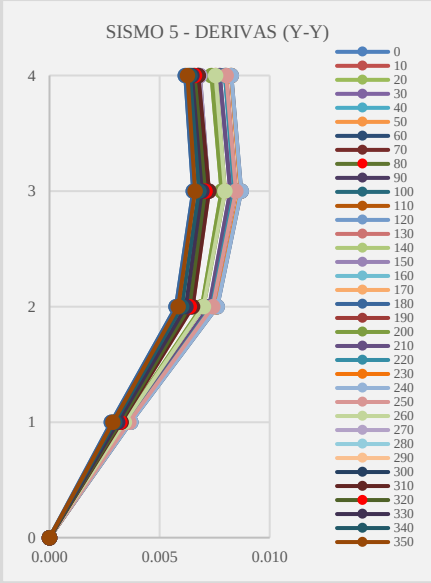

SISMO 3 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

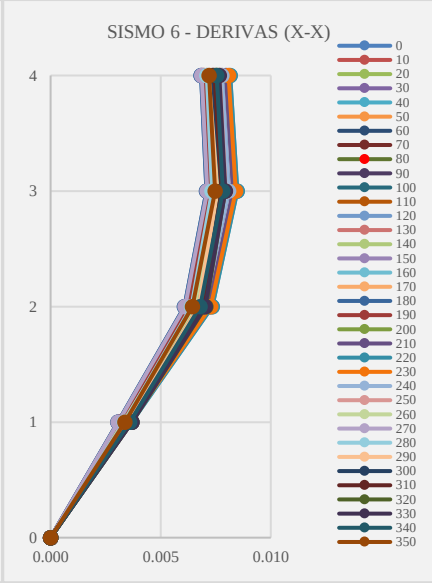

SISMO 3 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

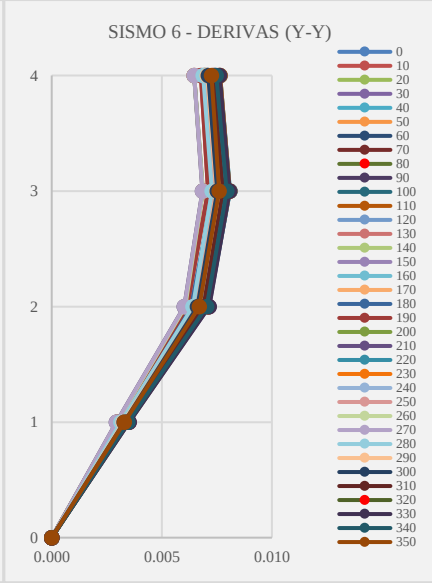

SISMO 4 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

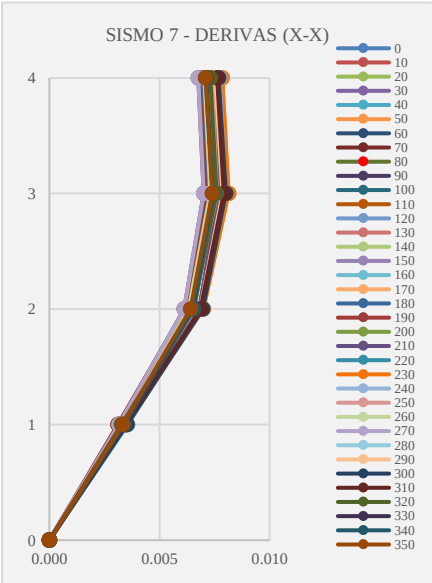

SISMO 4 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

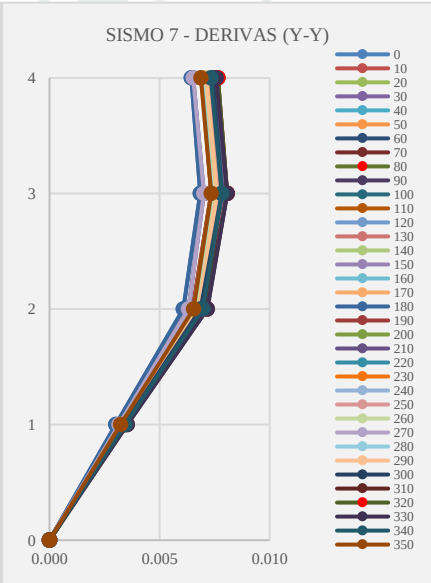

SISMO 5 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

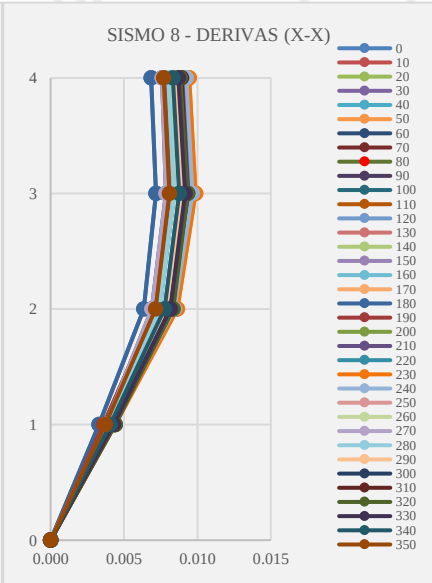

SISMO 5 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

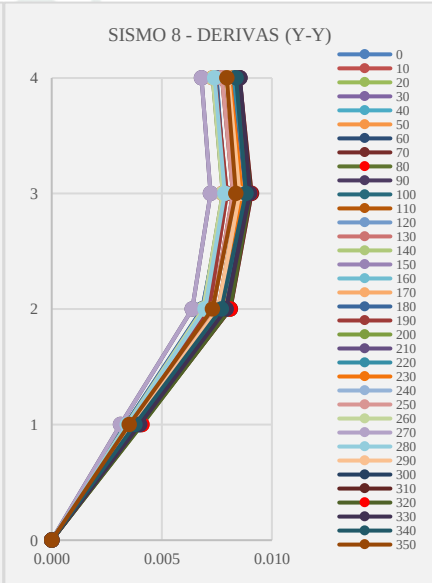

SISMO 6 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

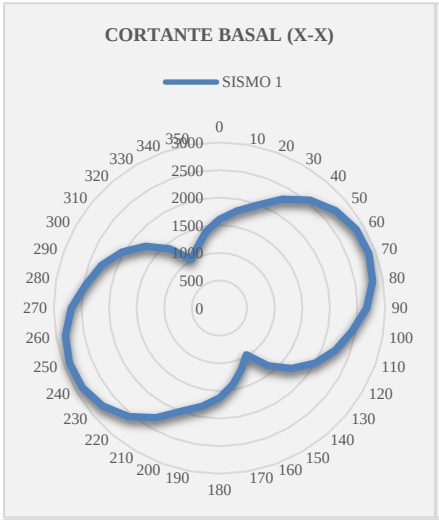

SISMO 7 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

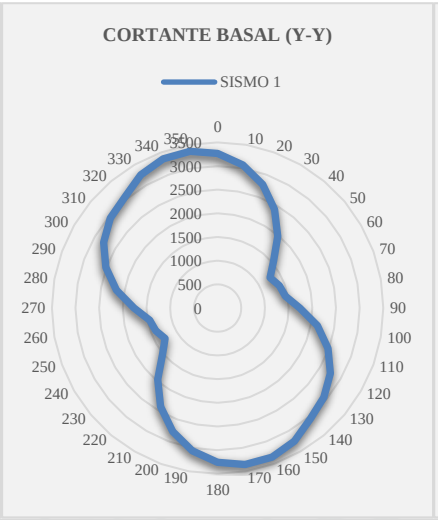

SISMO 7 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

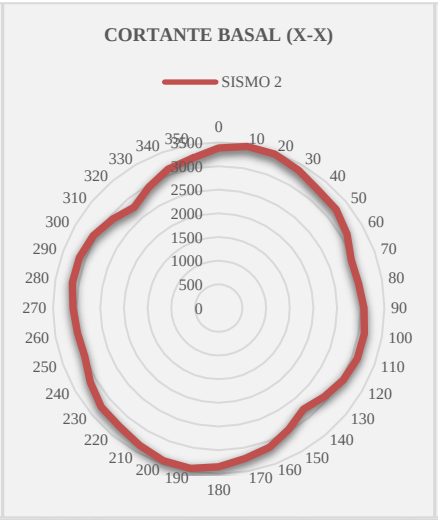

SISMO 8 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

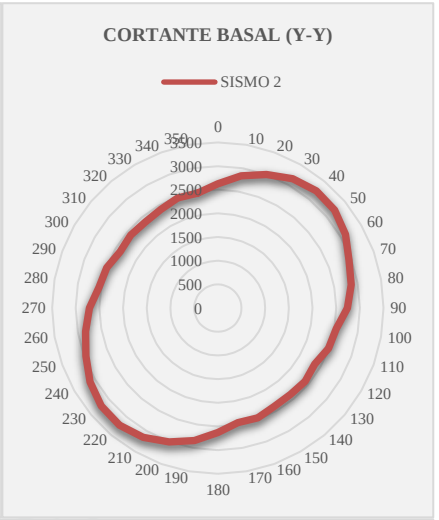

SISMO 8 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

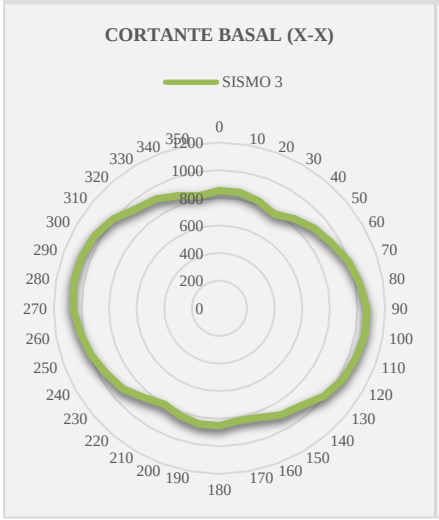
Para 8 pisos:

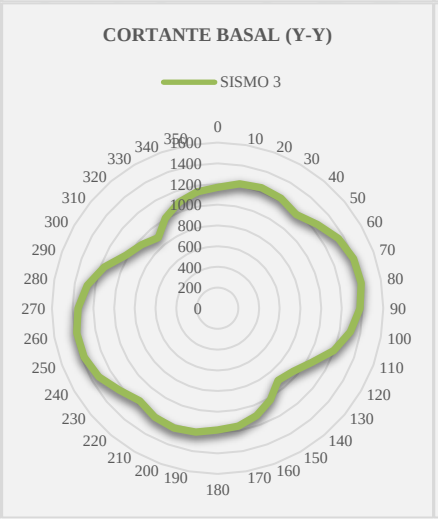

CORTANTE BASAL (X-X)
SISMO 1

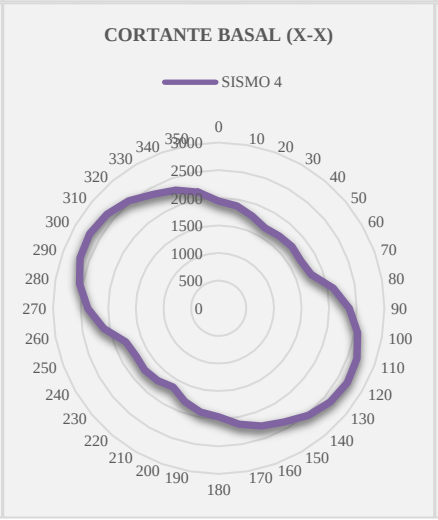

CORTANTE BASAL (Y-Y)
SISMO 1

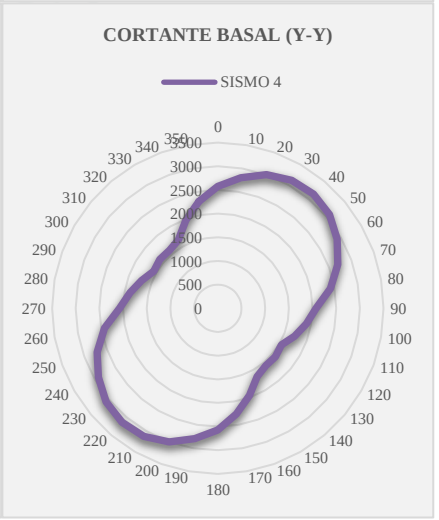

CORTANTE BASAL (X-X)
SISMO 2


CORTANTE BASAL (Y-Y)
SISMO 2

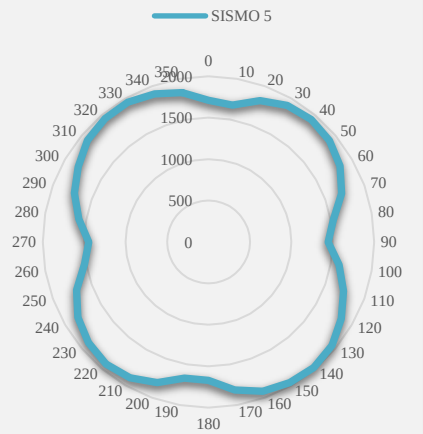

CORTANTE BASAL (X-X)
SISMO 3


CORTANTE BASAL (Y-Y)
SISMO 3

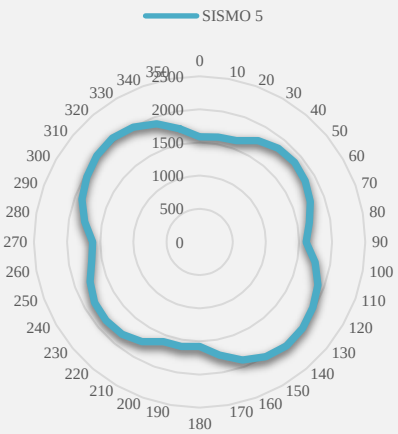

CORTANTE BASAL (X-X)
SISMO 4


CORTANTE BASAL (Y-Y)
SISMO 4

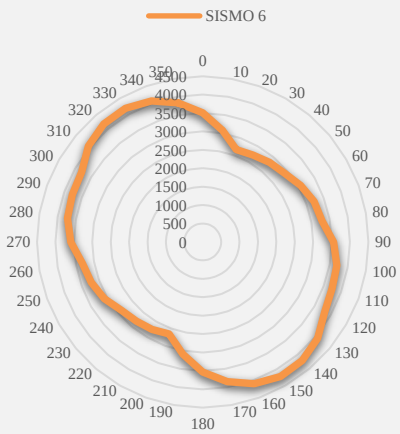
CORTANTE BASAL (X-X)



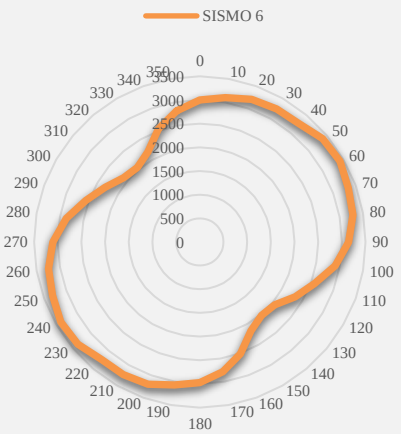
CORTANTE BASAL (Y-Y)



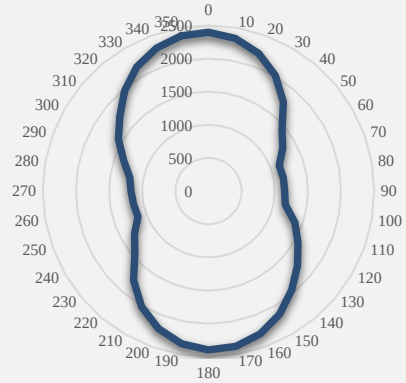
CORTANTE BASAL (X-X)



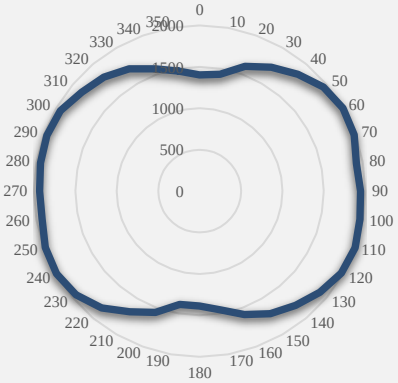
CORTANTE BASAL (Y-Y)



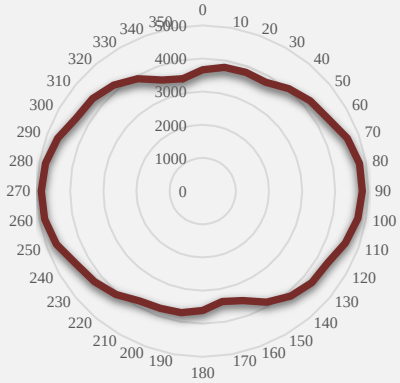
CORTANTE BASAL (X-X)



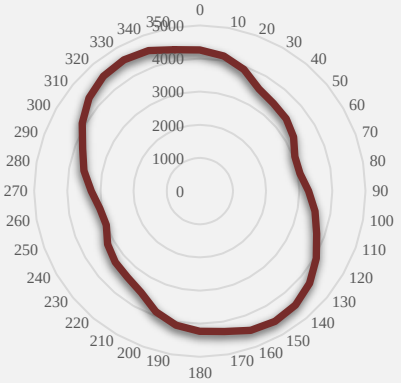
CORTANTE BASAL (Y-Y)

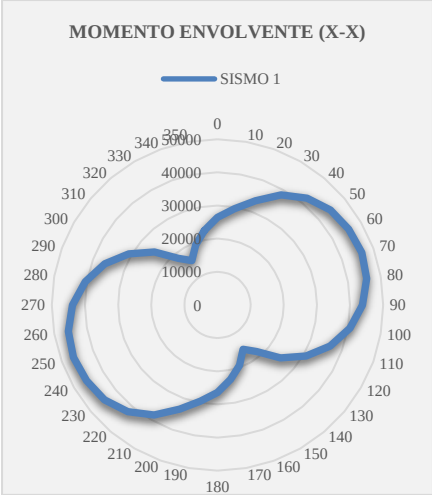


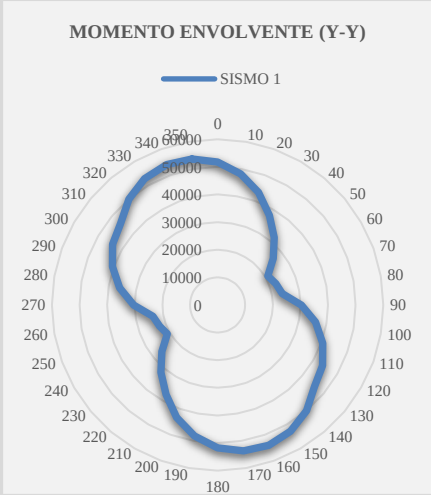
CORTANTE BASAL (X-X)

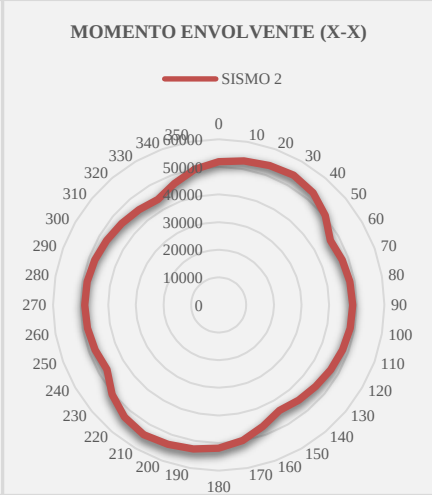


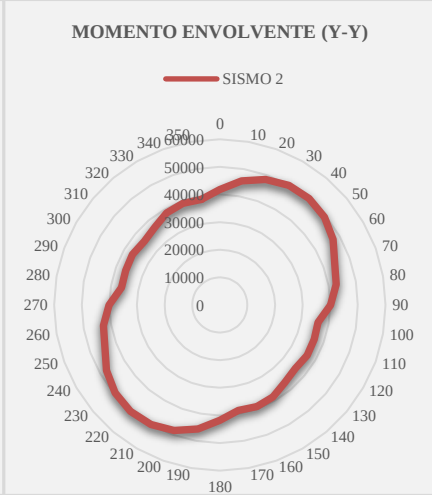
CORTANTE BASAL (Y-Y)

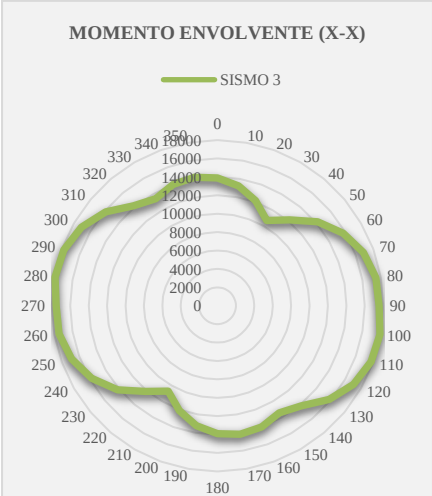


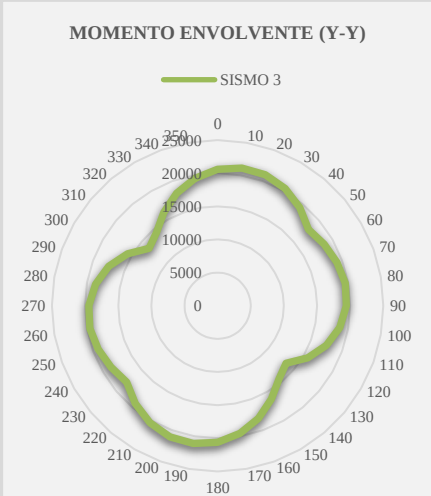

MOMENTO ENVOLVENTE (X-X)
SISMO 1

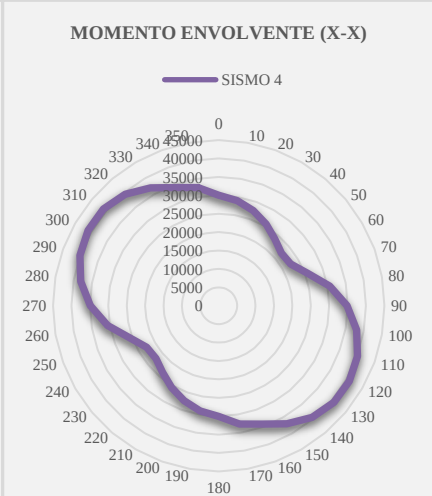

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

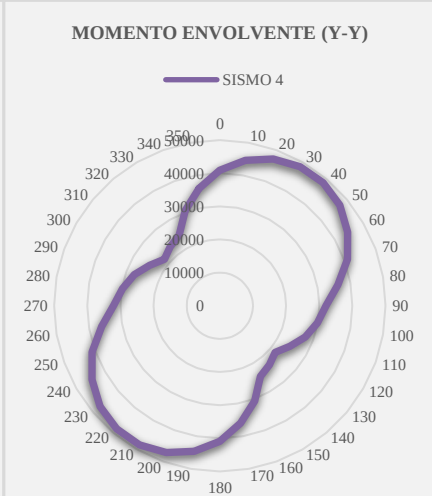

MOMENTO ENVOLVENTE (X-X)
SISMO 2

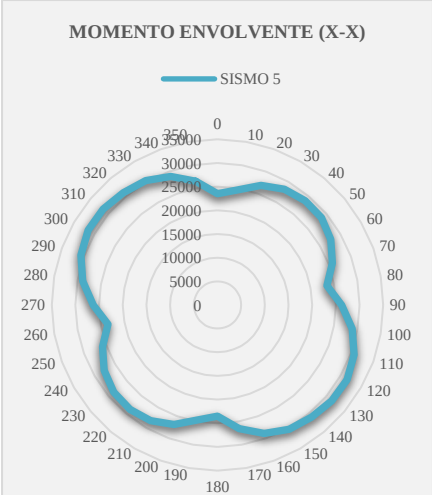

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

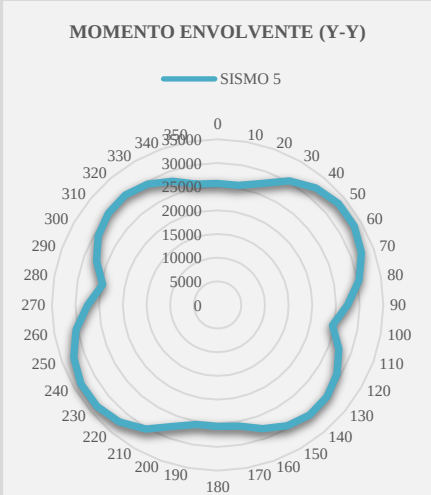

MOMENTO ENVOLVENTE (X-X)
SISMO 3

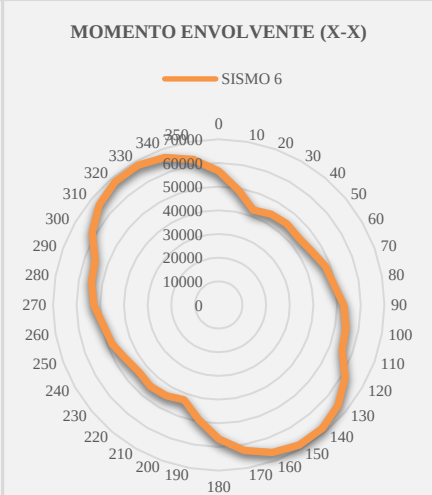

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

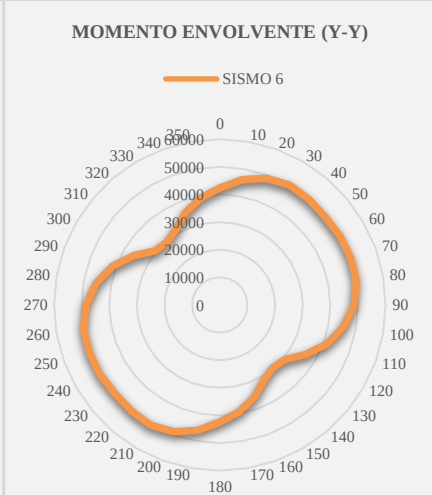

MOMENTO ENVOLVENTE (X-X)
SISMO 4

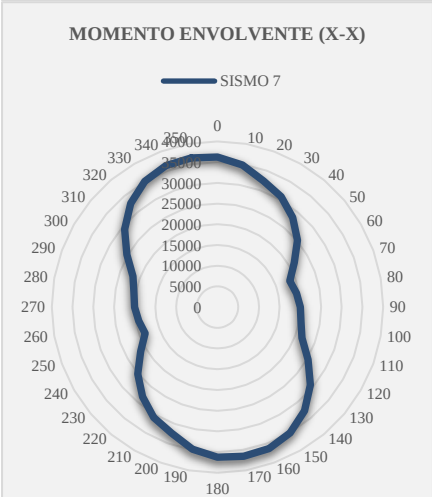

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

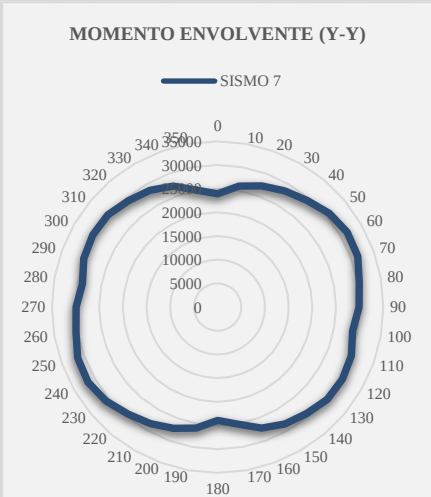

MOMENTO ENVOLVENTE (X-X)
SISMO 5

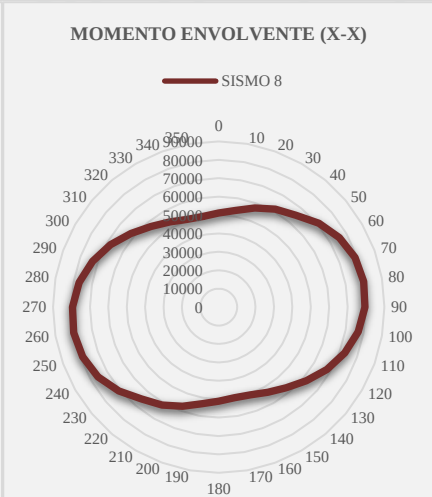

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

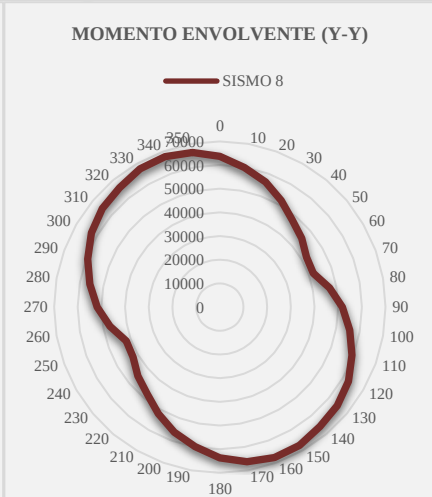

MOMENTO ENVOLVENTE (X-X)
SISMO 6

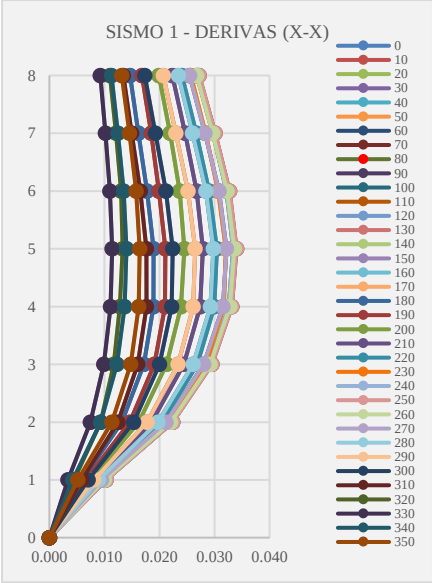

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

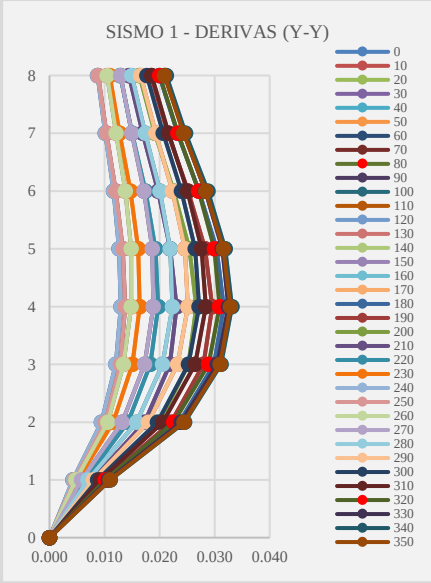

MOMENTO ENVOLVENTE (X-X)
SISMO 7

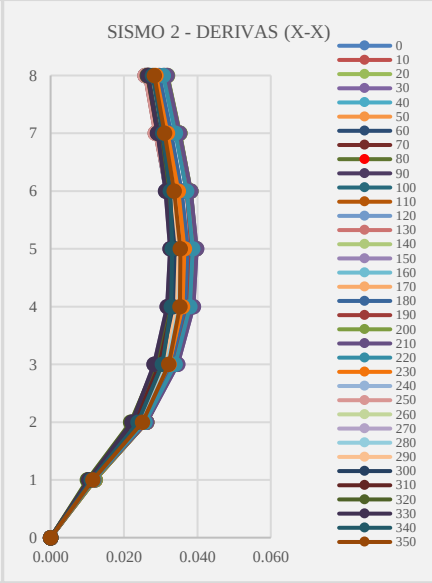

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

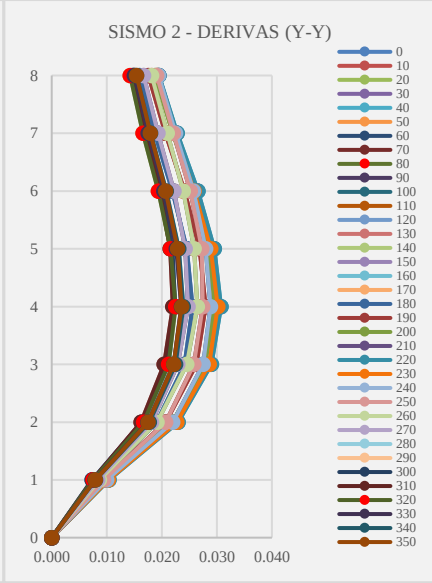

MOMENTO ENVOLVENTE (X-X)
SISMO 8

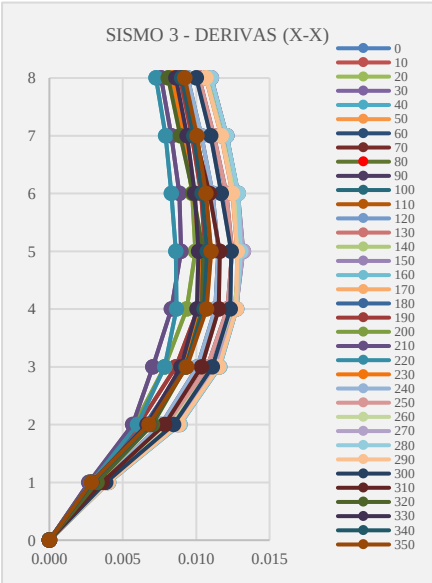

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

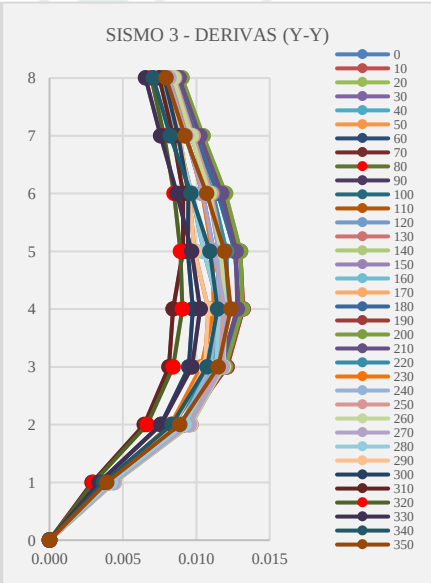

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

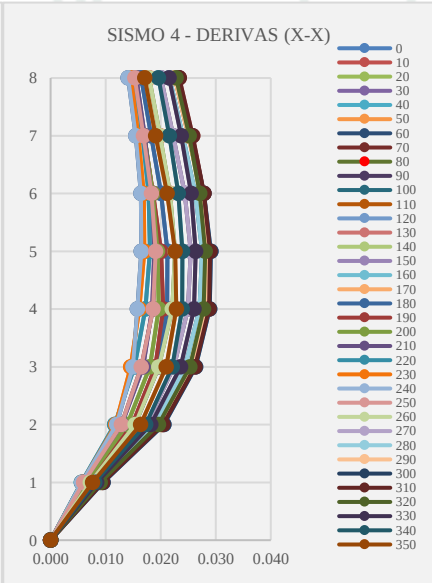

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

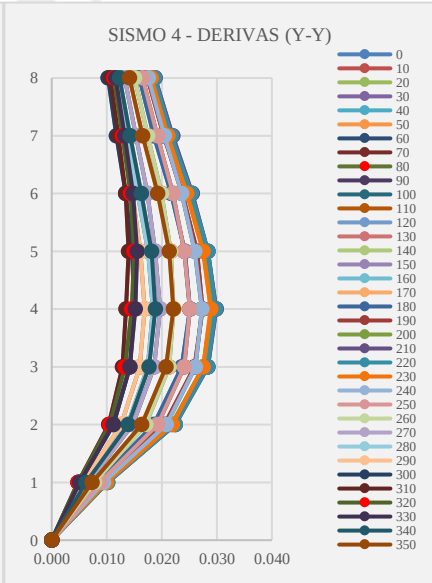

SISMO 2 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060

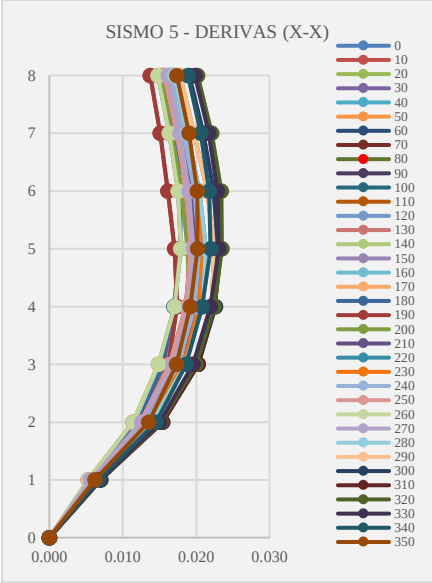

SISMO 2 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

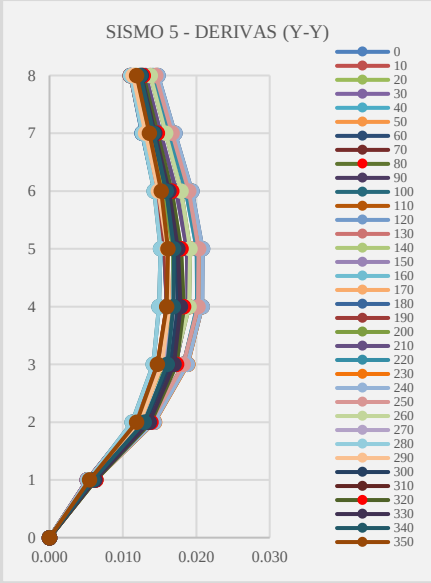

SISMO 3 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

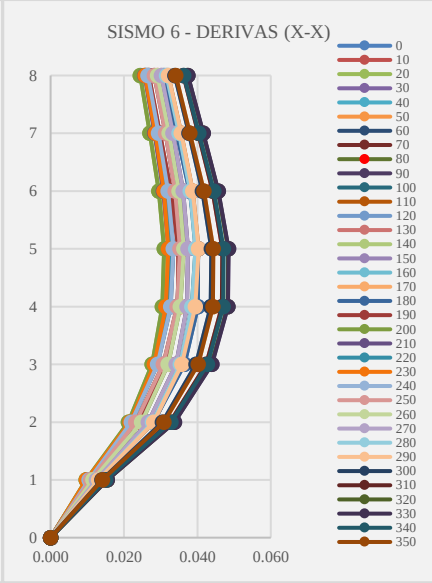

SISMO 3 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

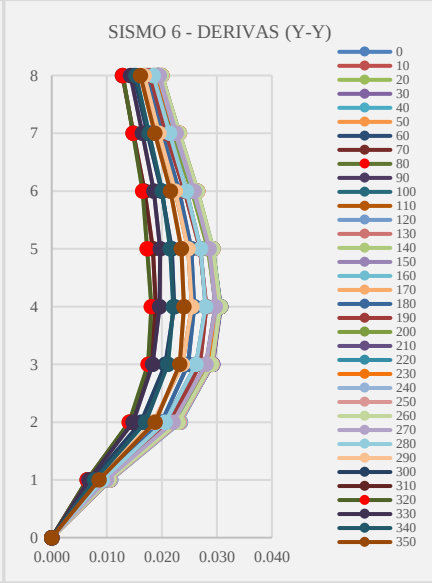

SISMO 4 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

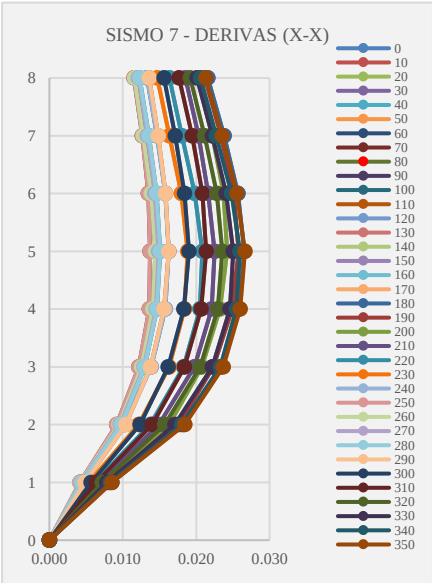

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

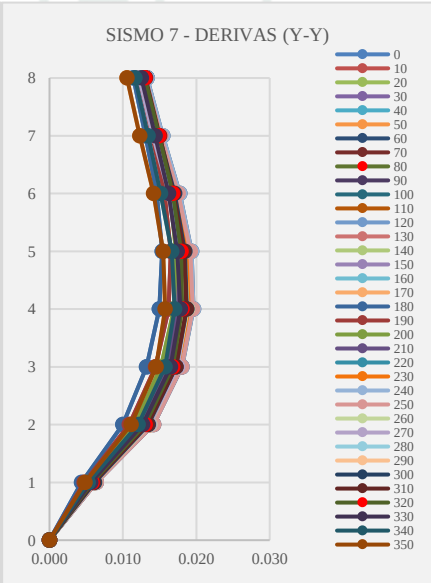

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

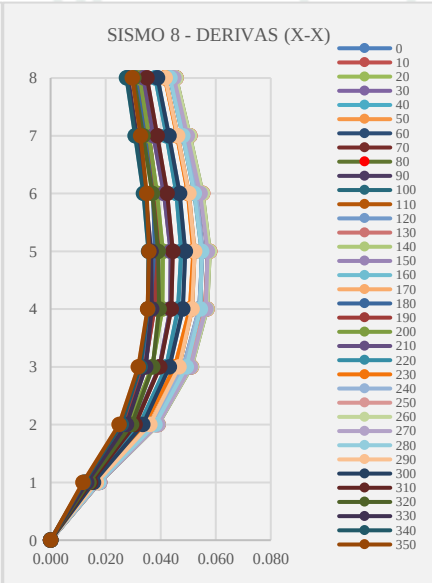

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

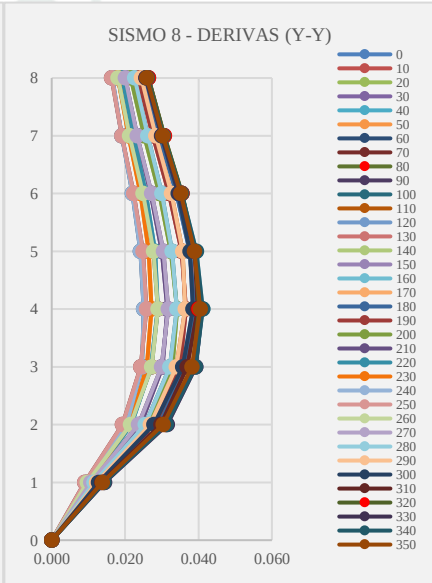

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

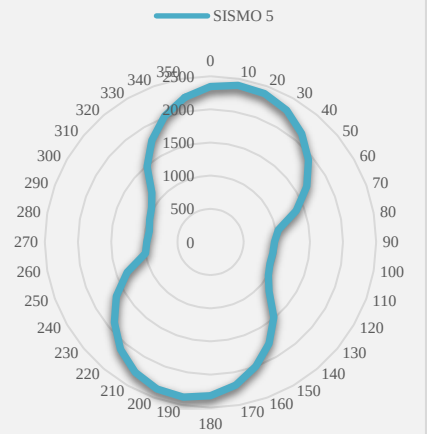

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060 0.080
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

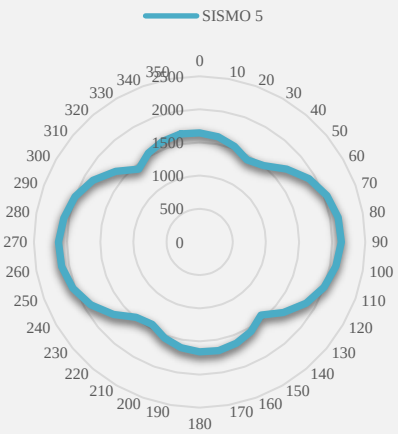
Para 12 pisos:



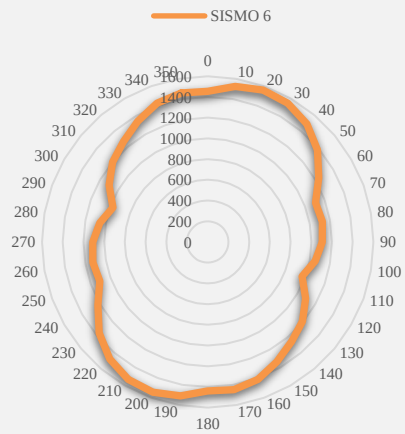
CORTANTE BASAL (X-X)



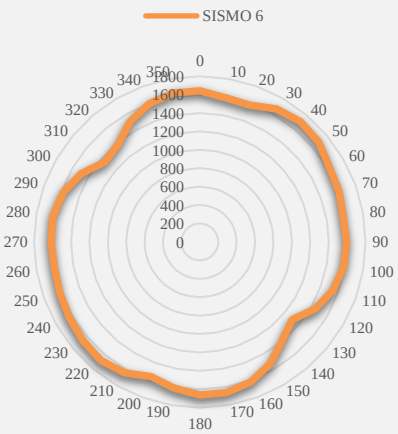
CORTANTE BASAL (Y-Y)



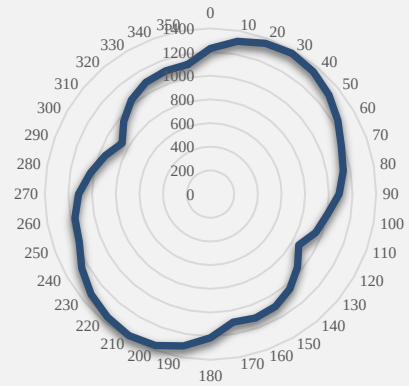
CORTANTE BASAL (X-X)



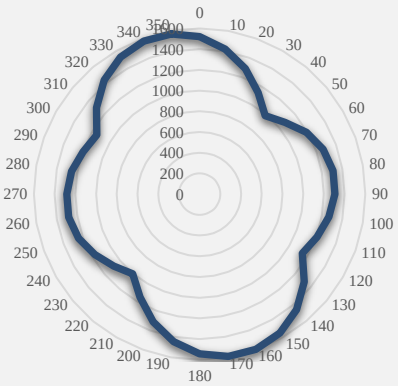
CORTANTE BASAL (Y-Y)



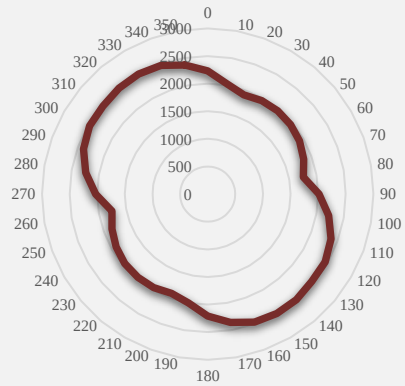
CORTANTE BASAL (X-X)



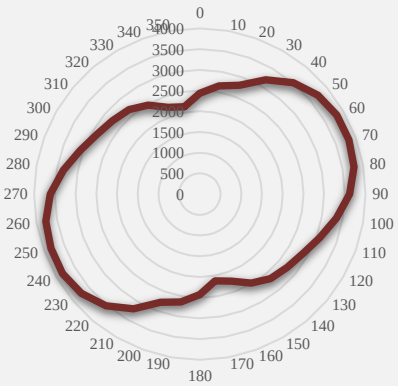
CORTANTE BASAL (Y-Y)

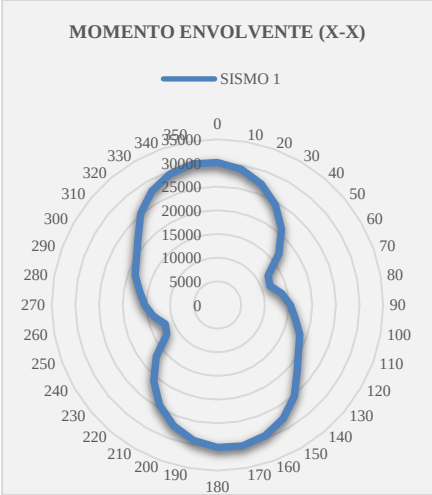


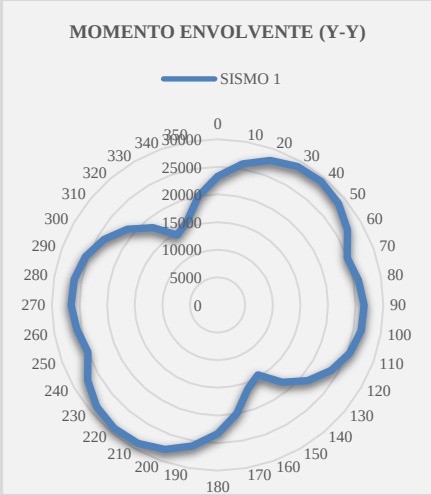
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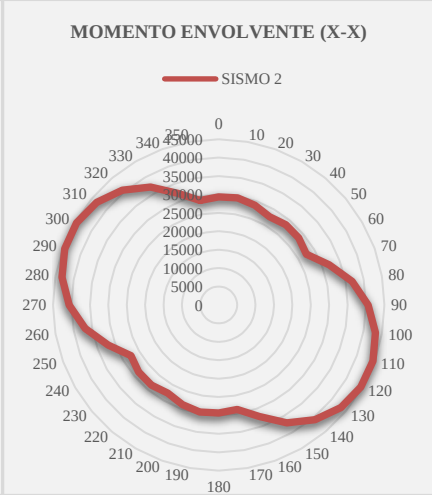


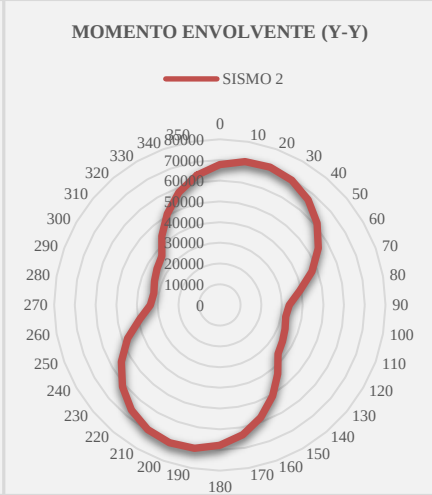
CORTANTE BASAL (Y-Y)

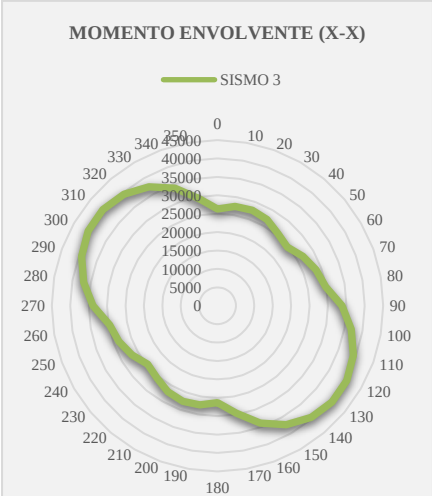


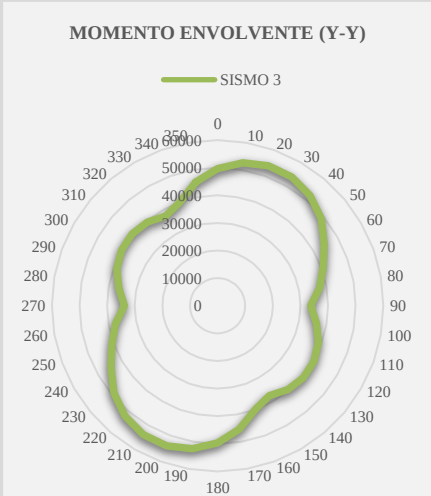

MOMENTO ENVOLVENTE (X-X)
SISMO 1

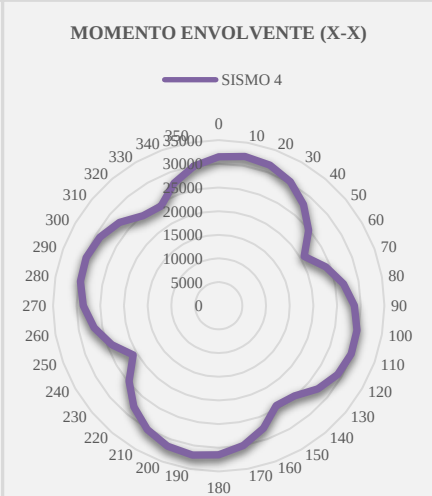

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

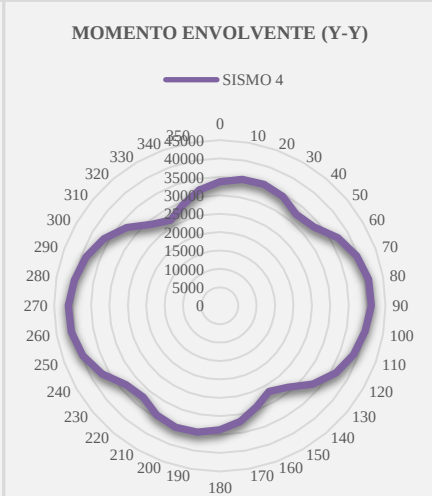

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

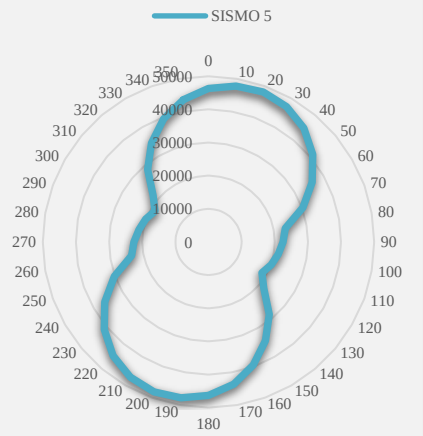

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

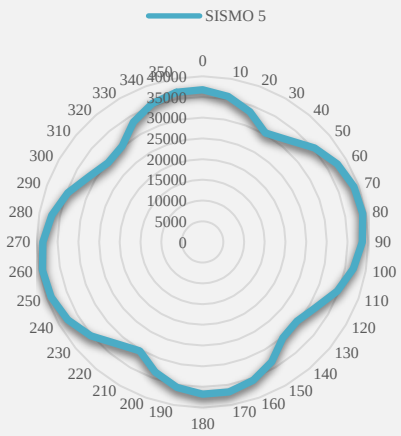

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

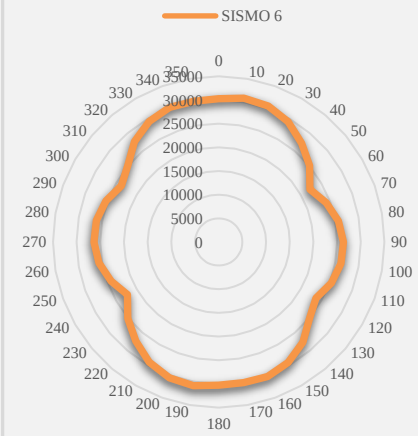
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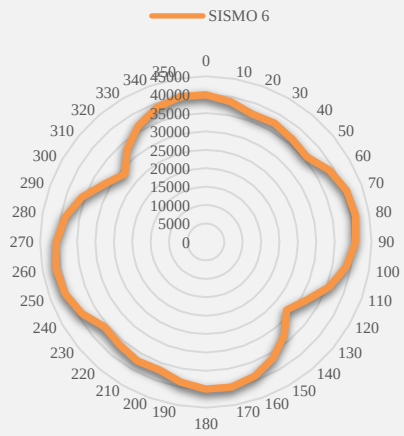
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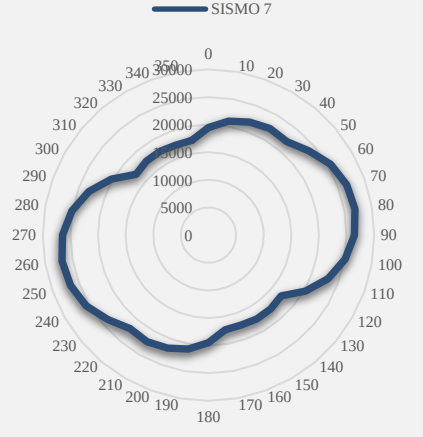
MOMENTO ENVOLVENTE (X-X)



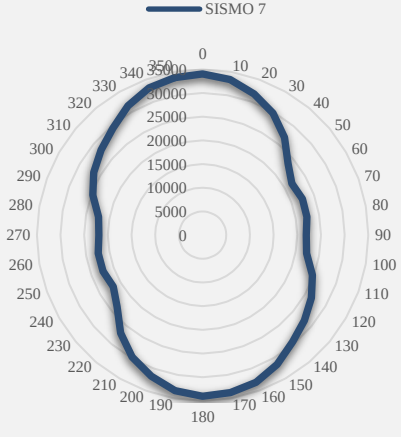
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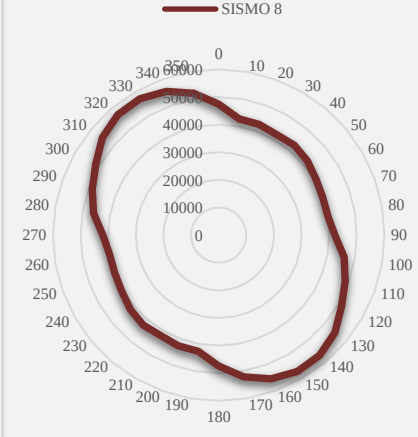
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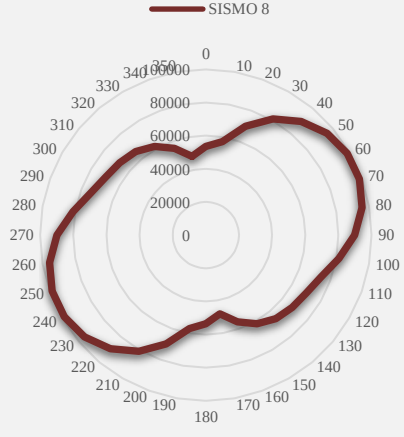
MOMENTO ENVOLVENTE (Y-Y)

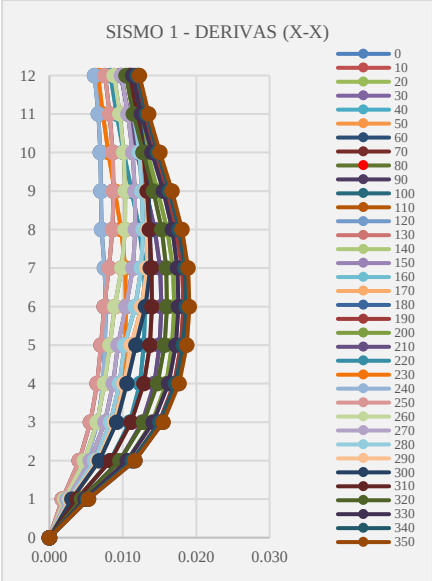


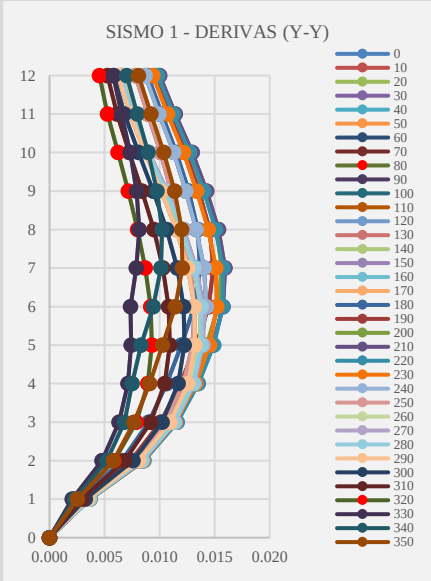
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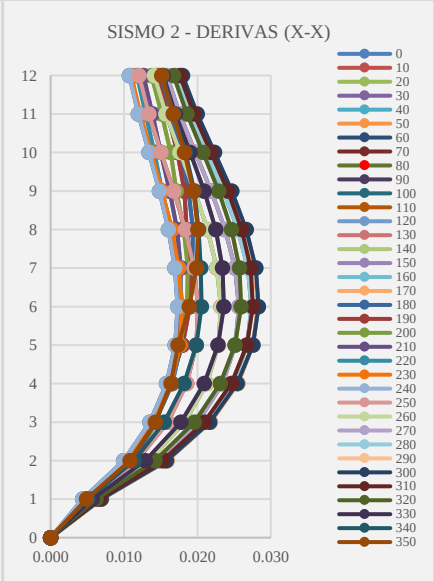


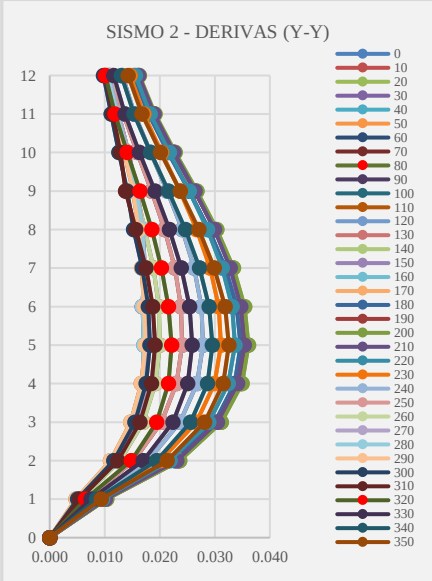
MOMENTO ENVOLVENTE (Y-Y)

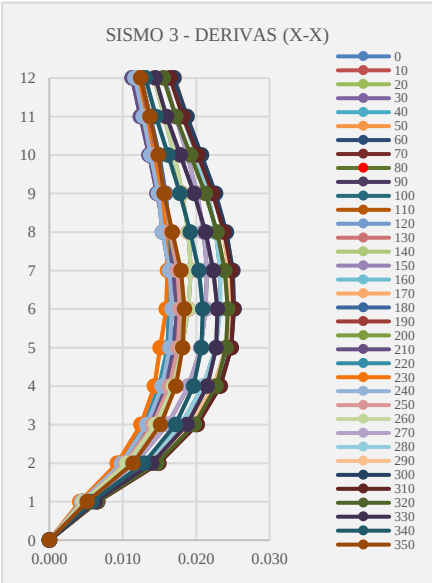


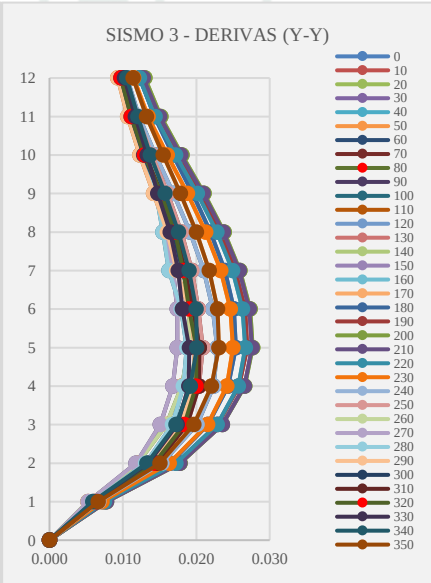

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

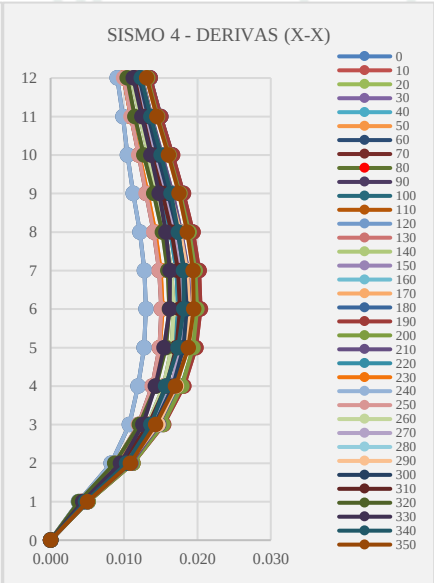

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020
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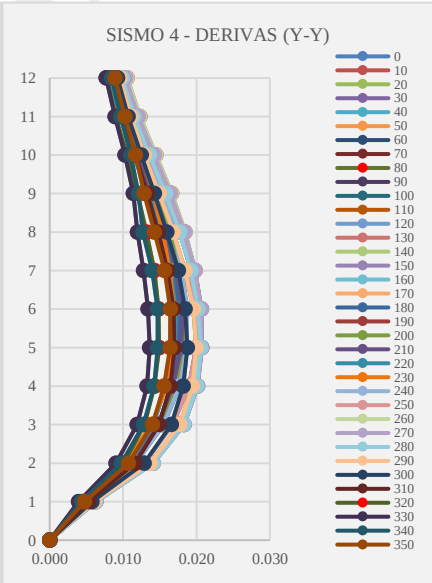

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
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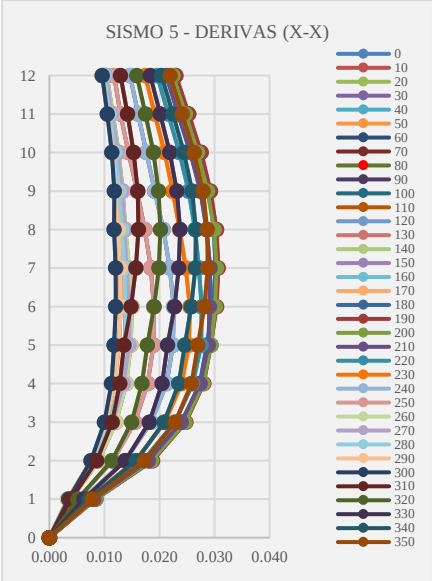

SISMO 2 - DERIVAS (Y-Y)
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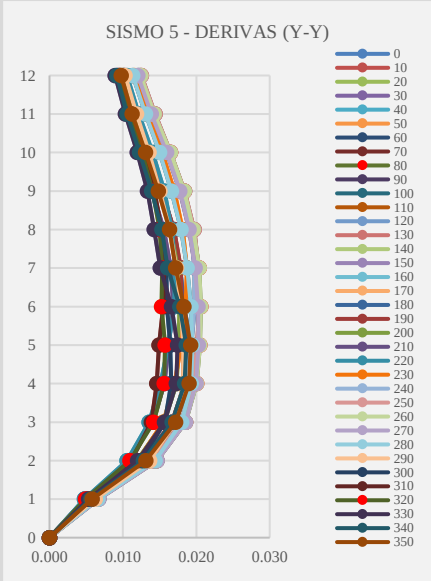

SISMO 3 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
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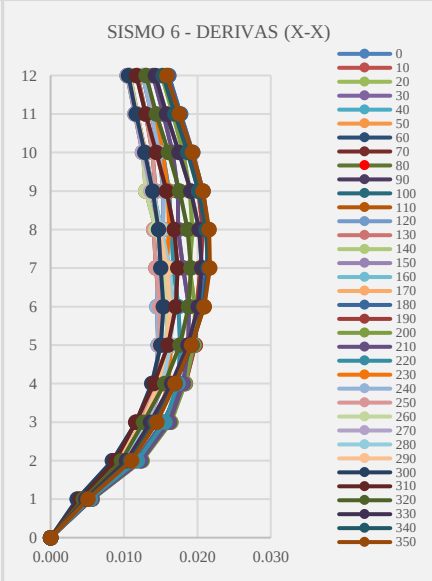

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

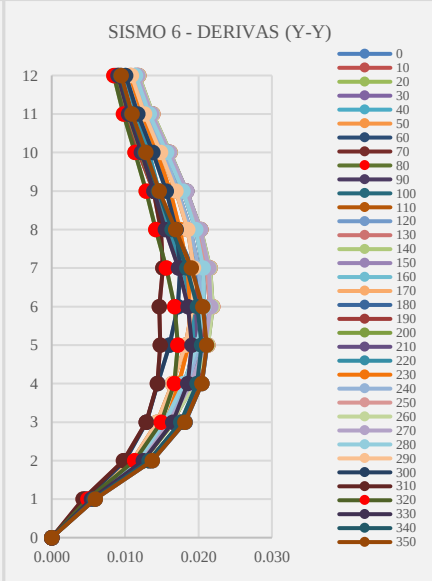

SISMO 4 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

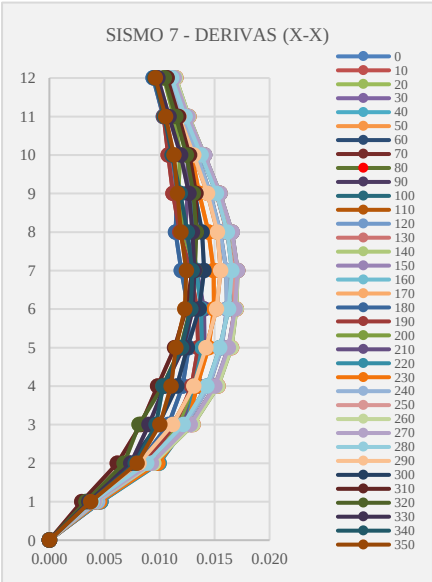

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

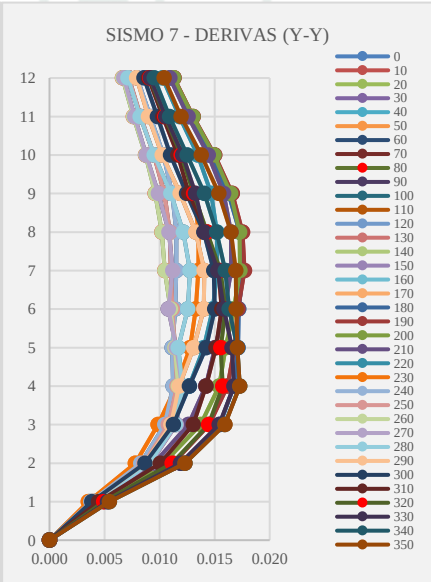

SISMO 5 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

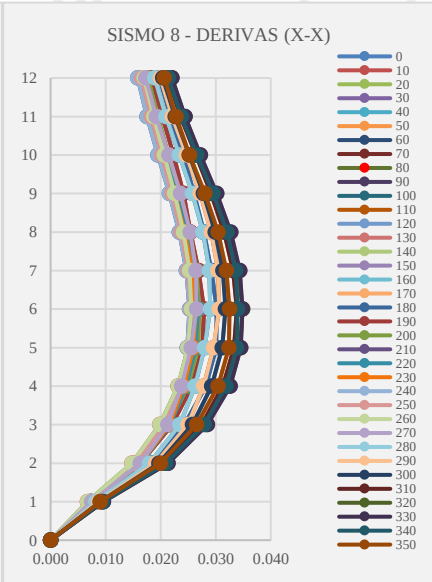

SISMO 5 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

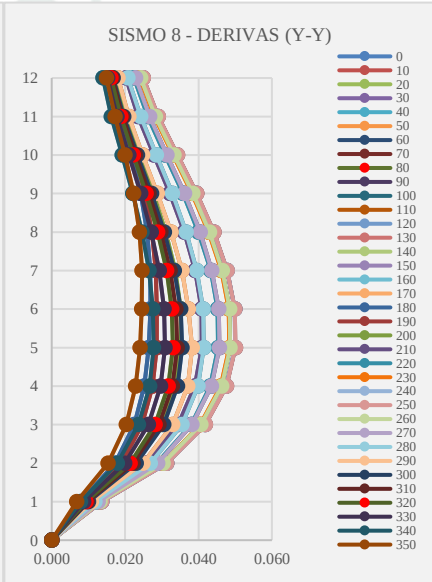

SISMO 6 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030


SISMO 6 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030


SISMO 7 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020


SISMO 7 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020


SISMO 8 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

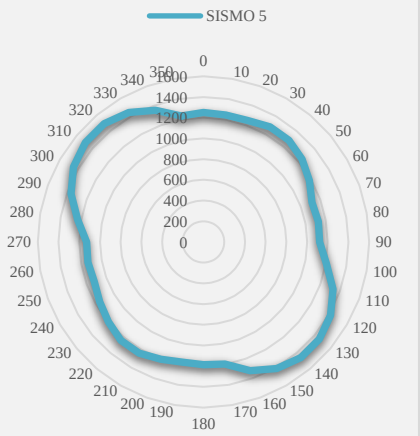

SISMO 8 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.020 0.040 0.060

MODELO 3

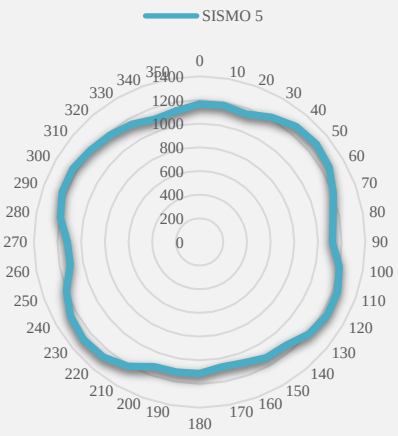
Para 4 pisos:



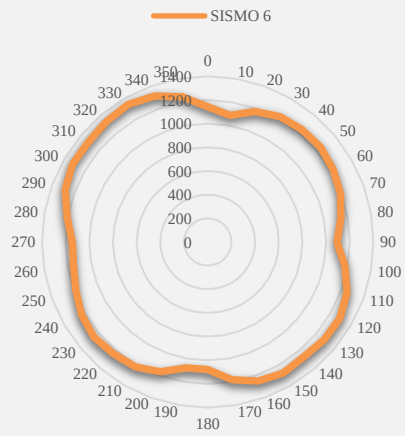
CORTANTE BASAL (X-X)



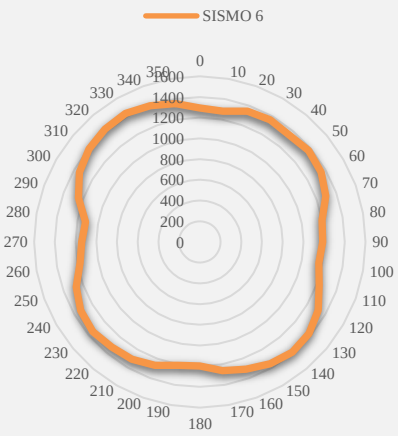
CORTANTE BASAL (Y-Y)



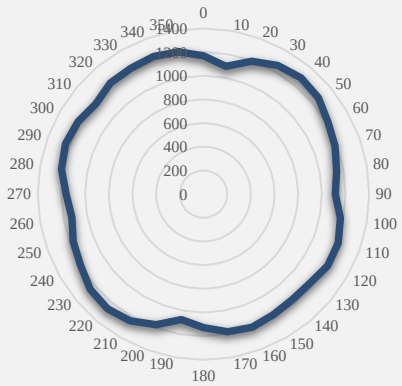
CORTANTE BASAL (X-X)



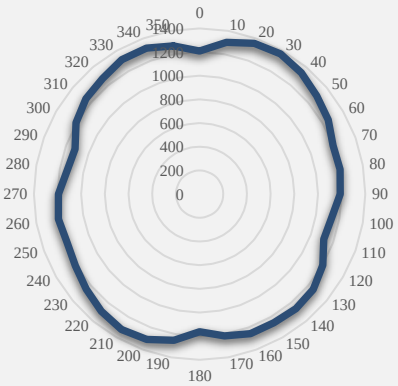
CORTANTE BASAL (Y-Y)



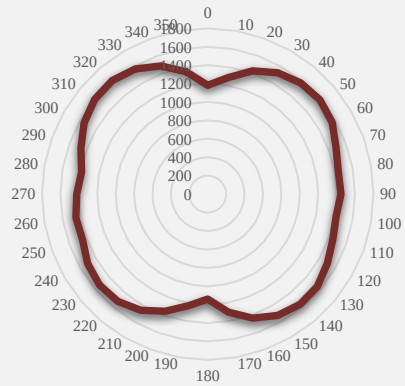
CORTANTE BASAL (X-X)



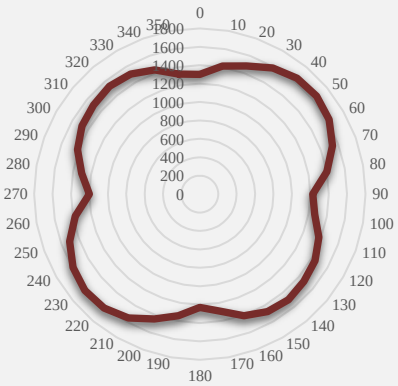
CORTANTE BASAL (Y-Y)

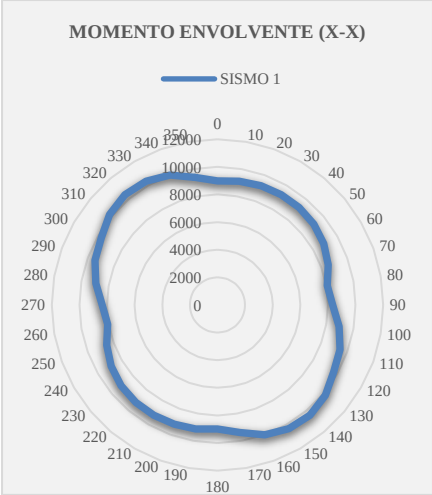


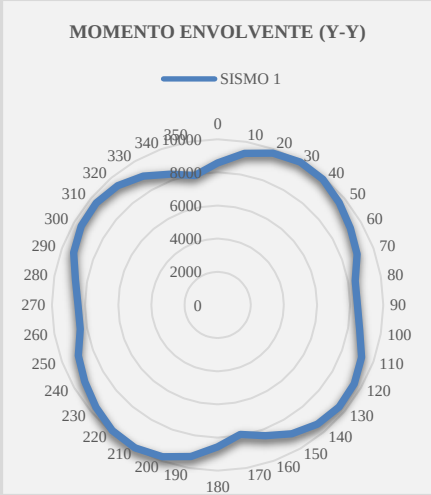
CORTANTE BASAL (X-X)

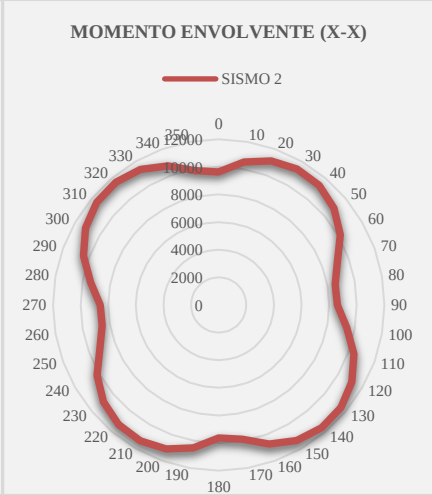


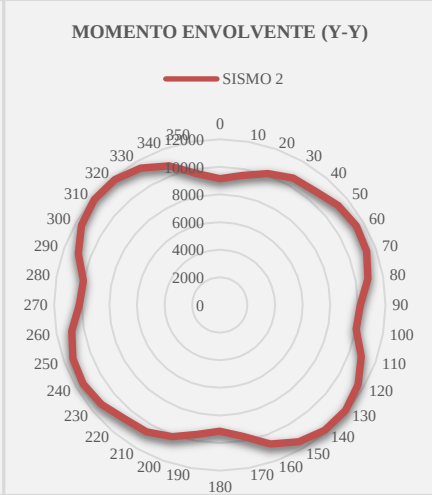
CORTANTE BASAL (Y-Y)

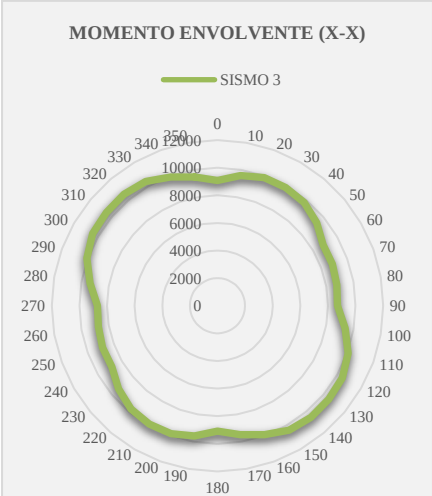


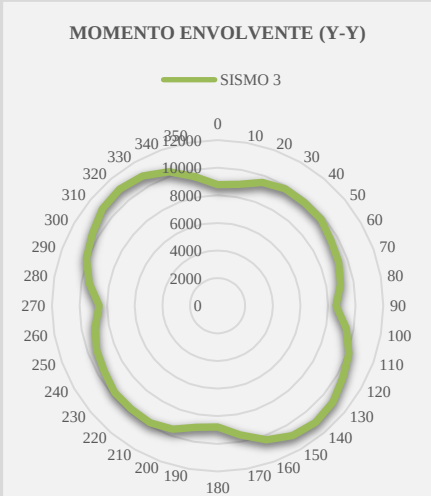

MOMENTO ENVOLVENTE (X-X)
SISMO 1

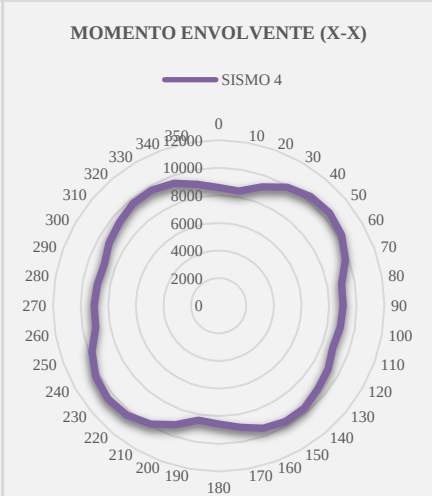

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

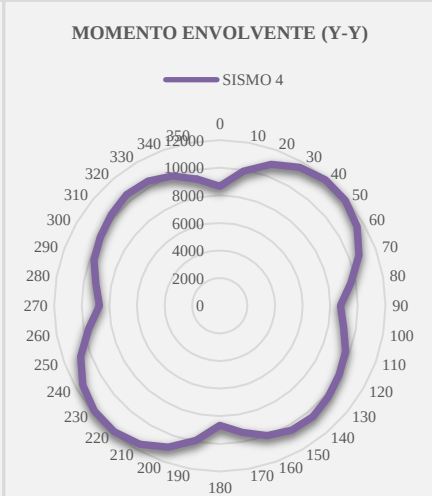

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

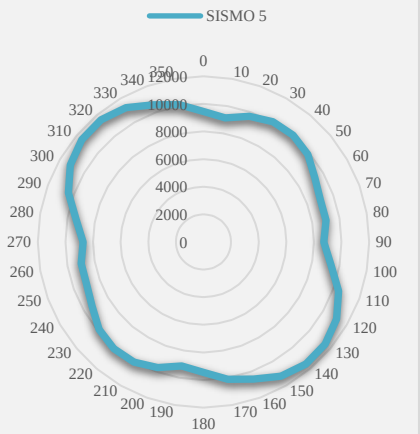

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

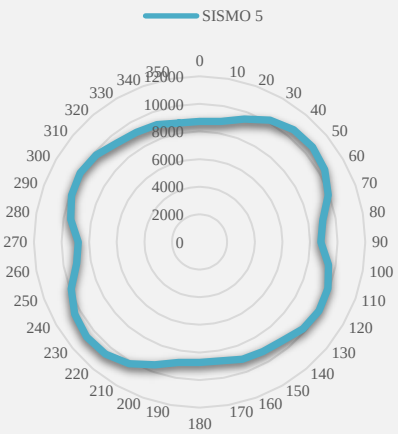

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

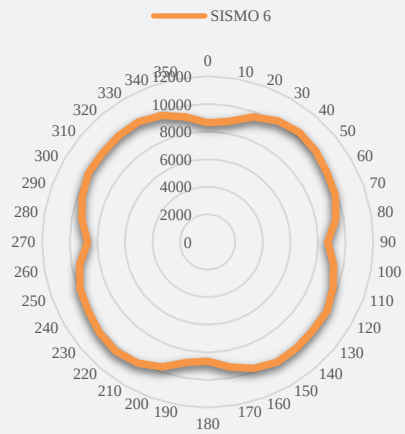
MOMENTO ENVOLVENTE (X-X)



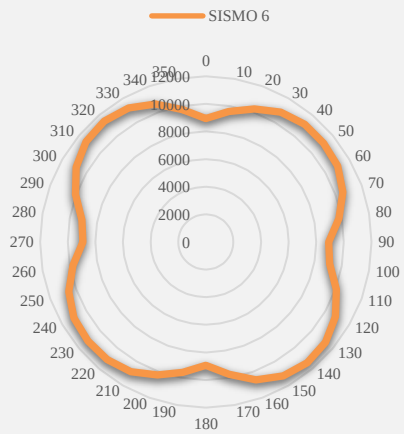
MOMENTO ENVOLVENTE (Y-Y)



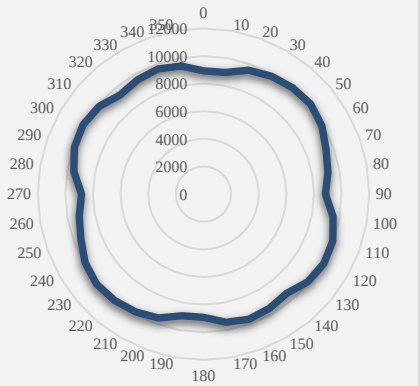
MOMENTO ENVOLVENTE (X-X)



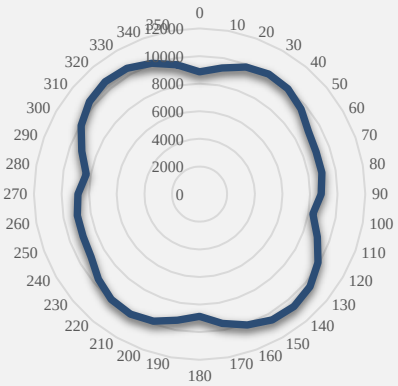
MOMENTO ENVOLVENTE (Y-Y)



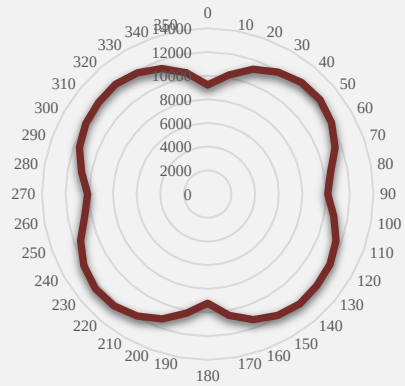
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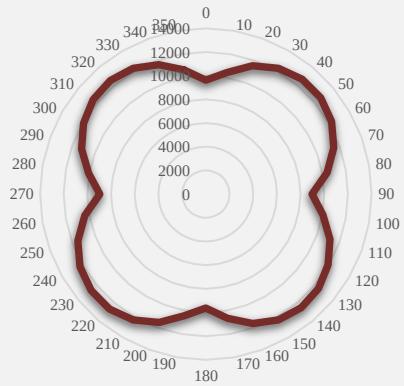
MOMENTO ENVOLVENTE (Y-Y)

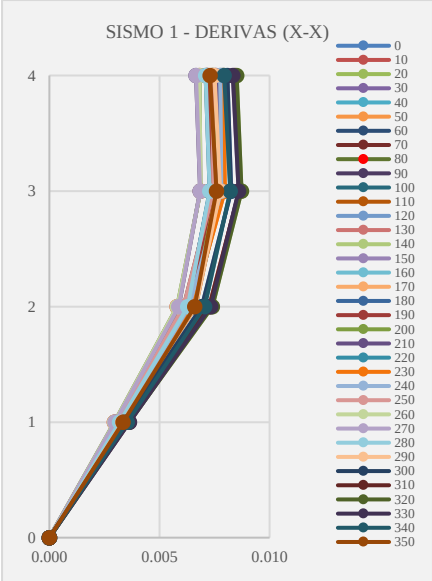


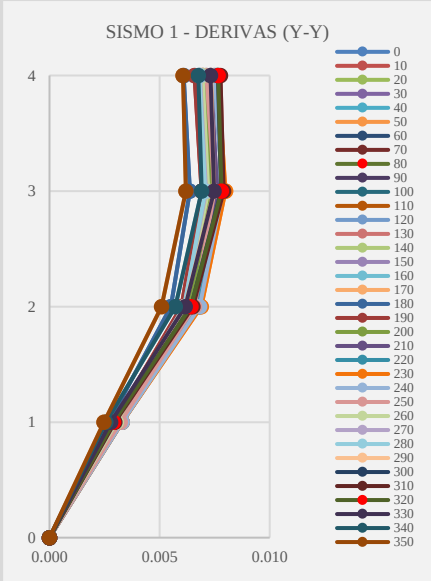
MOMENTO ENVOLVENTE (X-X)

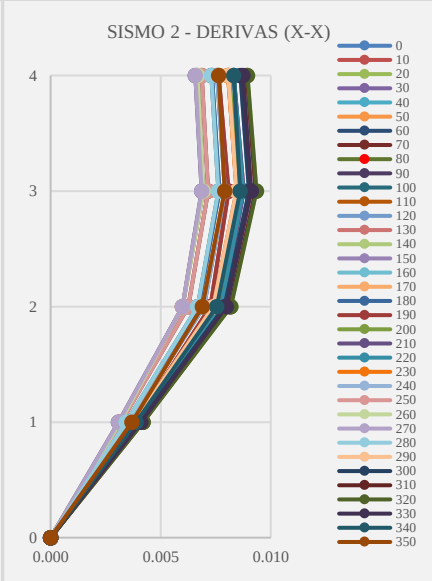


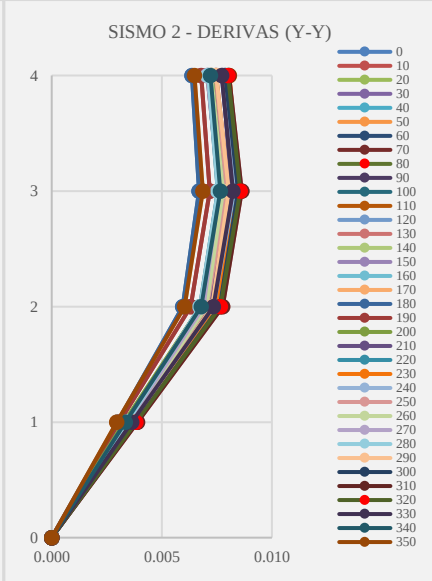
MOMENTO ENVOLVENTE (Y-Y)

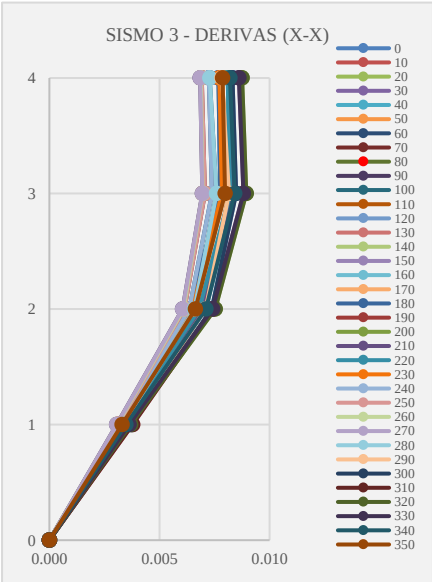


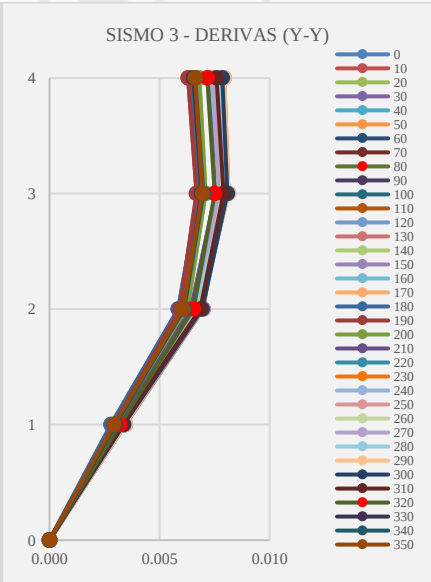

SISMO 1 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

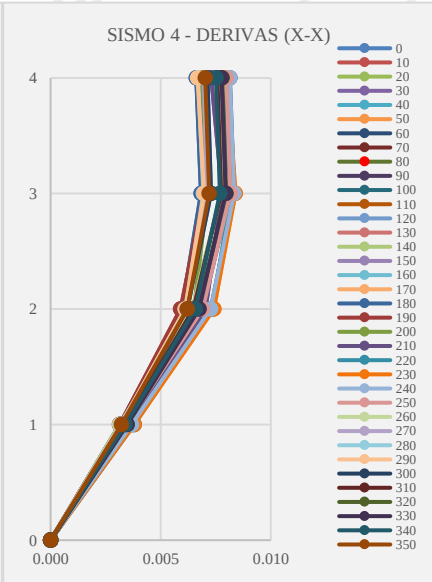

SISMO 1 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

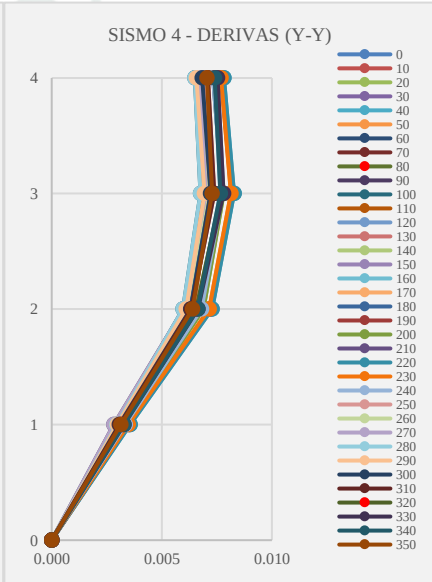

SISMO 2 - DERIVAS (X-X)
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2
3
4
0.000
0.005
0.010
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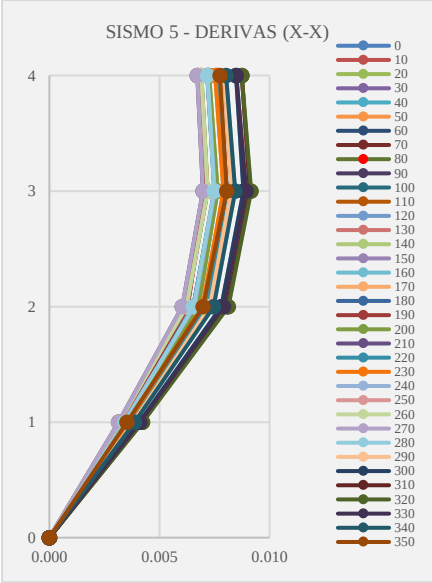

SISMO 2 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

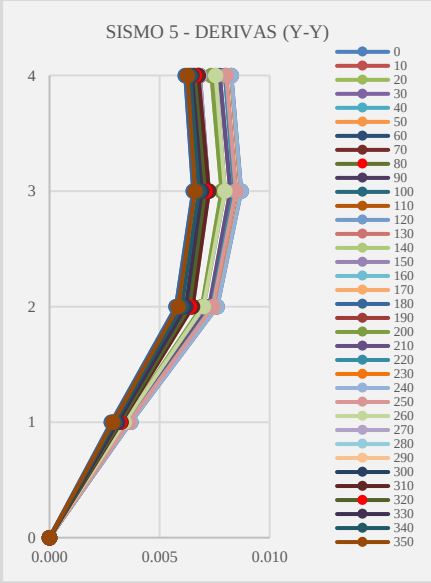

SISMO 3 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
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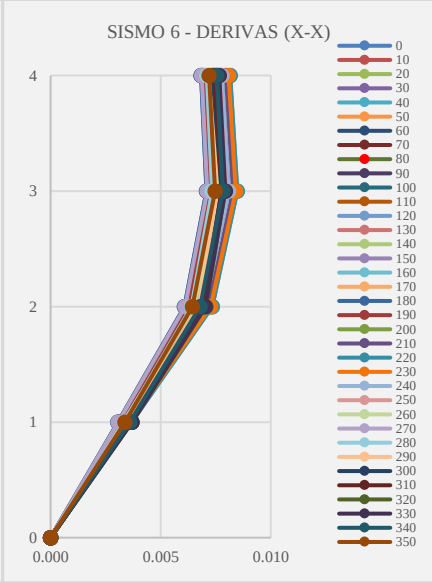

SISMO 3 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

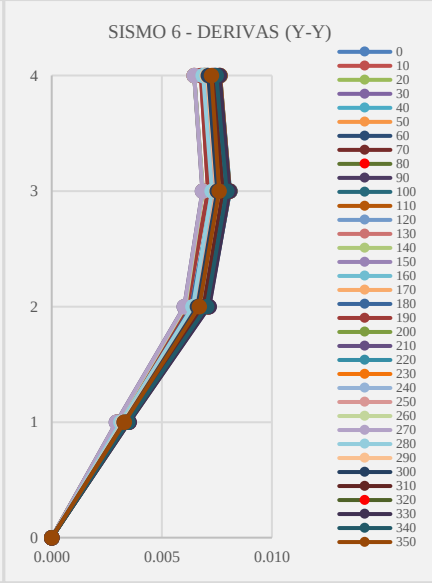

SISMO 4 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
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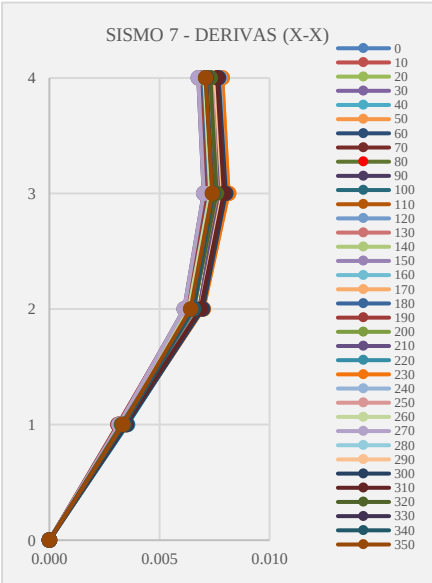

SISMO 4 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

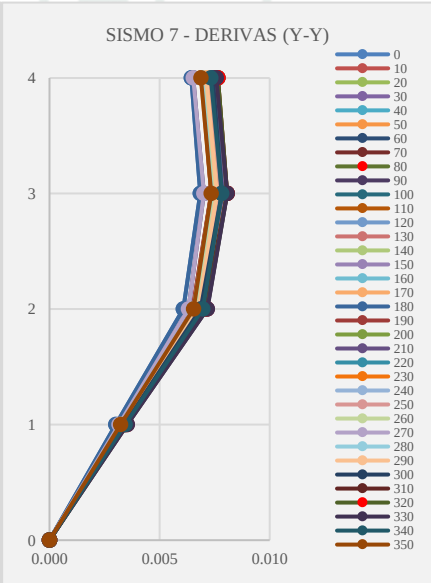

SISMO 5 - DERIVAS (X-X)
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2
3
4
0.000
0.005
0.010
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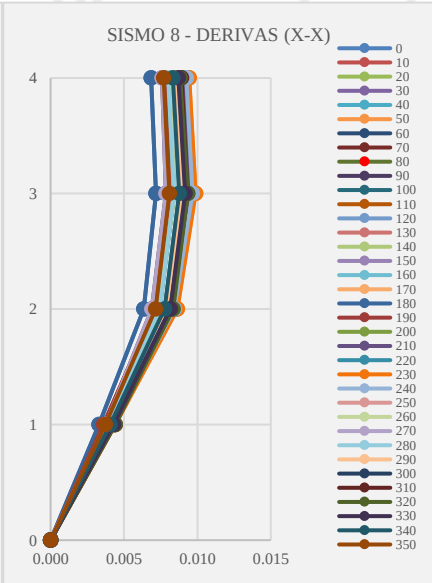

SISMO 5 - DERIVAS (Y-Y)
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1
2
3
4
0.000
0.005
0.010
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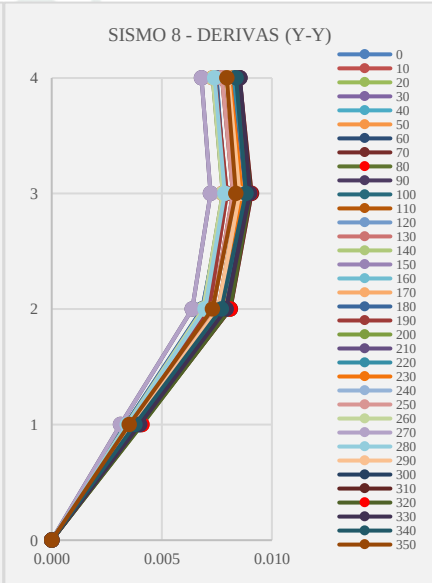

SISMO 6 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

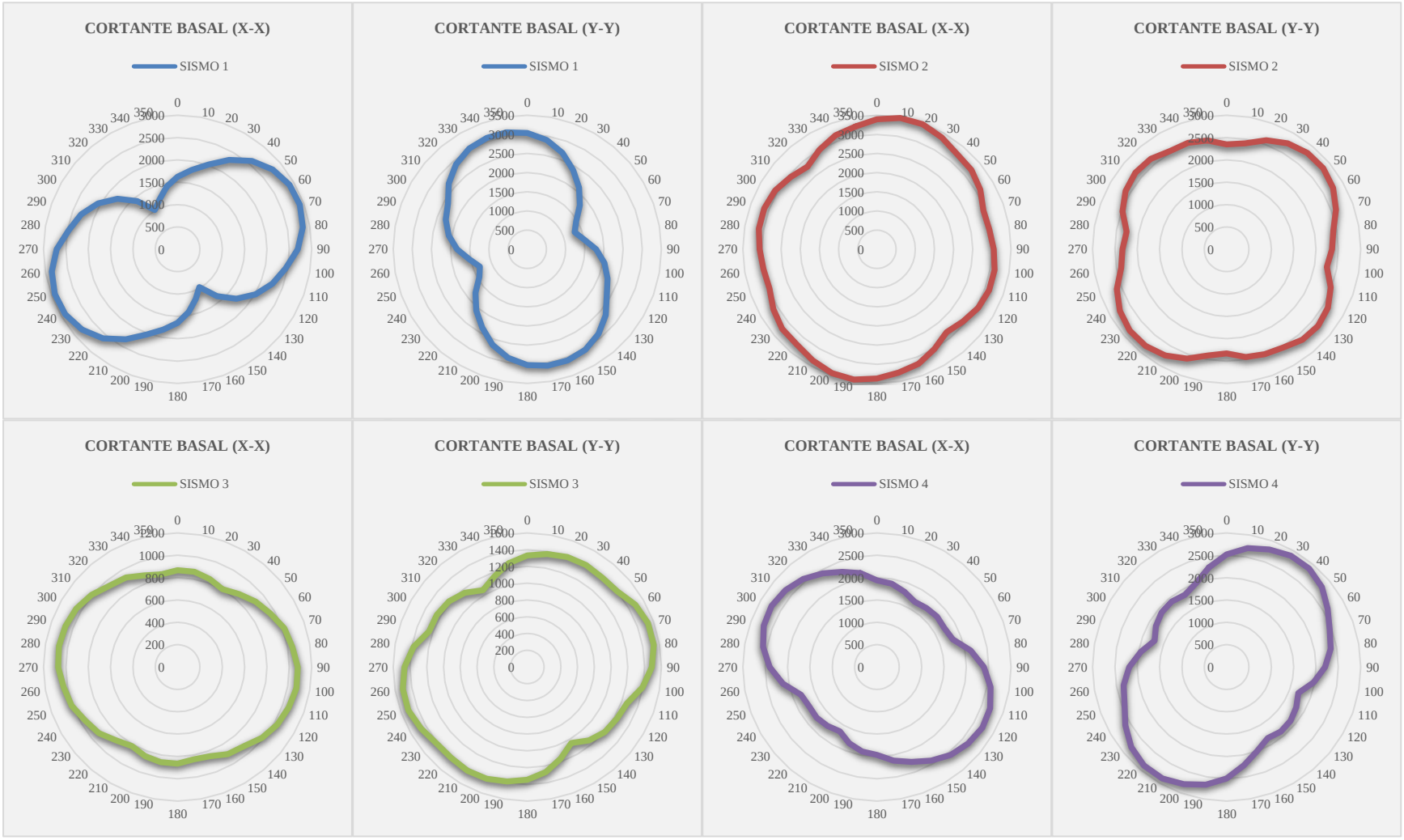

SISMO 7 - DERIVAS (X-X)
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2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

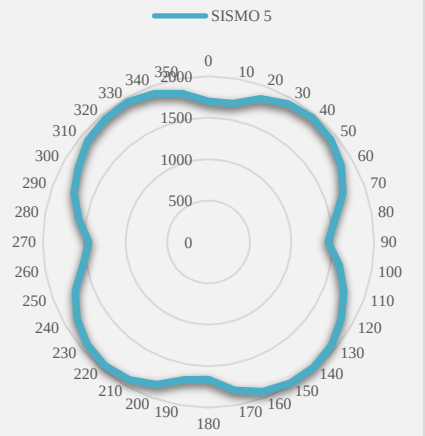

SISMO 8 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

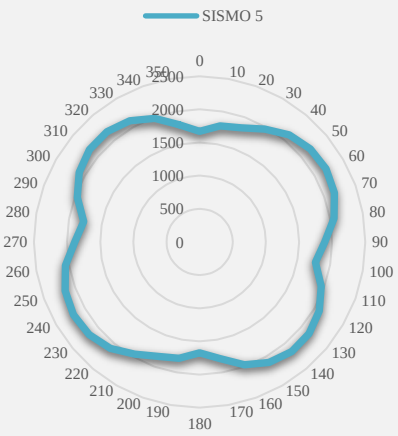
Para 8 pisos:


CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

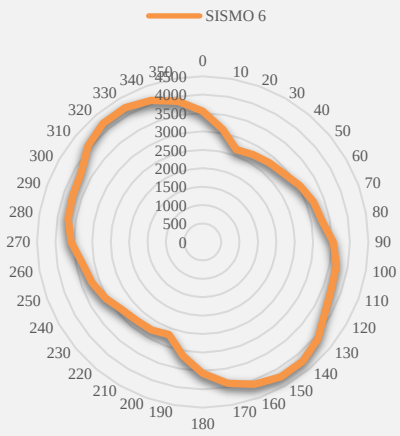
CORTANTE BASAL (X-X)



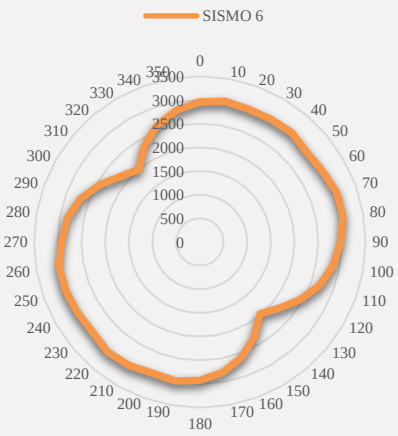
CORTANTE BASAL (Y-Y)



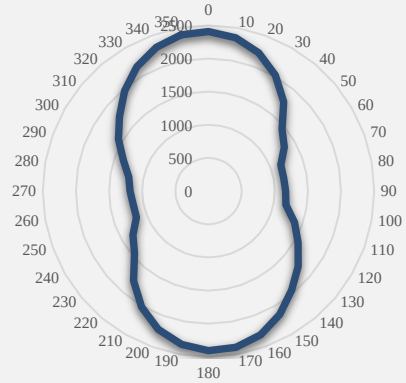
CORTANTE BASAL (X-X)



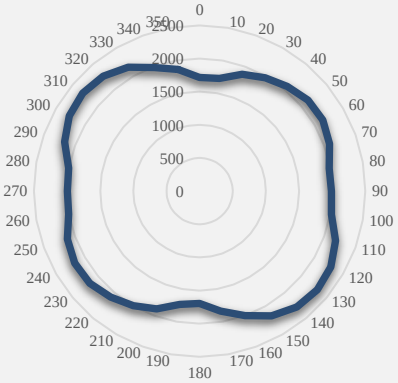
CORTANTE BASAL (Y-Y)



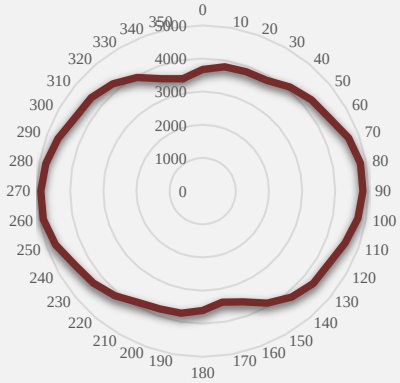
CORTANTE BASAL (X-X)



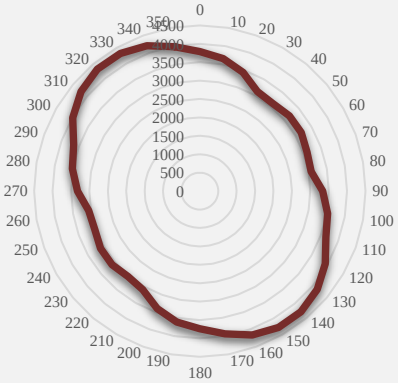
CORTANTE BASAL (Y-Y)

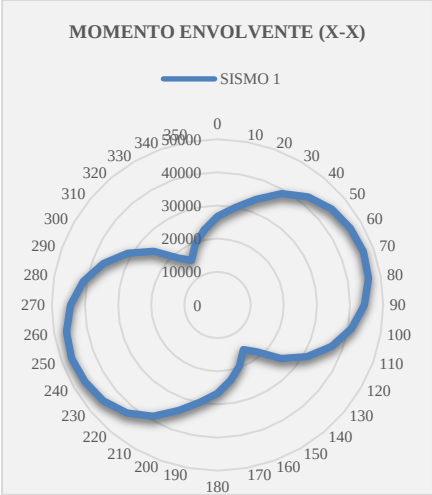


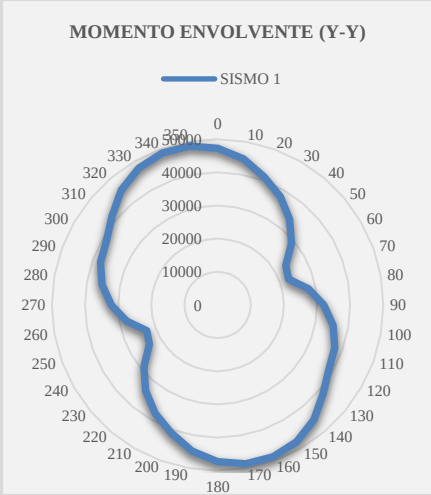
CORTANTE BASAL (X-X)

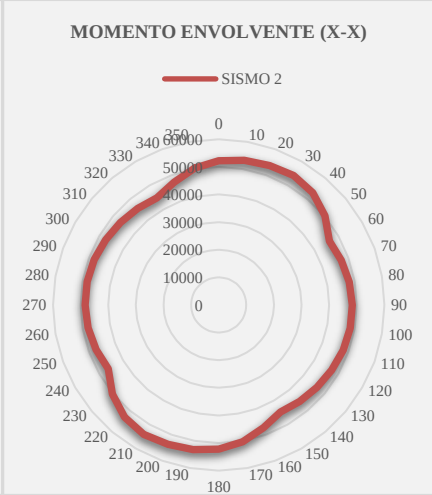


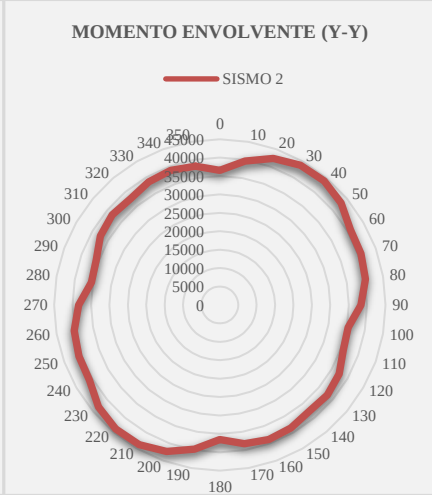
CORTANTE BASAL (Y-Y)

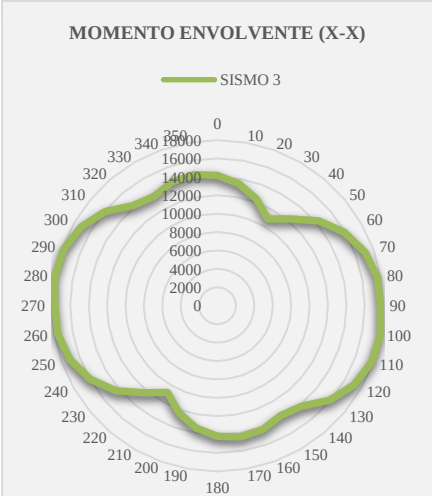


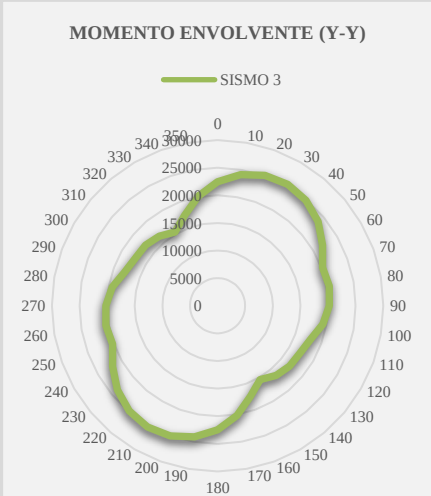

MOMENTO ENVOLVENTE (X-X)
SISMO 1

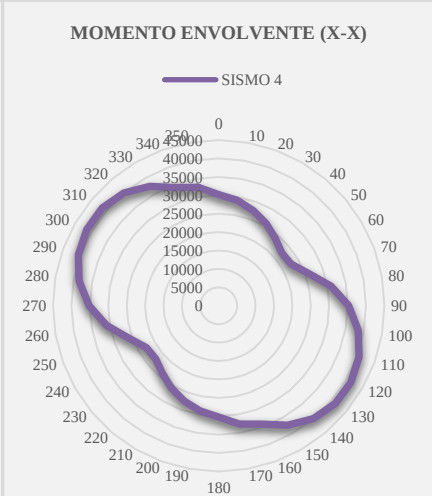

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

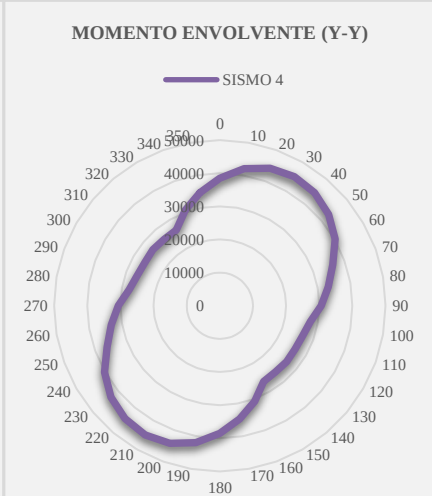

MOMENTO ENVOLVENTE (X-X)
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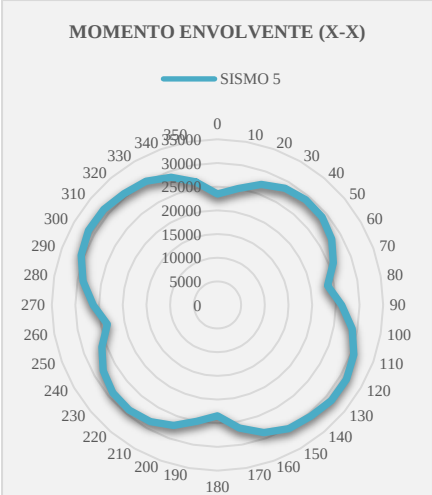

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

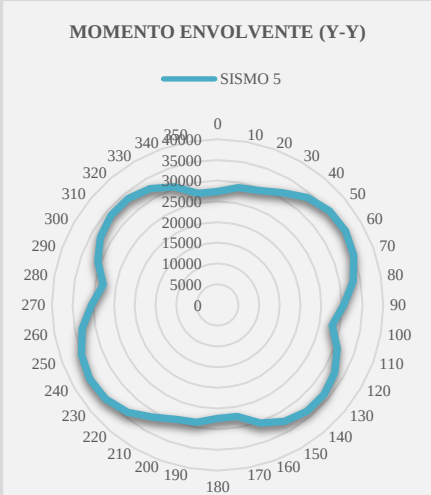

MOMENTO ENVOLVENTE (X-X)
SISMO 3

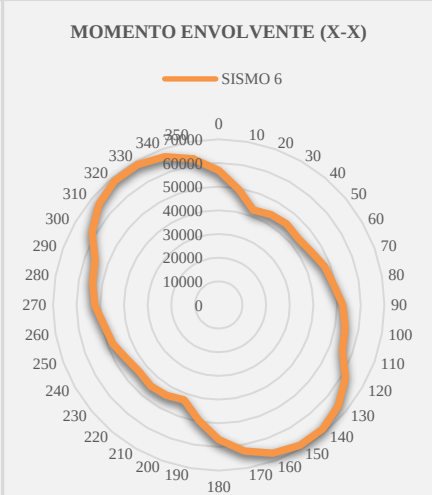

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

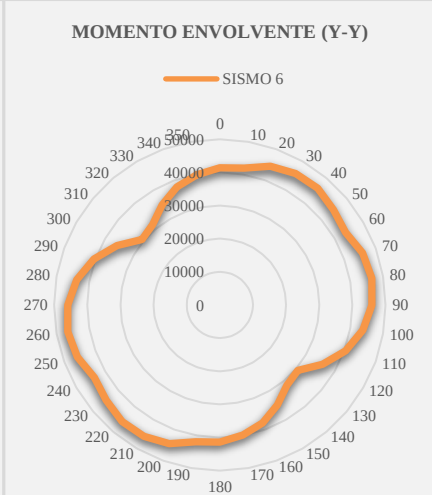

MOMENTO ENVOLVENTE (X-X)
SISMO 4

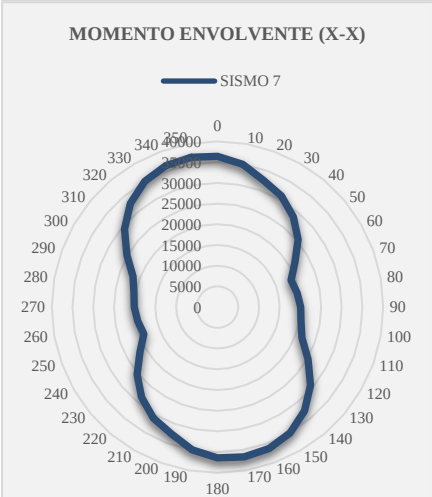

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

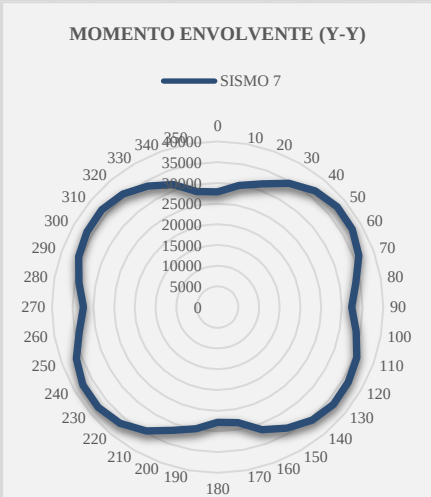

MOMENTO ENVOLVENTE (X-X)
SISMO 5

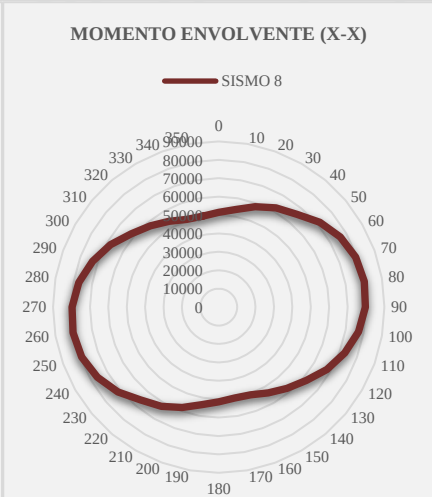

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

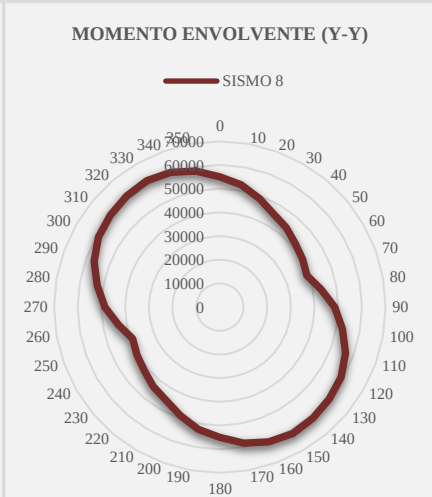

MOMENTO ENVOLVENTE (X-X)
SISMO 6

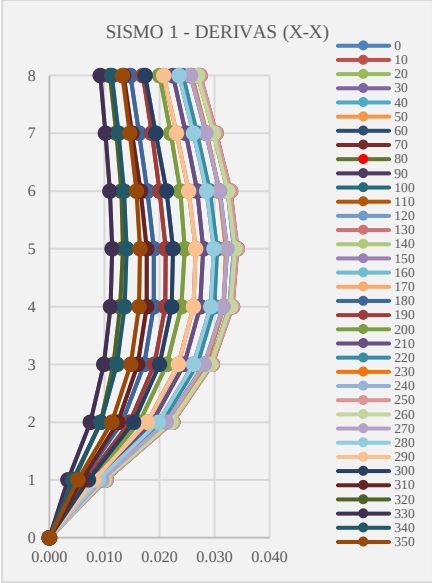

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

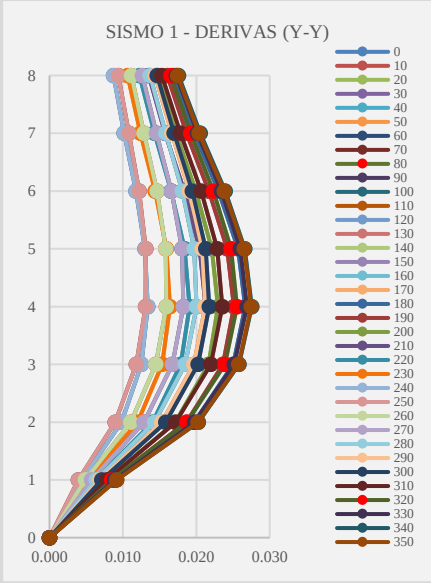

MOMENTO ENVOLVENTE (X-X)
SISMO 7

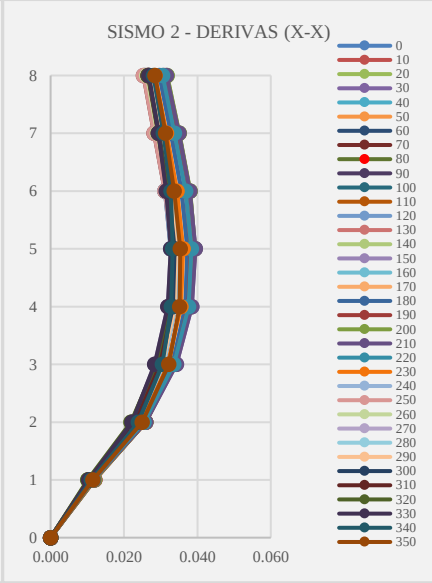

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

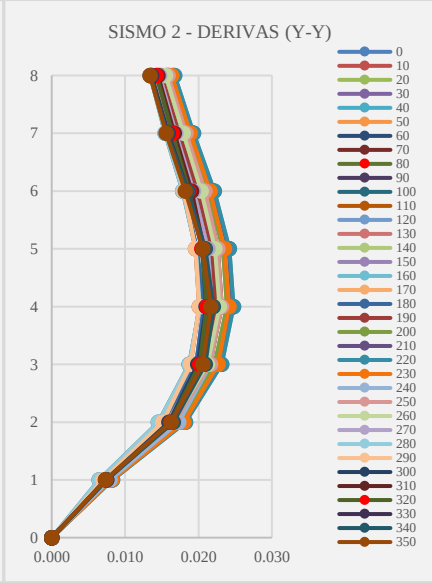

MOMENTO ENVOLVENTE (X-X)
SISMO 8

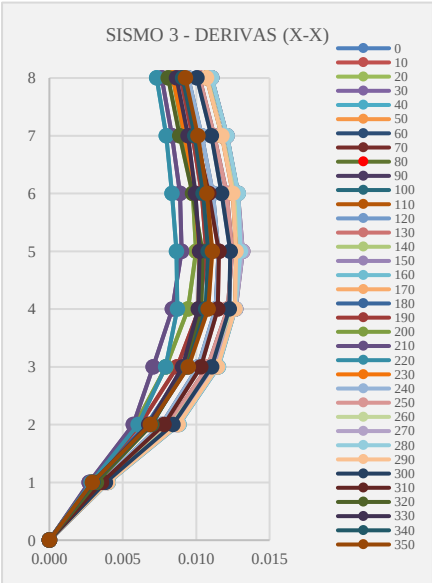

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

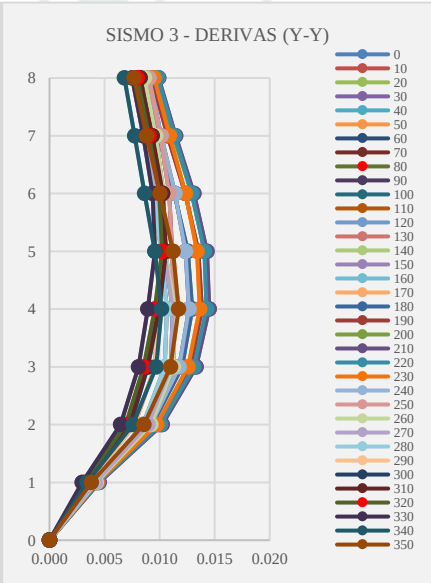

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

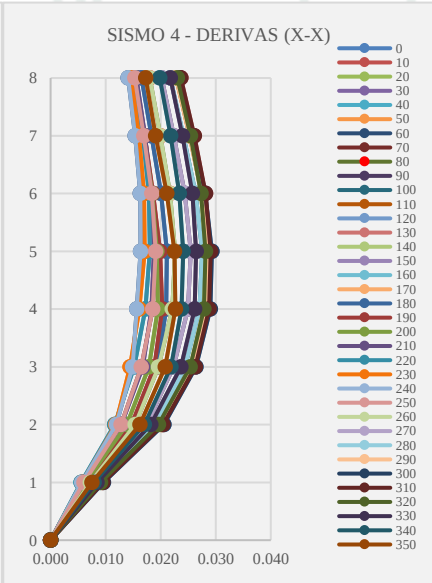

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

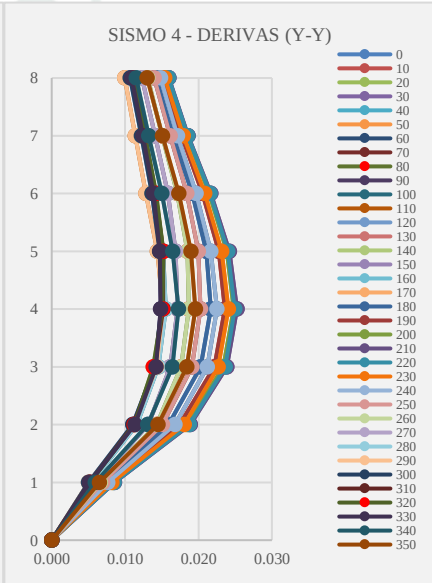

SISMO 2 - DERIVAS (X-X)
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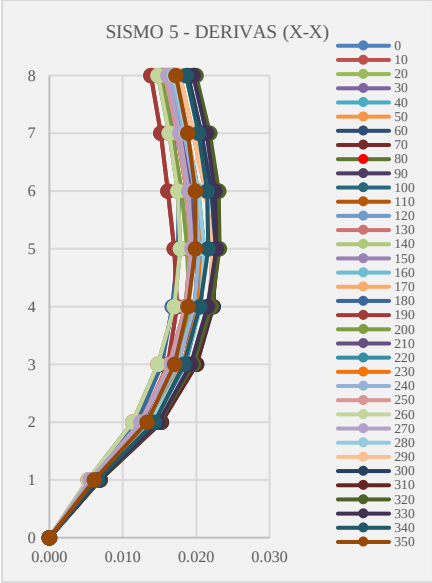

SISMO 2 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

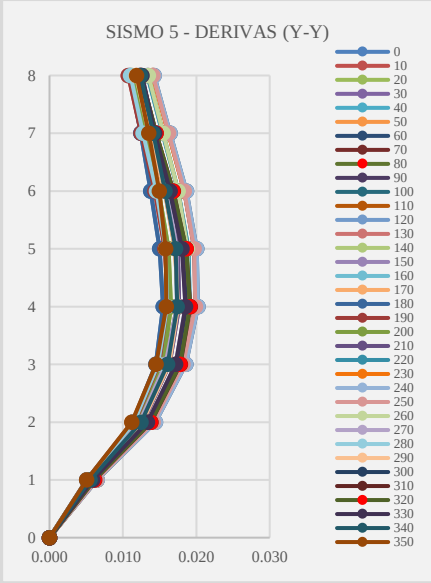

SISMO 3 - DERIVAS (X-X)
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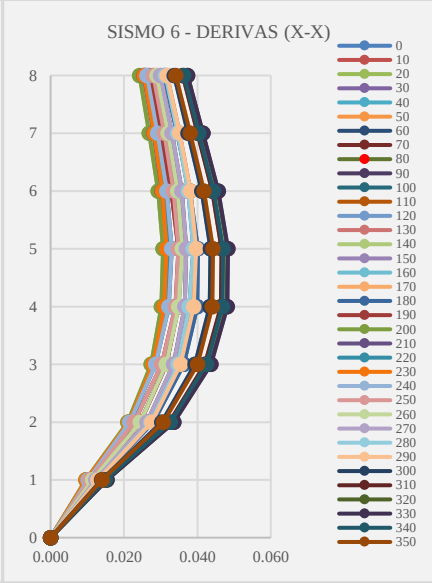

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

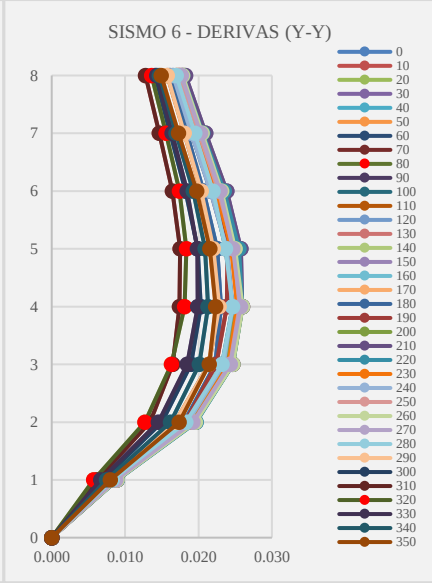

SISMO 4 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030 0.040
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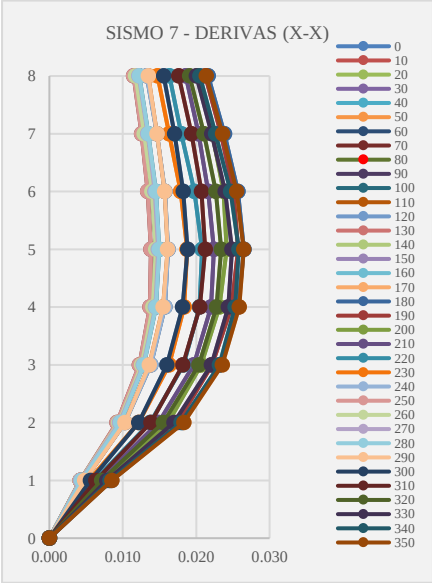

SISMO 4 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

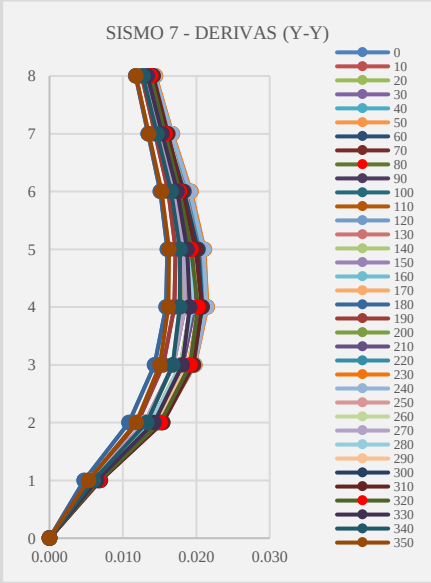

SISMO 5 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

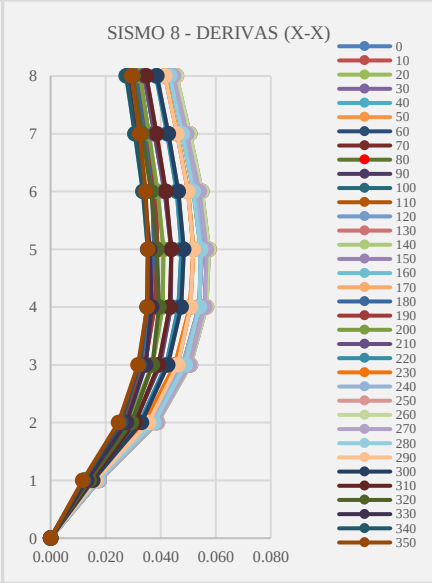

SISMO 5 - DERIVAS (Y-Y)
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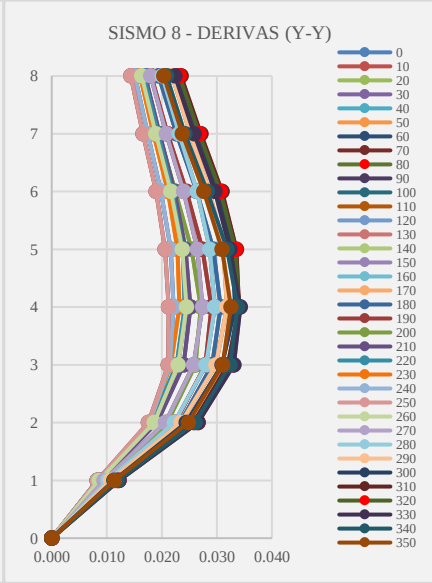

SISMO 6 - DERIVAS (X-X)
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0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

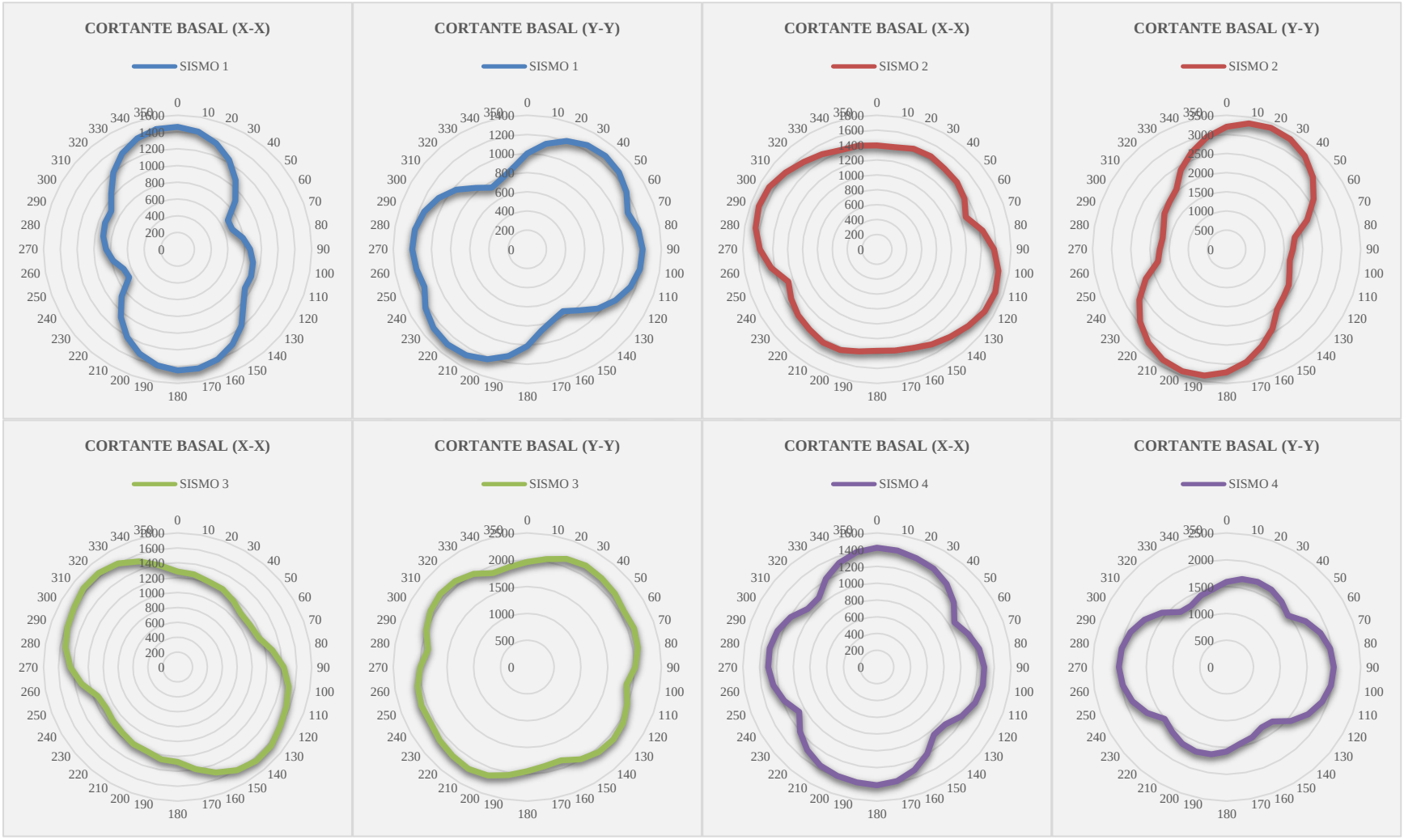

SISMO 7 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

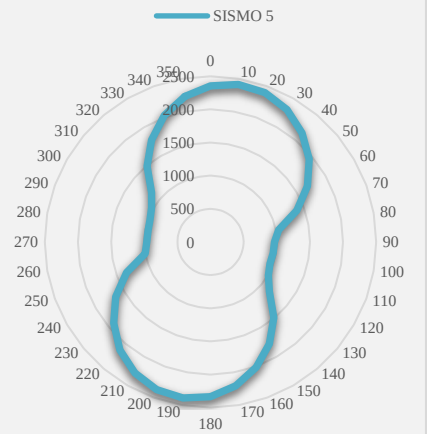

SISMO 8 - DERIVAS (X-X)
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0.000 0.020 0.040 0.060 0.080
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

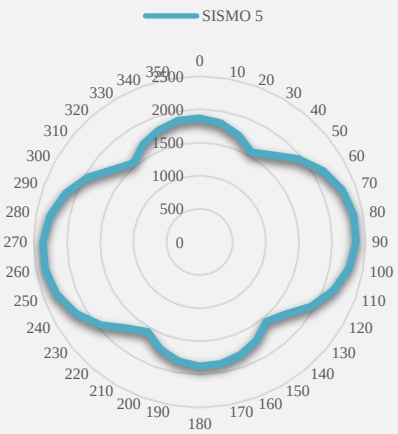
Para 12 pisos:



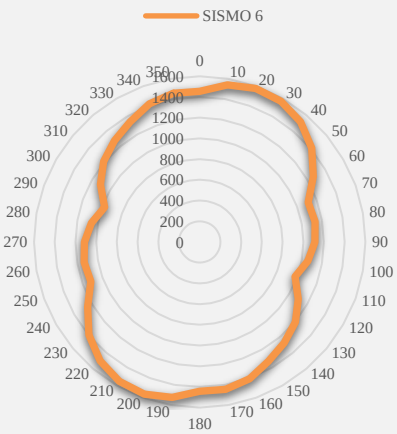
CORTANTE BASAL (X-X)



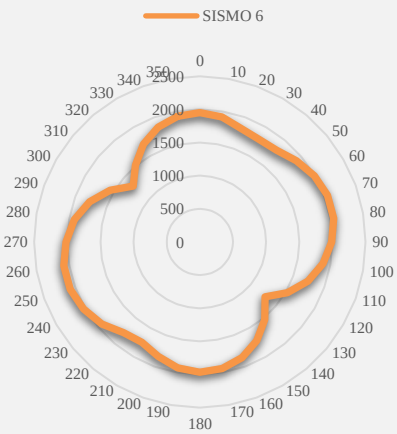
CORTANTE BASAL (Y-Y)



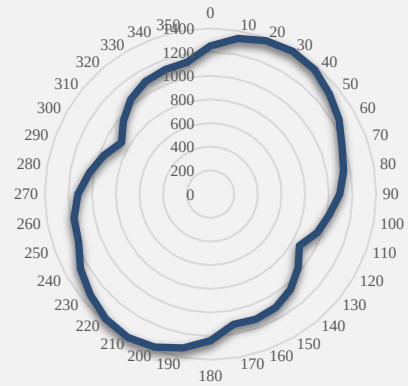
CORTANTE BASAL (X-X)



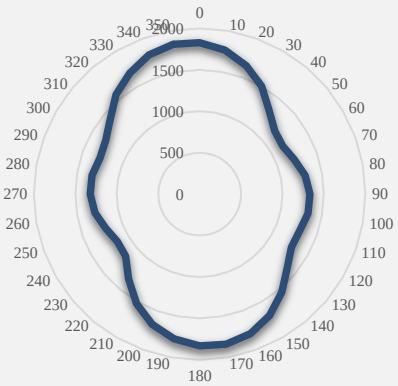
CORTANTE BASAL (Y-Y)



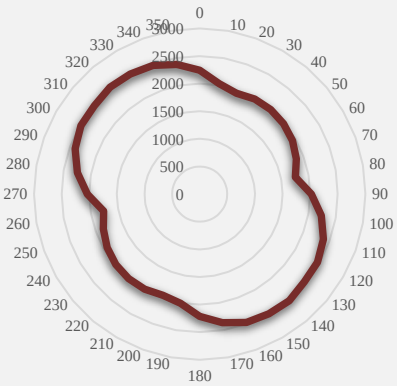
CORTANTE BASAL (X-X)



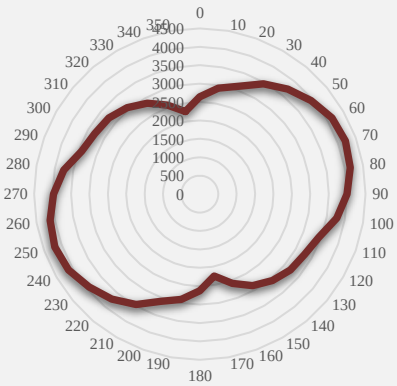
CORTANTE BASAL (Y-Y)

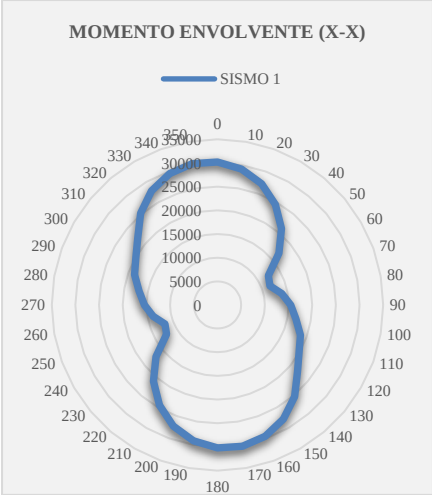


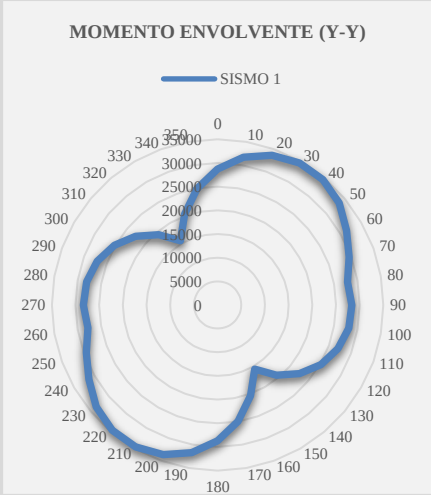
CORTANTE BASAL (X-X)

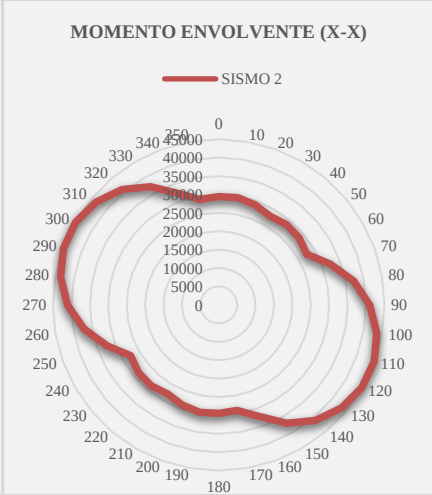


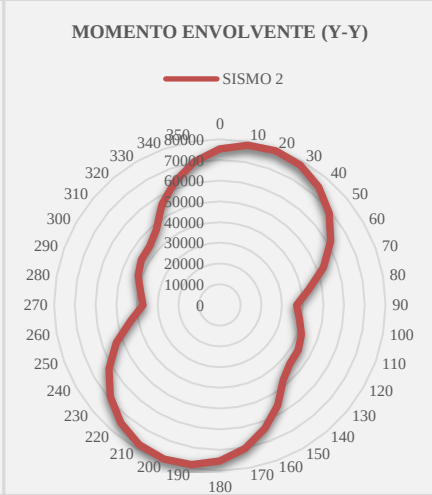
CORTANTE BASAL (Y-Y)

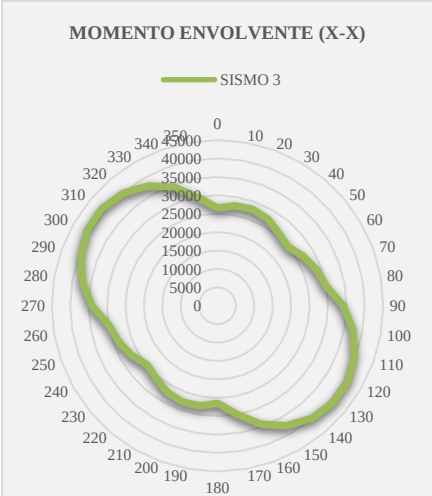


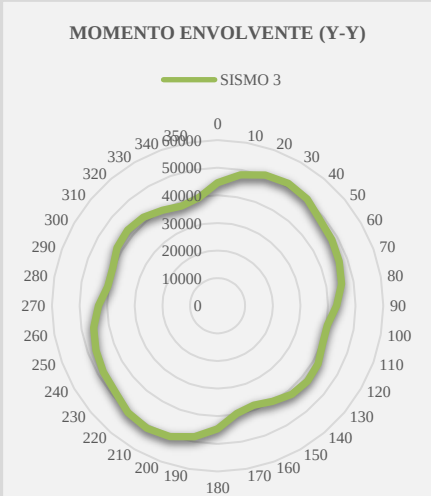

MOMENTO ENVOLVENTE (X-X)
SISMO 1

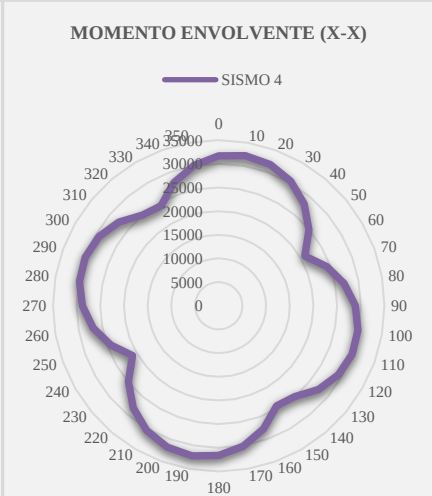

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

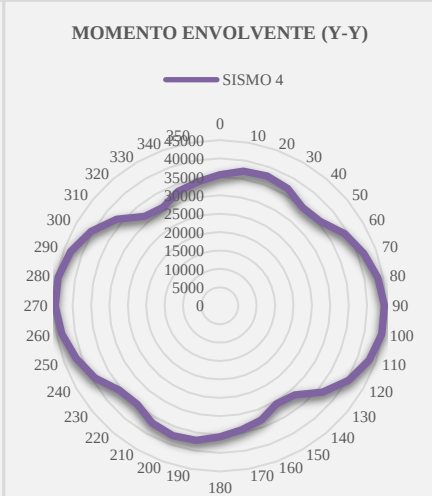

MOMENTO ENVOLVENTE (X-X)
SISMO 2

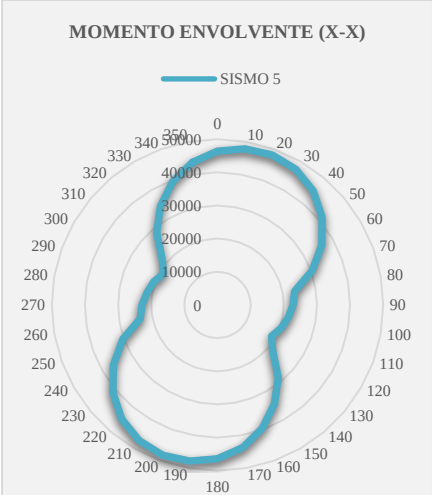

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

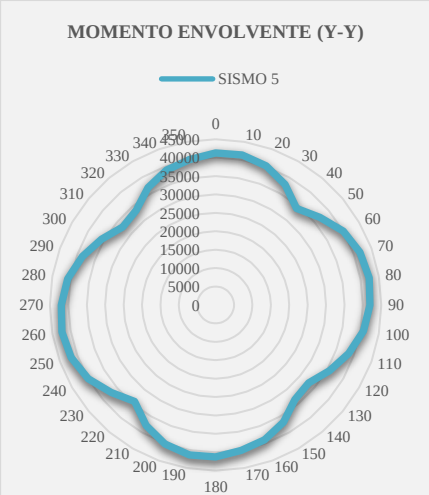

MOMENTO ENVOLVENTE (X-X)
SISMO 3

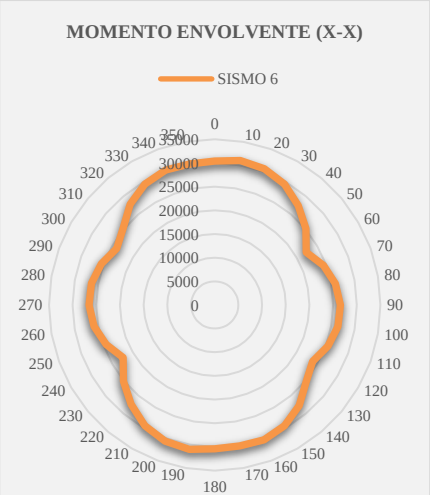

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

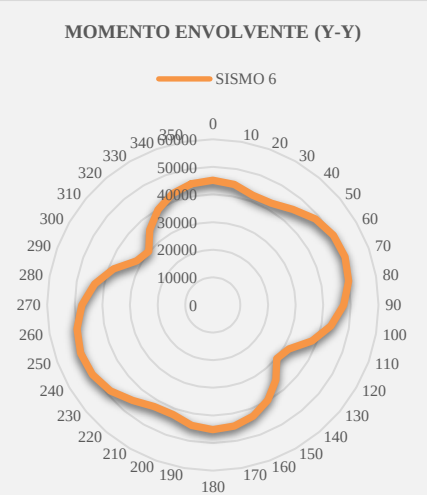

MOMENTO ENVOLVENTE (X-X)
SISMO 4

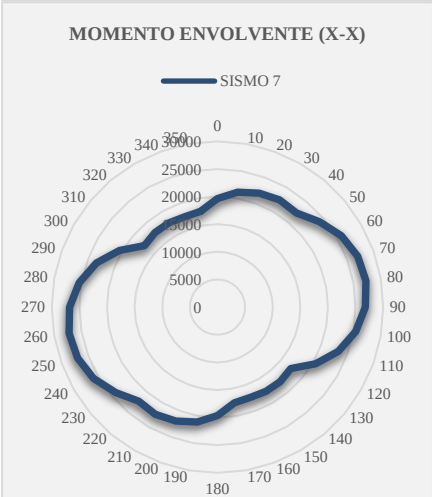

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

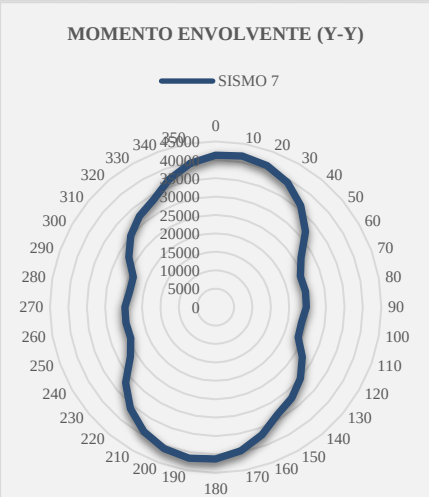

MOMENTO ENVOLVENTE (X-X)
SISMO 5

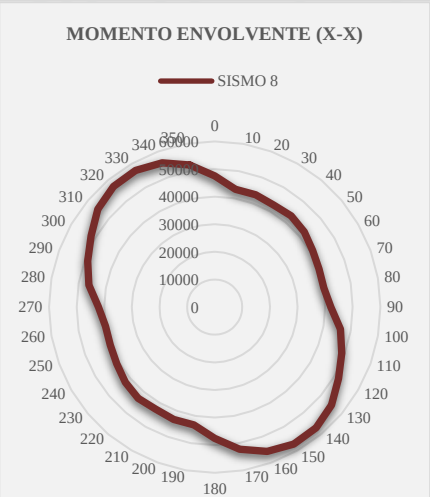

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

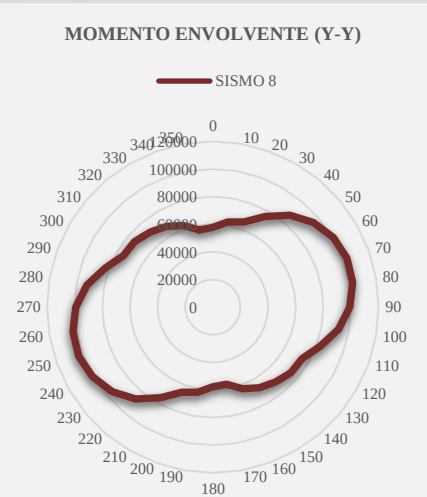

MOMENTO ENVOLVENTE (X-X)
SISMO 6

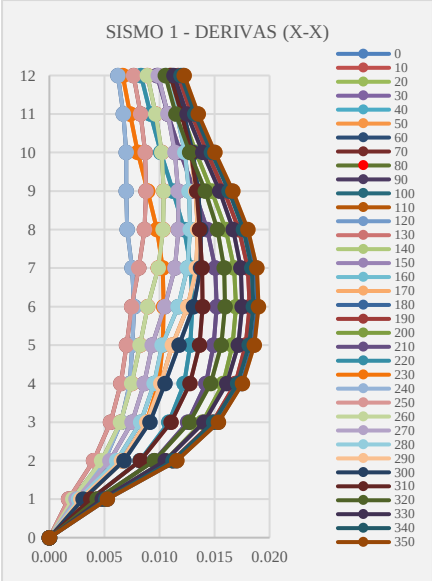

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

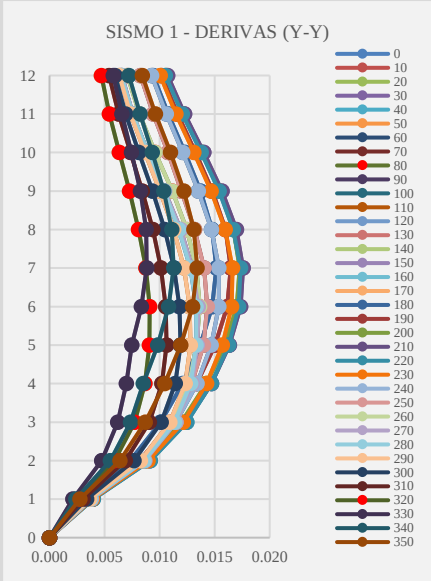

MOMENTO ENVOLVENTE (X-X)
SISMO 7

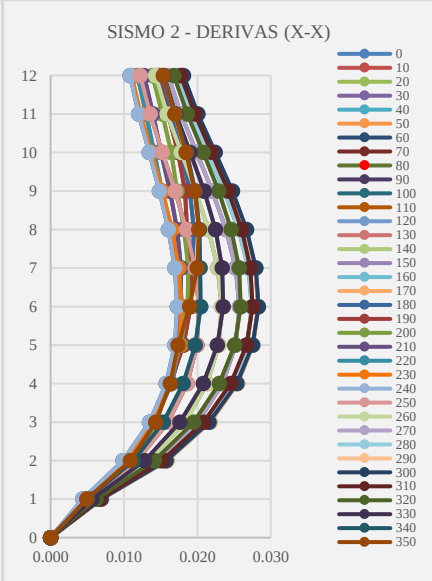

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

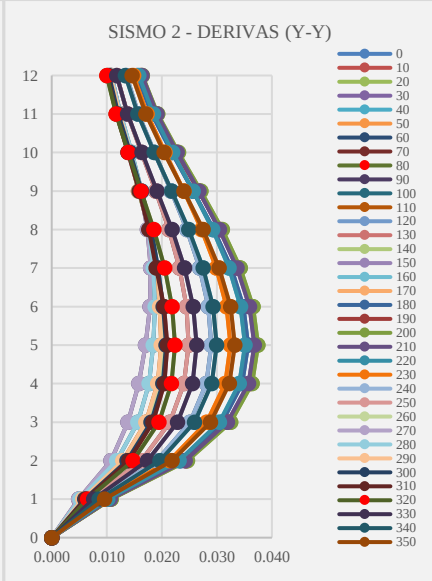

MOMENTO ENVOLVENTE (X-X)
SISMO 8

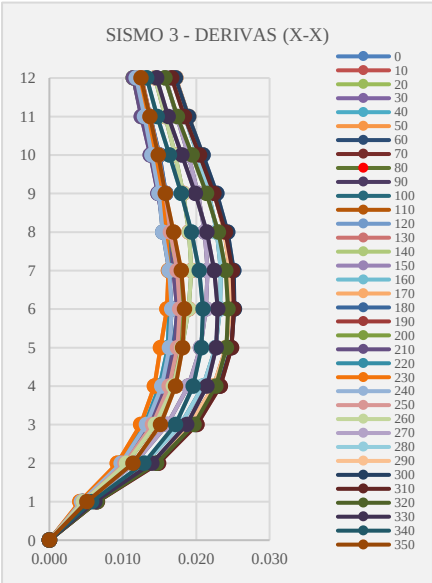

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

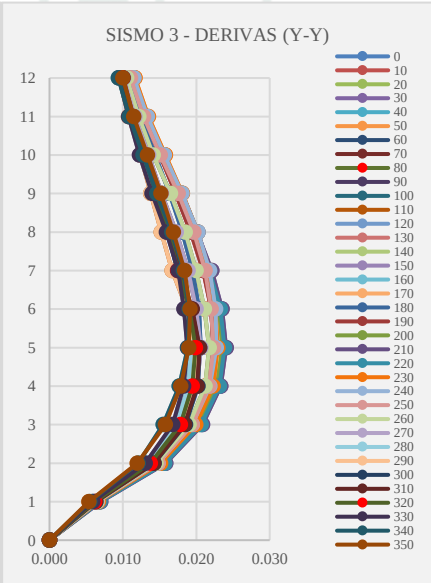

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

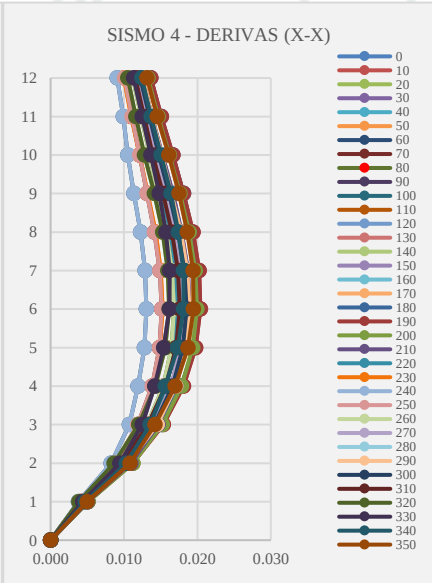

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

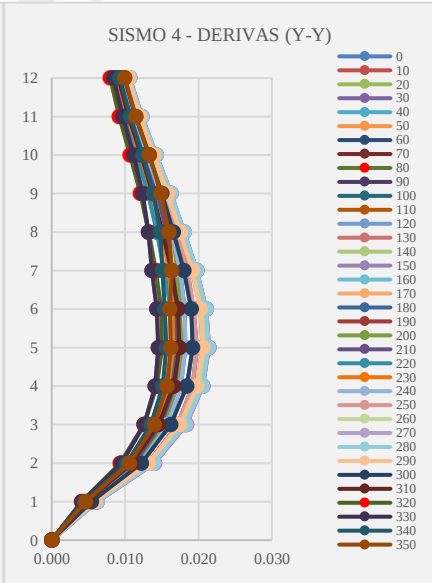

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

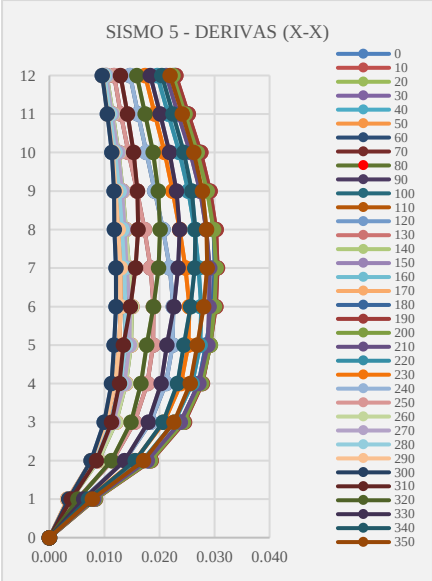

SISMO 2 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

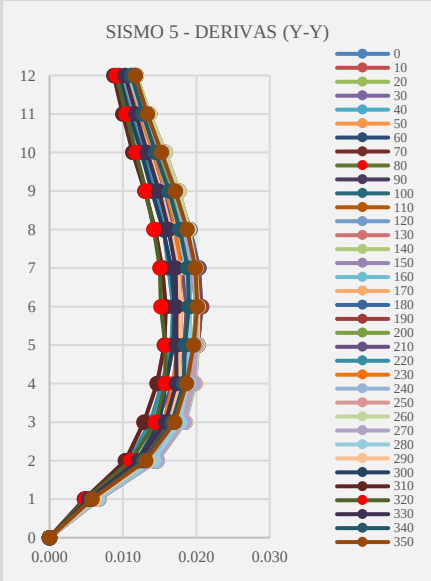

SISMO 3 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
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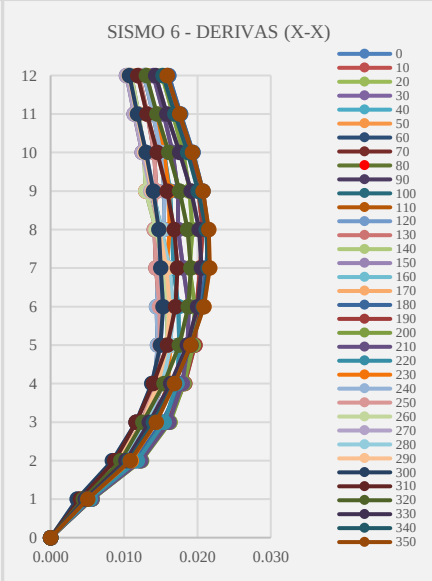

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
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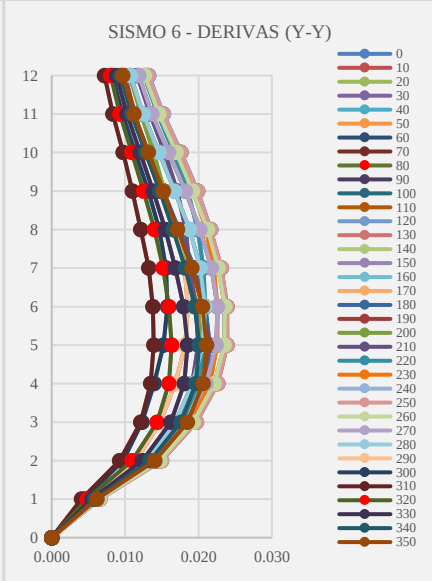

SISMO 4 - DERIVAS (X-X)
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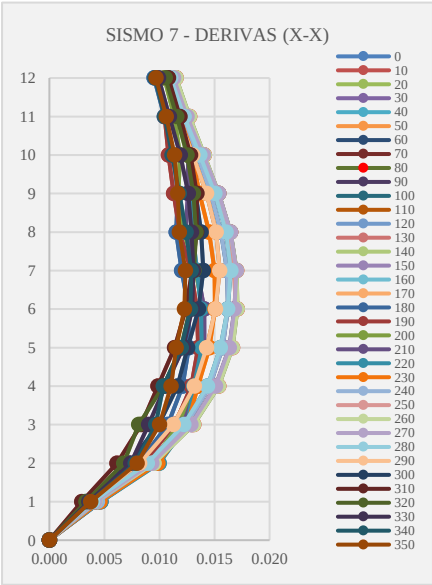

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

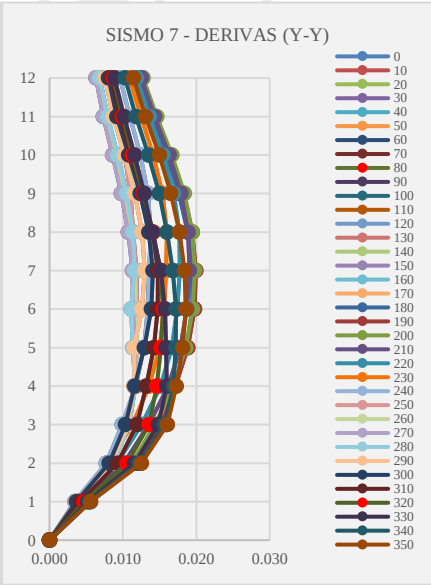

SISMO 5 - DERIVAS (X-X)
0.000 0.010 0.020 0.030 0.040
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

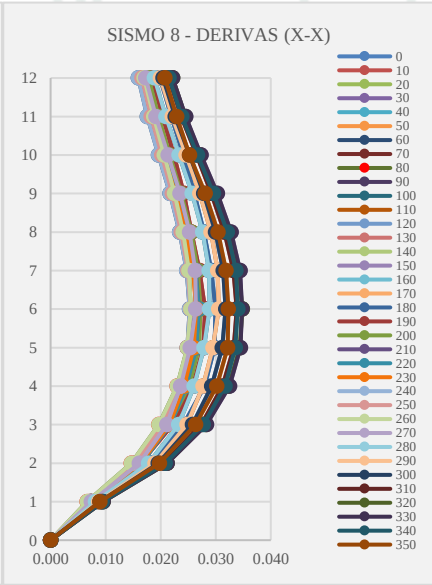

SISMO 5 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

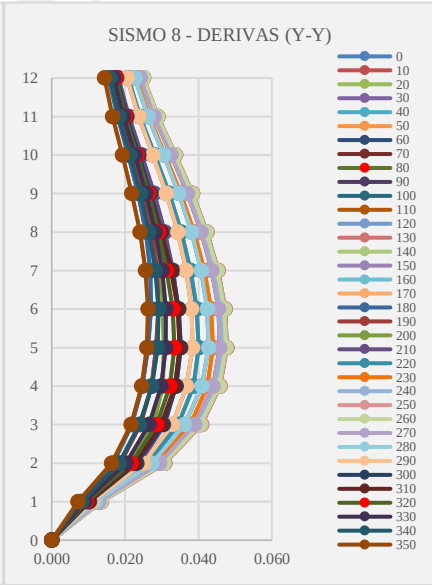

SISMO 6 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

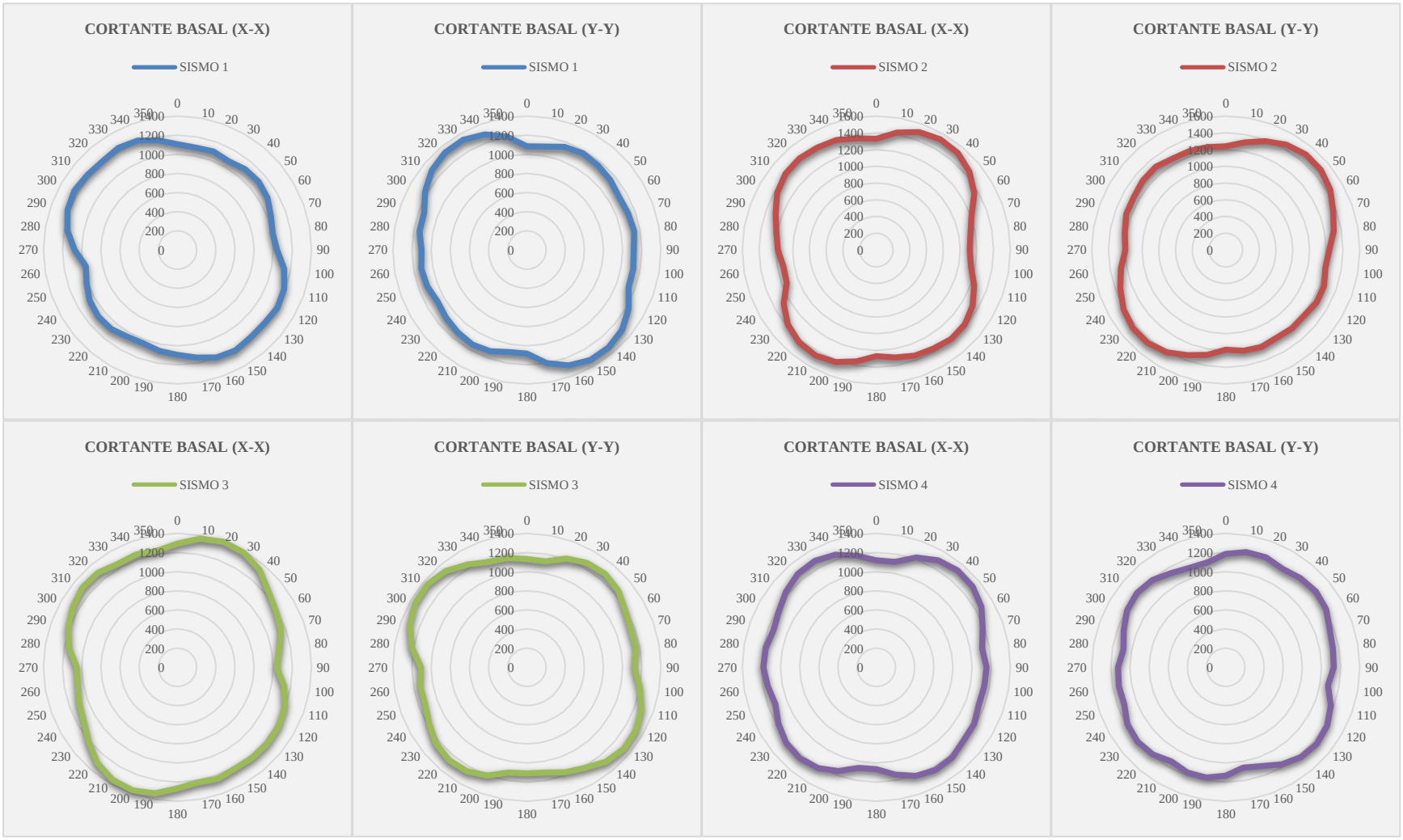

SISMO 7 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (X-X)
0.000 0.010 0.020 0.030 0.040
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

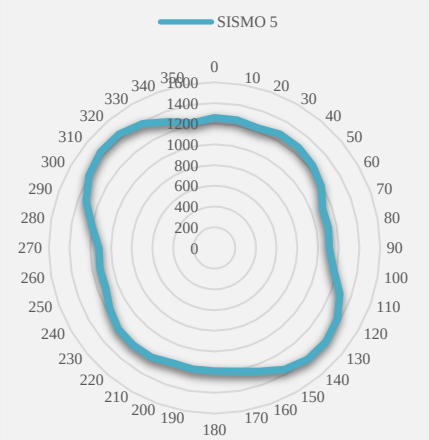

SISMO 8 - DERIVAS (Y-Y)
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MODELO 4

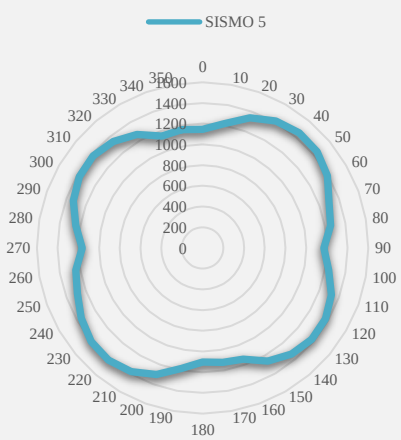
Para 4 pisos:



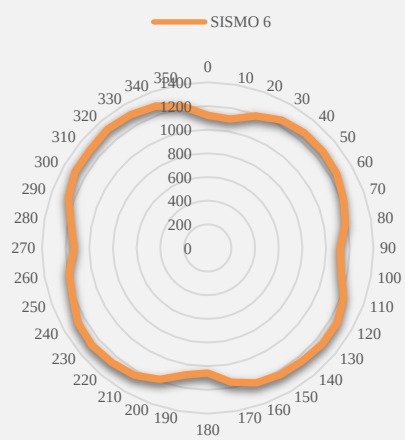
CORTANTE BASAL (X-X)



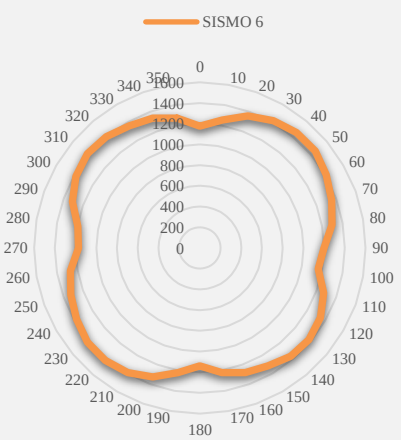
CORTANTE BASAL (Y-Y)



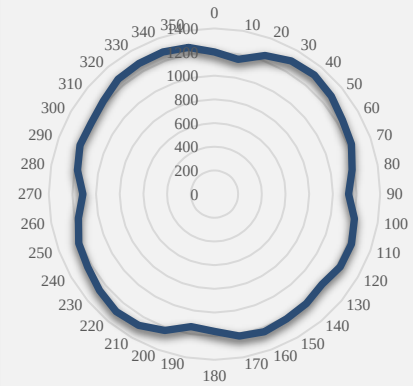
CORTANTE BASAL (X-X)



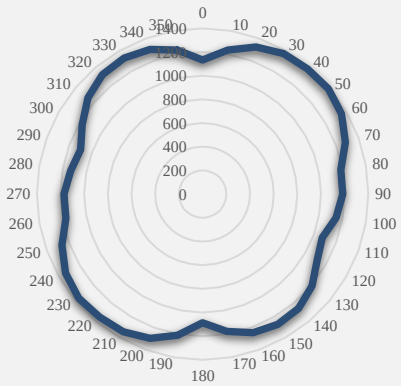
CORTANTE BASAL (Y-Y)



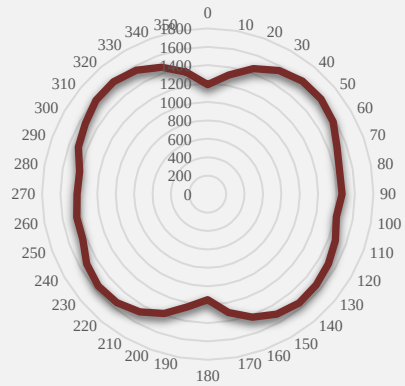
CORTANTE BASAL (X-X)



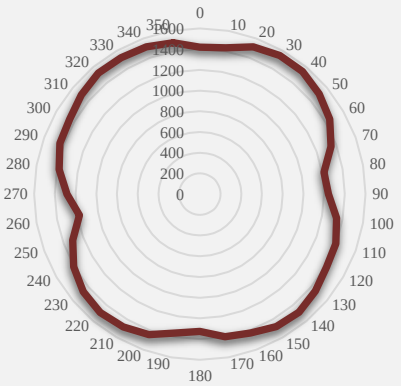
CORTANTE BASAL (Y-Y)

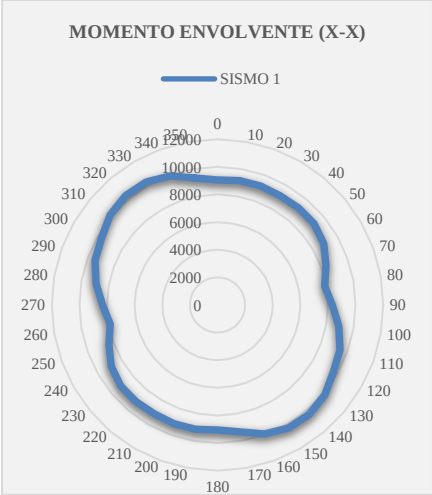


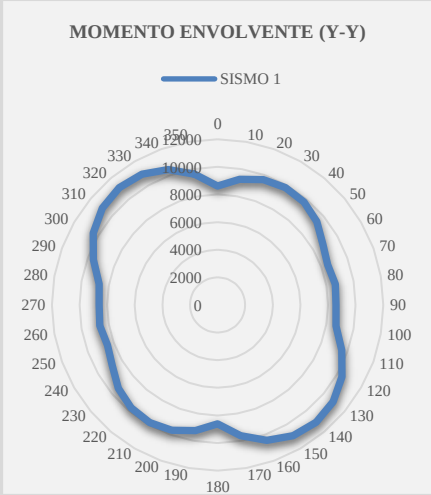
CORTANTE BASAL (X-X)

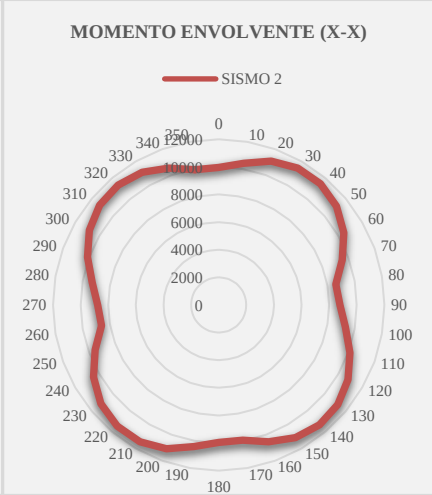


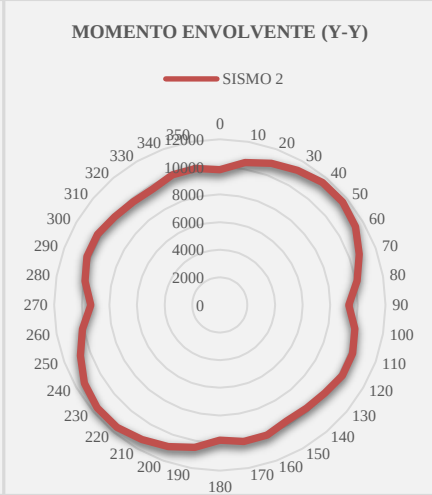
CORTANTE BASAL (Y-Y)

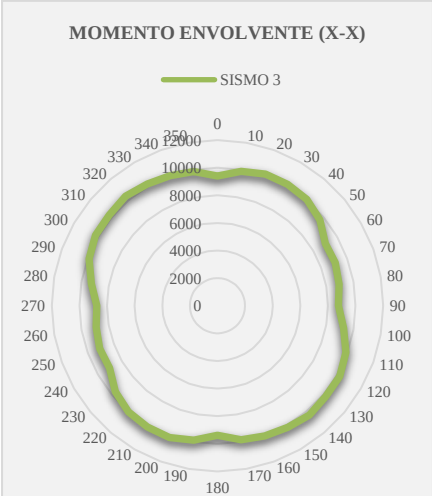


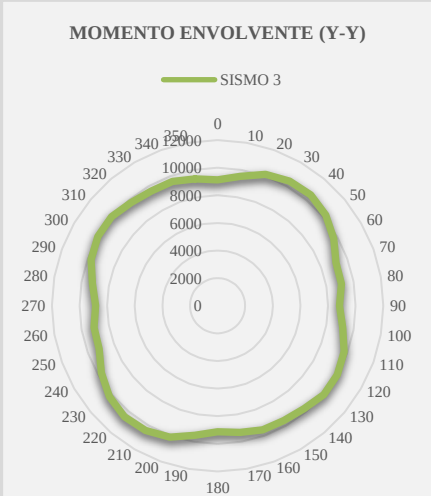

MOMENTO ENVOLVENTE (X-X)
SISMO 1

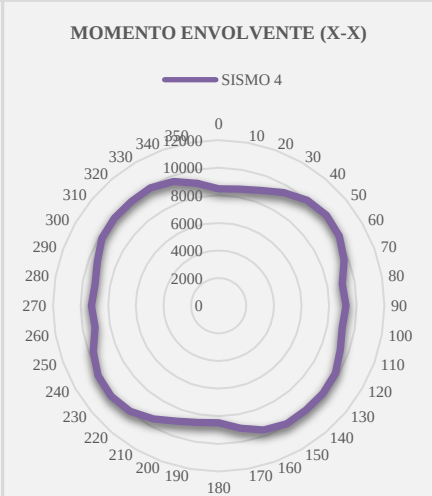

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

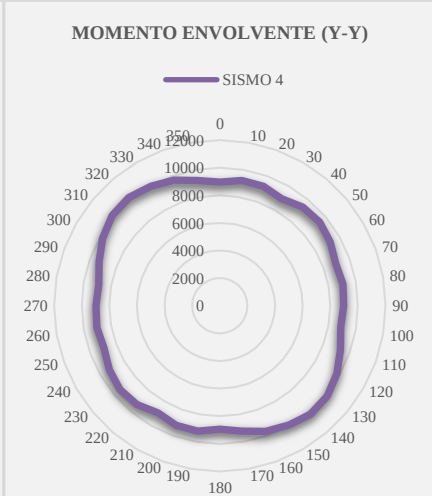

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

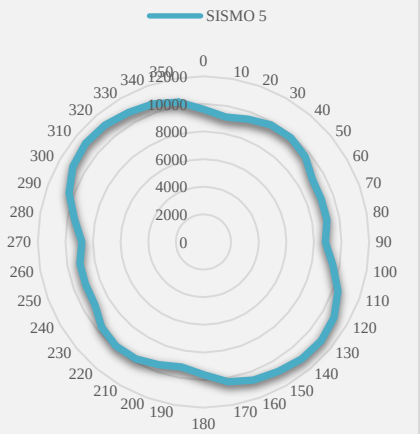

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

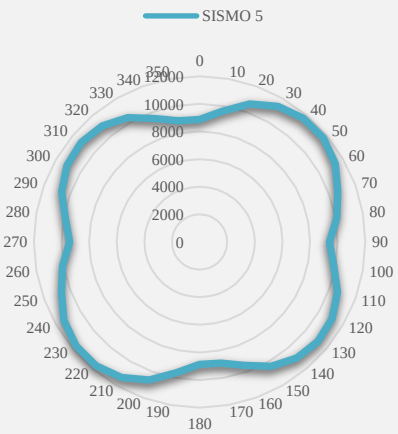

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

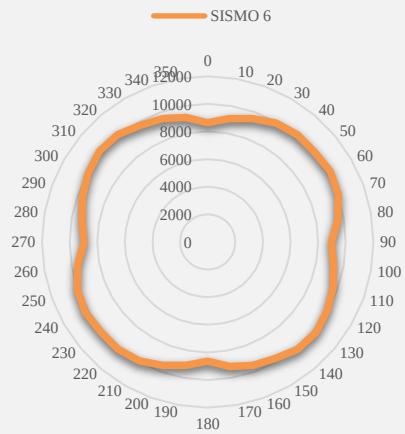
MOMENTO ENVOLVENTE (X-X)



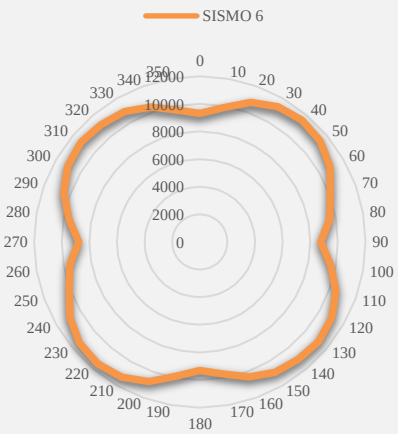
MOMENTO ENVOLVENTE (Y-Y)



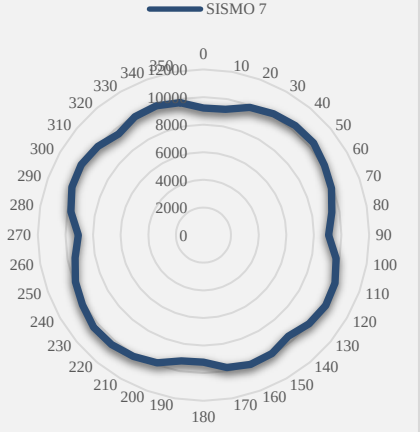
MOMENTO ENVOLVENTE (X-X)



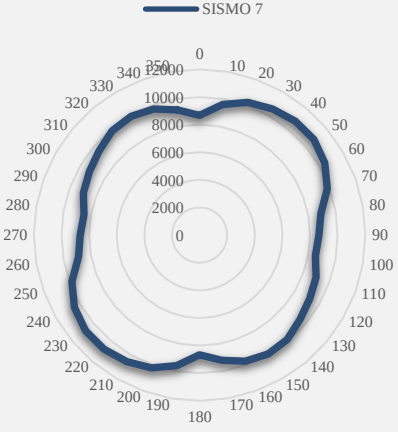
MOMENTO ENVOLVENTE (Y-Y)



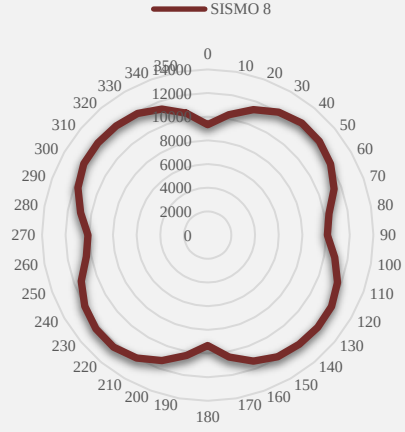
MOMENTO ENVOLVENTE (X-X)



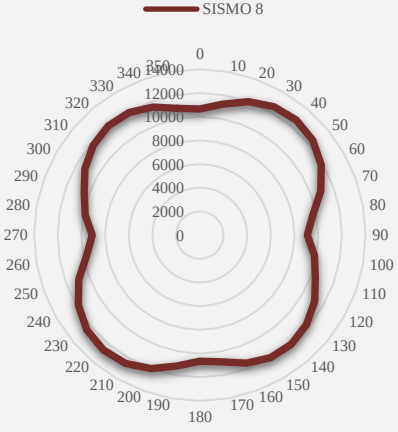
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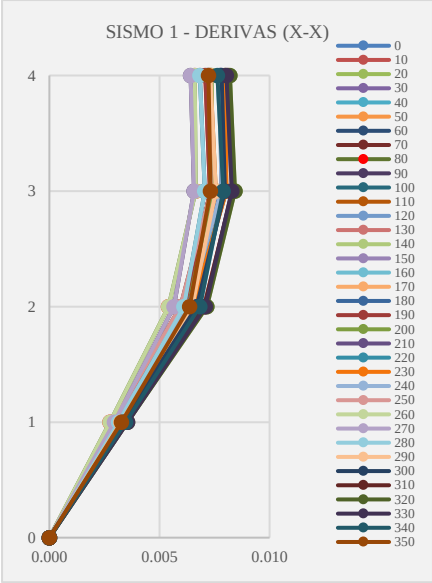


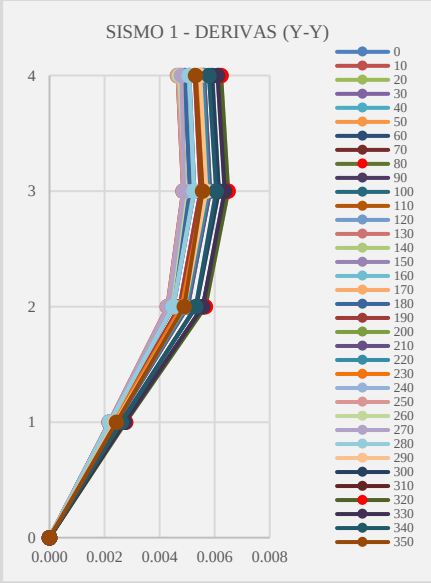
MOMENTO ENVOLVENTE (X-X)

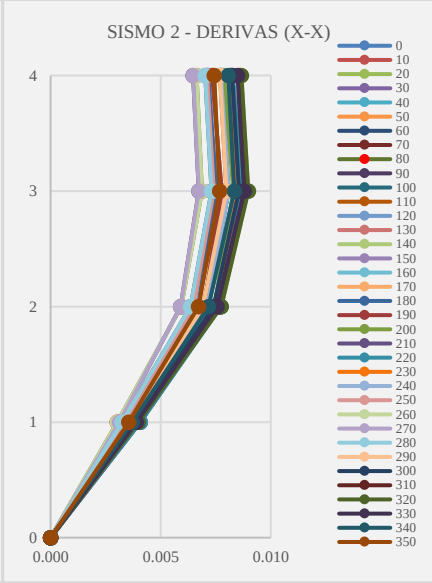


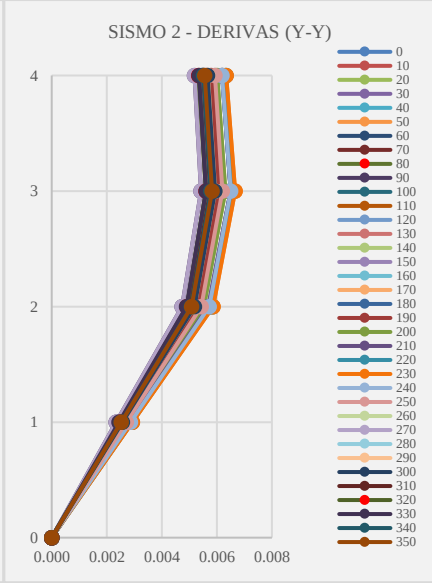
MOMENTO ENVOLVENTE (Y-Y)

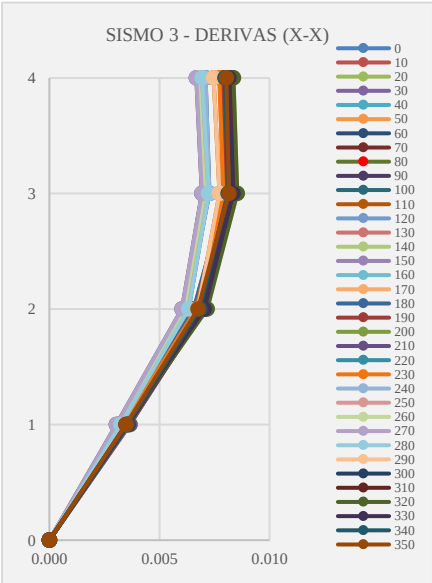


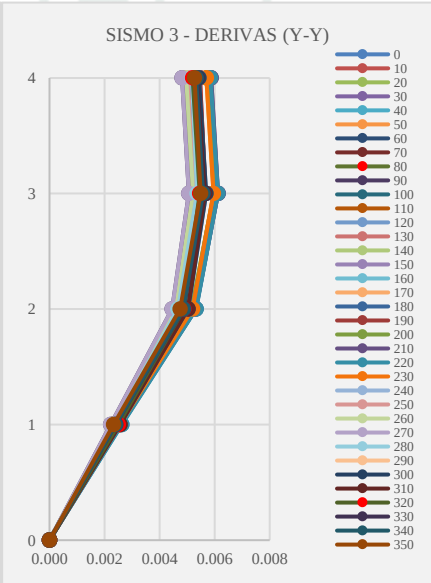

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.005 0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

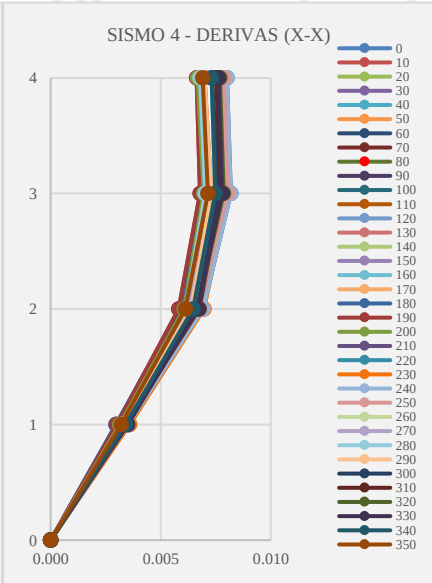

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

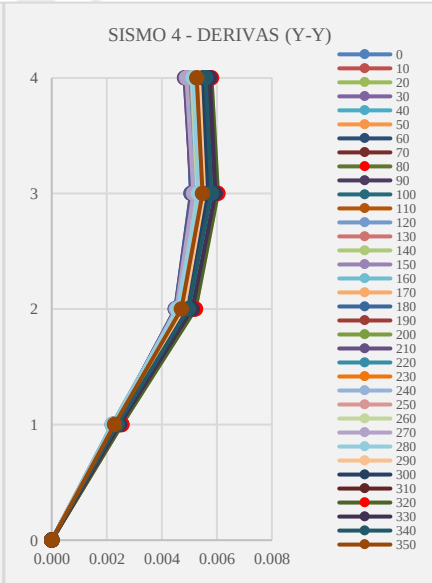

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0.000 0.005 0.010
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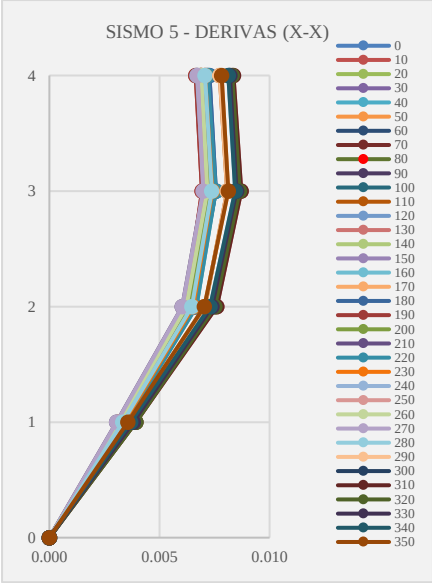

SISMO 2 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

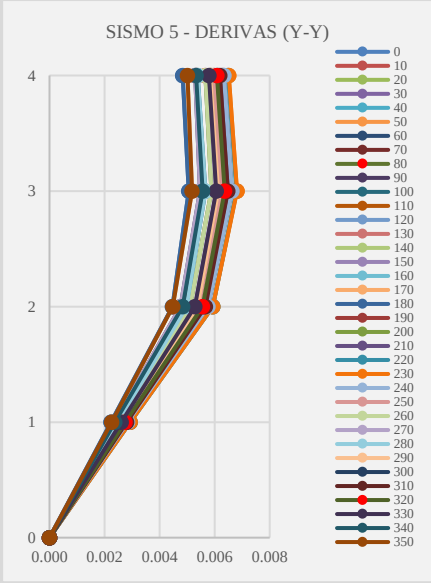

SISMO 3 - DERIVAS (X-X)
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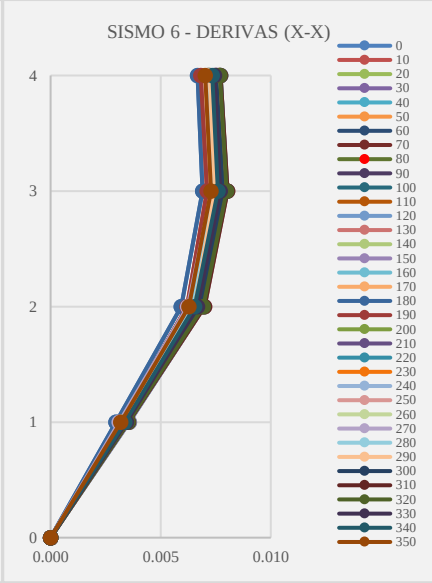

SISMO 3 - DERIVAS (Y-Y)
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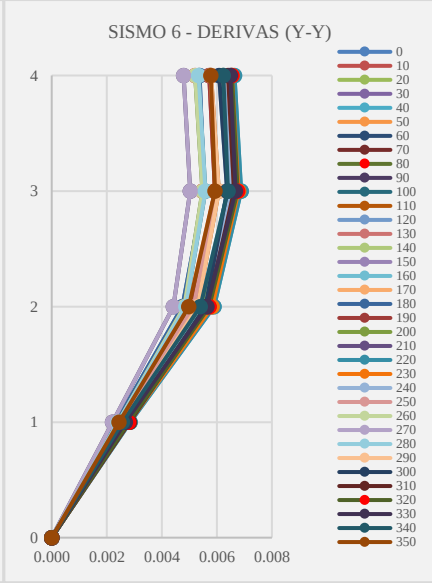

SISMO 4 - DERIVAS (X-X)
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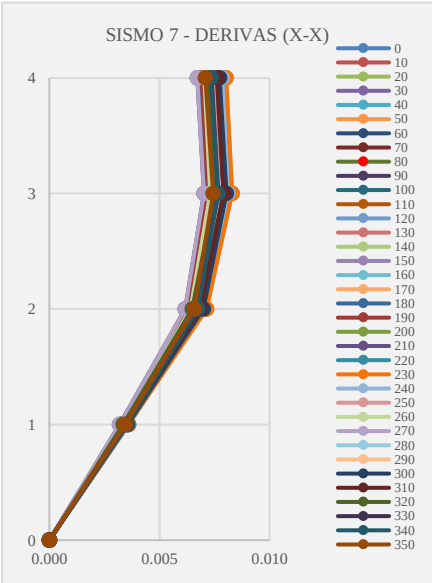

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

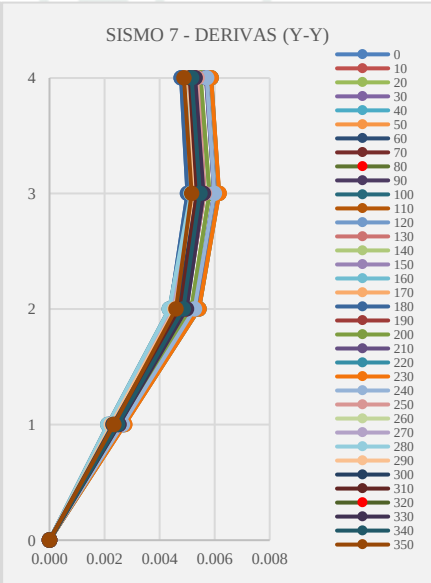

SISMO 5 - DERIVAS (X-X)
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0.000 0.005 0.010
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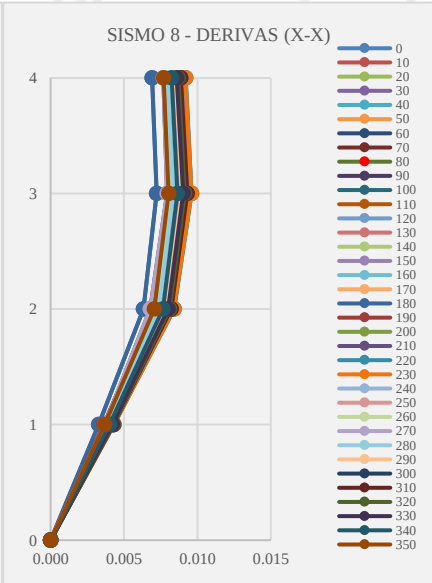

SISMO 5 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006 0.008
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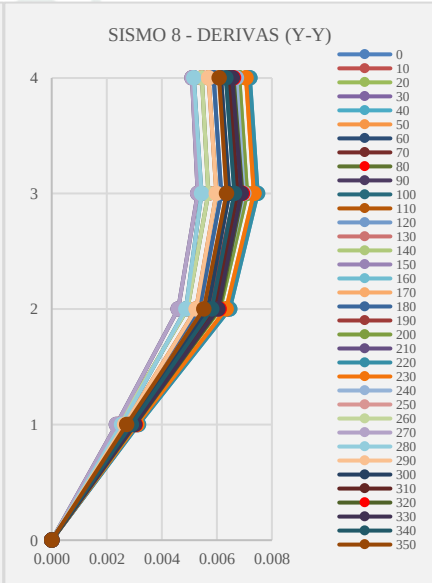

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.005 0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

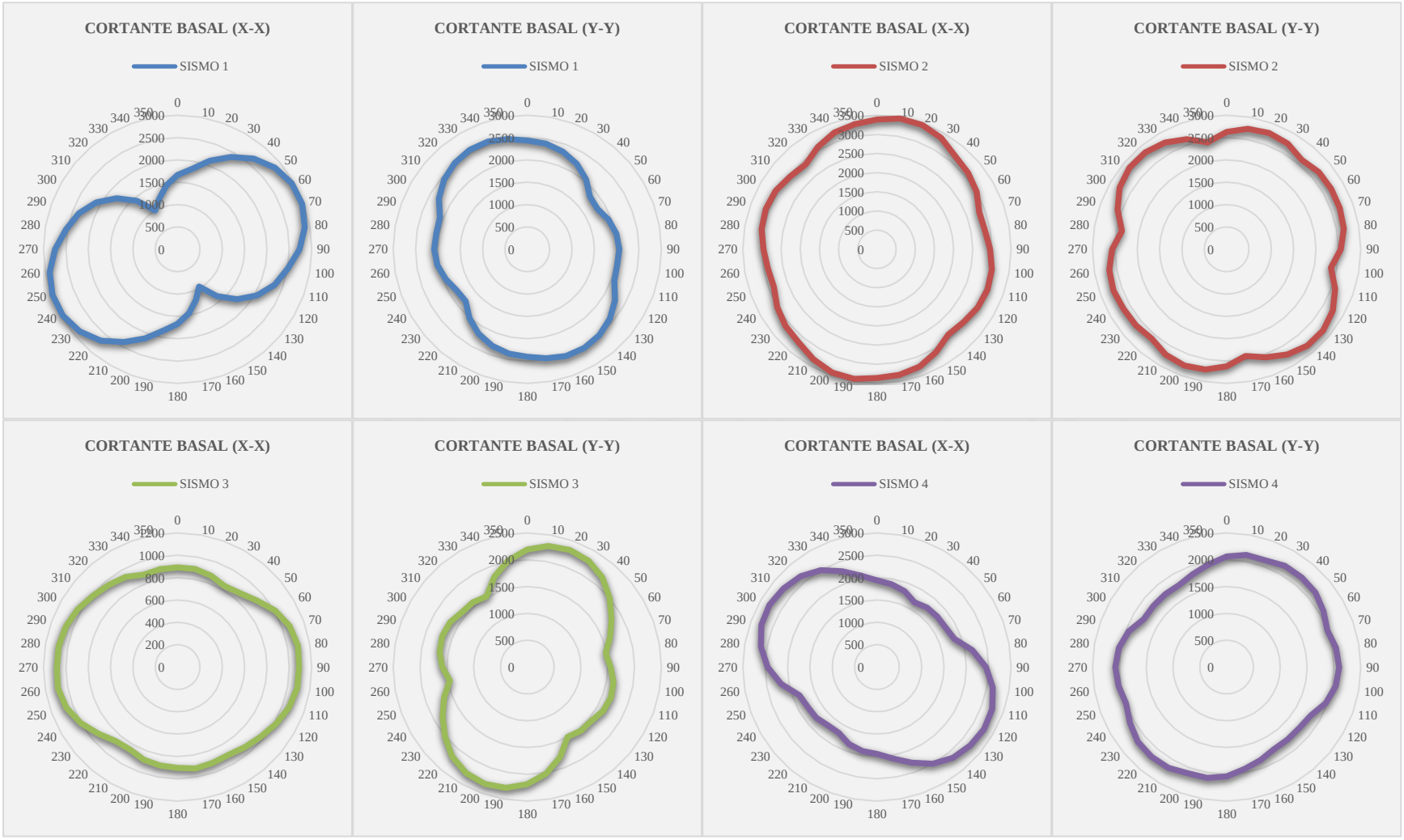

SISMO 7 - DERIVAS (X-X)
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0.000 0.005 0.010
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SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

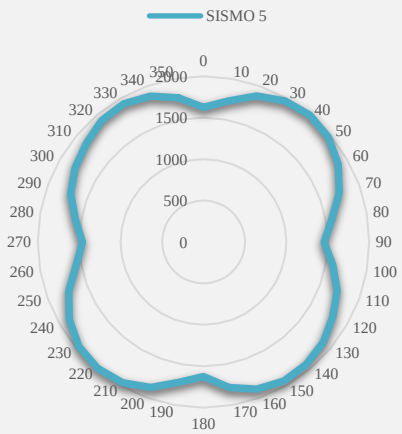

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

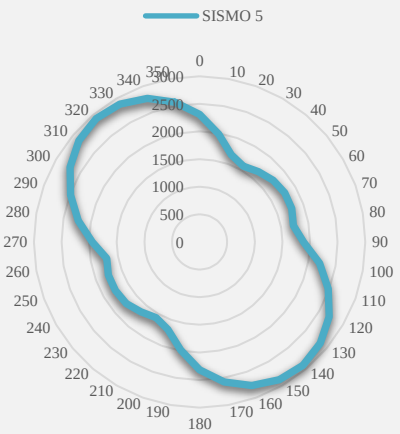
Para 8 pisos:


CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

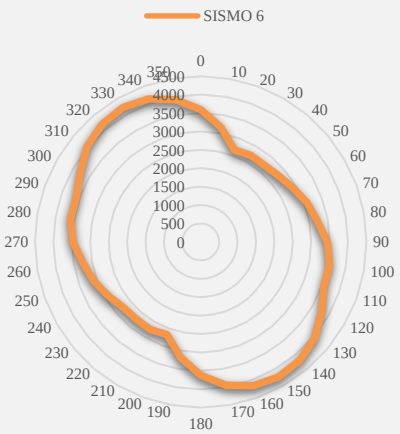
CORTANTE BASAL (X-X)



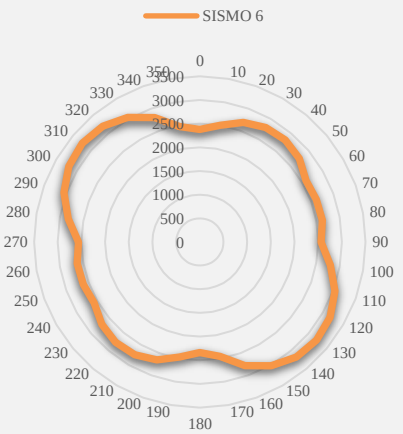
CORTANTE BASAL (Y-Y)



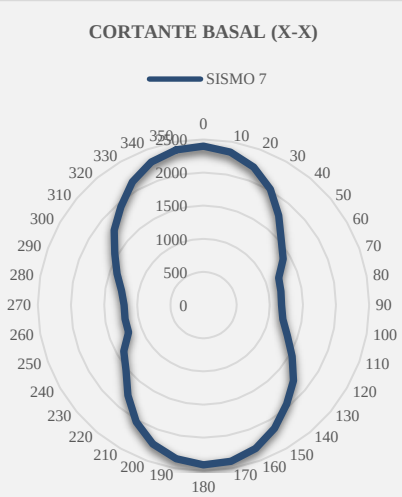
CORTANTE BASAL (X-X)



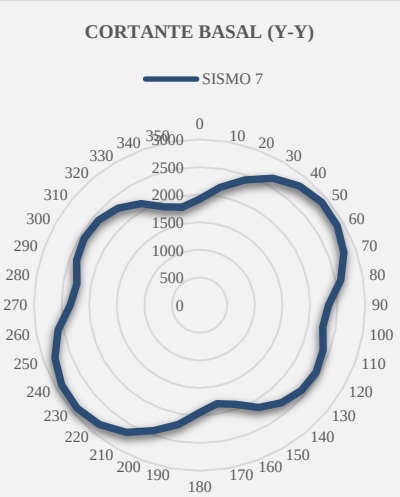
CORTANTE BASAL (Y-Y)



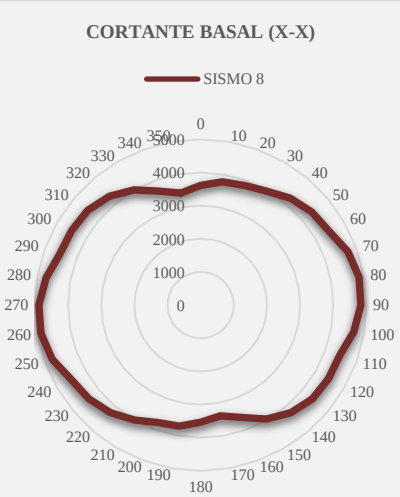
CORTANTE BASAL (X-X)



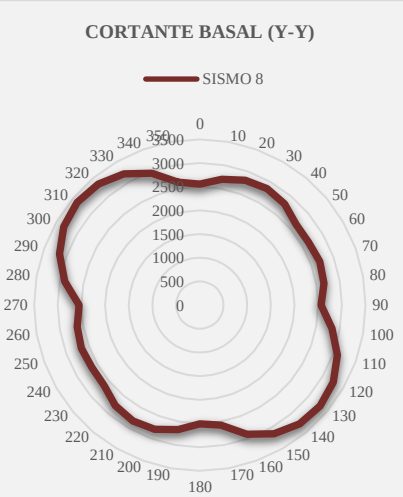
CORTANTE BASAL (Y-Y)

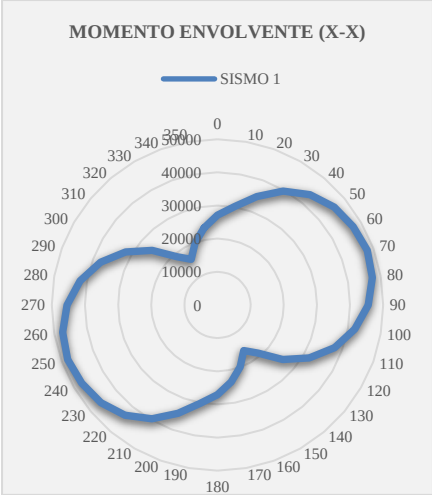


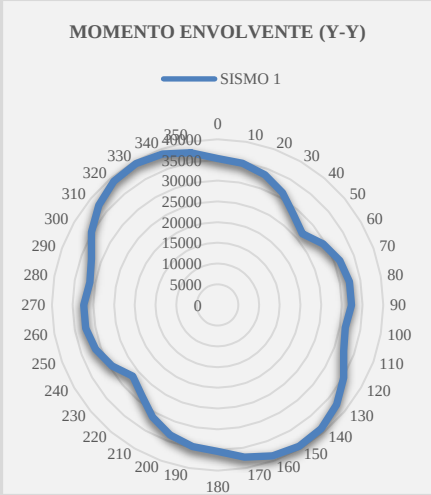
CORTANTE BASAL (X-X)

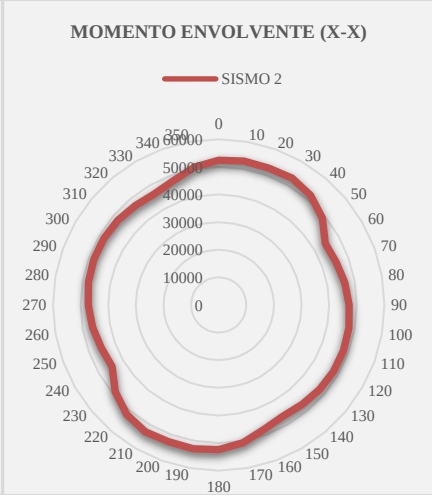


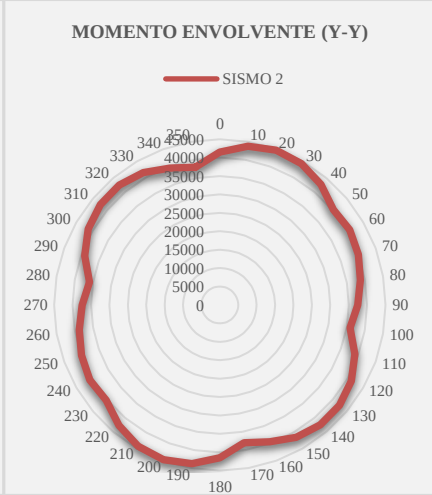
CORTANTE BASAL (Y-Y)

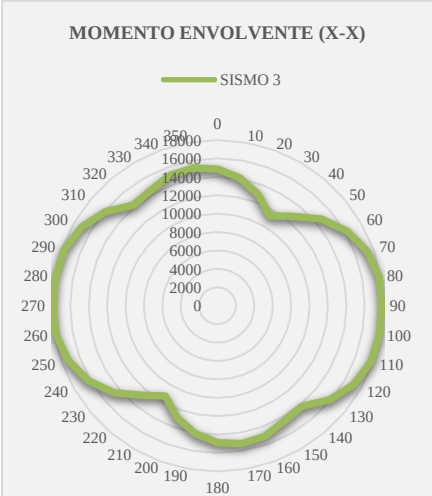


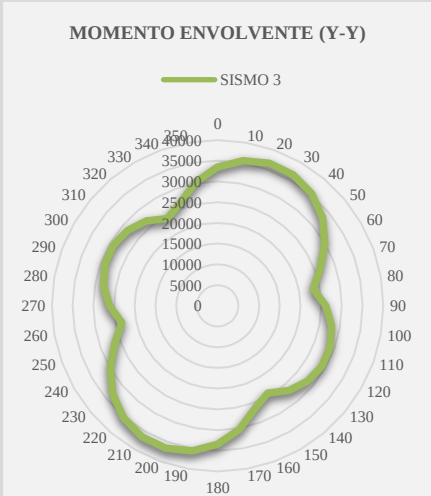

MOMENTO ENVOLVENTE (X-X)
SISMO 1

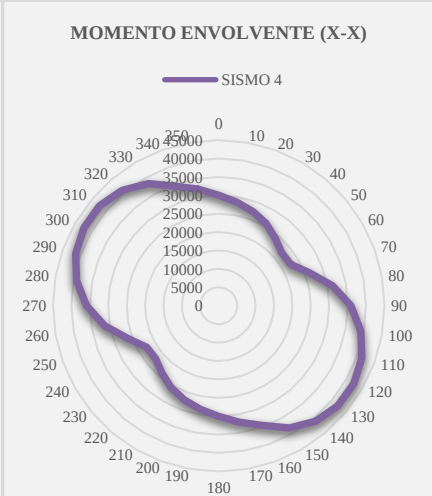

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

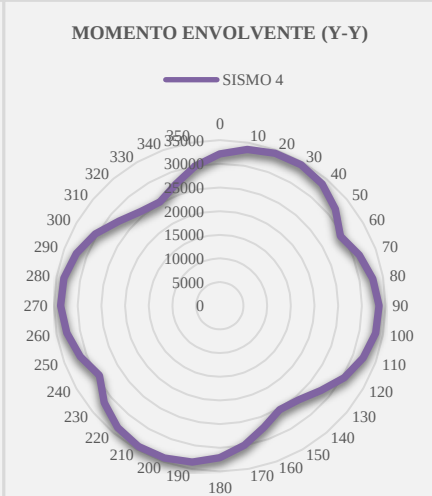

MOMENTO ENVOLVENTE (X-X)
SISMO 2

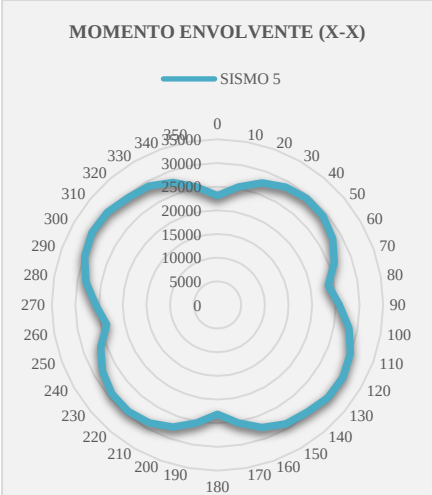

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

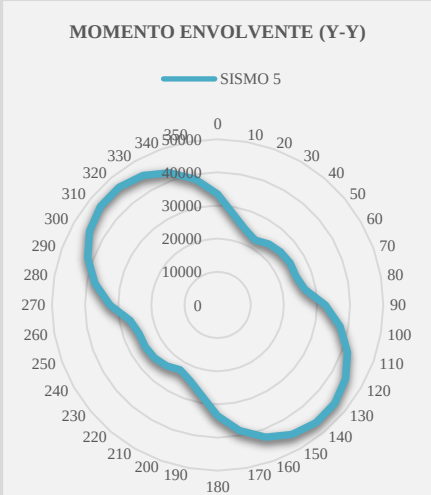

MOMENTO ENVOLVENTE (X-X)
SISMO 3

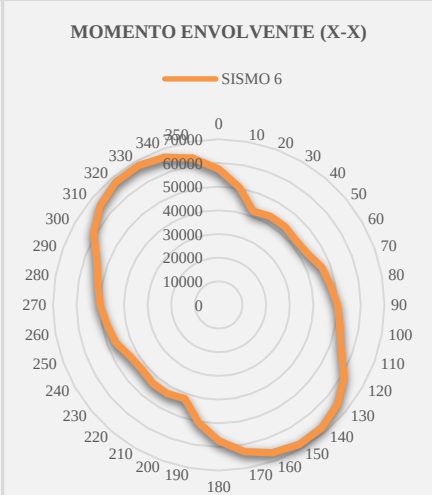

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

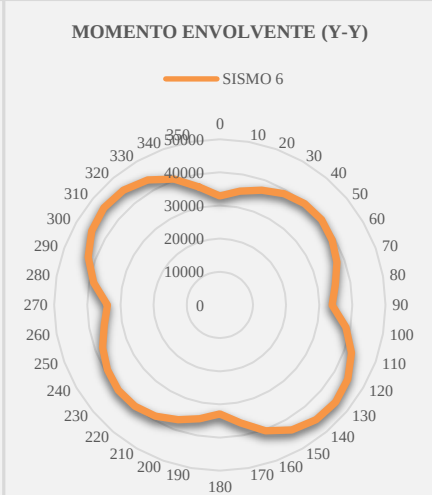

MOMENTO ENVOLVENTE (X-X)
SISMO 4

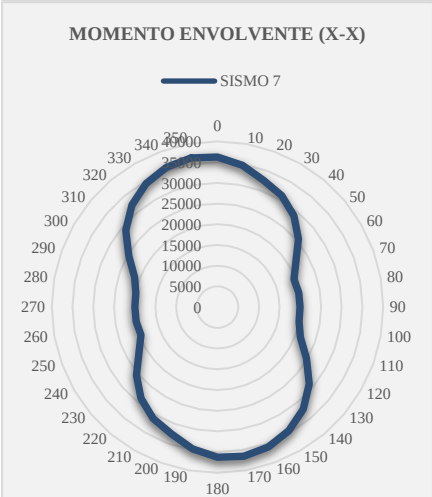

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

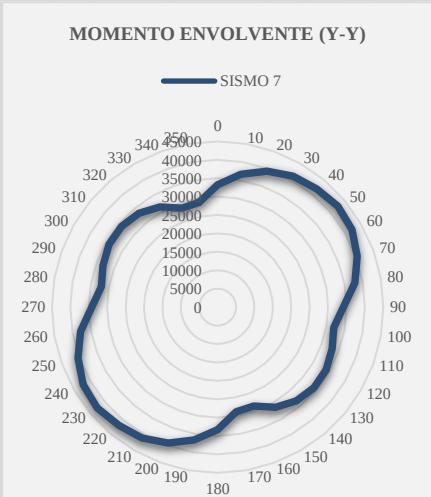

MOMENTO ENVOLVENTE (X-X)
SISMO 5

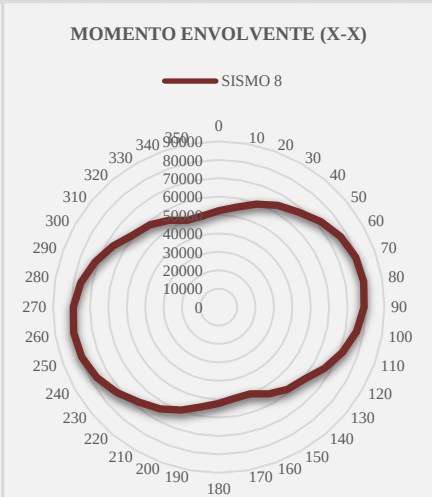

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

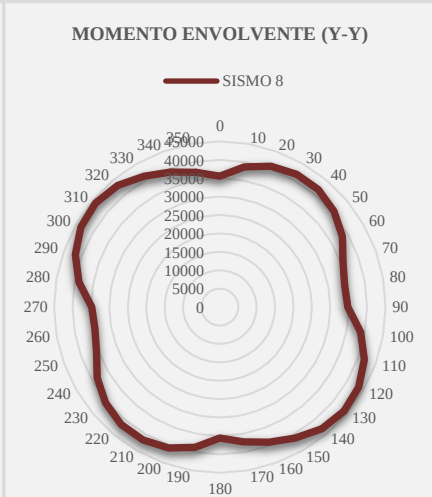

MOMENTO ENVOLVENTE (X-X)
SISMO 6

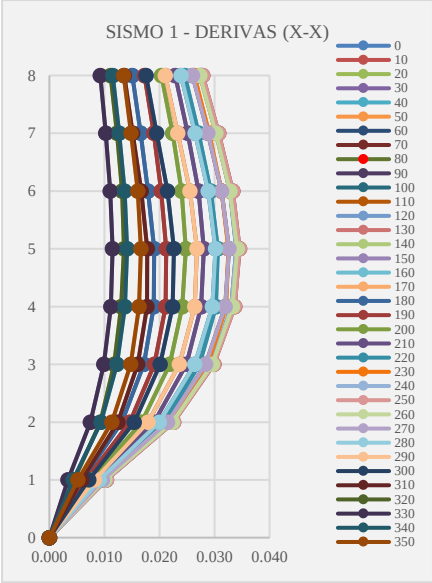

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

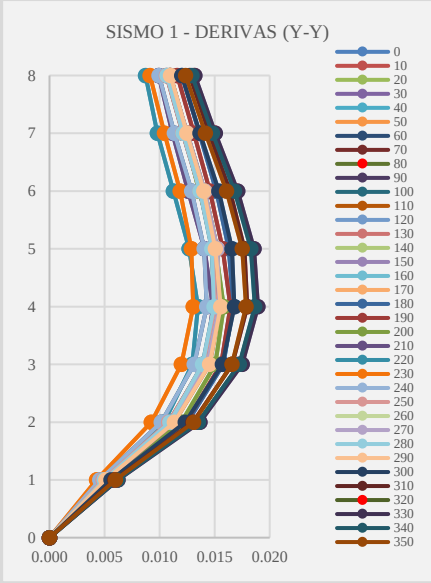

MOMENTO ENVOLVENTE (X-X)
SISMO 7

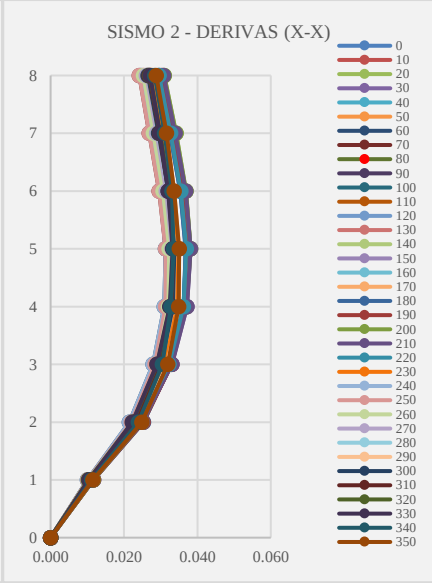

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

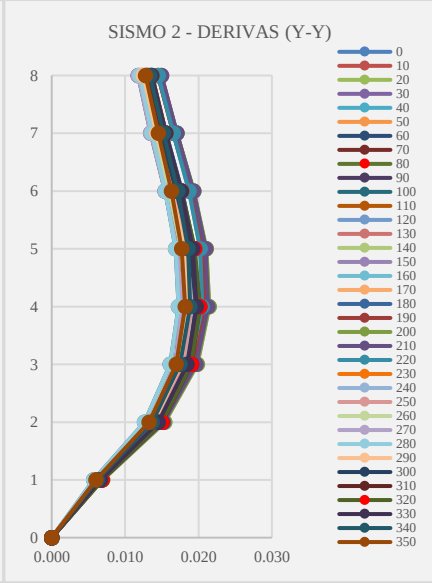

MOMENTO ENVOLVENTE (X-X)
SISMO 8

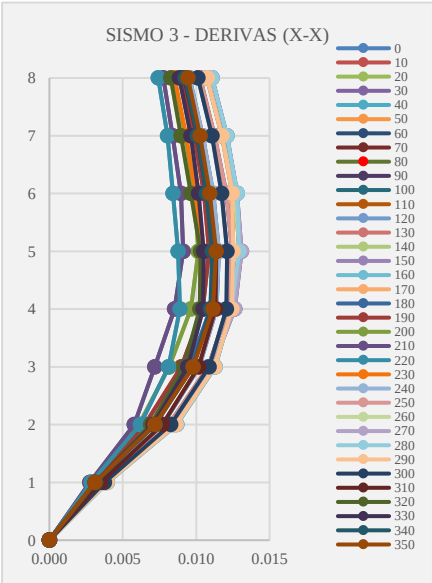

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

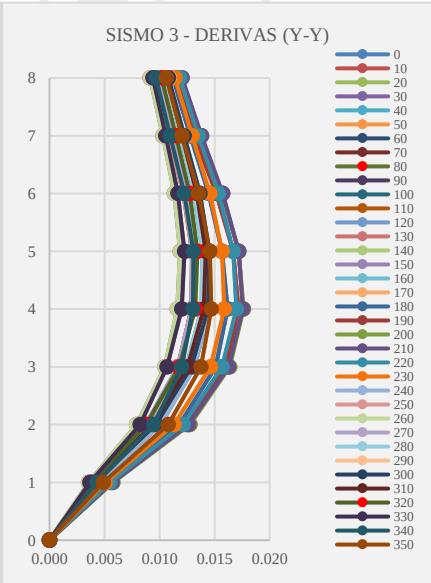

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

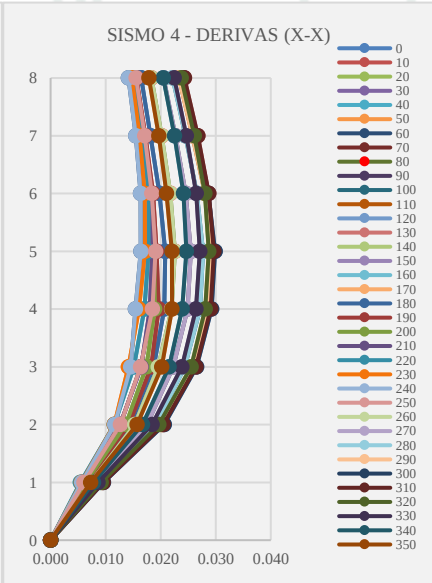

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

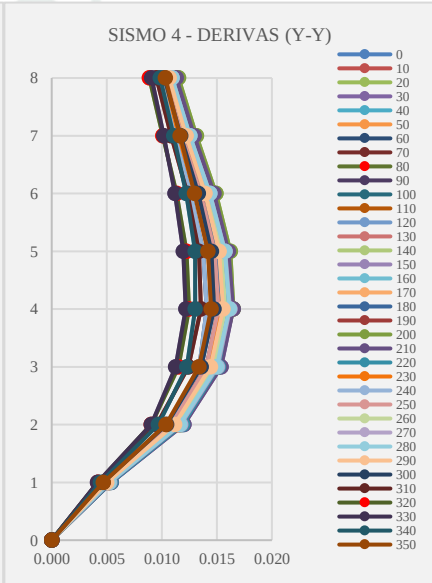

SISMO 2 - DERIVAS (X-X)
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0.000 0.020 0.040 0.060
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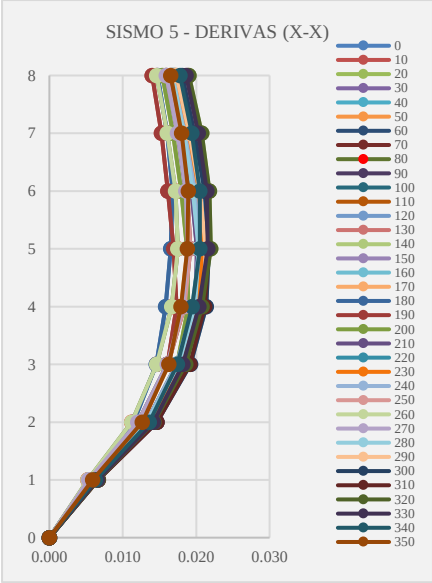

SISMO 2 - DERIVAS (Y-Y)
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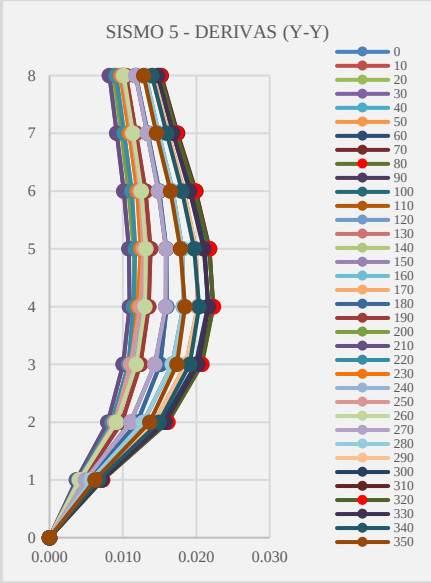

SISMO 3 - DERIVAS (X-X)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

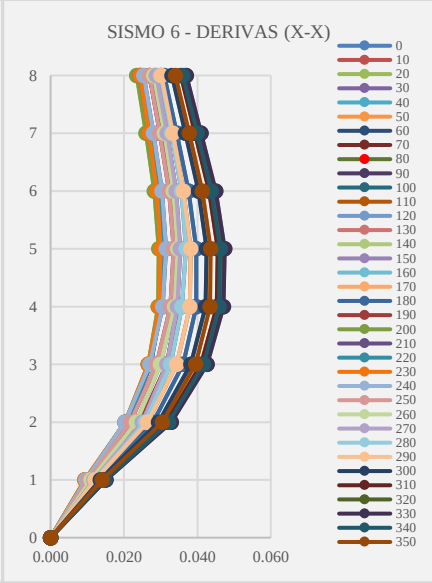

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

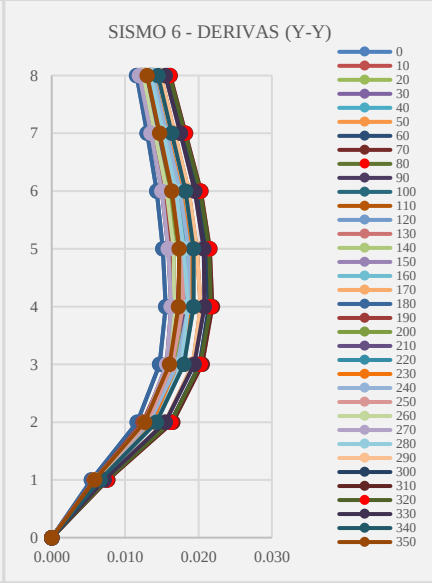

SISMO 4 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

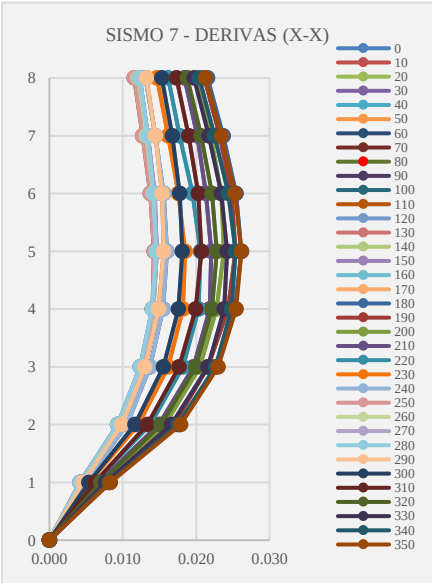

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

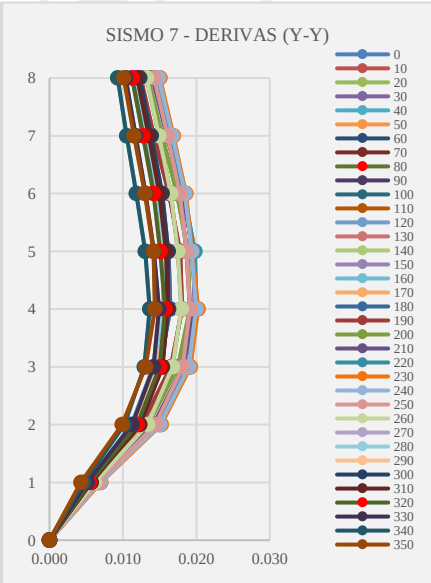

SISMO 5 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

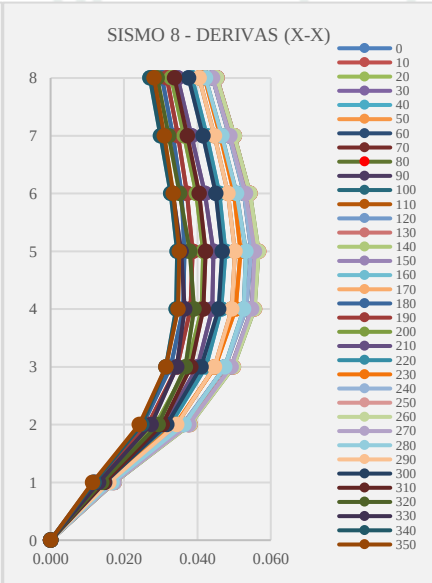

SISMO 5 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

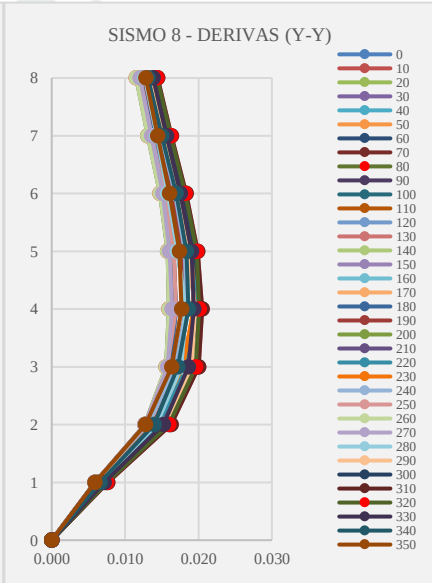

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

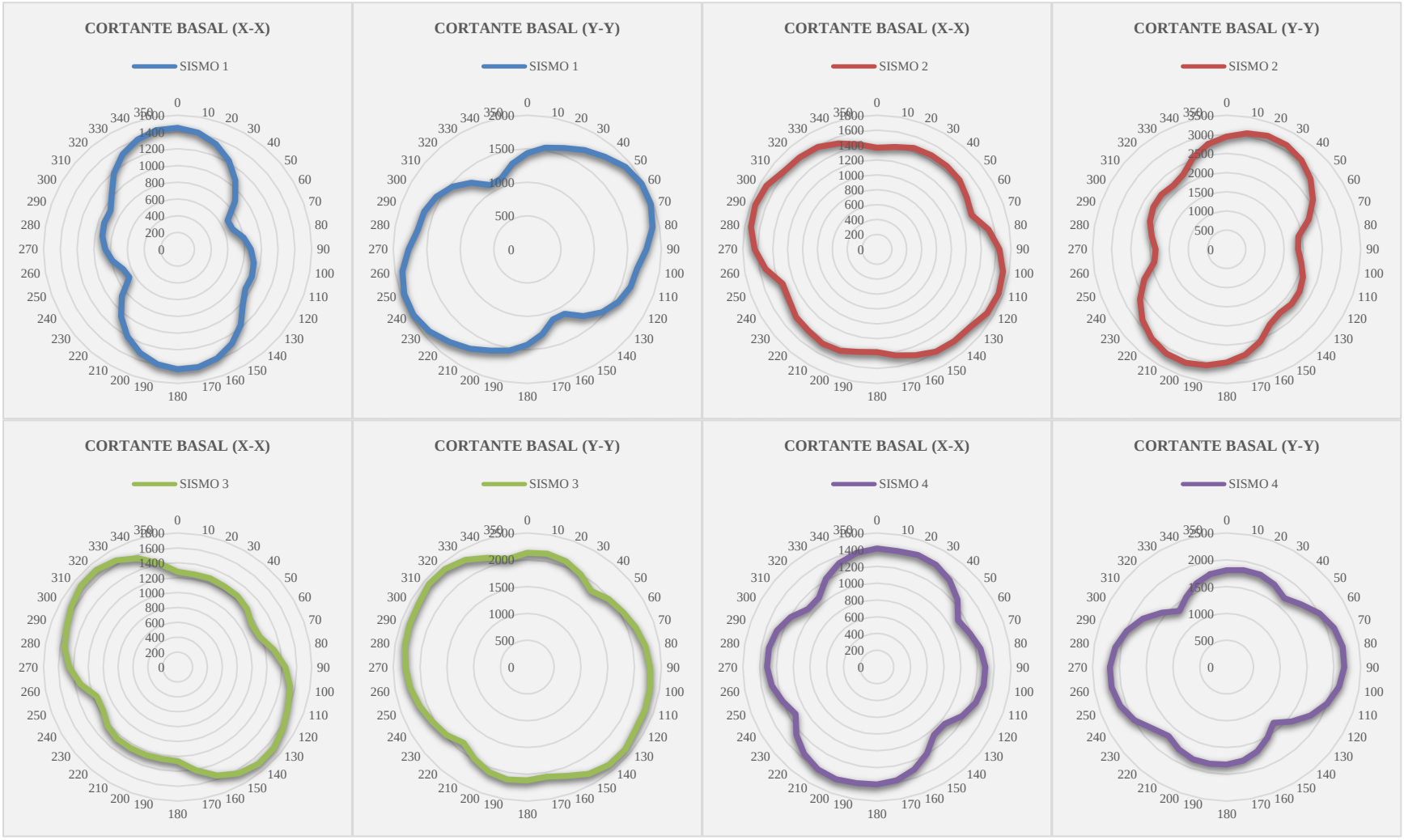

SISMO 7 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

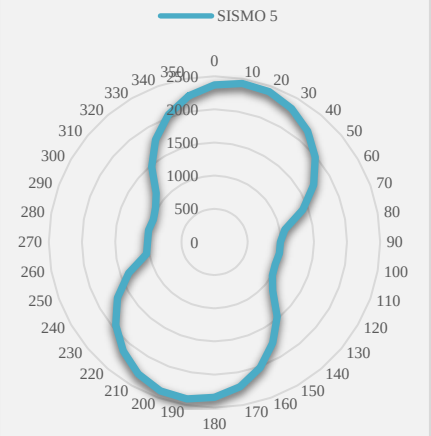

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

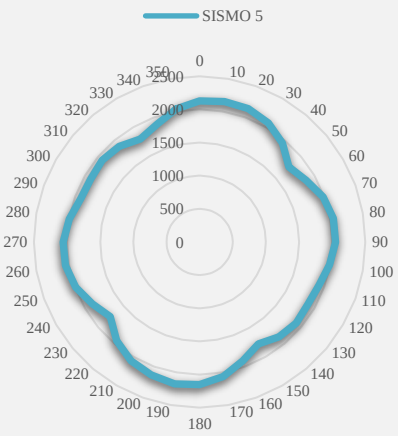
Para 12 pisos:



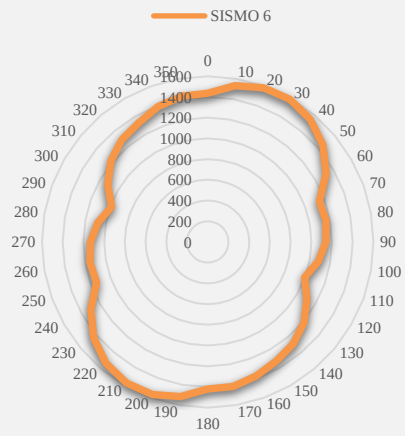
CORTANTE BASAL (X-X)



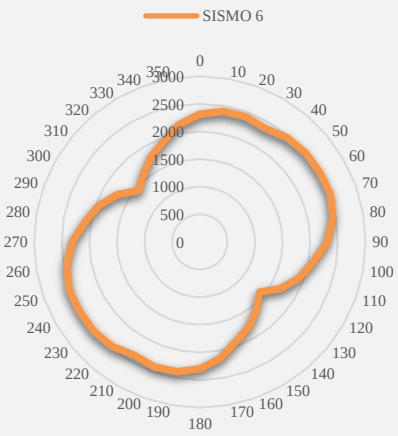
CORTANTE BASAL (Y-Y)



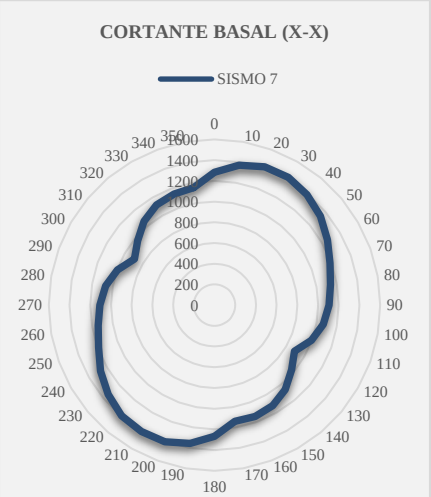
CORTANTE BASAL (X-X)



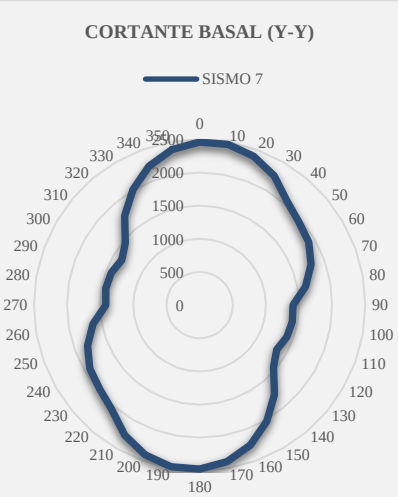
CORTANTE BASAL (Y-Y)



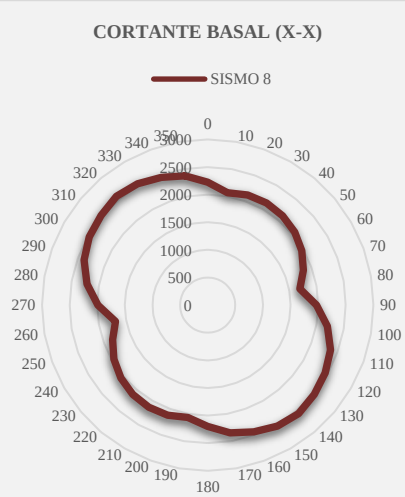
CORTANTE BASAL (X-X)



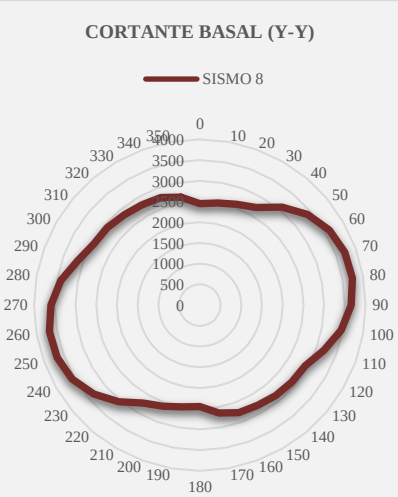
CORTANTE BASAL (Y-Y)

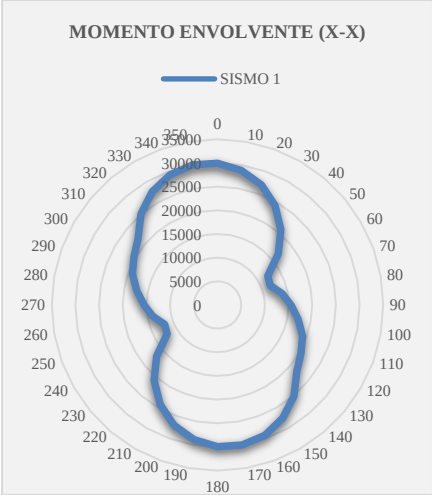


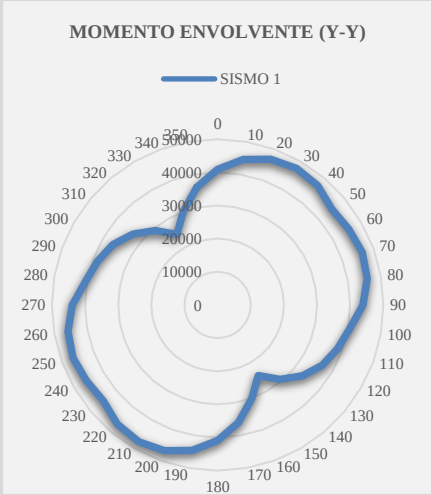
CORTANTE BASAL (X-X)

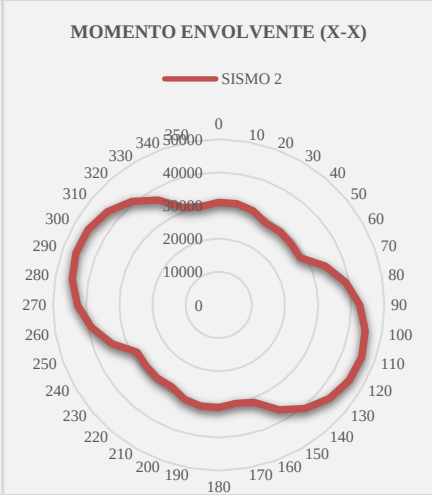


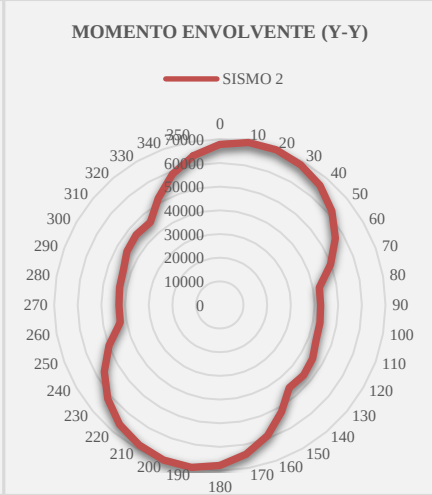
CORTANTE BASAL (Y-Y)

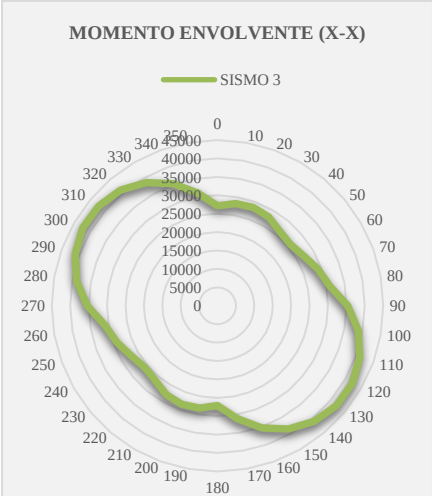


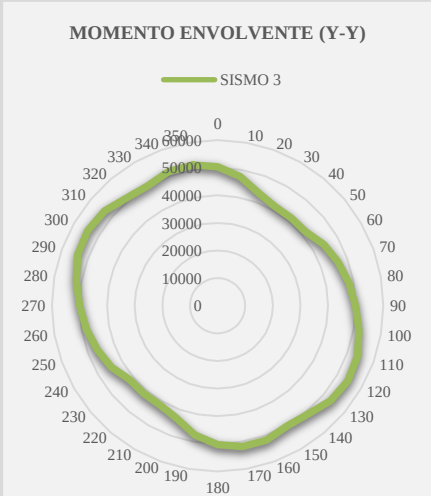

MOMENTO ENVOLVENTE (X-X)
SISMO 1

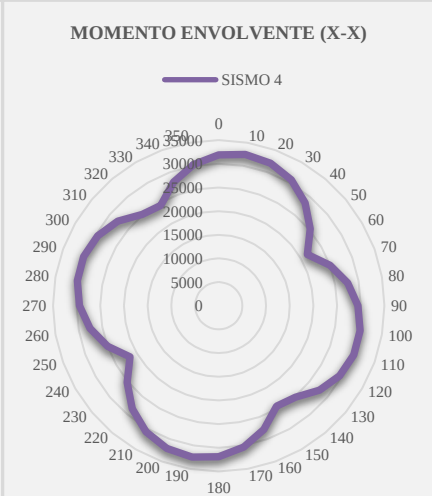

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

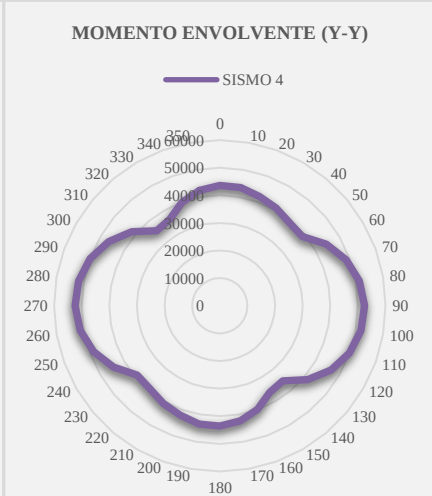

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

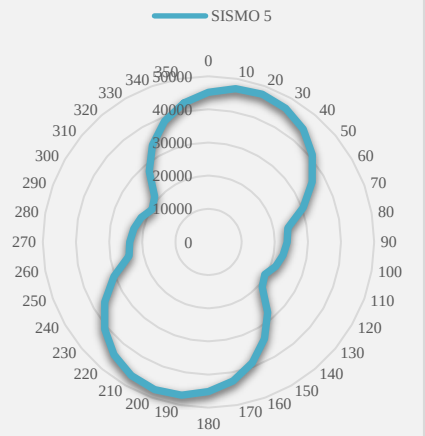

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

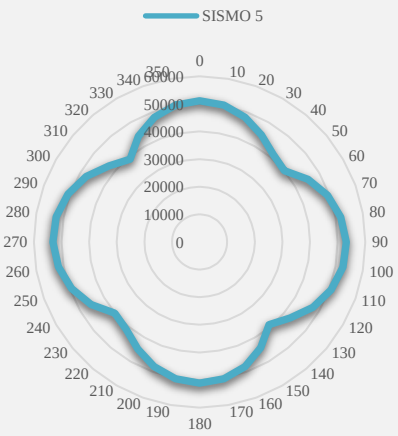

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

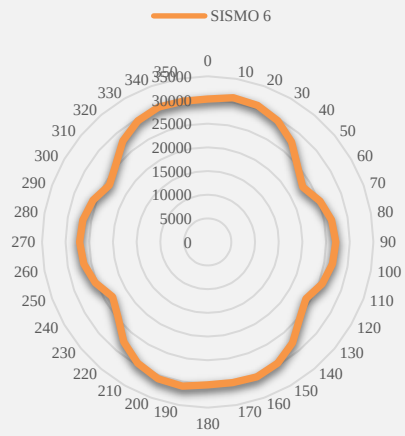
MOMENTO ENVOLVENTE (X-X)



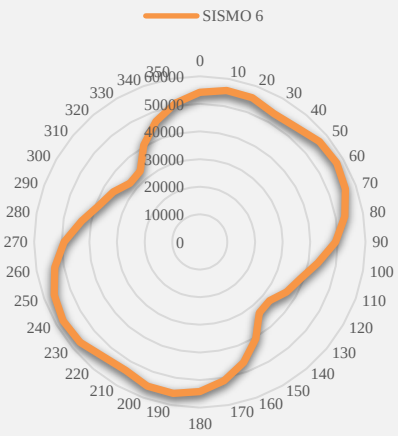
MOMENTO ENVOLVENTE (Y-Y)



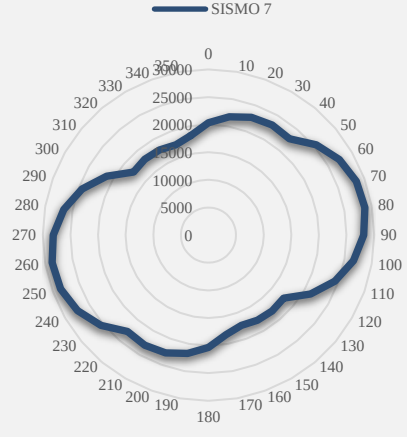
MOMENTO ENVOLVENTE (X-X)



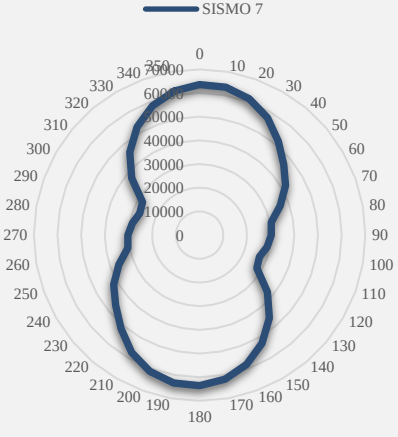
MOMENTO ENVOLVENTE (Y-Y)



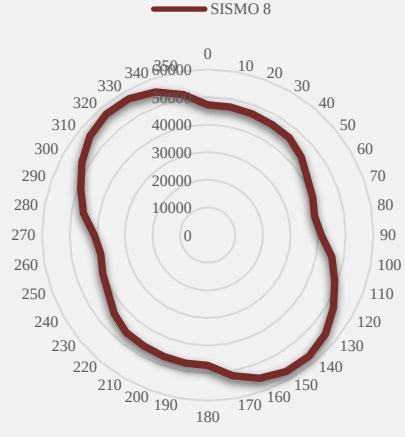
MOMENTO ENVOLVENTE (X-X)



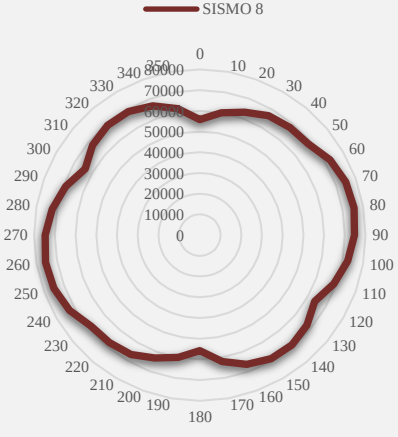
MOMENTO ENVOLVENTE (Y-Y)

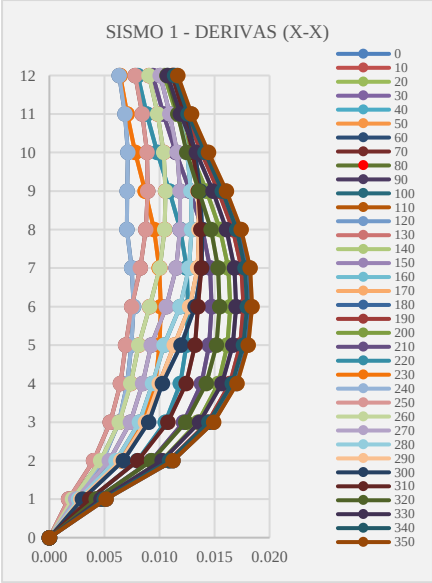


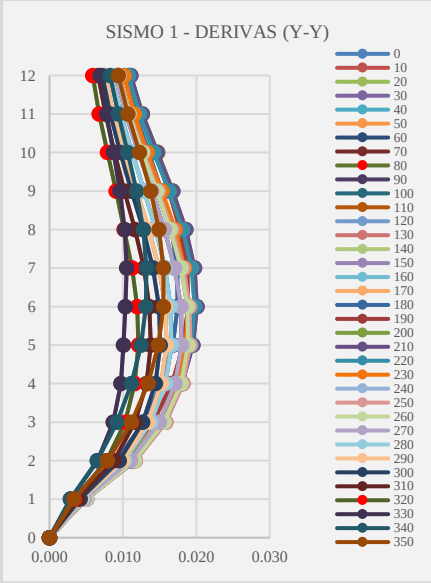
MOMENTO ENVOLVENTE (X-X)

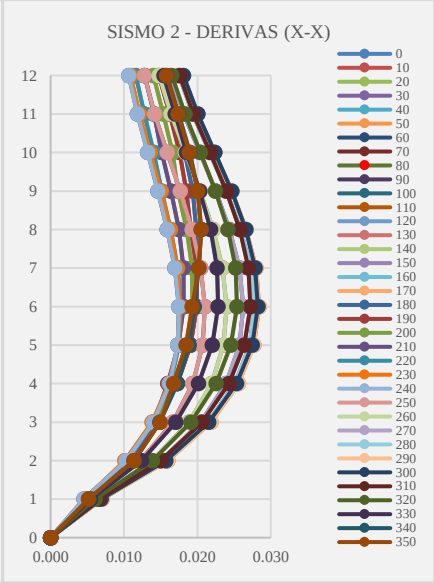


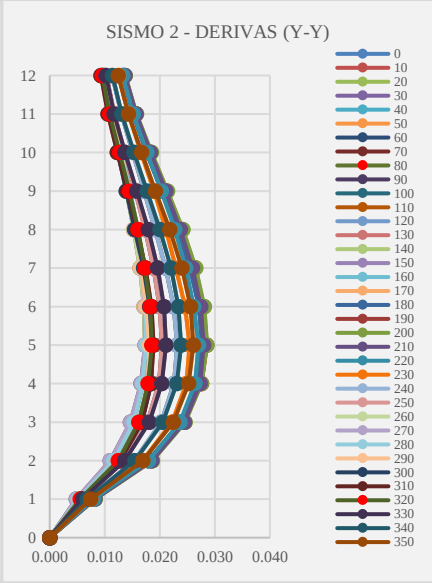
MOMENTO ENVOLVENTE (Y-Y)

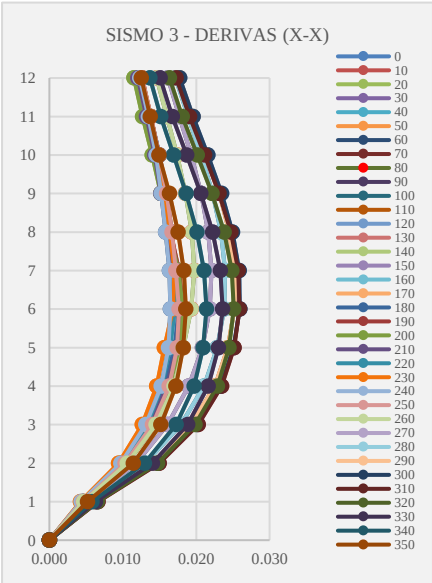


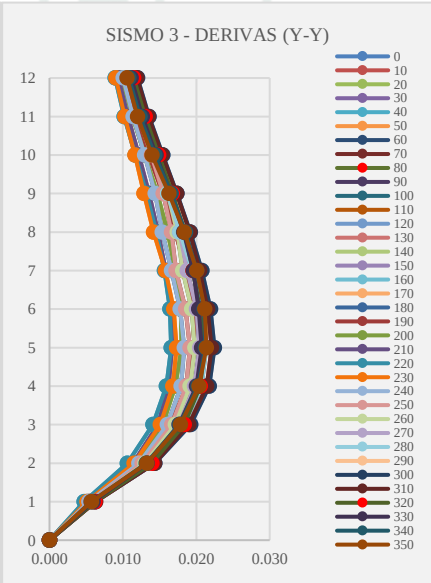

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

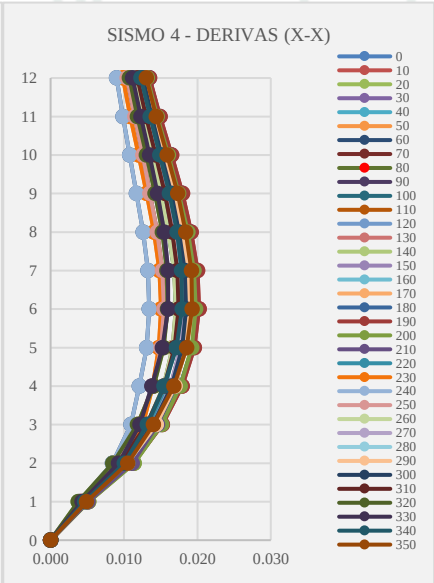

SISMO 1 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

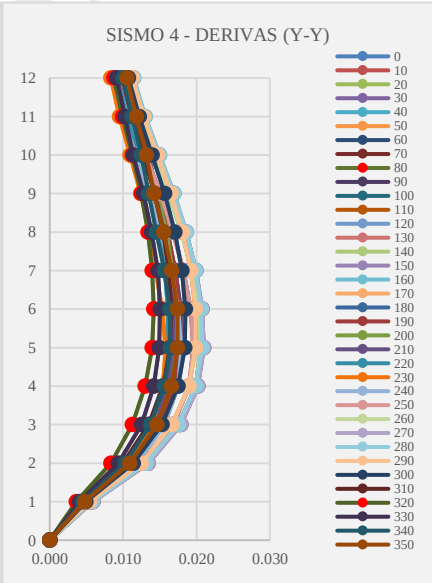

SISMO 2 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

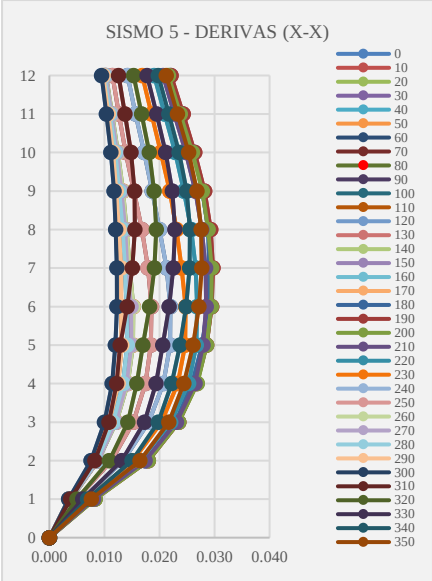

SISMO 2 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

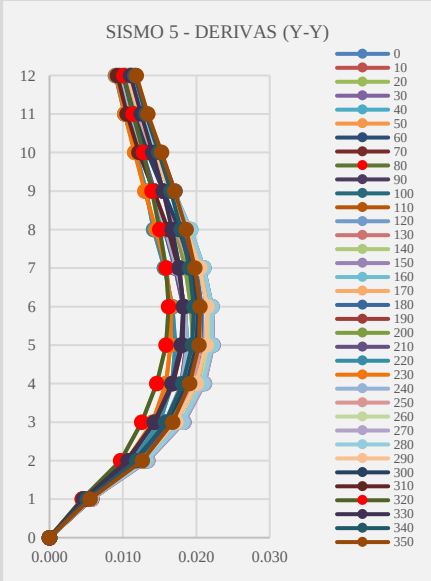

SISMO 3 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

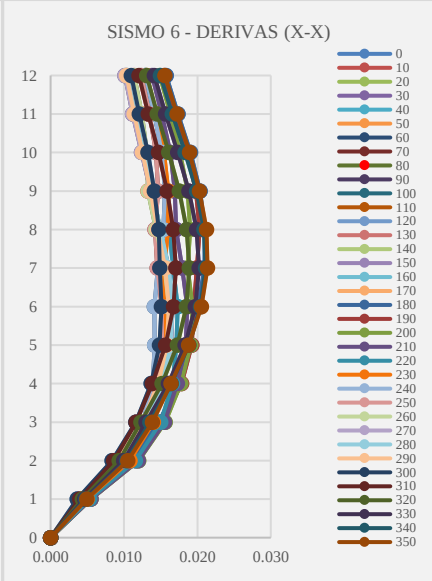

SISMO 3 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

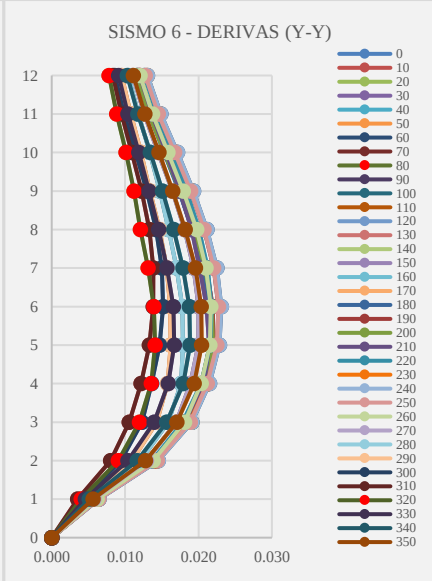

SISMO 4 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

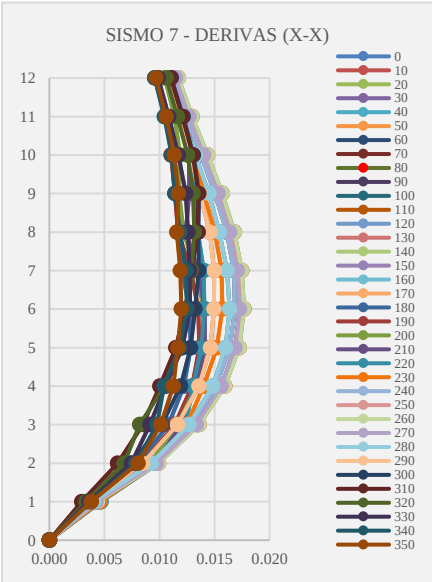

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

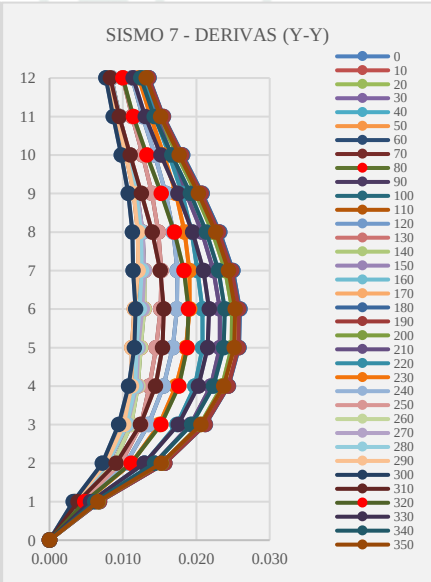

SISMO 5 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

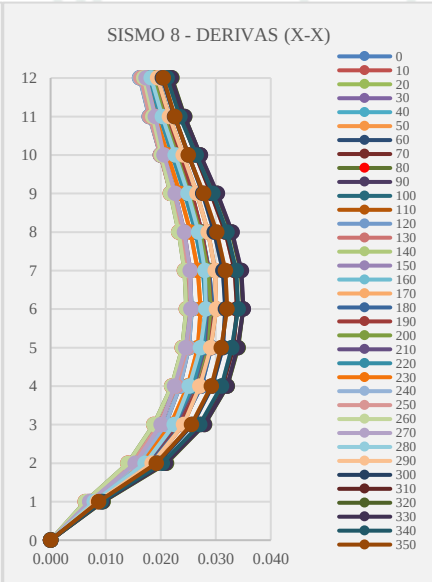

SISMO 5 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

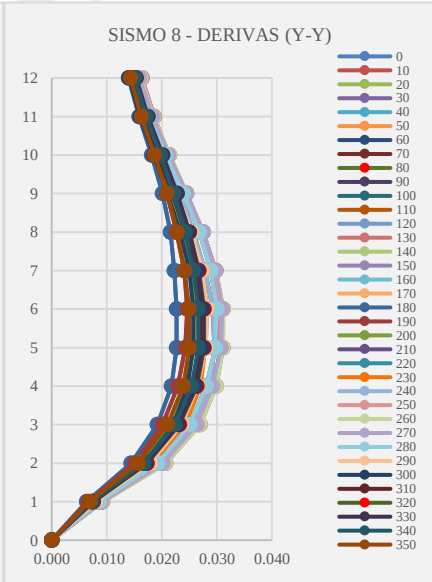

SISMO 6 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030


SISMO 6 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030


SISMO 7 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

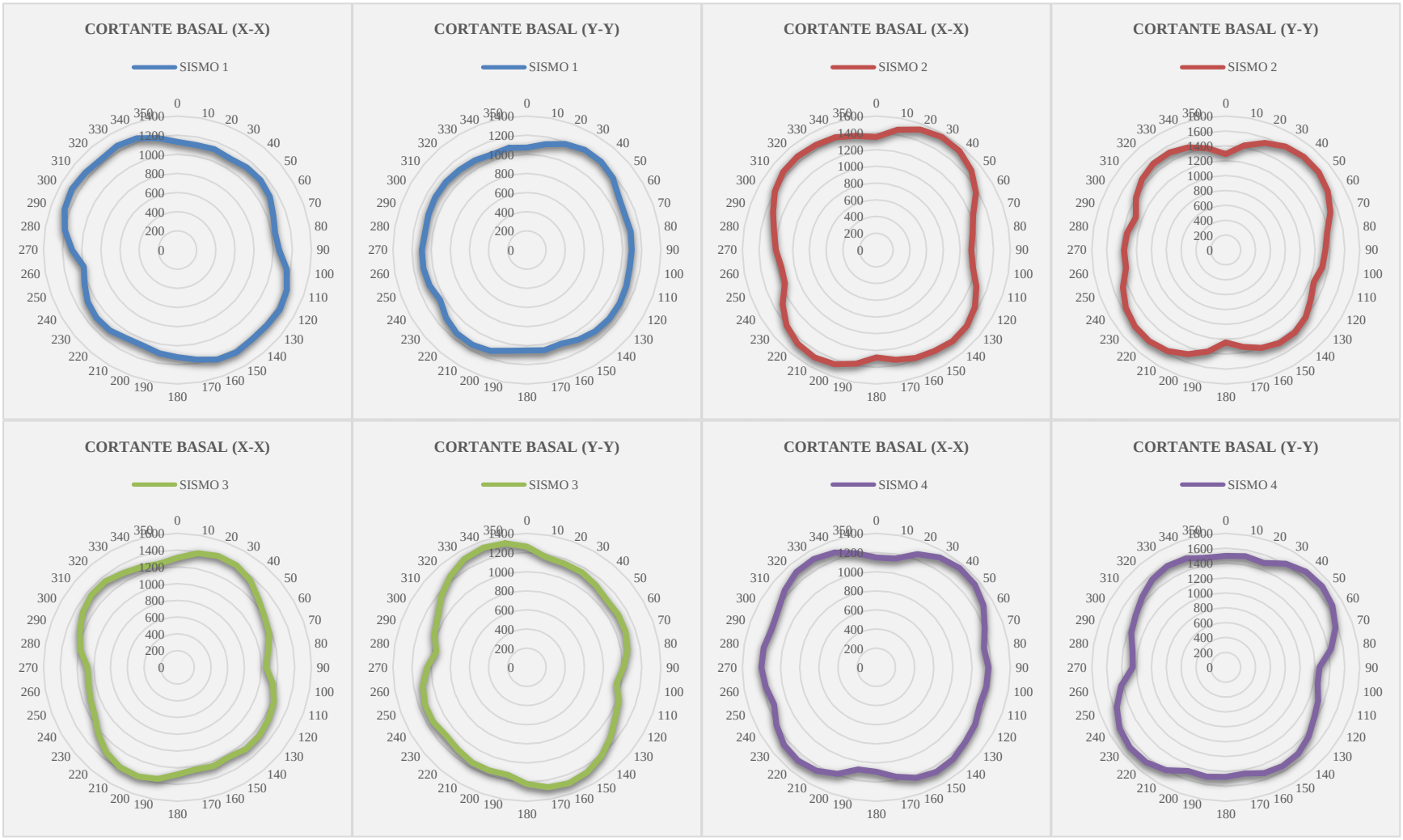

SISMO 7 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030


SISMO 8 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

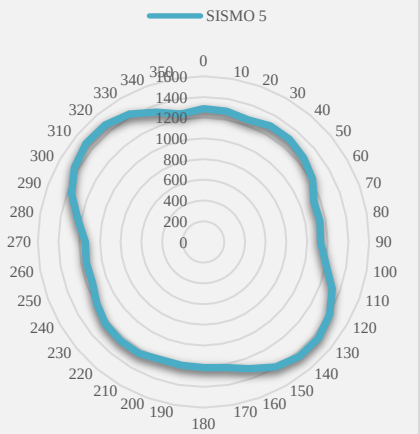

SISMO 8 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

MODELO 5

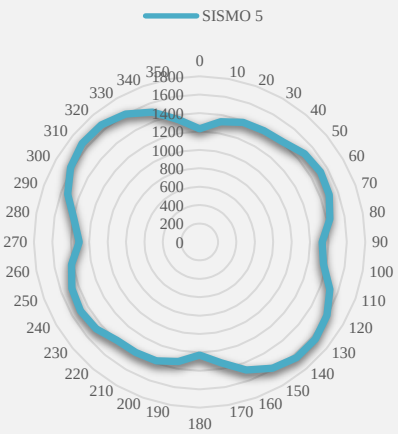
Para 4 pisos:



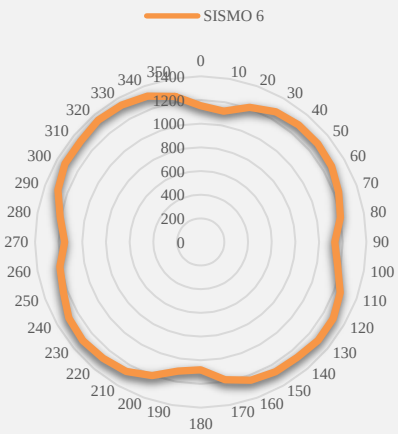
CORTANTE BASAL (X-X)



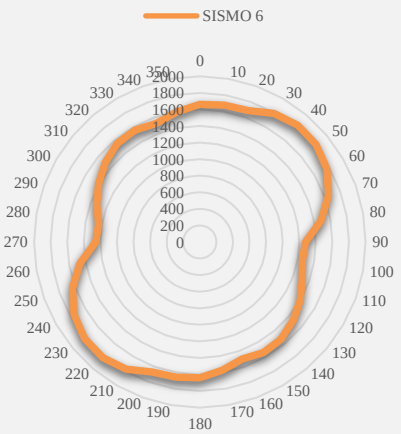
CORTANTE BASAL (Y-Y)



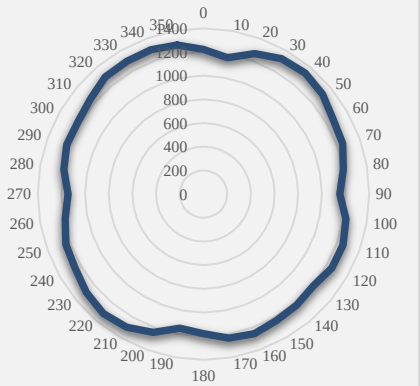
CORTANTE BASAL (X-X)



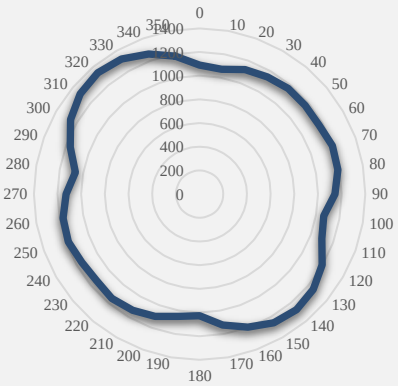
CORTANTE BASAL (Y-Y)



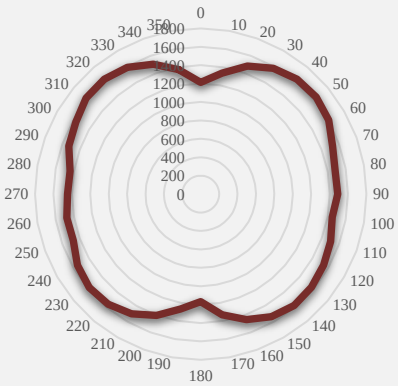
CORTANTE BASAL (X-X)



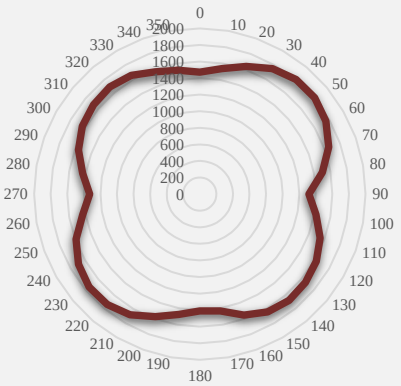
CORTANTE BASAL (Y-Y)

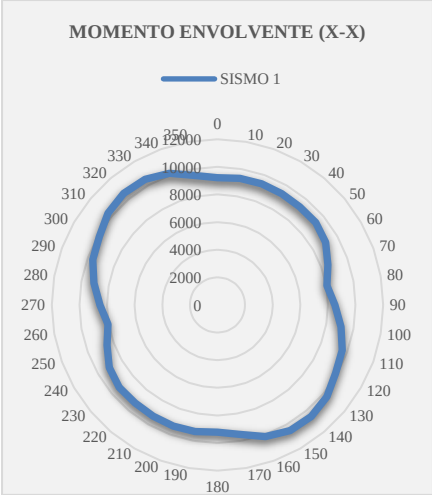


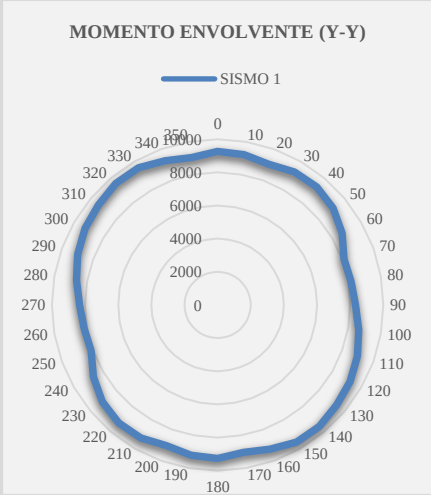
CORTANTE BASAL (X-X)

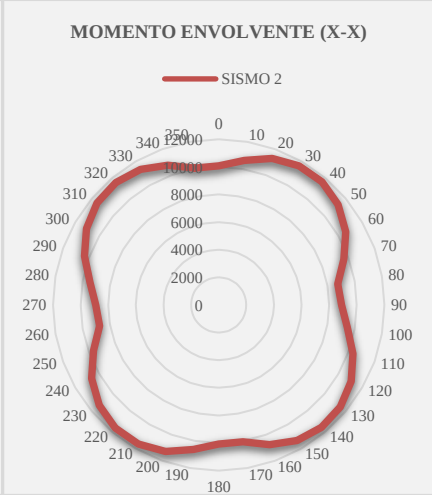


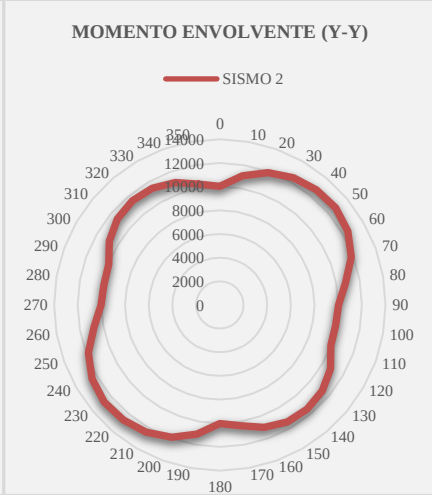
CORTANTE BASAL (Y-Y)

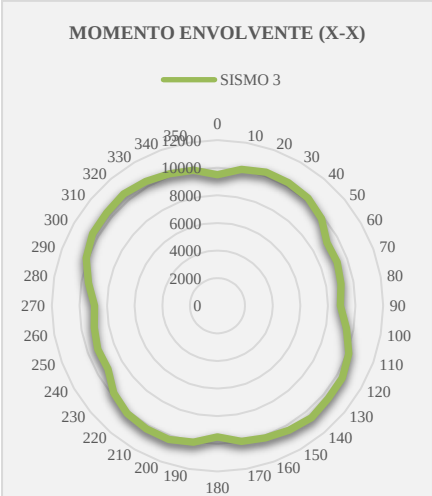


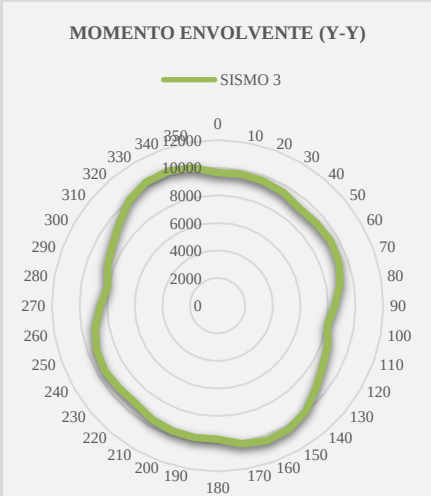

MOMENTO ENVOLVENTE (X-X)
SISMO 1

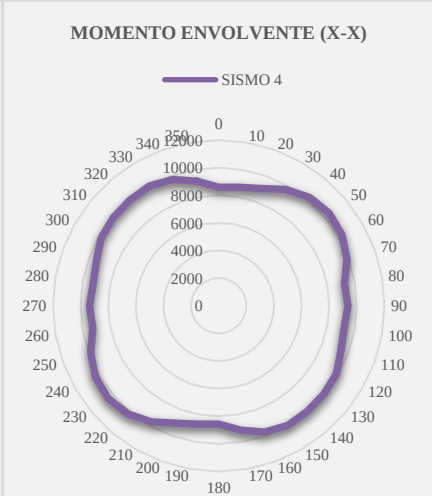

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

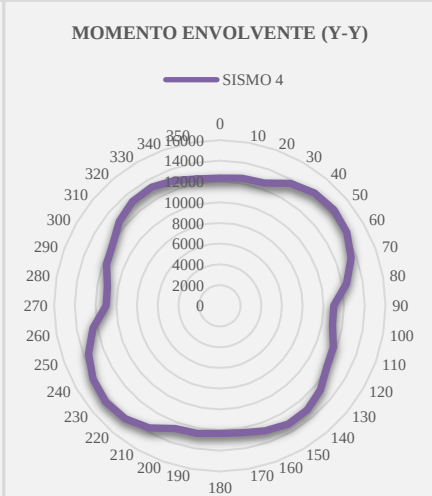

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

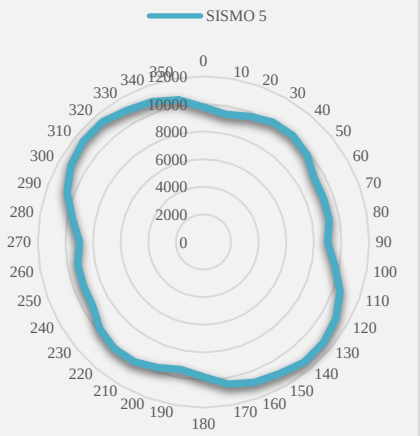

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

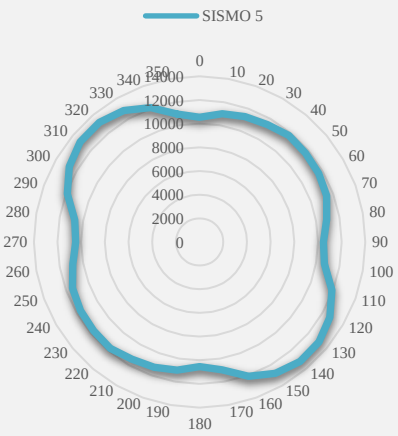

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

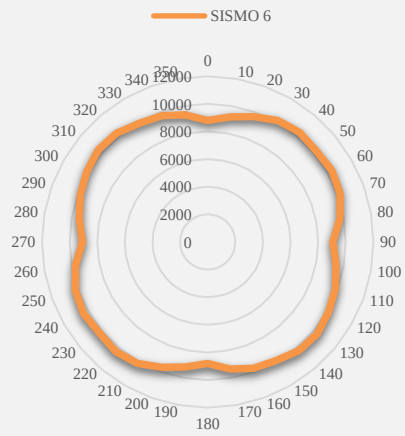
MOMENTO ENVOLVENTE (X-X)



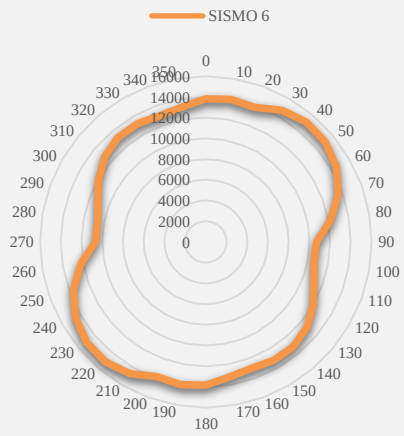
MOMENTO ENVOLVENTE (Y-Y)



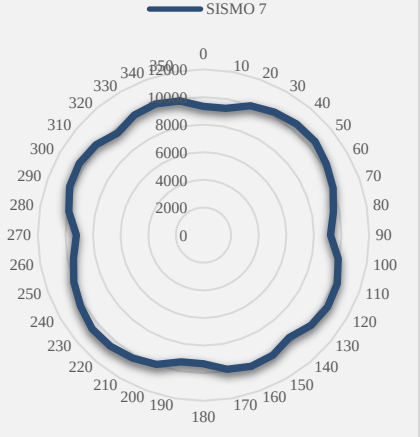
MOMENTO ENVOLVENTE (X-X)



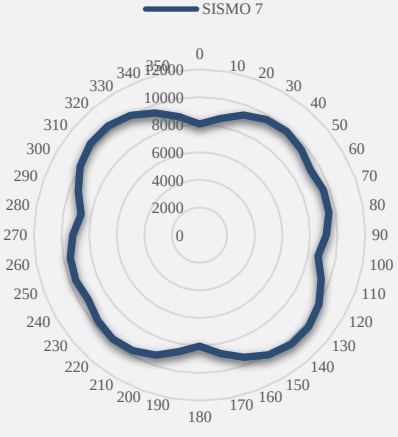
MOMENTO ENVOLVENTE (Y-Y)



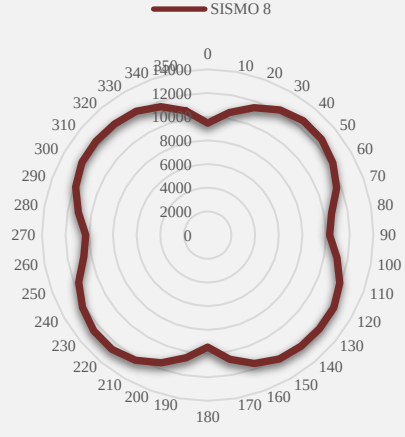
MOMENTO ENVOLVENTE (X-X)



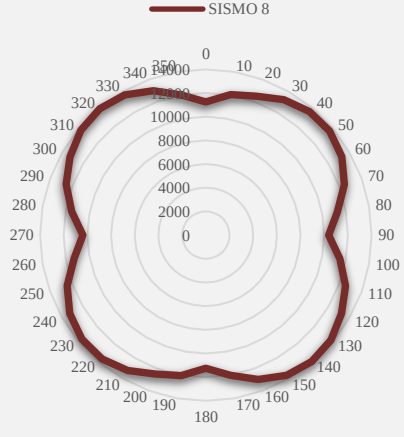
MOMENTO ENVOLVENTE (Y-Y)

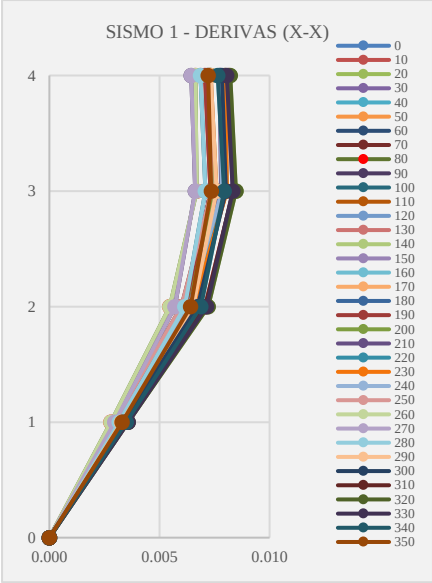


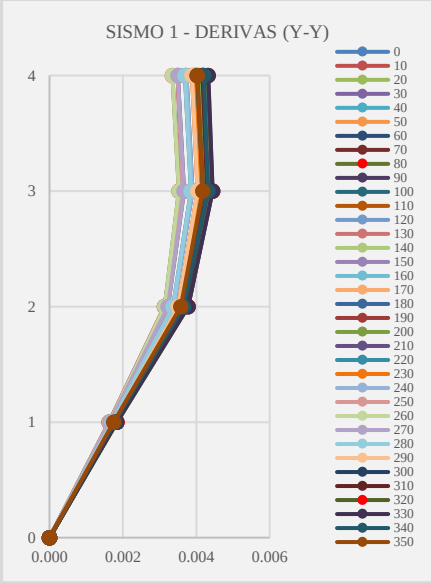
MOMENTO ENVOLVENTE (X-X)

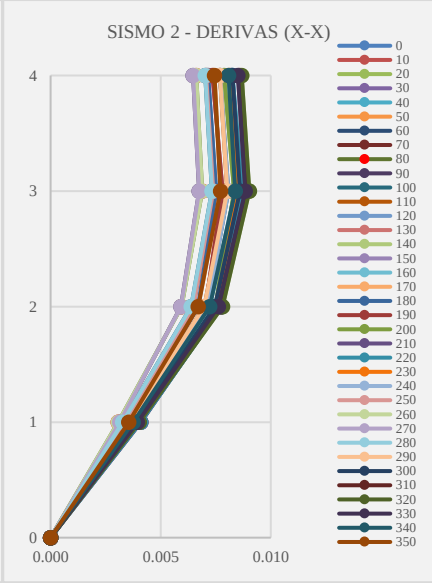


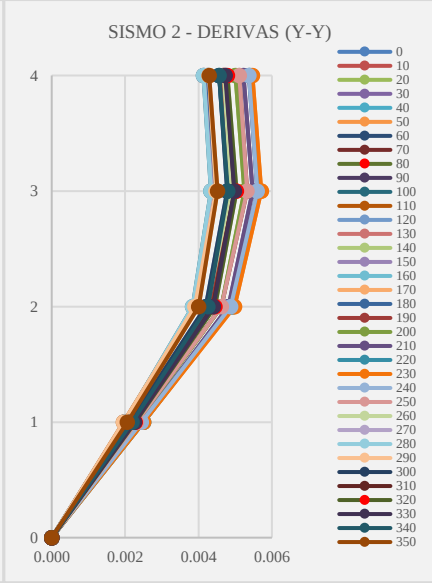
MOMENTO ENVOLVENTE (Y-Y)

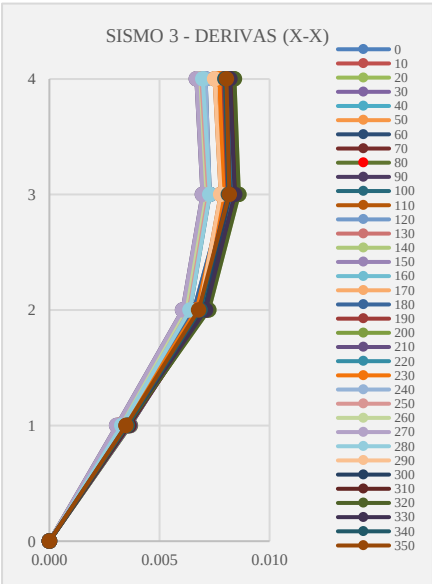


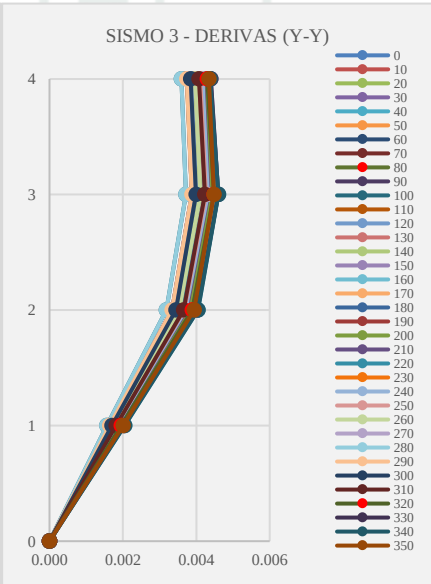

SISMO 1 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010

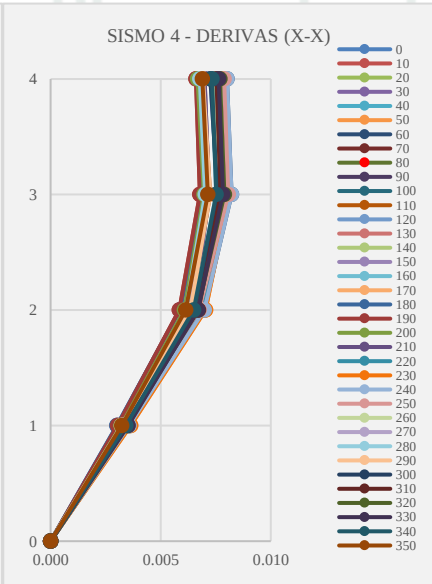

SISMO 1 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006

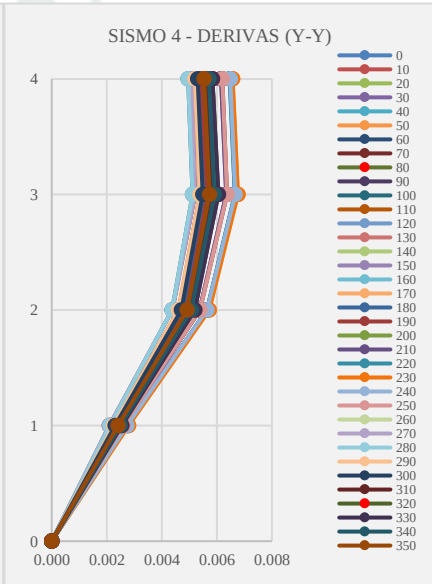

SISMO 2 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010

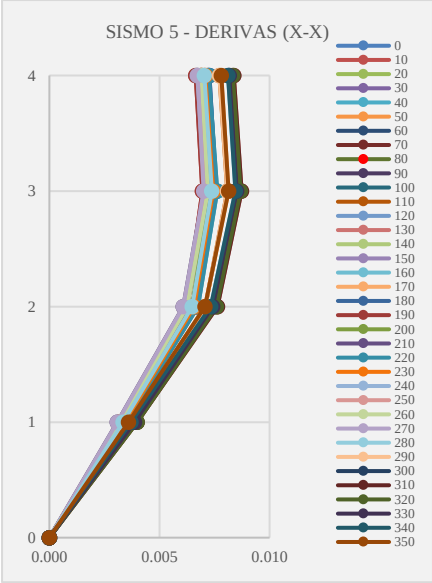

SISMO 2 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006

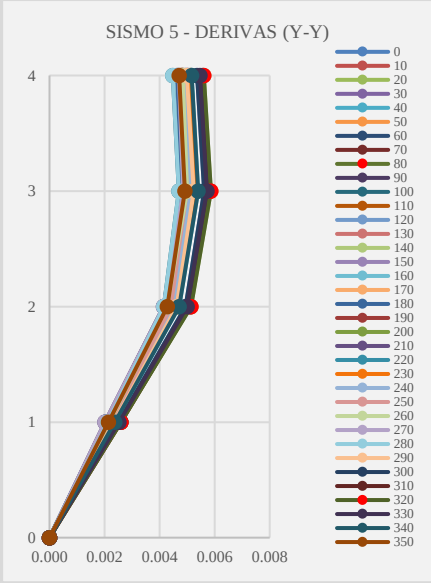

SISMO 3 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010

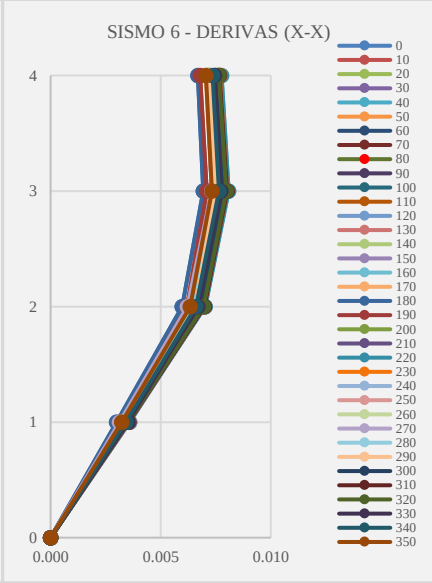

SISMO 3 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006

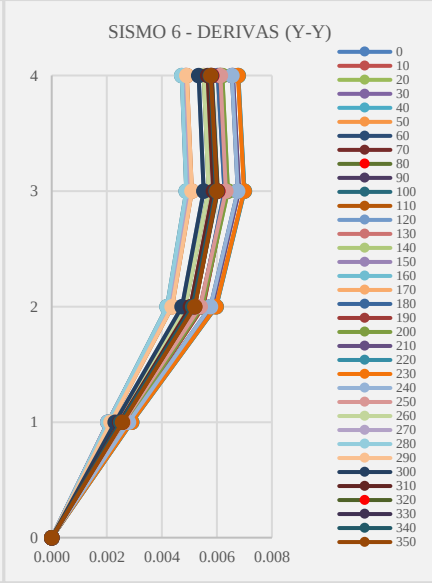

SISMO 4 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010

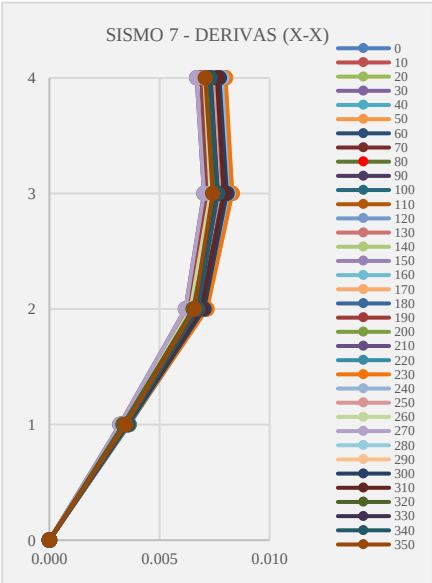

SISMO 4 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006
0.008

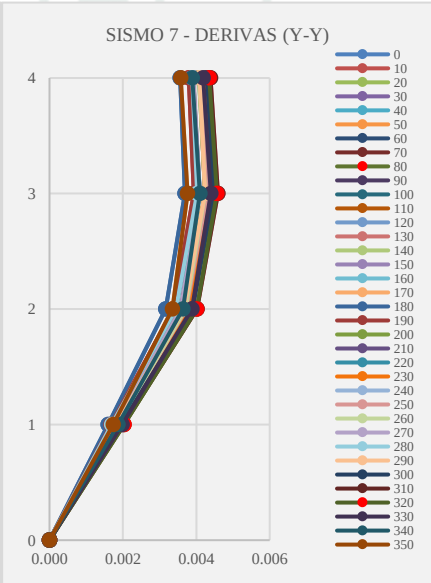

SISMO 5 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

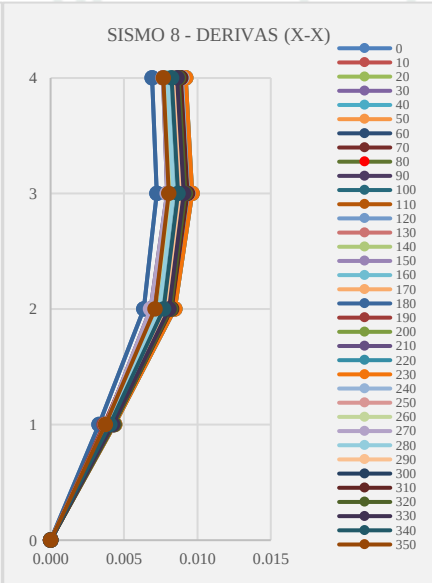

SISMO 5 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006
0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

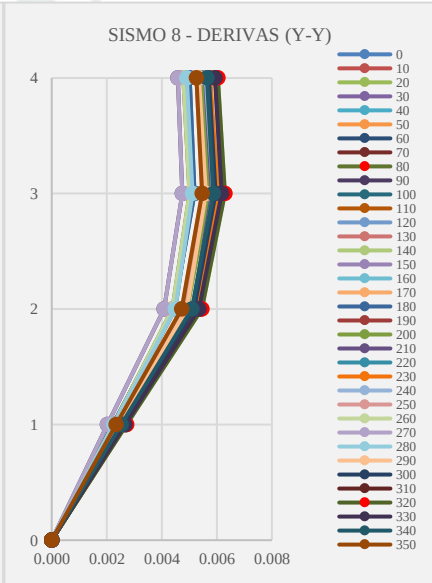

SISMO 6 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006
0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

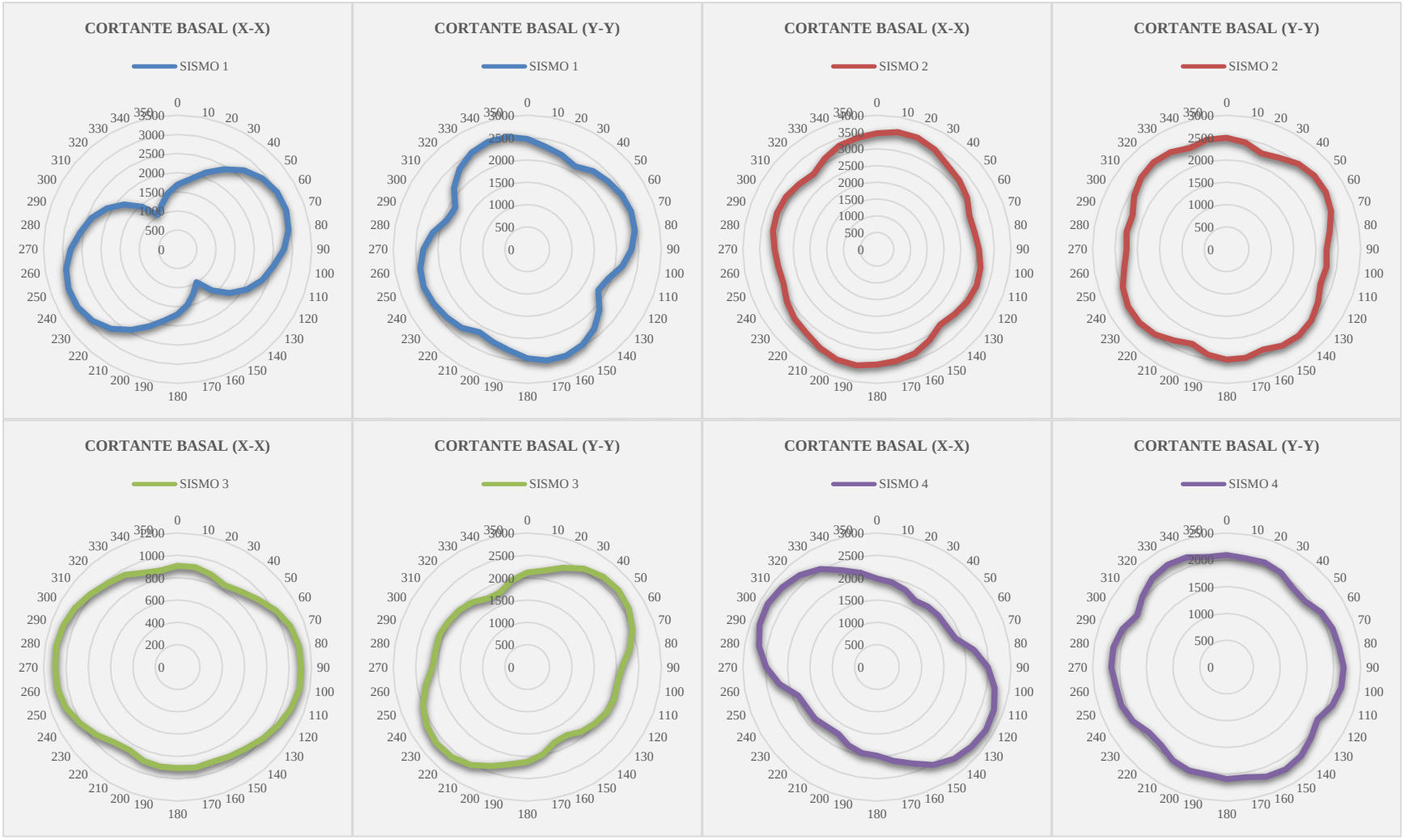

SISMO 7 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

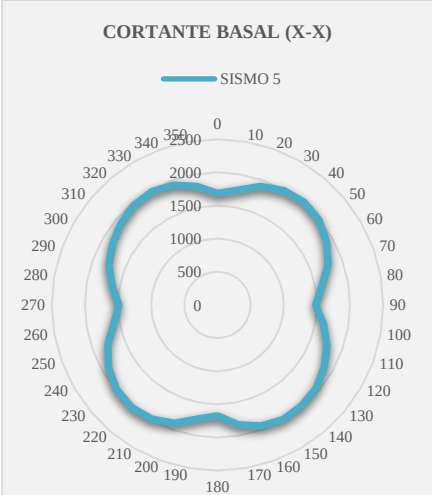

SISMO 7 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

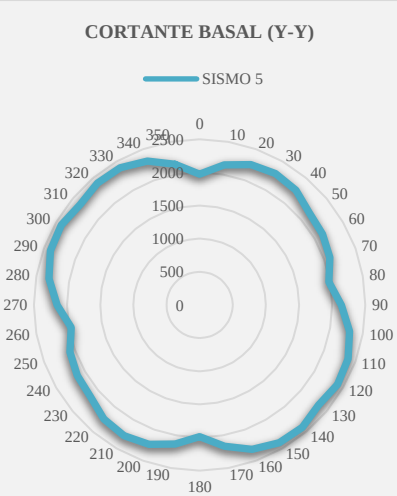

SISMO 8 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

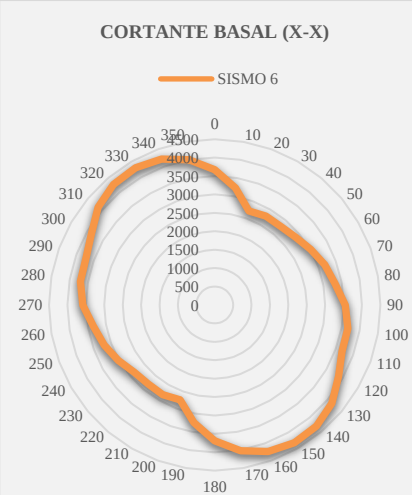

SISMO 8 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.002
0.004
0.006
0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

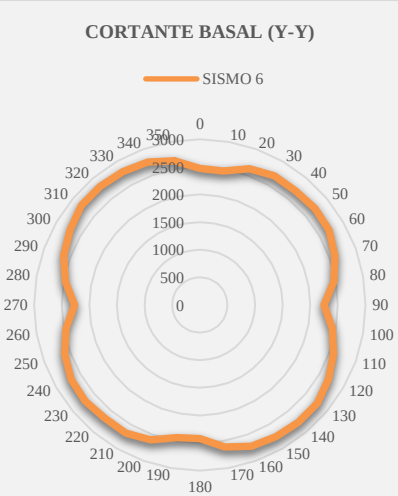
Para 8 pisos:

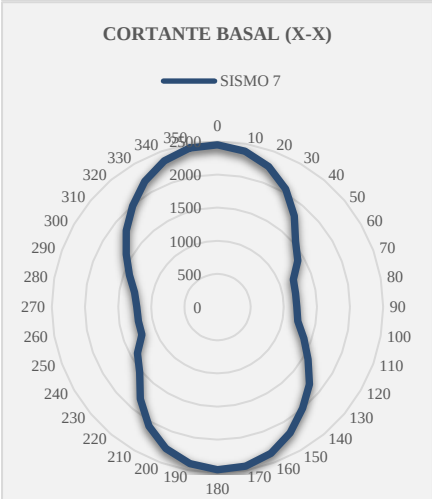

CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

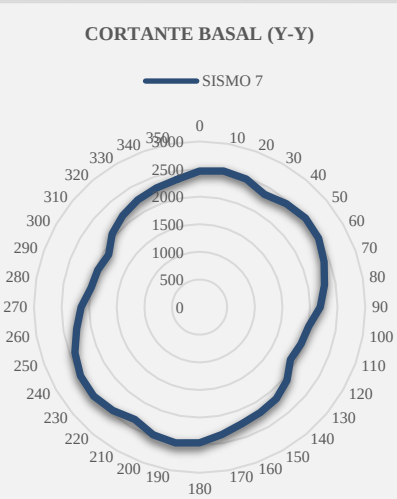

CORTANTE BASAL (X-X)
SISMO 5

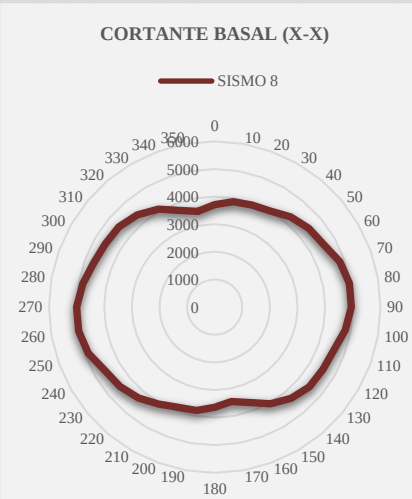

CORTANTE BASAL (Y-Y)
SISMO 5

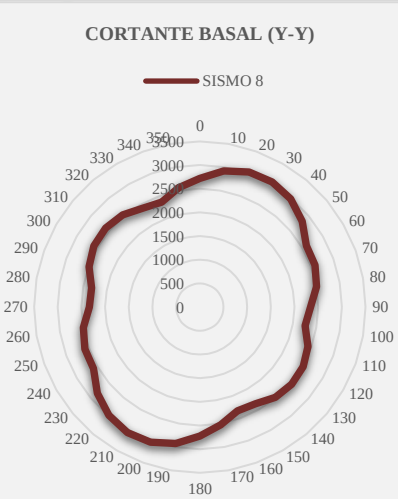

CORTANTE BASAL (X-X)
SISMO 6

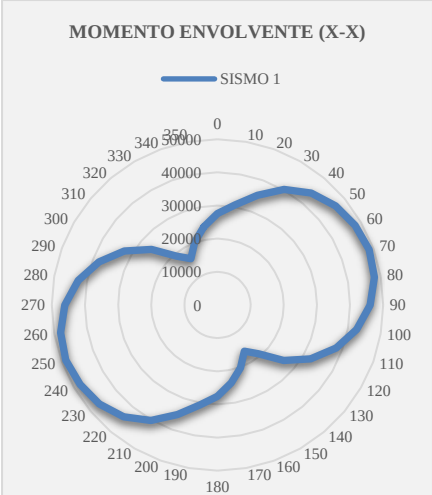

CORTANTE BASAL (Y-Y)
SISMO 6

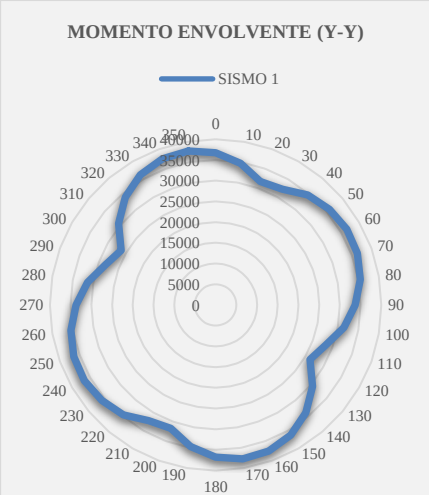

CORTANTE BASAL (X-X)
SISMO 7

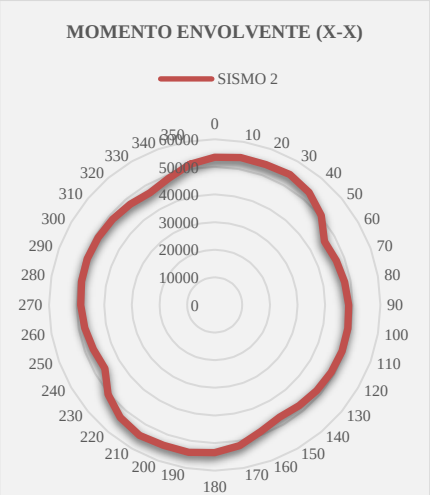

CORTANTE BASAL (Y-Y)
SISMO 7

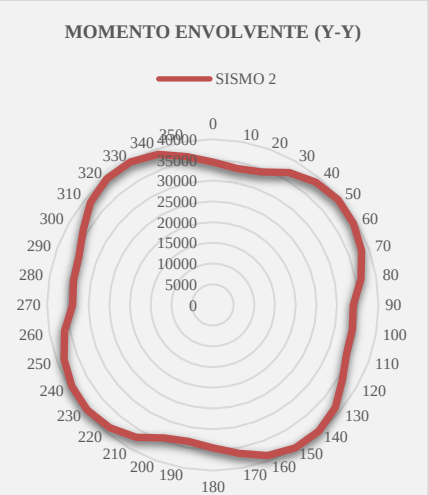

CORTANTE BASAL (X-X)
SISMO 8

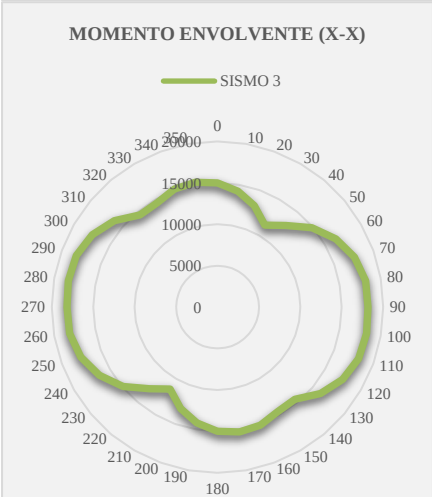

CORTANTE BASAL (Y-Y)
SISMO 8

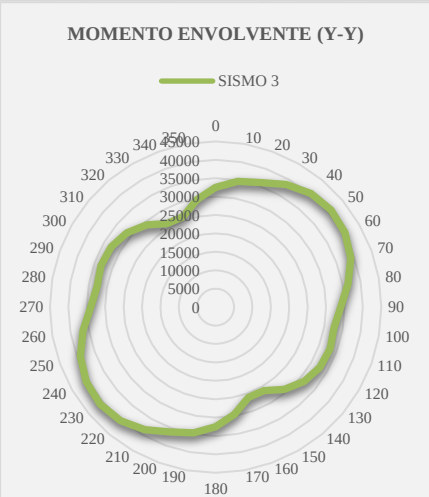

MOMENTO ENVOLVENTE (X-X)
SISMO 1

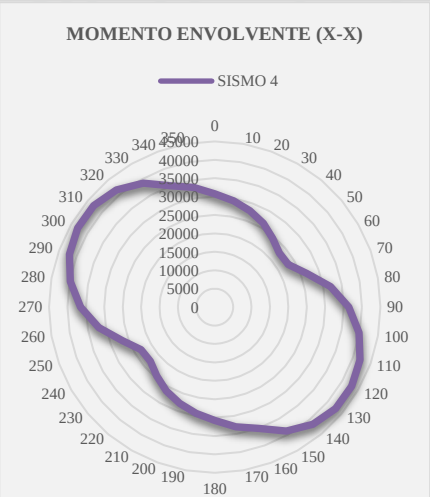

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

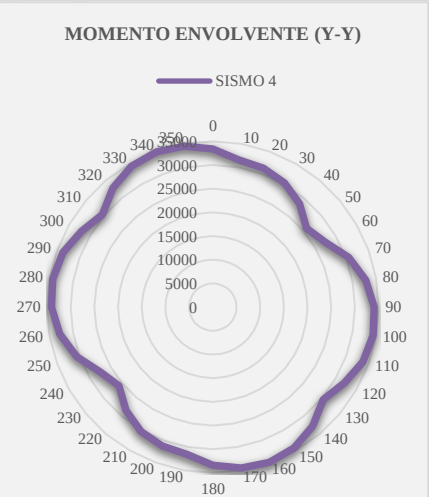

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

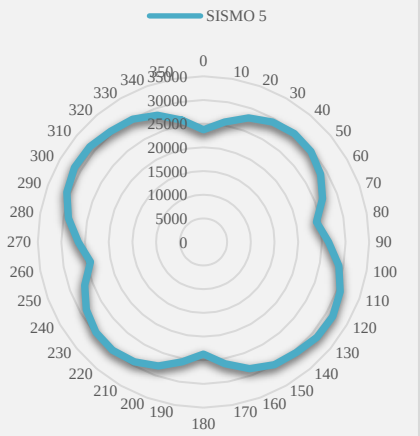

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

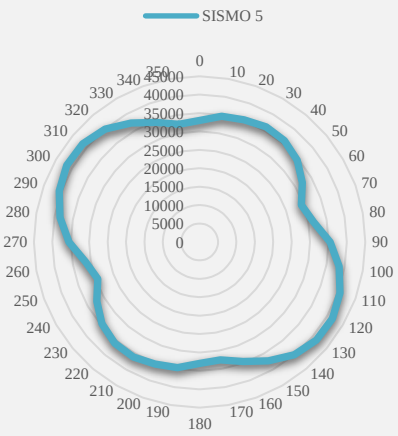

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

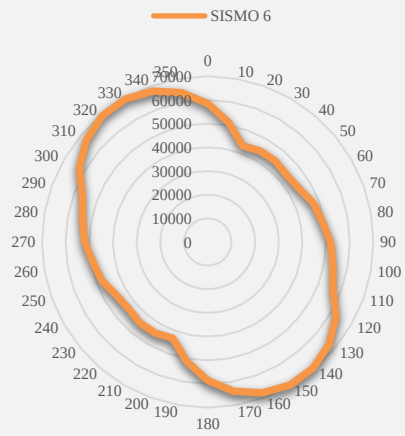
MOMENTO ENVOLVENTE (X-X)



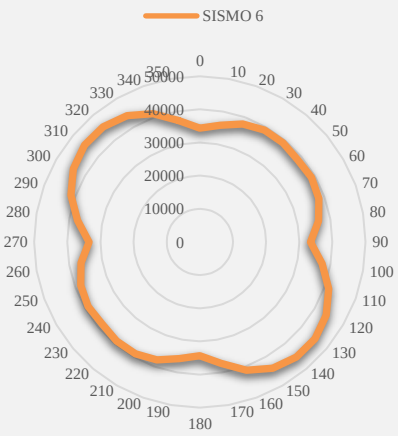
MOMENTO ENVOLVENTE (Y-Y)



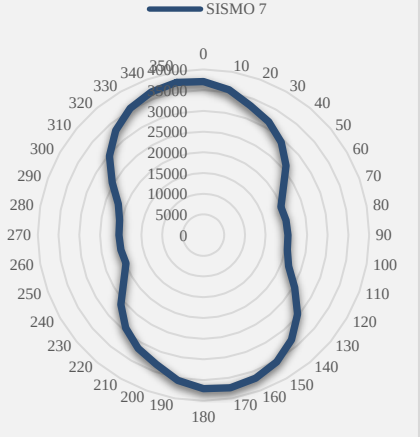
MOMENTO ENVOLVENTE (X-X)



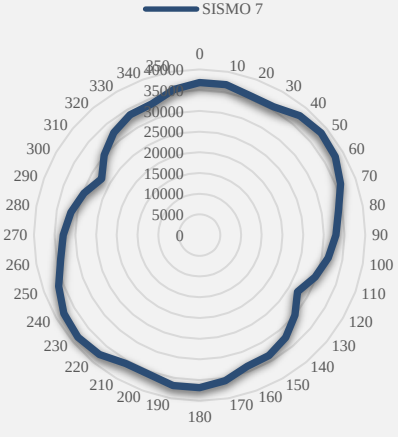
MOMENTO ENVOLVENTE (Y-Y)



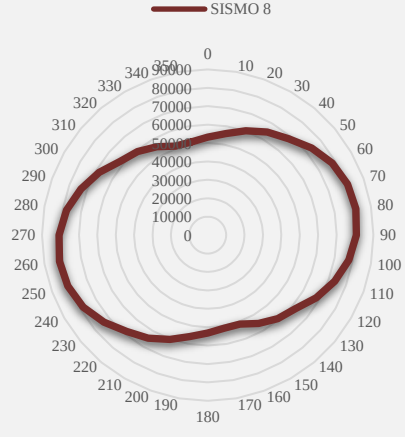
MOMENTO ENVOLVENTE (X-X)



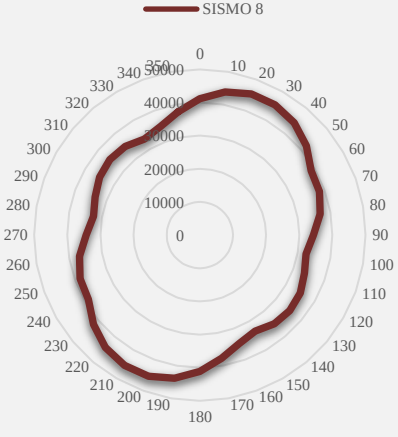
MOMENTO ENVOLVENTE (Y-Y)

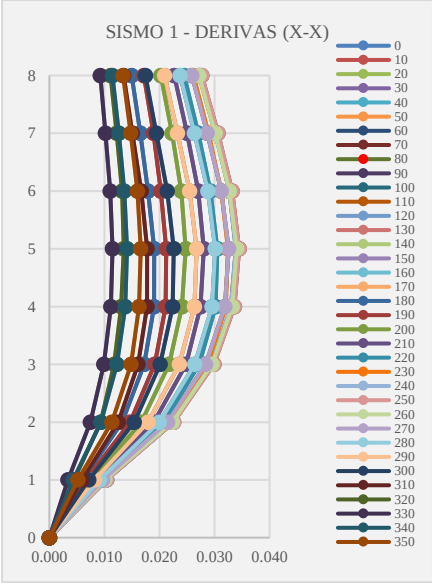


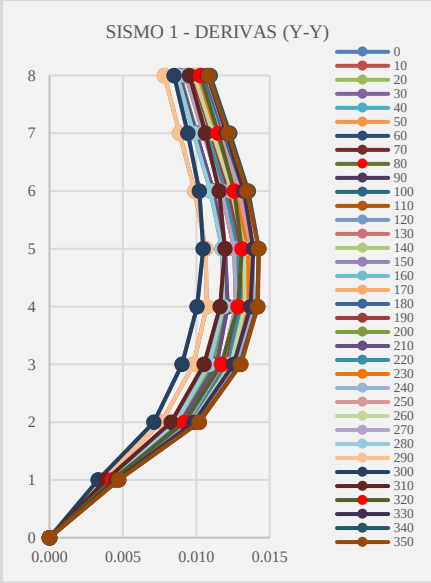
MOMENTO ENVOLVENTE (X-X)

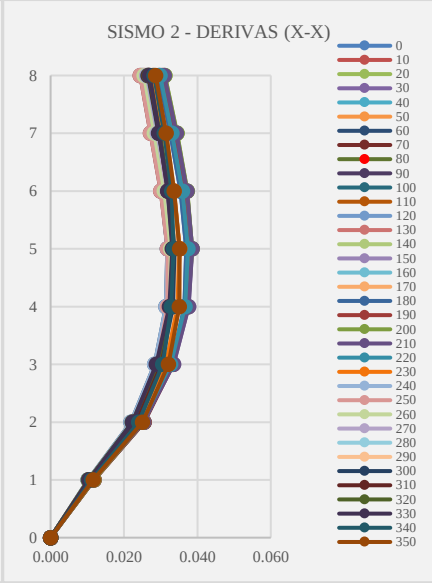


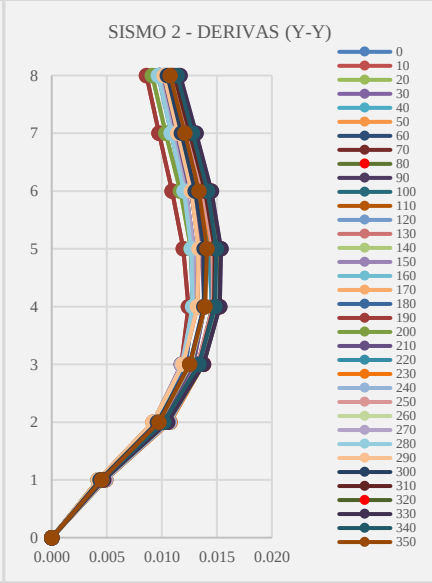
MOMENTO ENVOLVENTE (Y-Y)

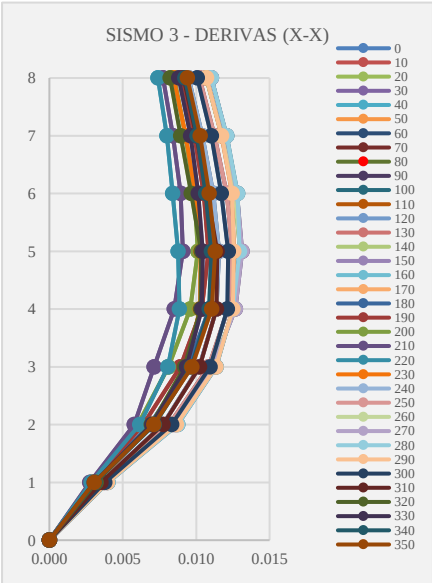


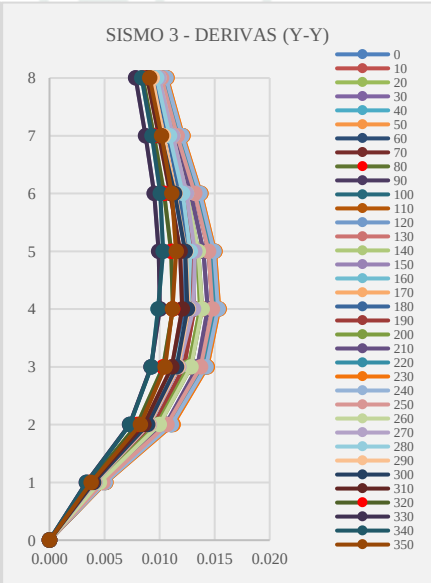

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

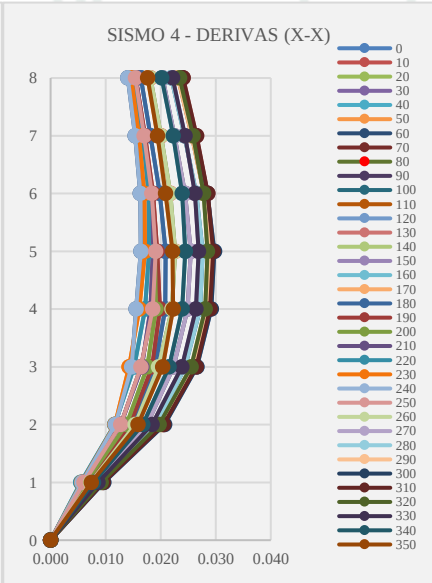

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

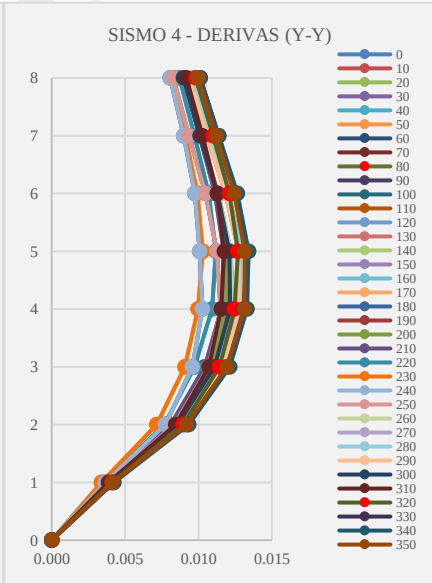

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

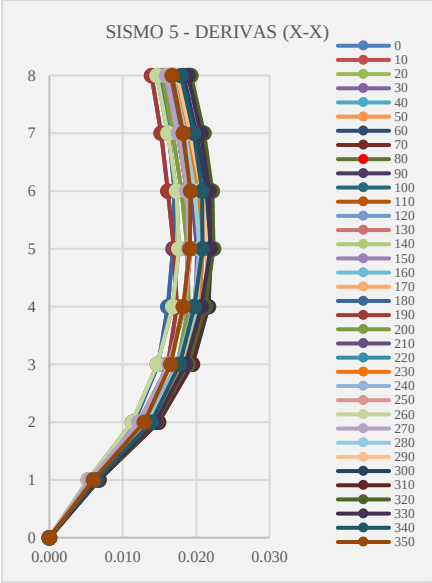

SISMO 2 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

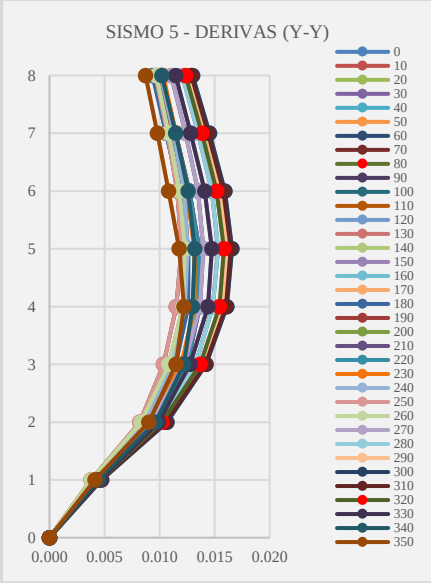

SISMO 3 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

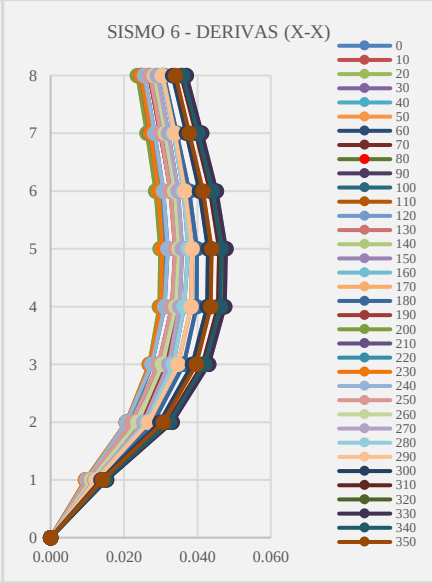

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

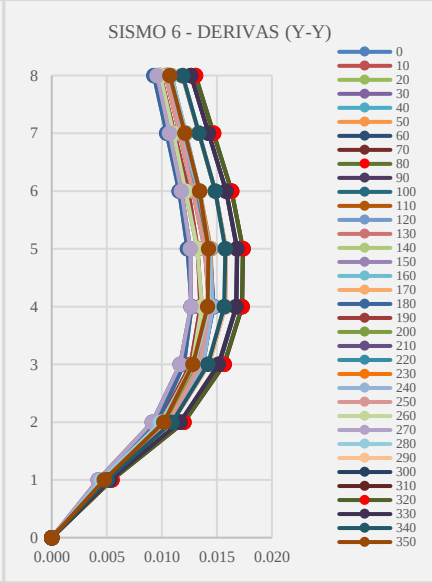

SISMO 4 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

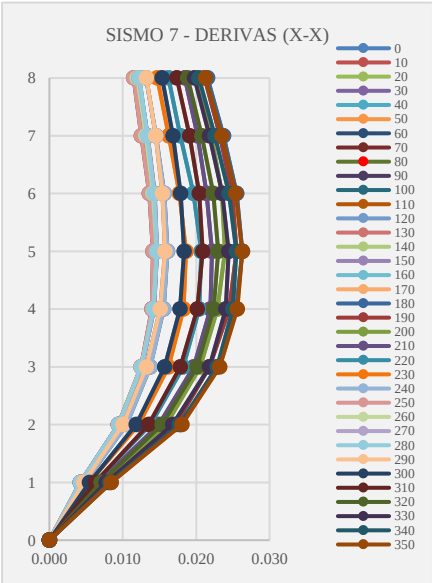

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

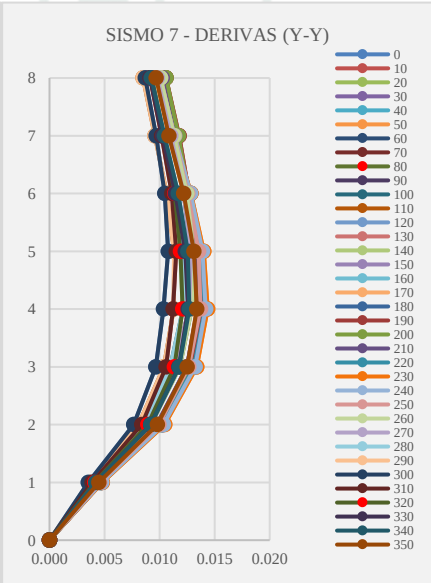

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

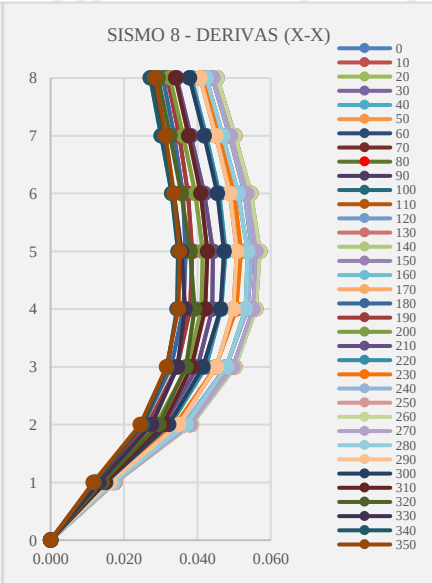

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

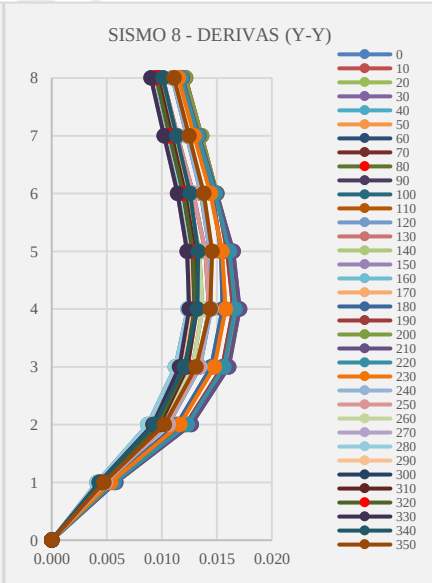

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

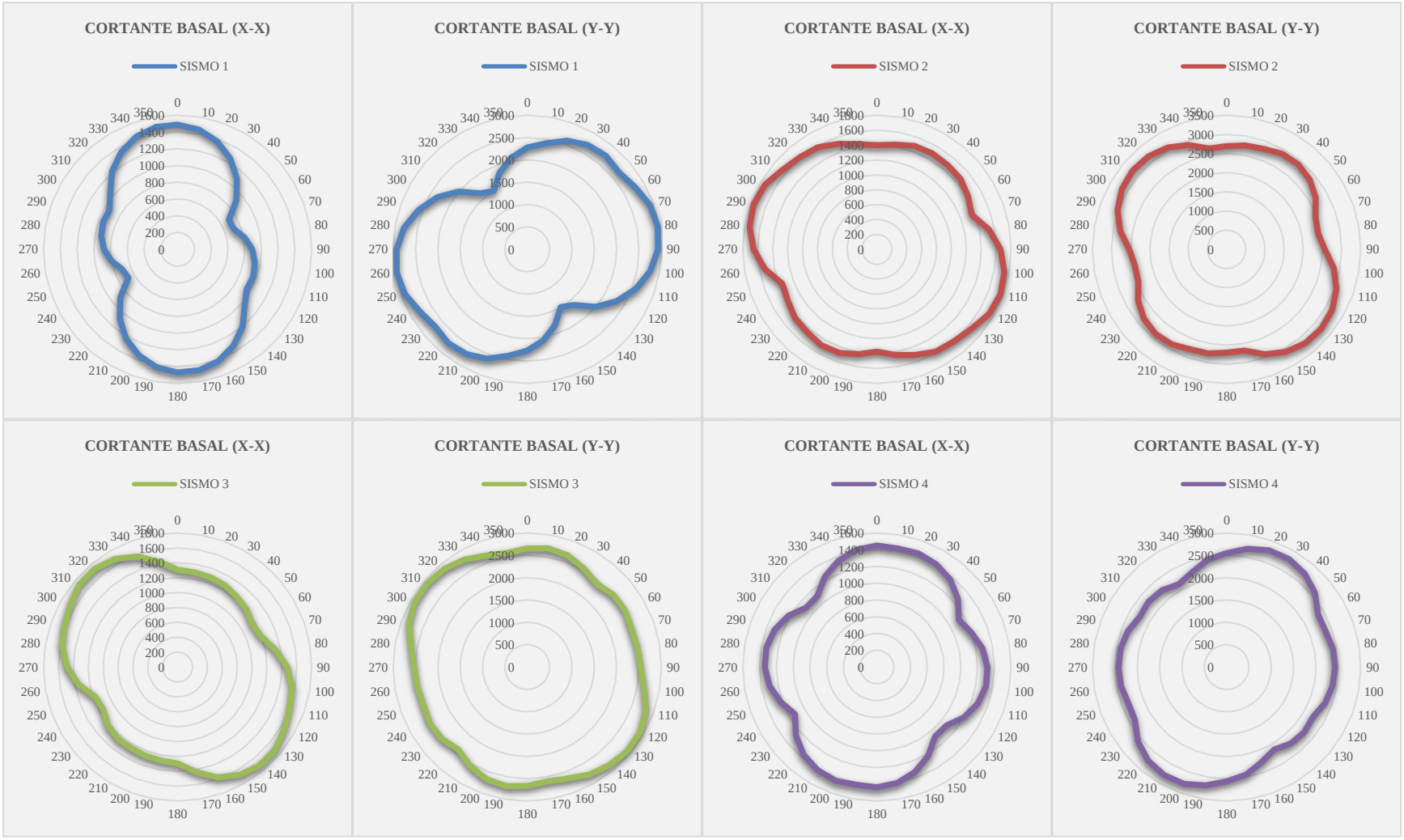

SISMO 7 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

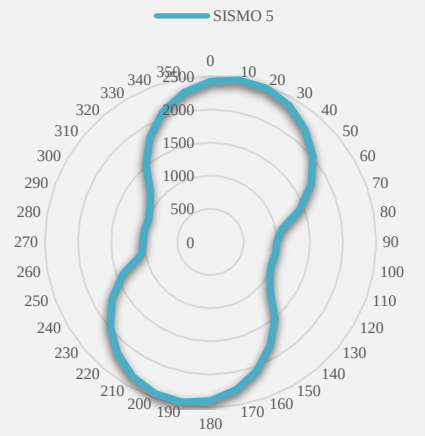

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

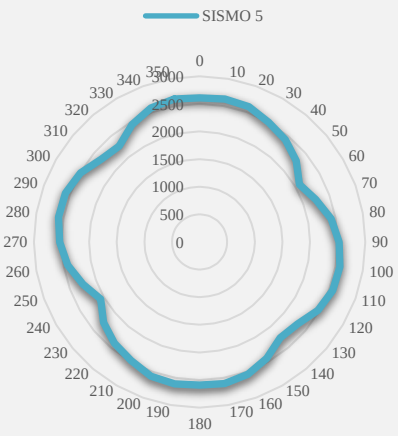
Para 12 pisos:



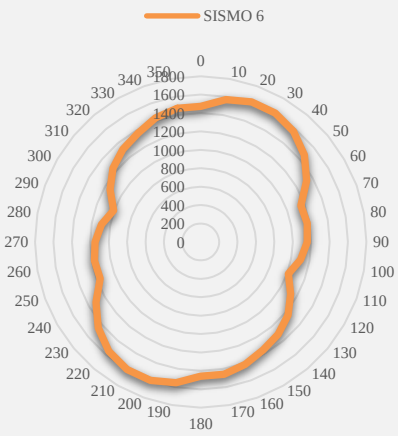
CORTANTE BASAL (X-X)



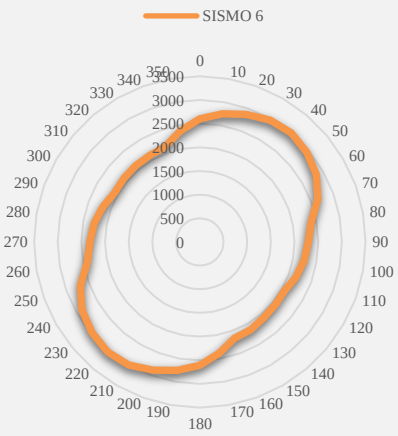
CORTANTE BASAL (Y-Y)



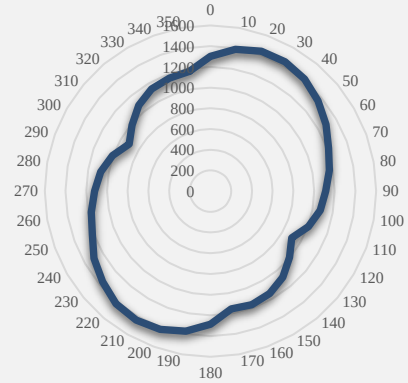
CORTANTE BASAL (X-X)



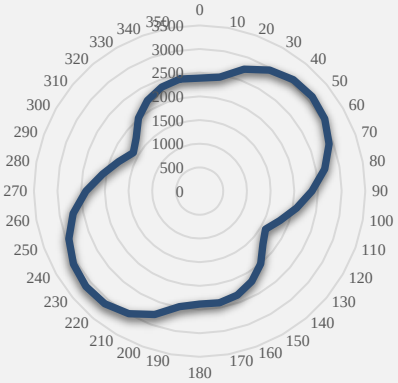
CORTANTE BASAL (Y-Y)



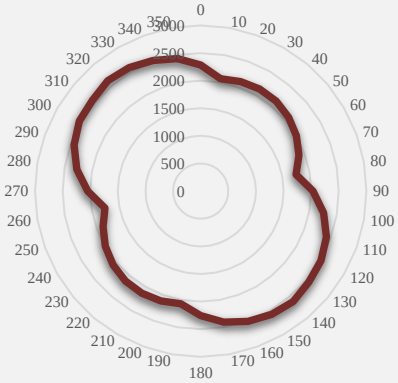
CORTANTE BASAL (X-X)



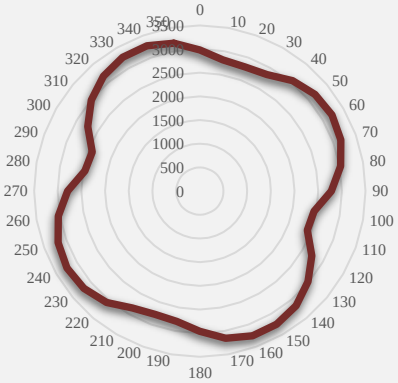
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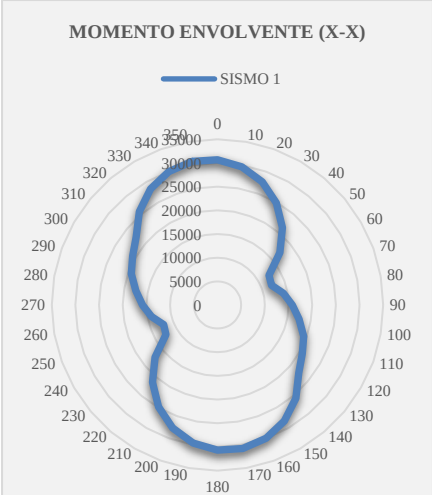


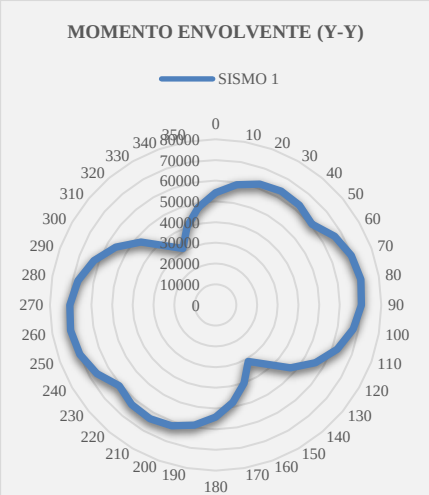
CORTANTE BASAL (X-X)

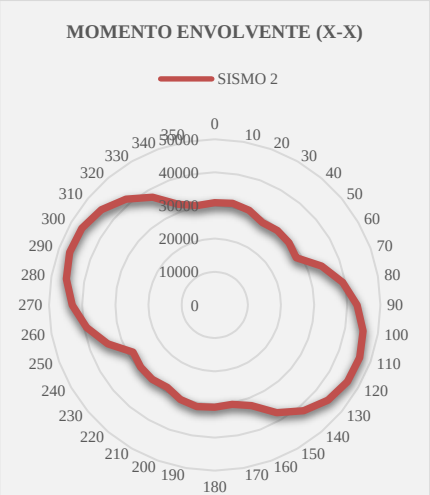


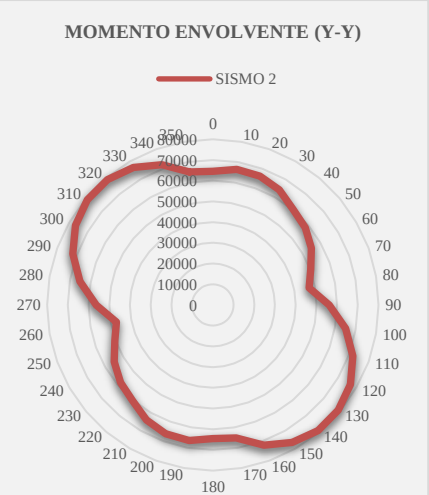
CORTANTE BASAL (Y-Y)

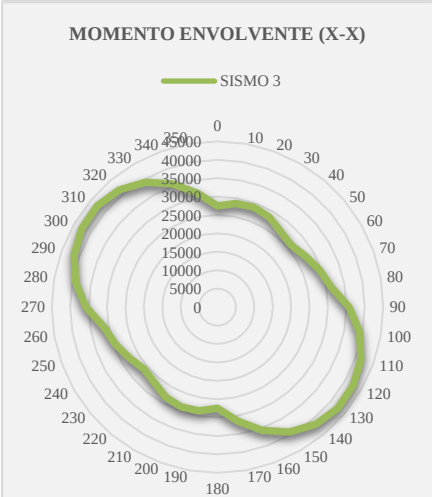


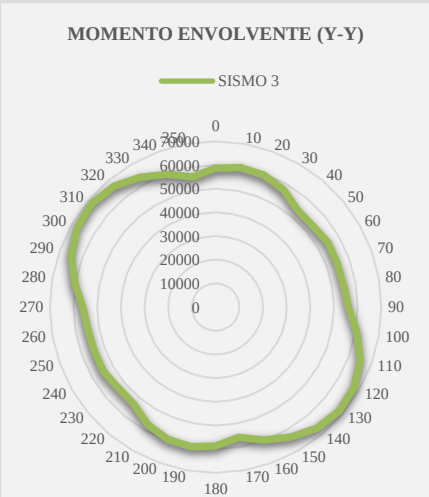

MOMENTO ENVOLVENTE (X-X)
SISMO 1

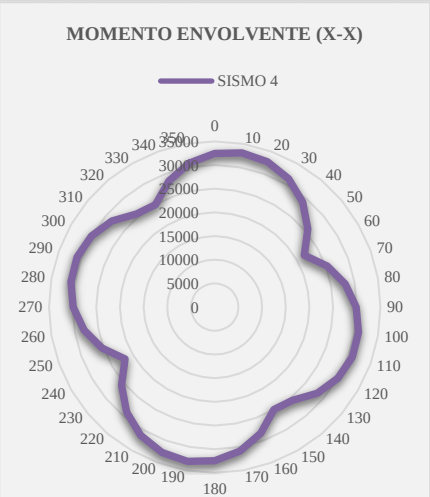

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

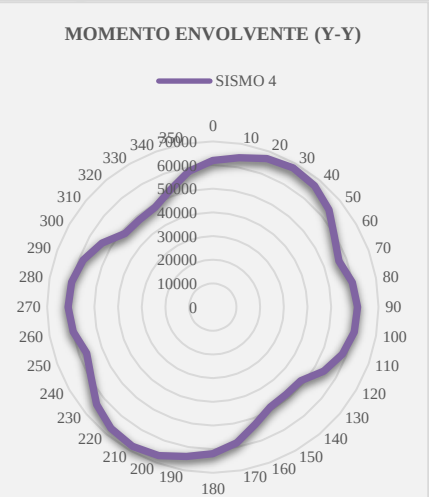

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

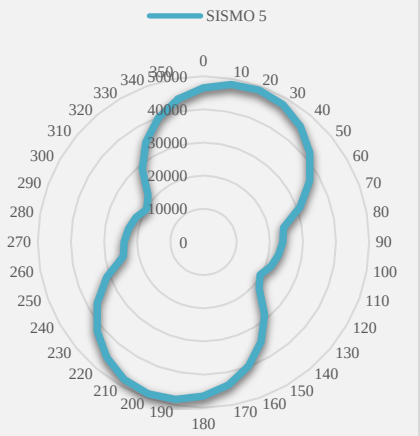

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

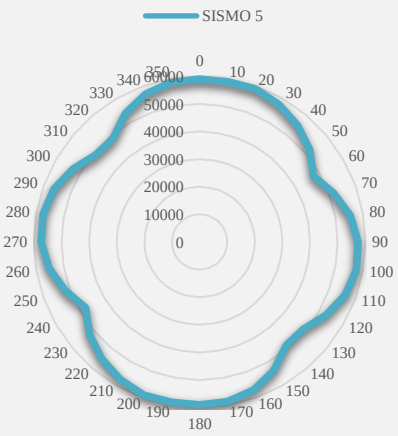

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

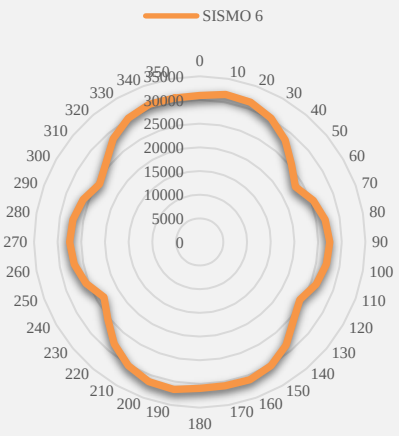
MOMENTO ENVOLVENTE (X-X)



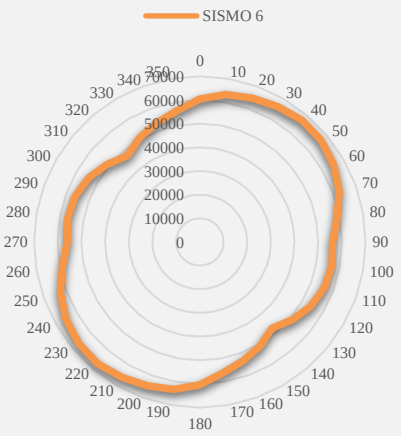
MOMENTO ENVOLVENTE (Y-Y)



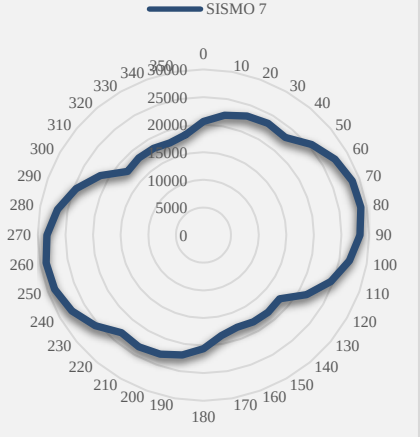
MOMENTO ENVOLVENTE (X-X)



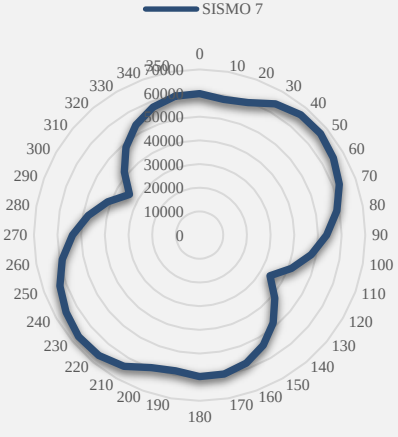
MOMENTO ENVOLVENTE (Y-Y)



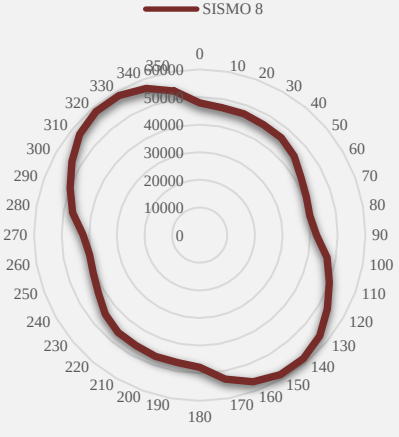
MOMENTO ENVOLVENTE (X-X)



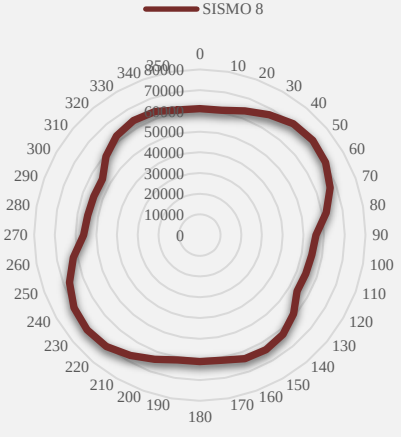
MOMENTO ENVOLVENTE (Y-Y)

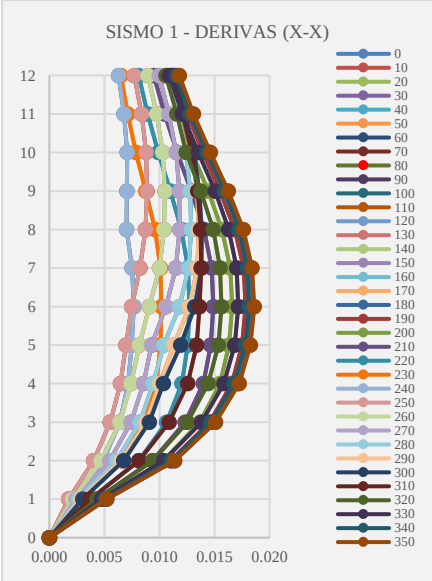


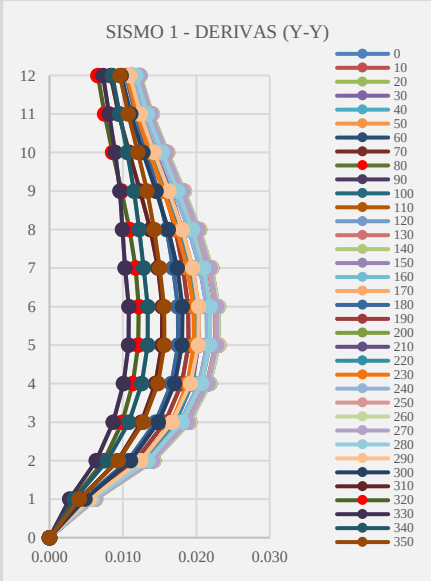
MOMENTO ENVOLVENTE (X-X)

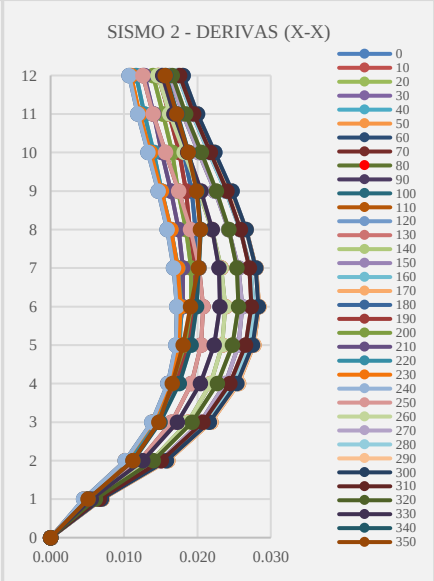


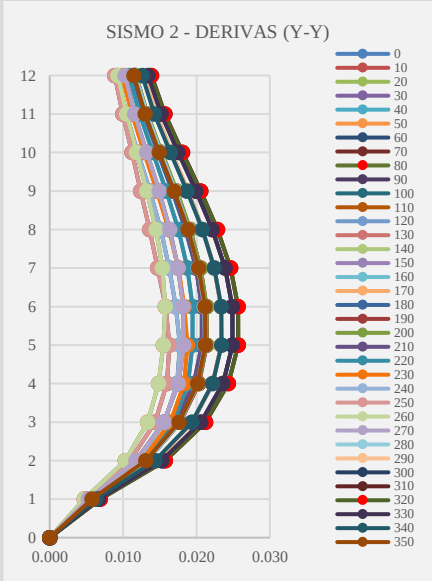
MOMENTO ENVOLVENTE (Y-Y)

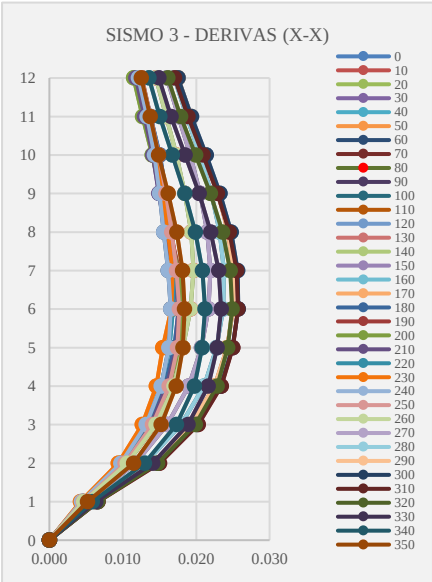


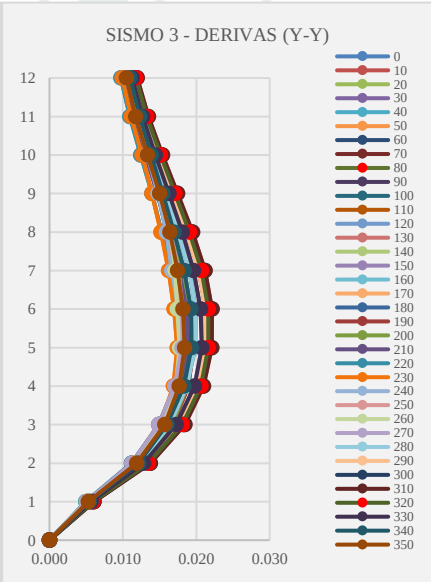

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

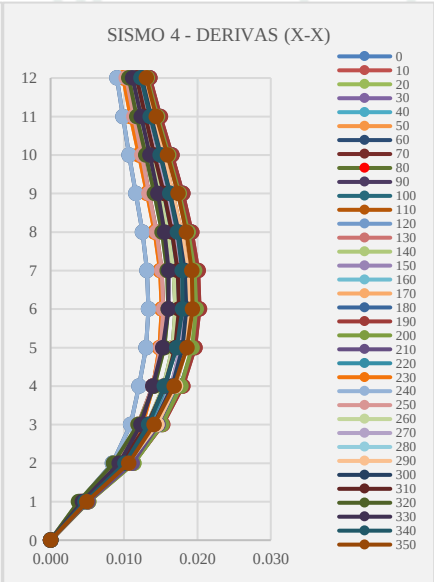

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

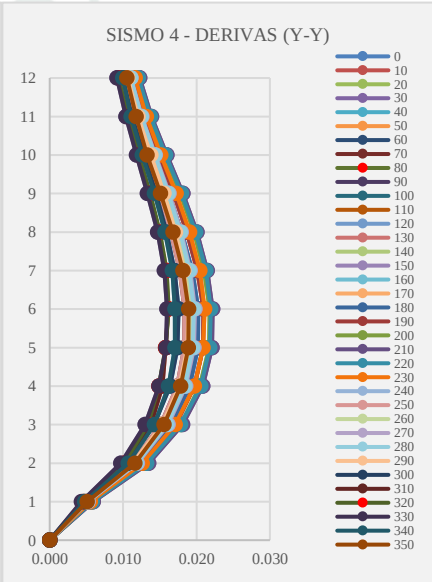

SISMO 2 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

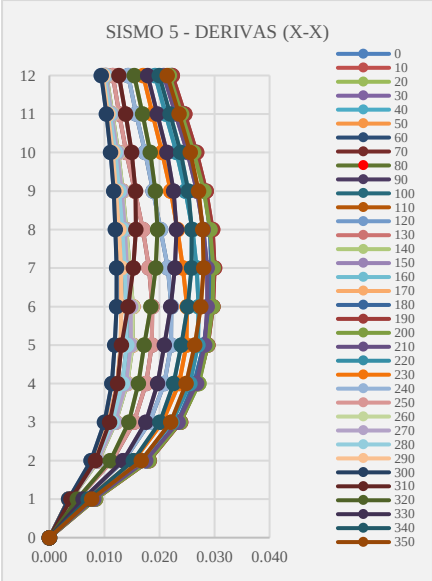

SISMO 2 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

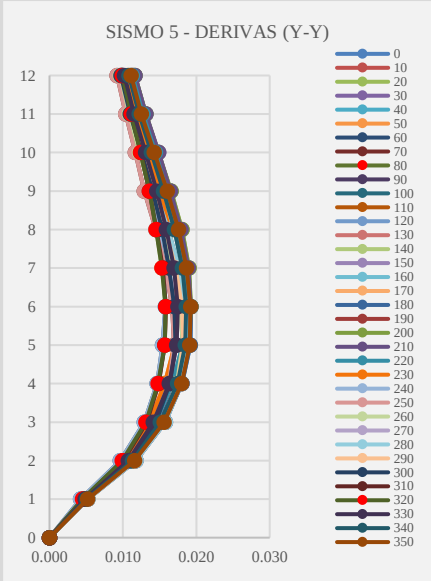

SISMO 3 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

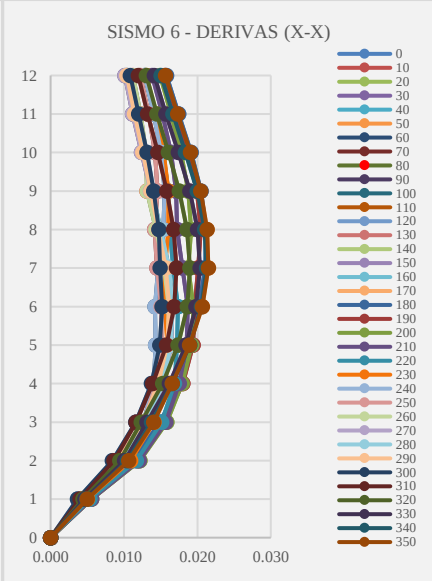

SISMO 3 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

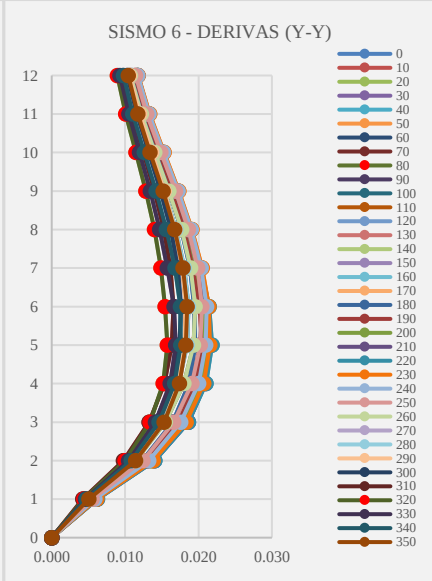

SISMO 4 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

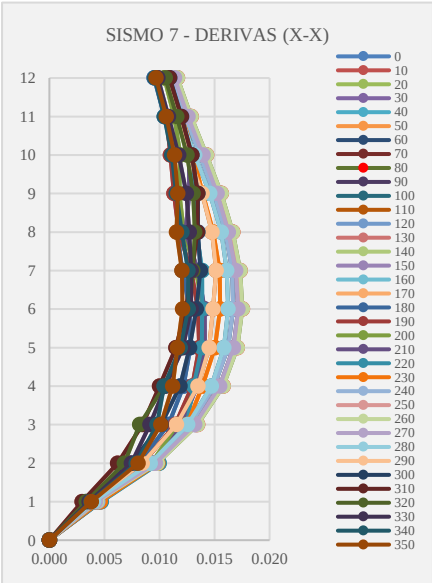

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

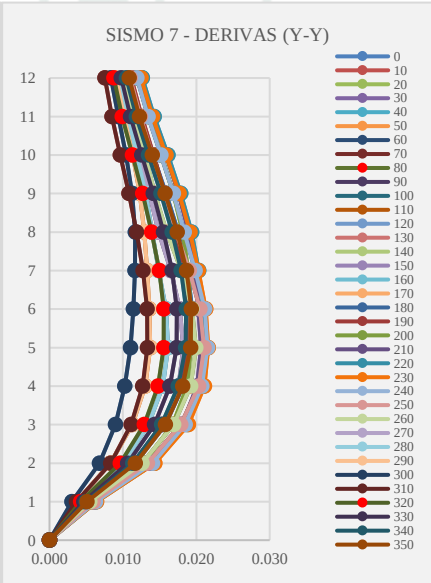

SISMO 5 - DERIVAS (X-X)
0.000 0.010 0.020 0.030 0.040
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

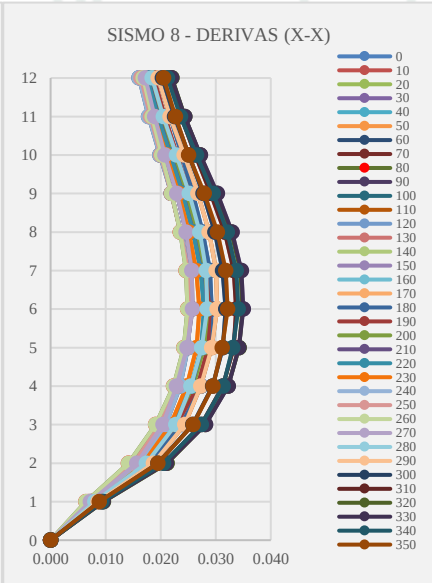

SISMO 5 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

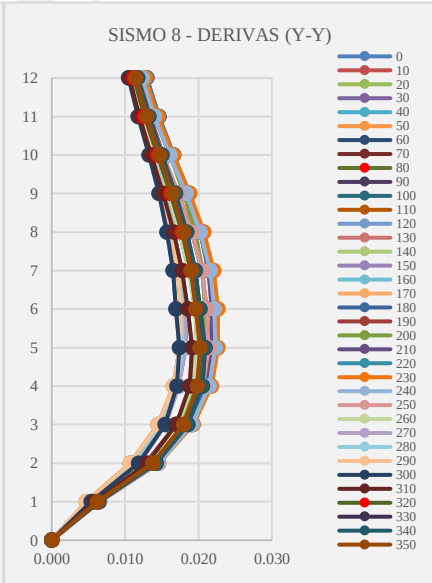

SISMO 6 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

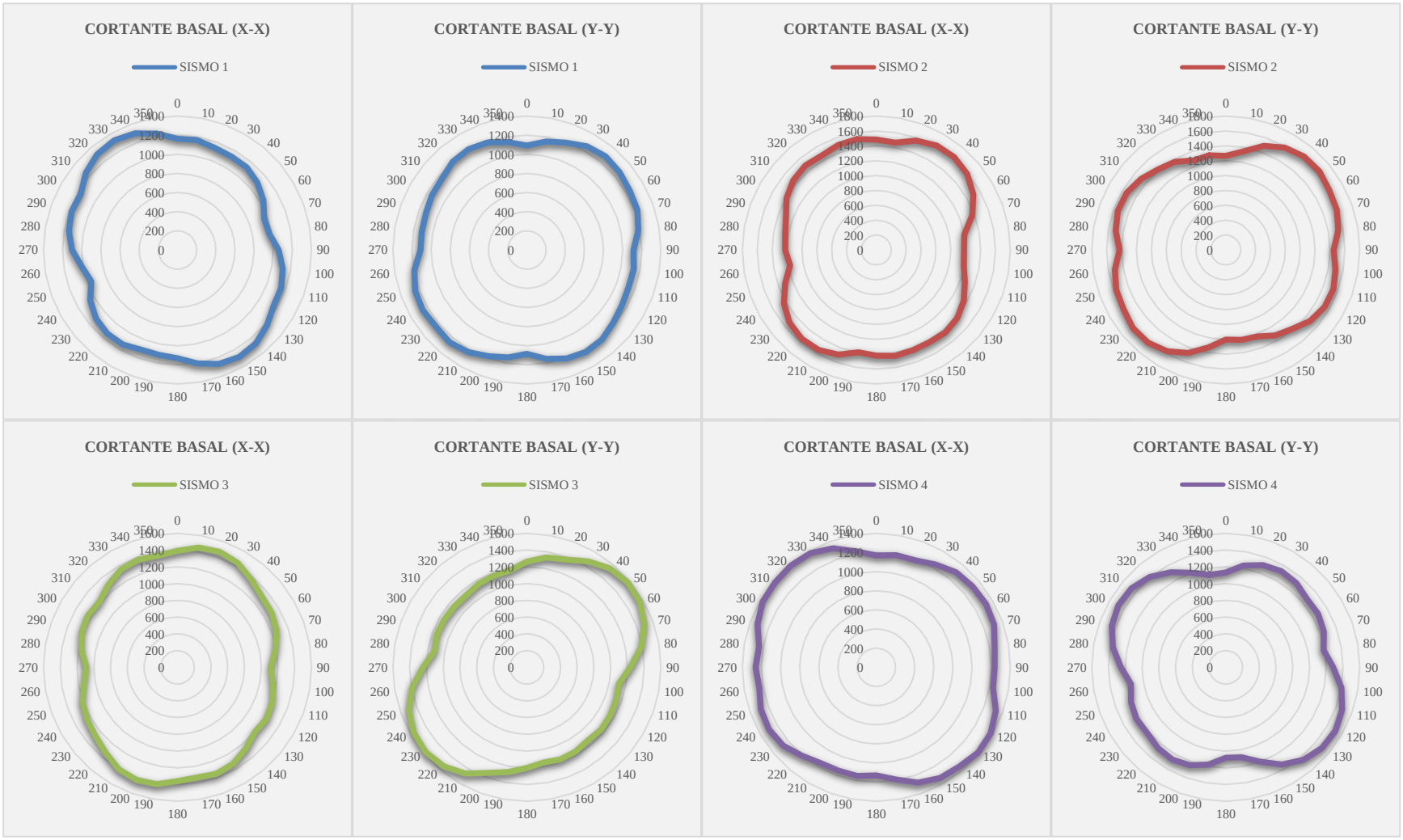

SISMO 7 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

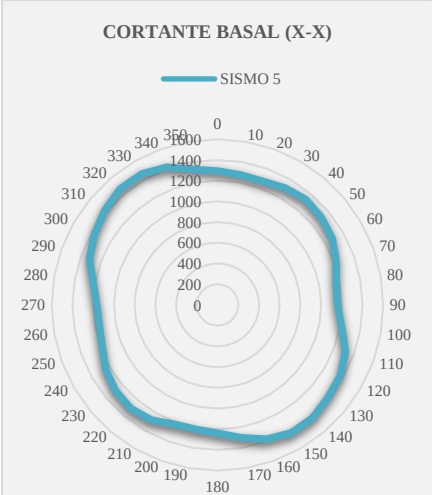

SISMO 8 - DERIVAS (X-X)
0.000 0.010 0.020 0.030 0.040
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

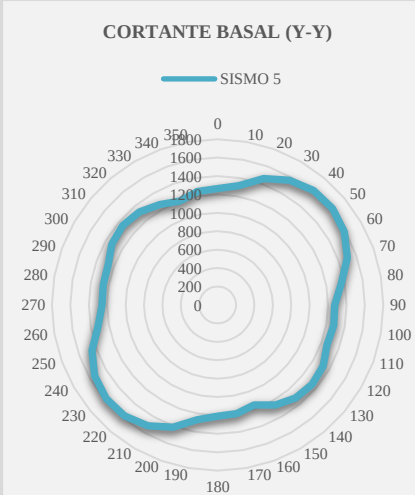

SISMO 8 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

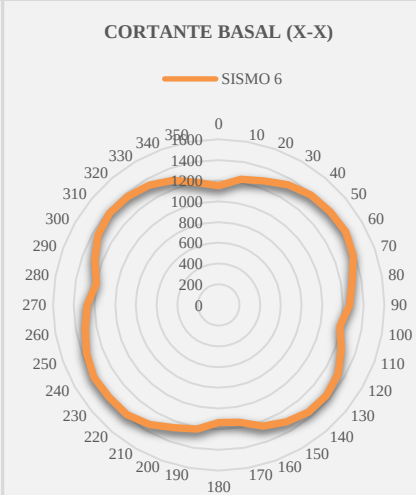
MODELO 6

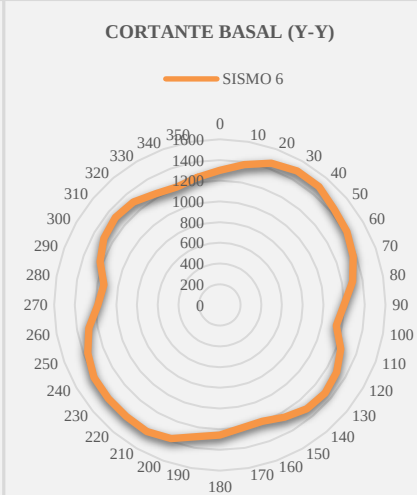
Para 4 pisos:

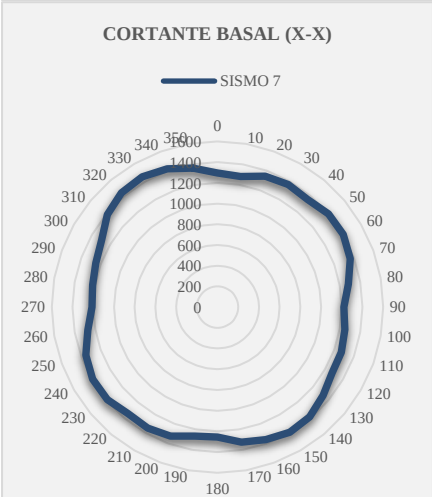


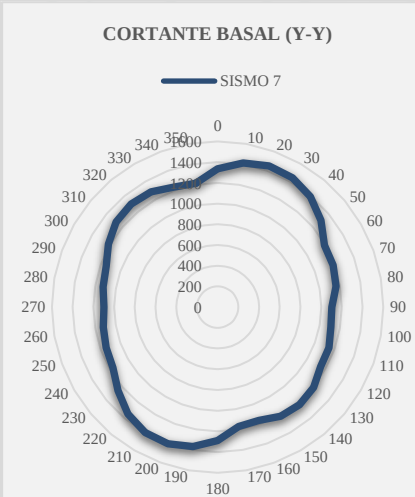

CORTANTE BASAL (X-X)
SISMO 5

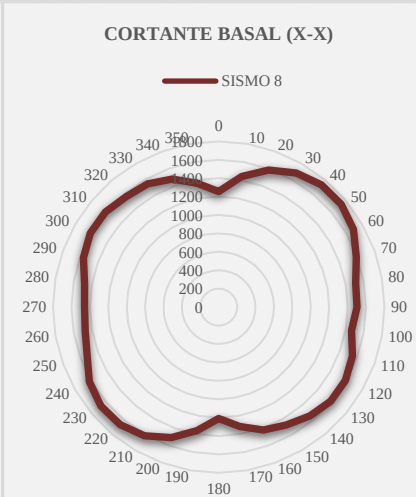

CORTANTE BASAL (Y-Y)
SISMO 5

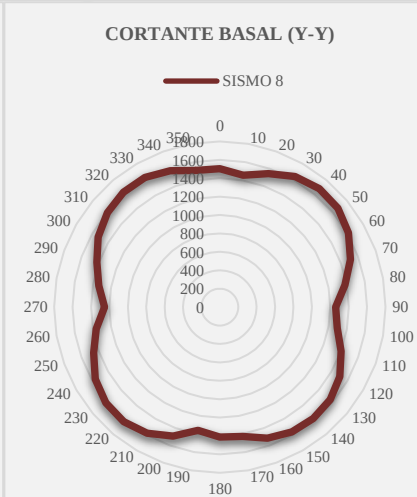

CORTANTE BASAL (X-X)
SISMO 6


CORTANTE BASAL (Y-Y)
SISMO 6

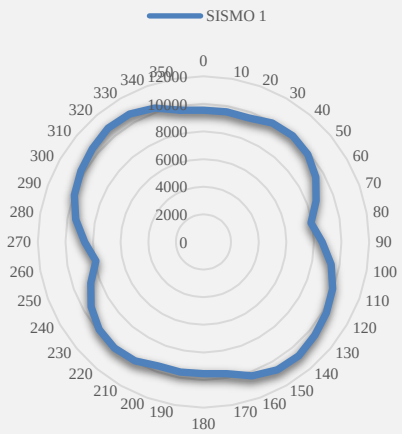

CORTANTE BASAL (X-X)
SISMO 7


CORTANTE BASAL (Y-Y)
SISMO 7

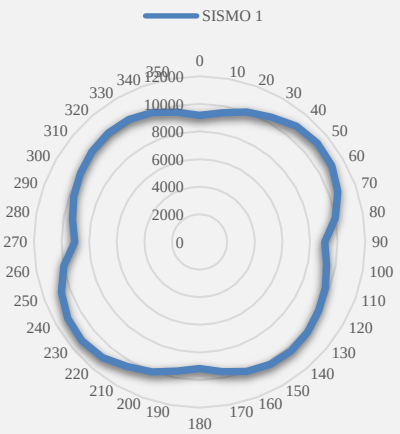

CORTANTE BASAL (X-X)
SISMO 8


CORTANTE BASAL (Y-Y)
SISMO 8

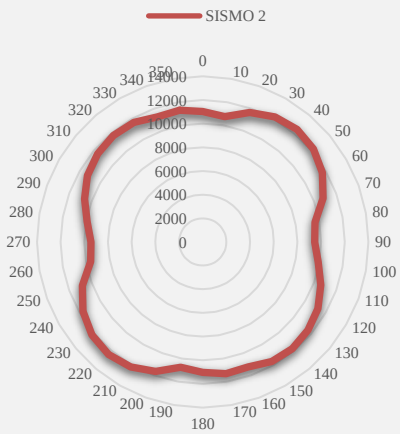
MOMENTO ENVOLVENTE (X-X)



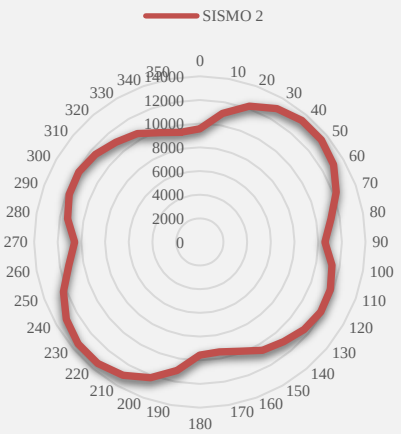
MOMENTO ENVOLVENTE (Y-Y)



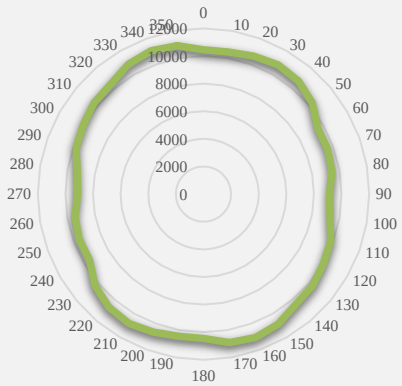
MOMENTO ENVOLVENTE (X-X)



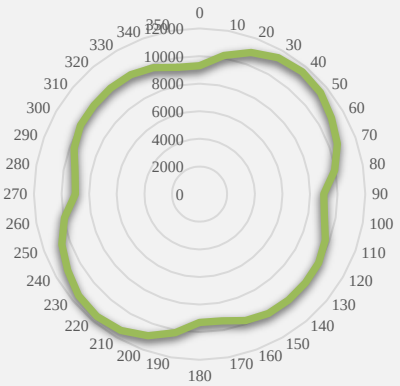
MOMENTO ENVOLVENTE (Y-Y)



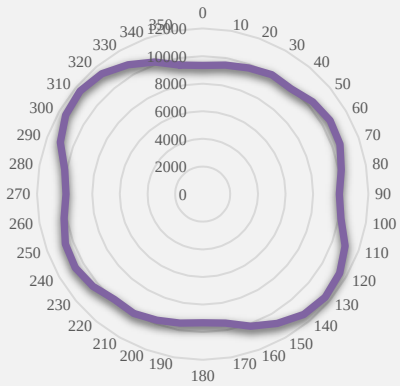
MOMENTO ENVOLVENTE (X-X)



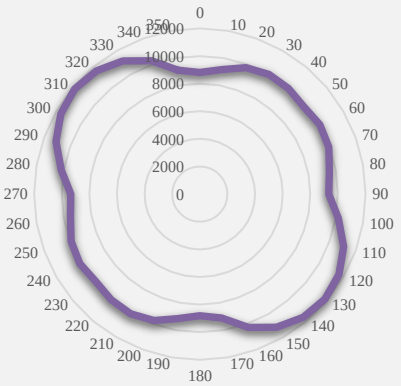
MOMENTO ENVOLVENTE (Y-Y)



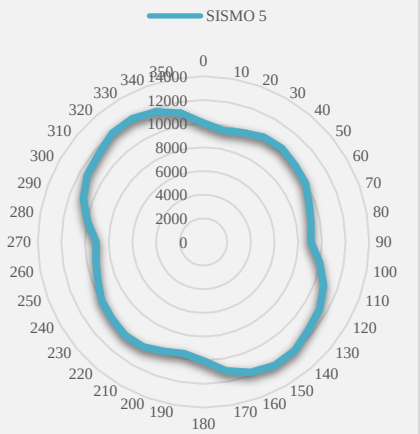
MOMENTO ENVOLVENTE (X-X)



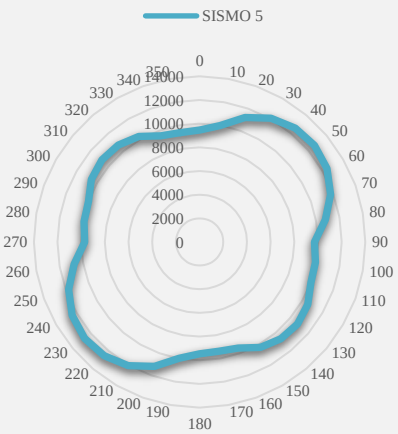
MOMENTO ENVOLVENTE (Y-Y)



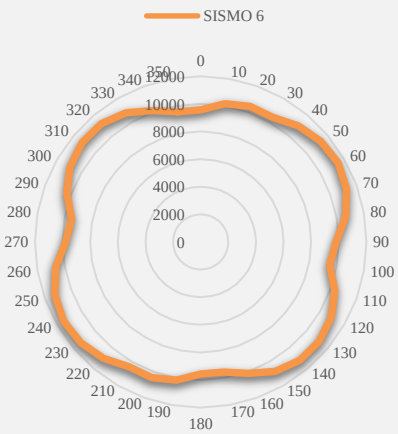
MOMENTO ENVOLVENTE (X-X)



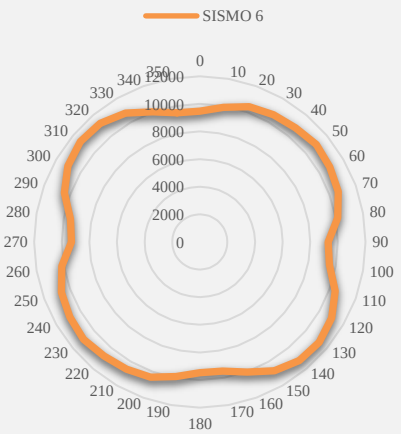
MOMENTO ENVOLVENTE (Y-Y)



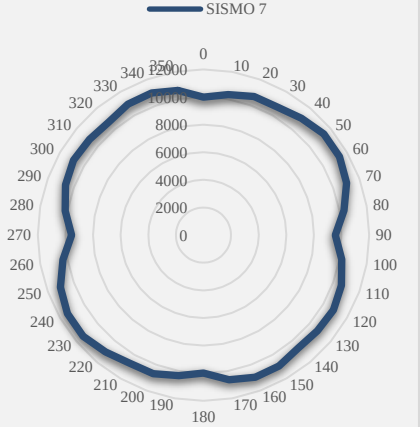
MOMENTO ENVOLVENTE (X-X)



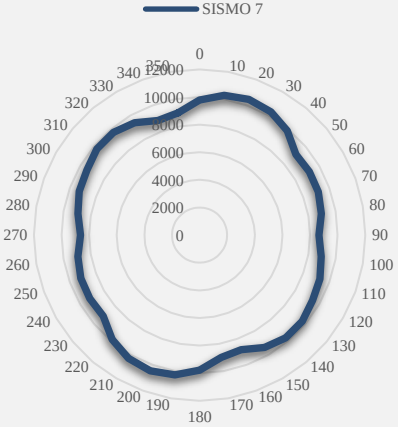
MOMENTO ENVOLVENTE (Y-Y)



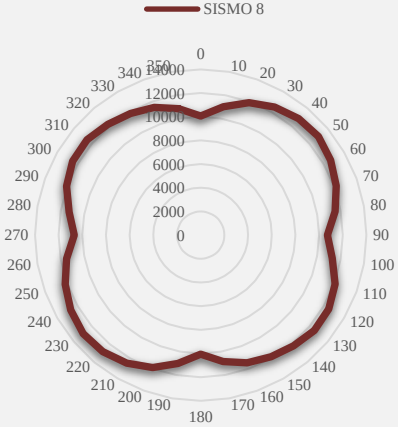
MOMENTO ENVOLVENTE (X-X)



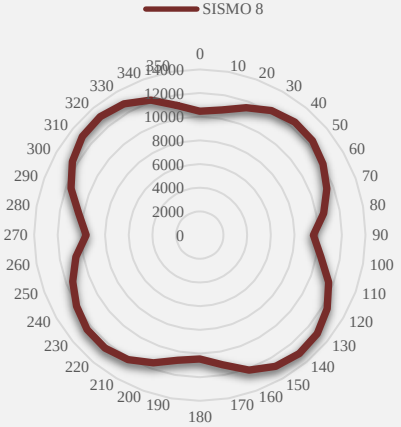
MOMENTO ENVOLVENTE (Y-Y)

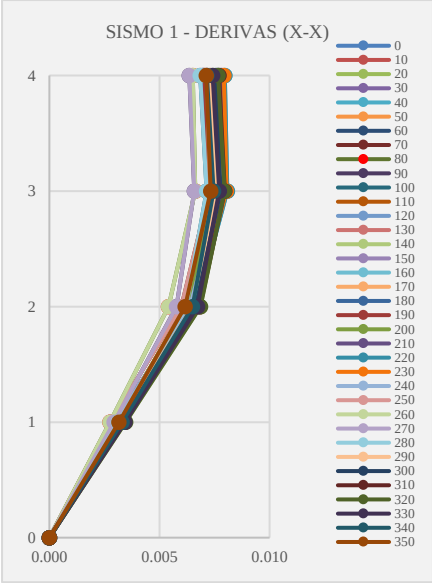


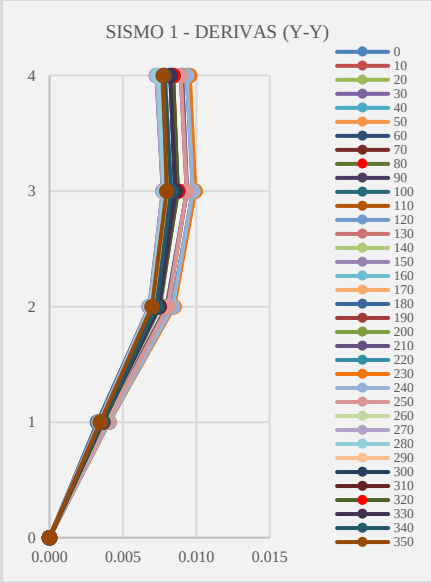
MOMENTO ENVOLVENTE (X-X)

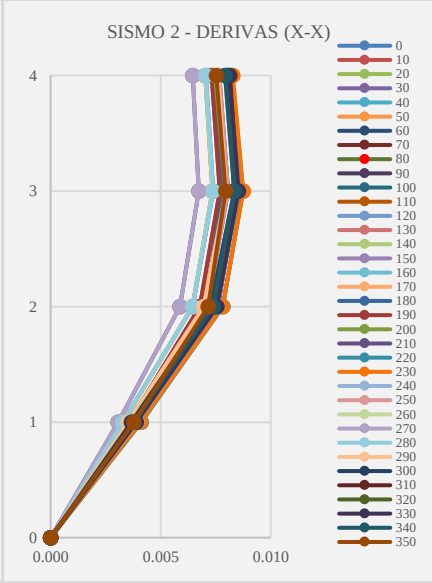


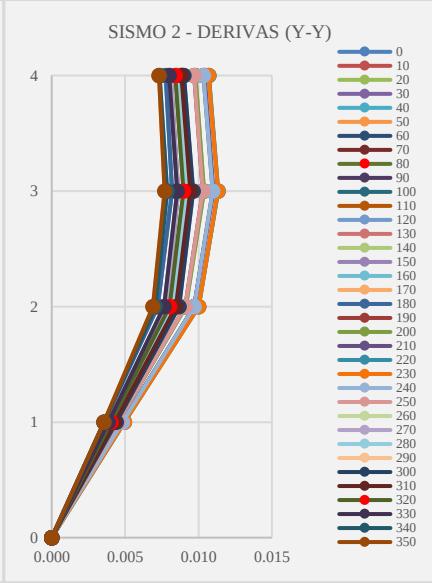
MOMENTO ENVOLVENTE (Y-Y)

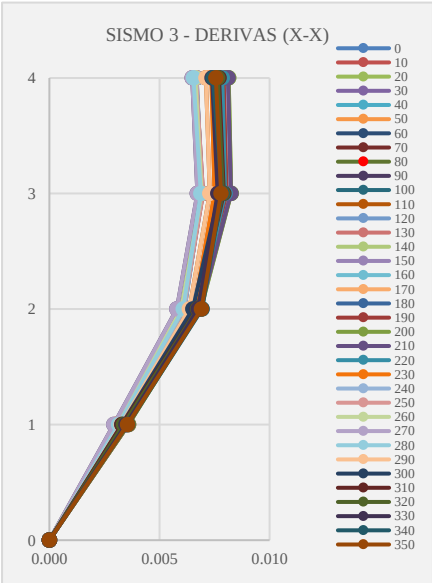


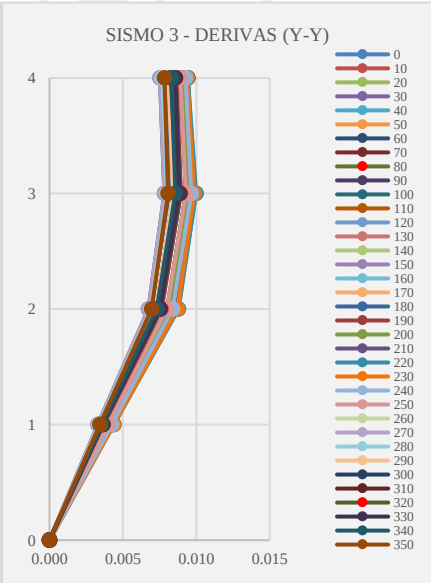

SISMO 1 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

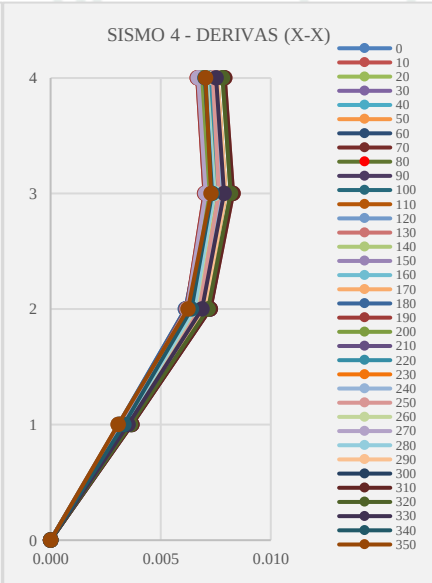

SISMO 1 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

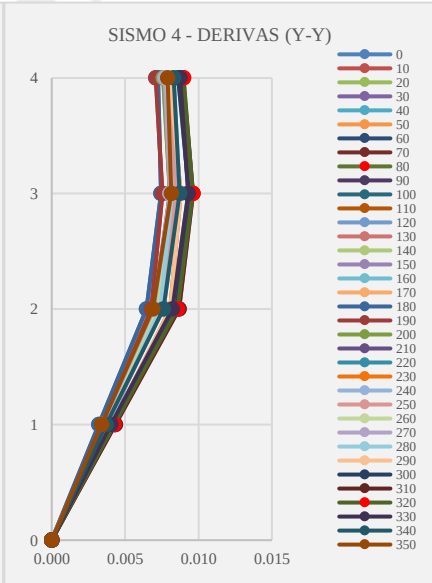

SISMO 2 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

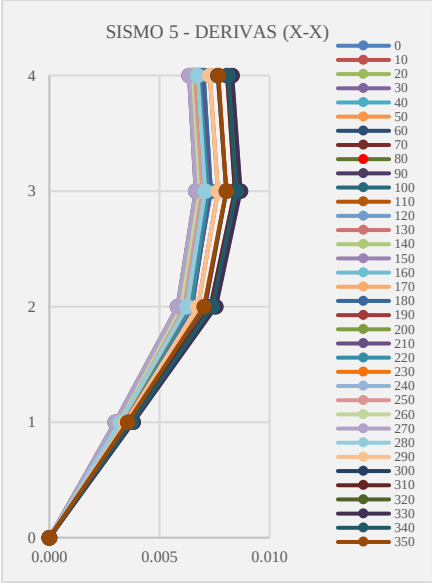

SISMO 2 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

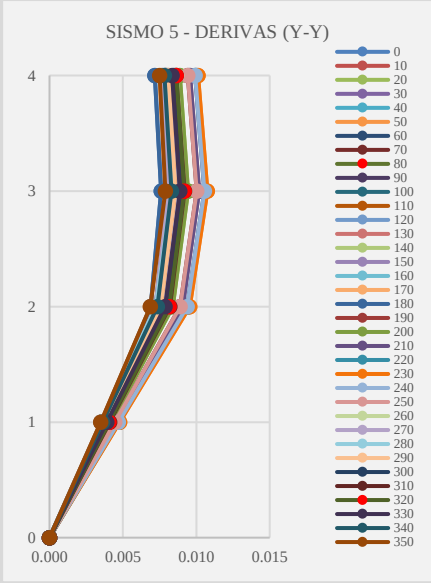

SISMO 3 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

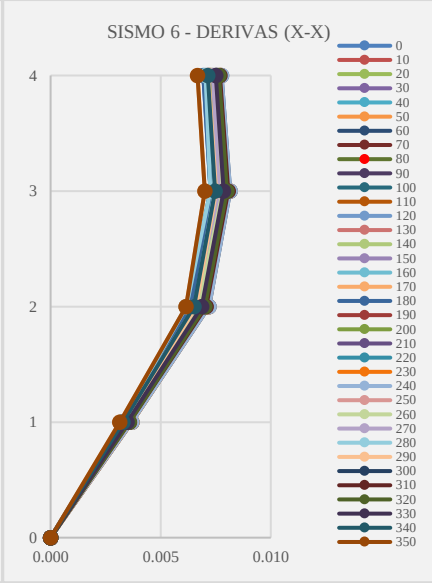

SISMO 3 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

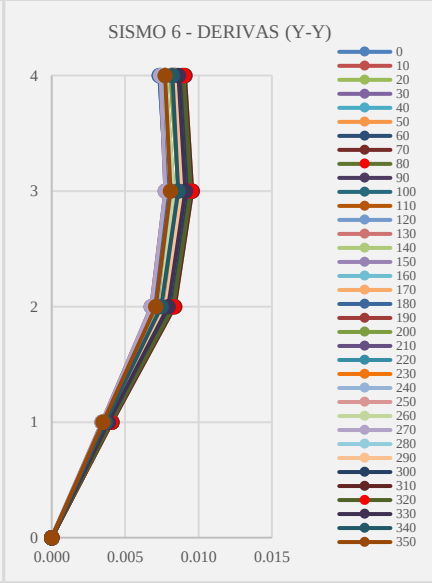

SISMO 4 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

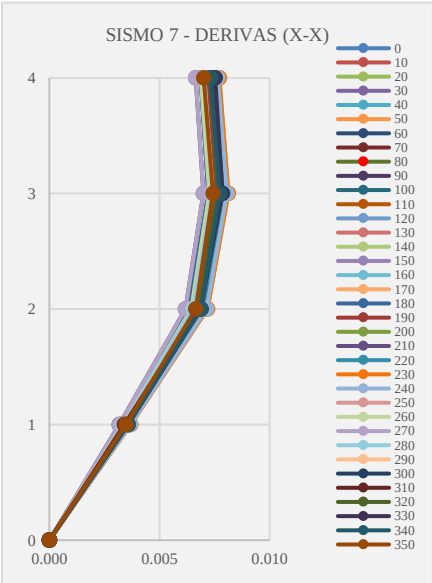

SISMO 4 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

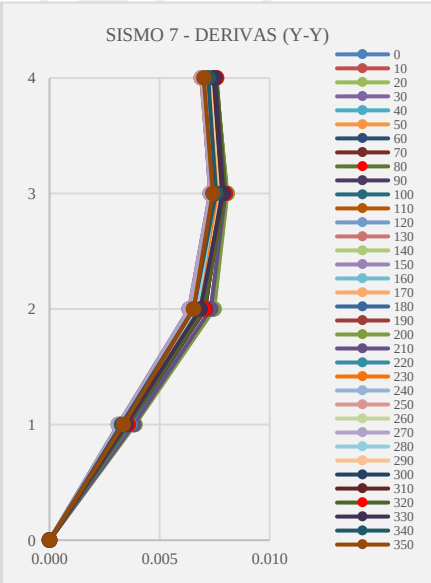

SISMO 5 - DERIVAS (X-X)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010

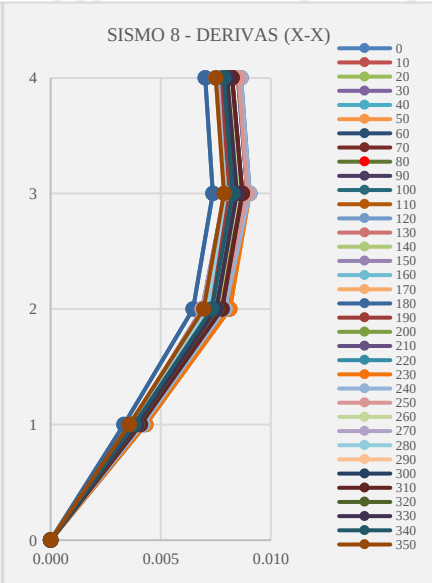

SISMO 5 - DERIVAS (Y-Y)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010
0.015

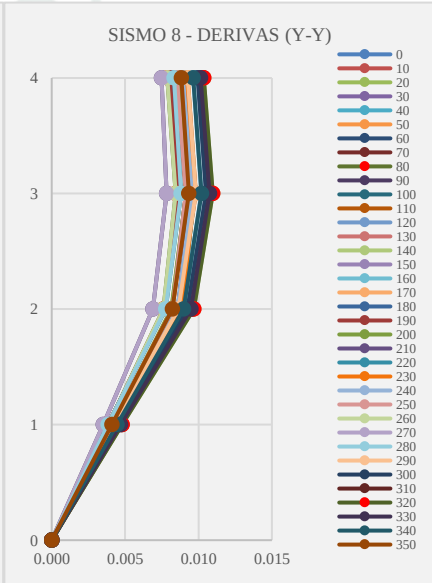

SISMO 6 - DERIVAS (X-X)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010


SISMO 6 - DERIVAS (Y-Y)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
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310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010
0.015

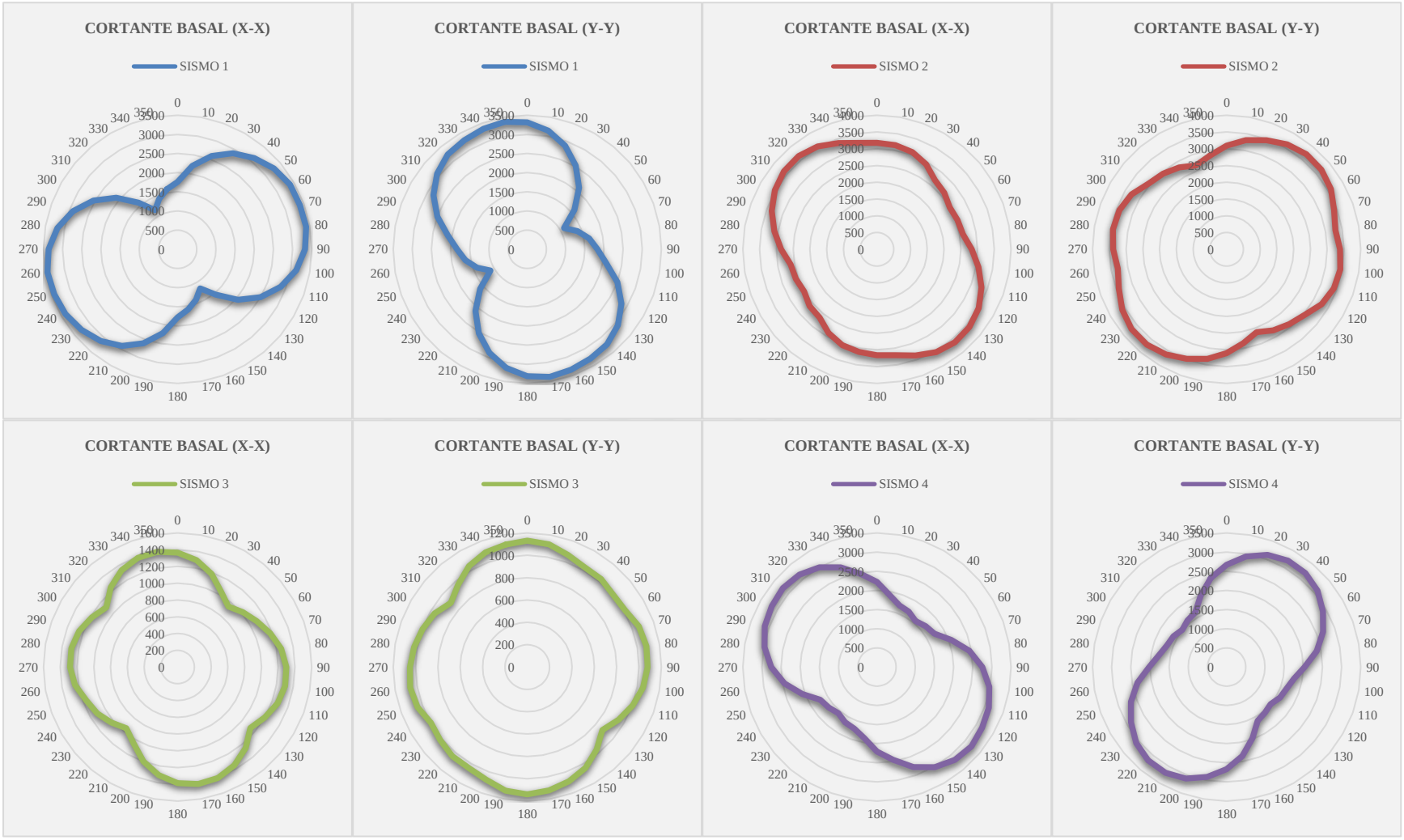

SISMO 7 - DERIVAS (X-X)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010


SISMO 7 - DERIVAS (Y-Y)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010

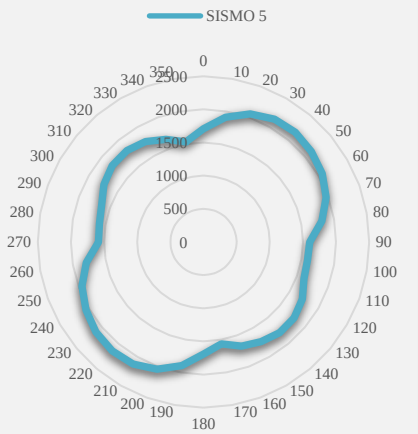

SISMO 8 - DERIVAS (X-X)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010


SISMO 8 - DERIVAS (Y-Y)
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
4
3
2
1
0
0.000
0.005
0.010
0.015

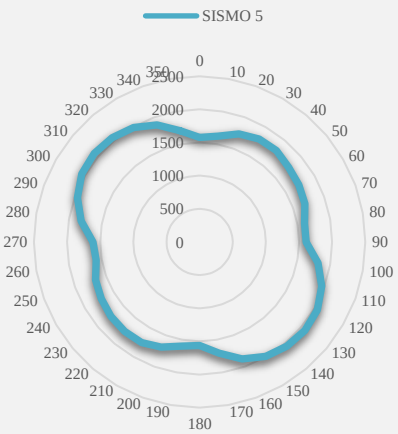
Para 8 pisos:


CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

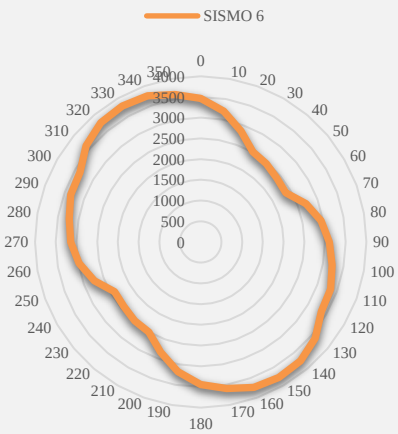
CORTANTE BASAL (X-X)



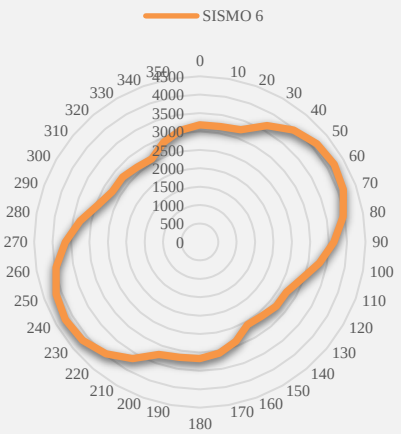
CORTANTE BASAL (Y-Y)



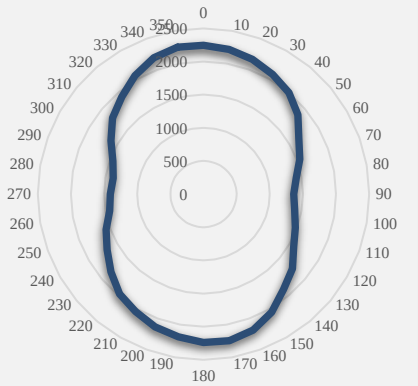
CORTANTE BASAL (X-X)



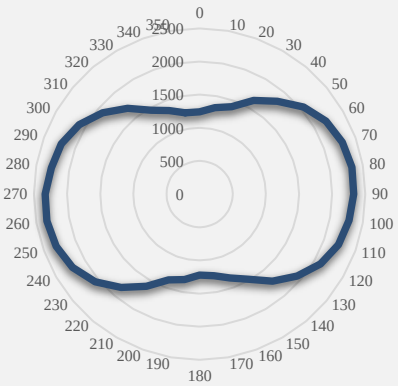
CORTANTE BASAL (Y-Y)



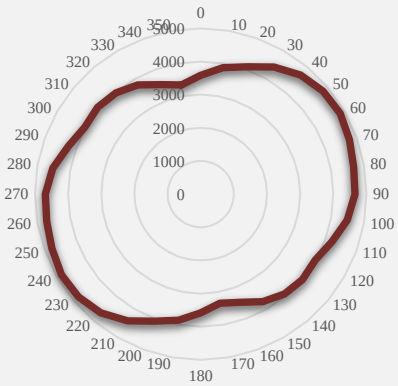
CORTANTE BASAL (X-X)



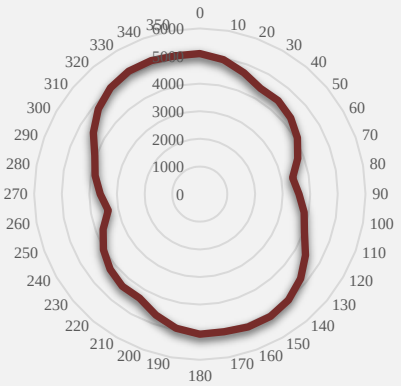
CORTANTE BASAL (Y-Y)



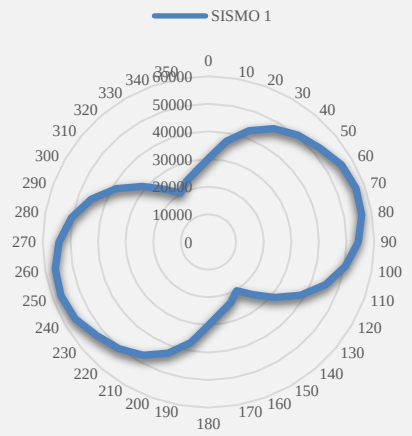
CORTANTE BASAL (X-X)



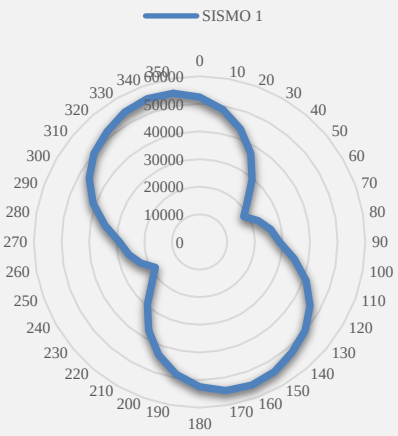
CORTANTE BASAL (Y-Y)



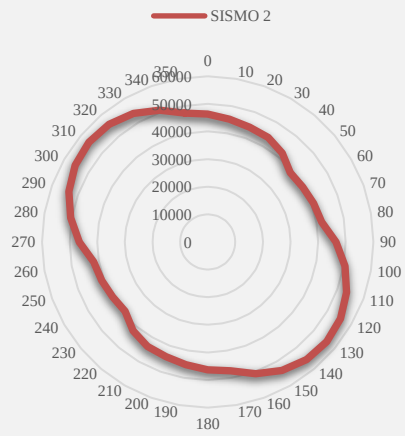
MOMENTO ENVOLVENTE (X-X)



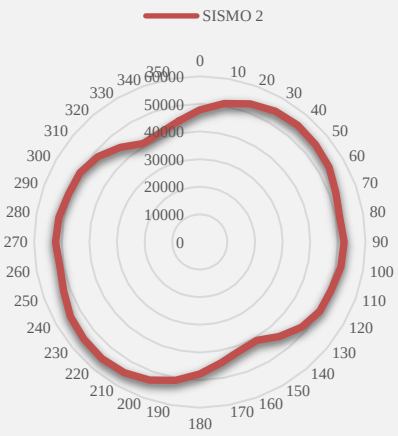
MOMENTO ENVOLVENTE (Y-Y)



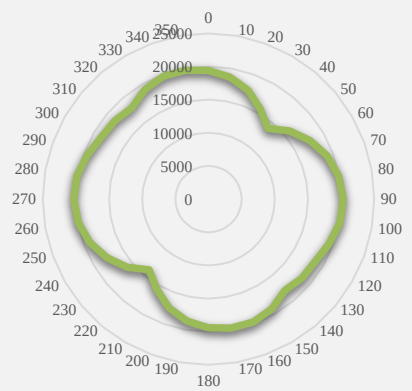
MOMENTO ENVOLVENTE (X-X)



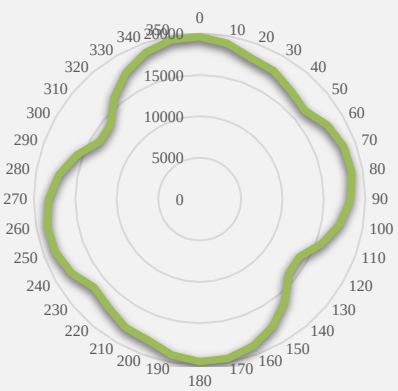
MOMENTO ENVOLVENTE (Y-Y)



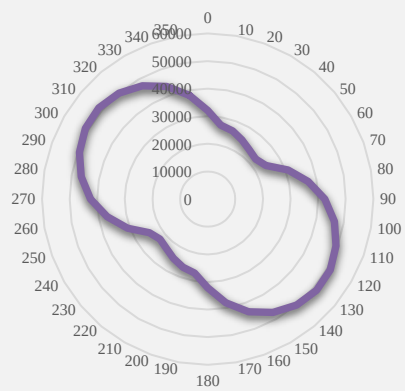
MOMENTO ENVOLVENTE (X-X)



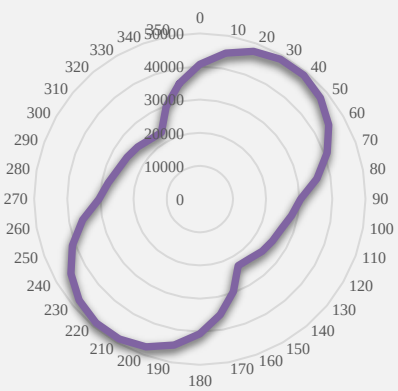
MOMENTO ENVOLVENTE (Y-Y)



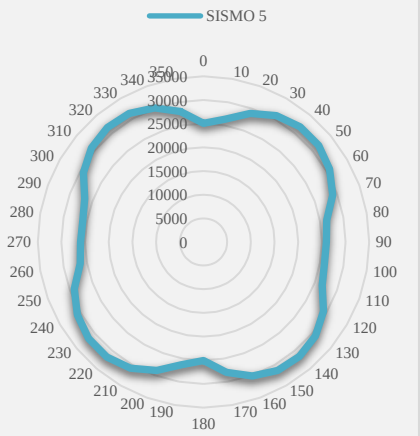
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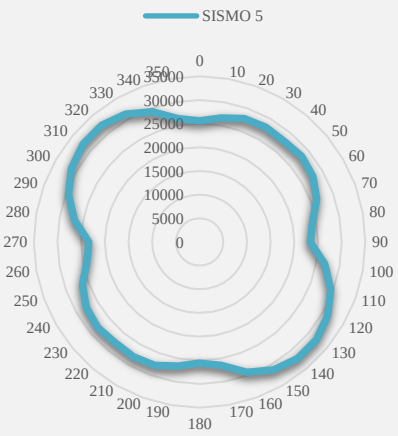
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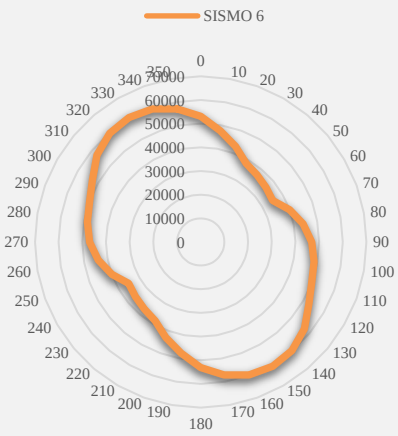
MOMENTO ENVOLVENTE (X-X)



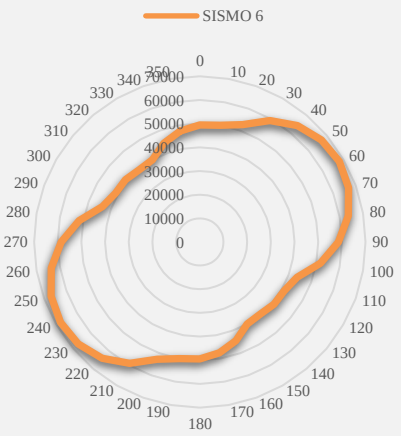
MOMENTO ENVOLVENTE (Y-Y)



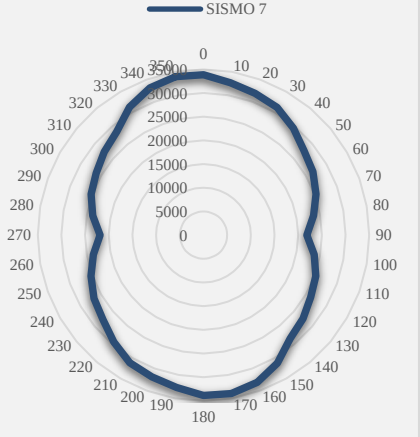
MOMENTO ENVOLVENTE (X-X)



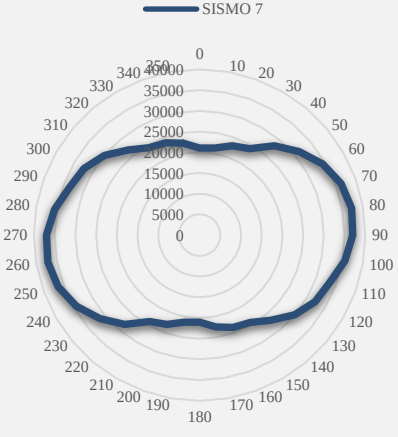
MOMENTO ENVOLVENTE (Y-Y)



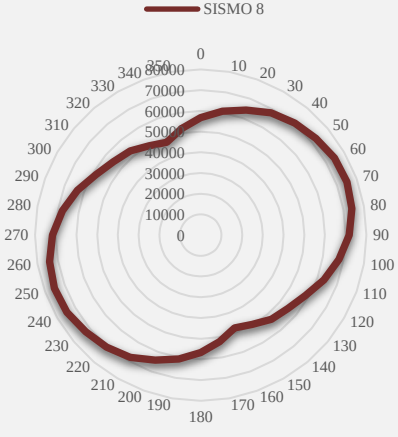
MOMENTO ENVOLVENTE (X-X)



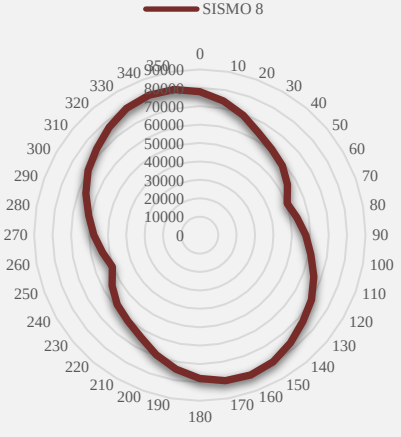
MOMENTO ENVOLVENTE (Y-Y)

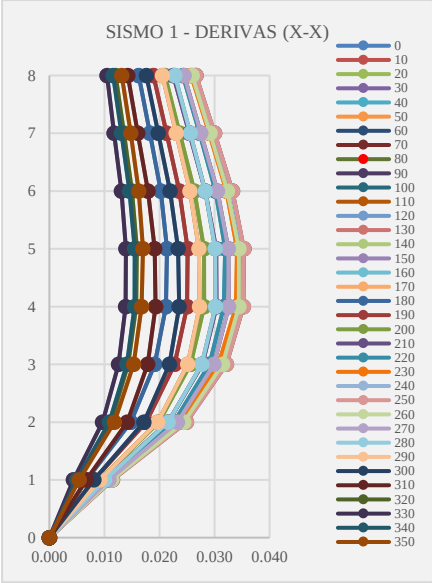


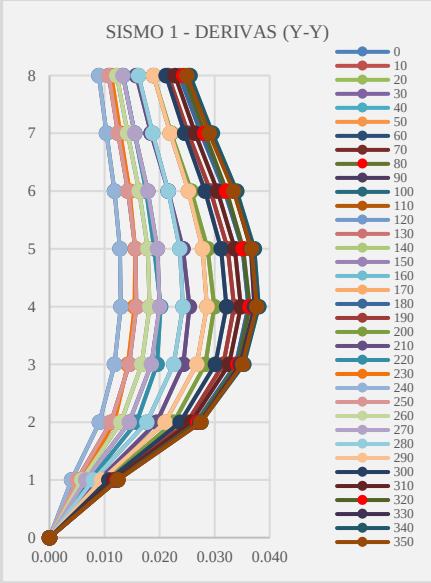
MOMENTO ENVOLVENTE (X-X)

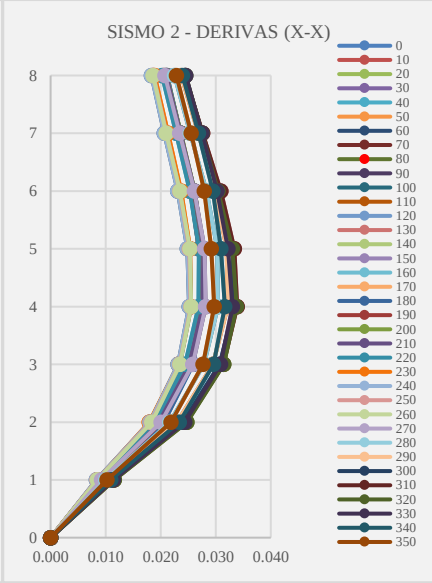


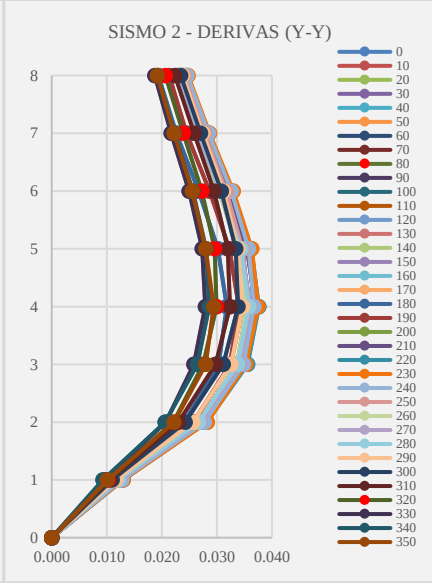
MOMENTO ENVOLVENTE (Y-Y)

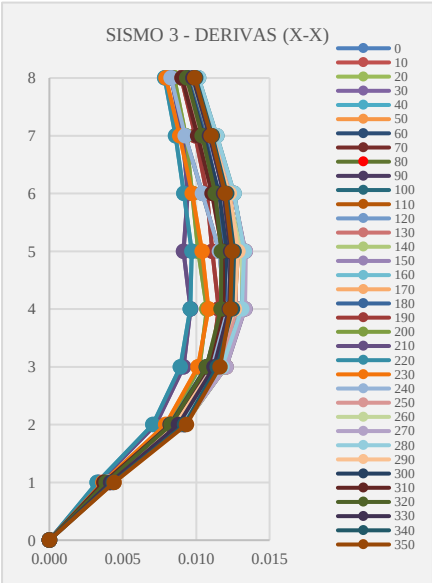


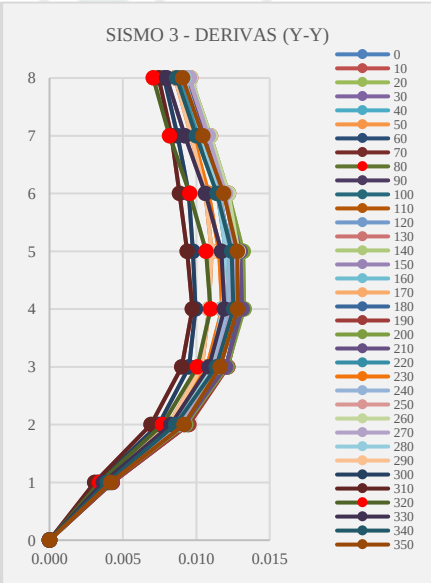

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

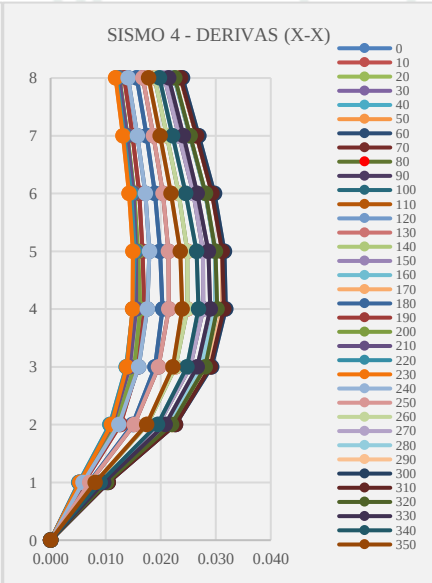

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

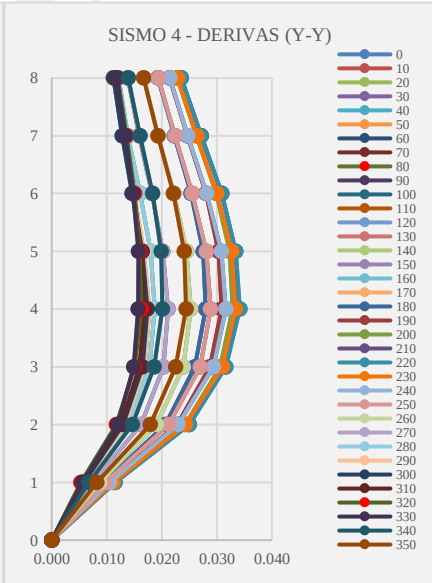

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

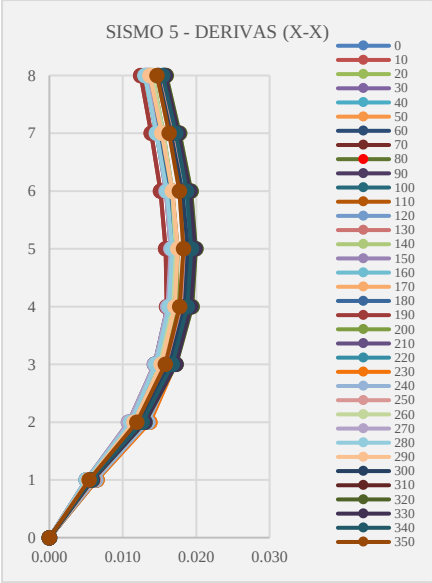

SISMO 2 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

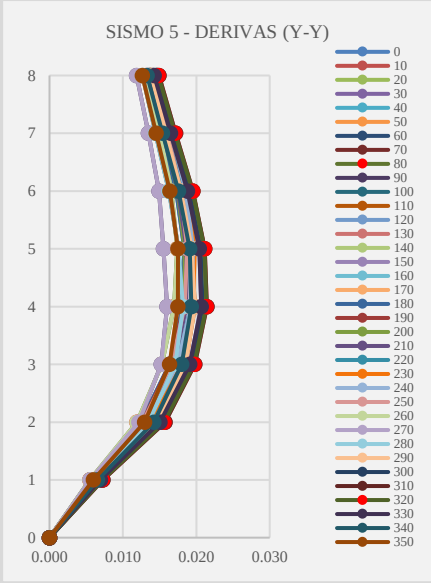

SISMO 3 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

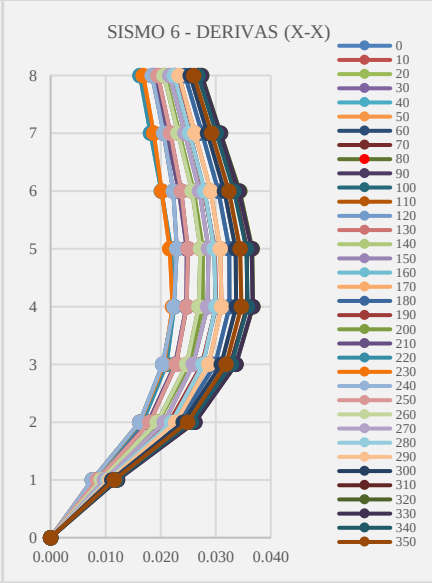

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

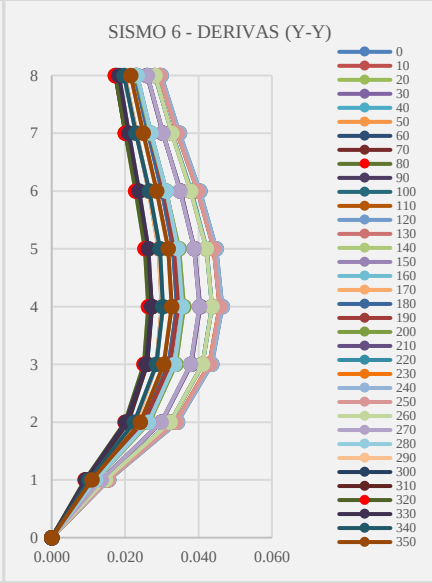

SISMO 4 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

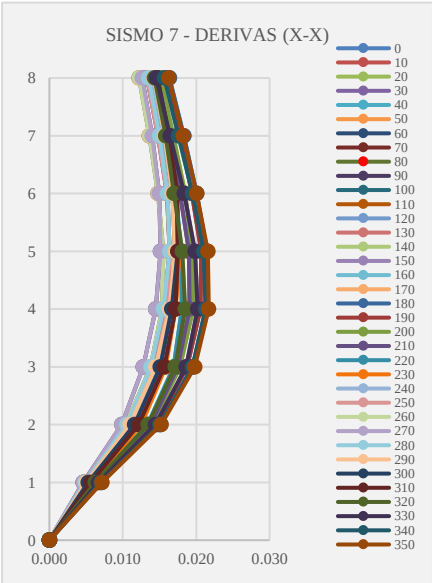

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

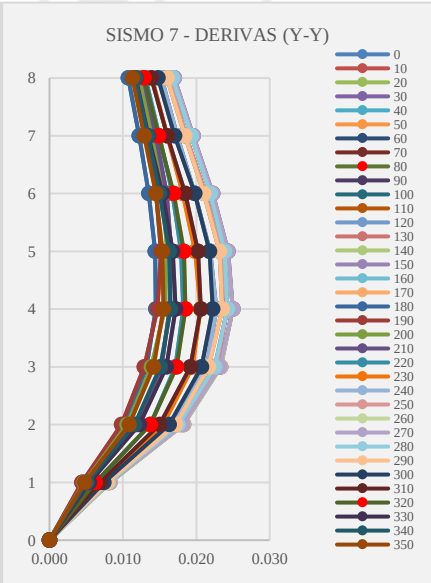

SISMO 5 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030

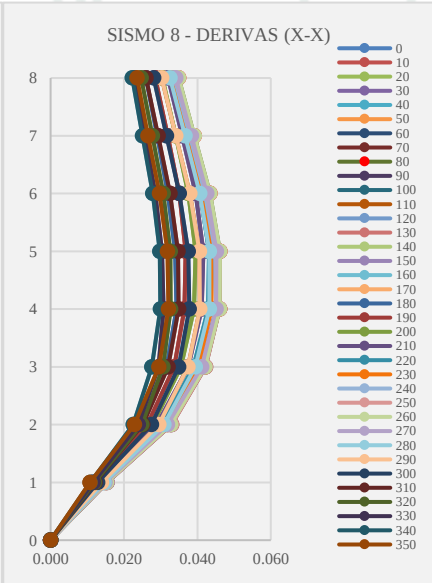

SISMO 5 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030

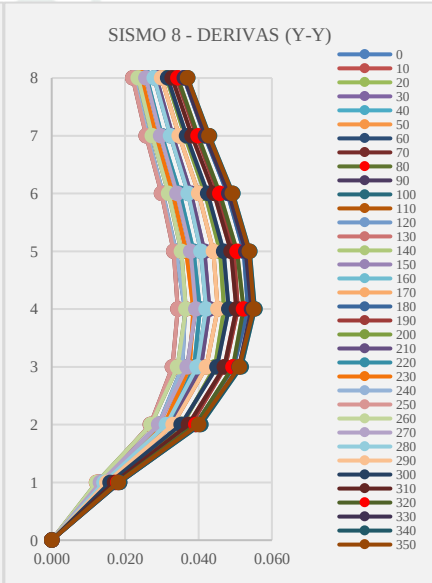

SISMO 6 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040


SISMO 6 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060

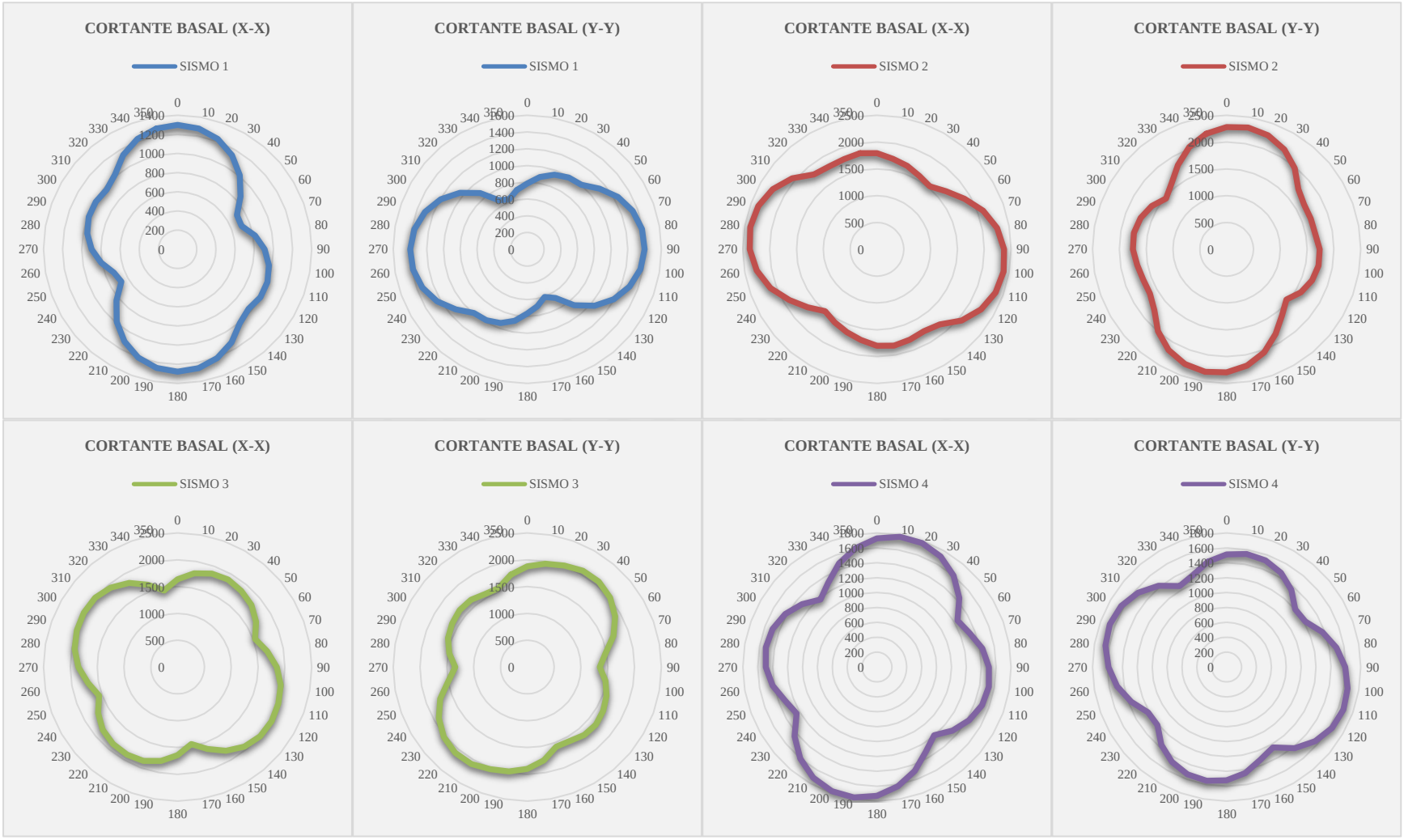

SISMO 7 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030


SISMO 7 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030

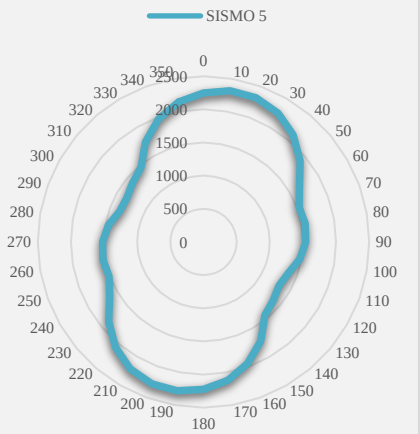

SISMO 8 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060


SISMO 8 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060

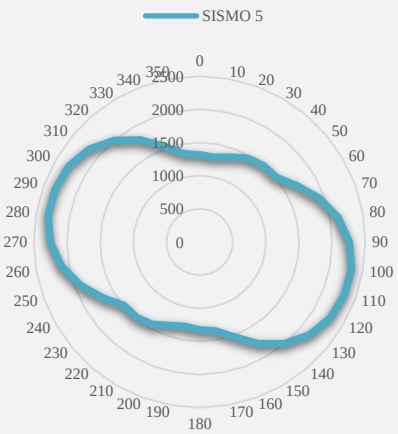
Para 12 pisos:



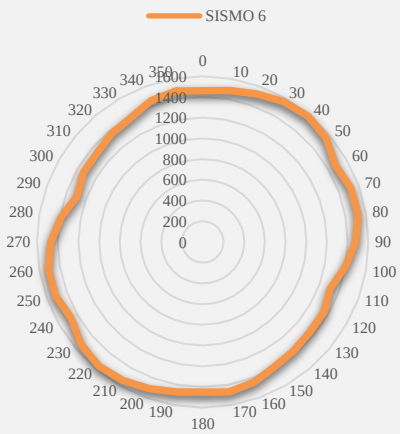
CORTANTE BASAL (X-X)



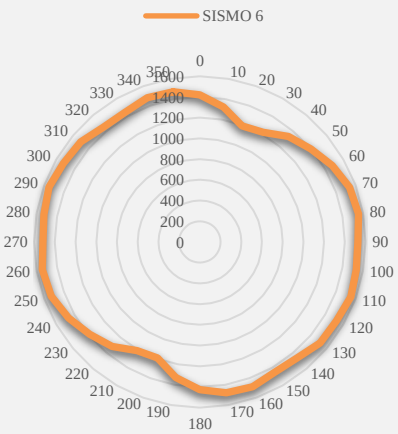
CORTANTE BASAL (Y-Y)



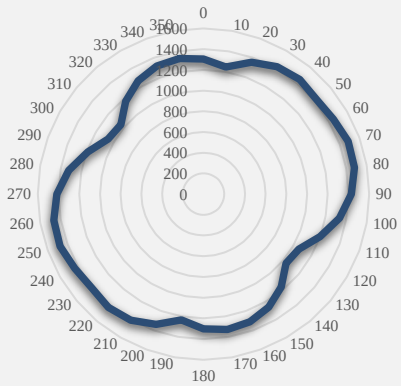
CORTANTE BASAL (X-X)



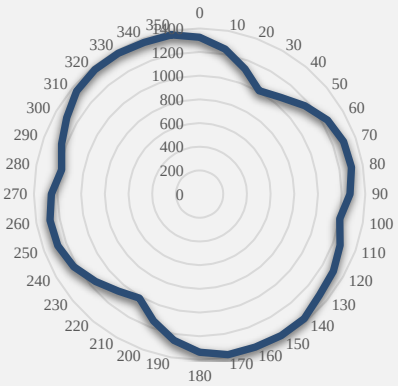
CORTANTE BASAL (Y-Y)



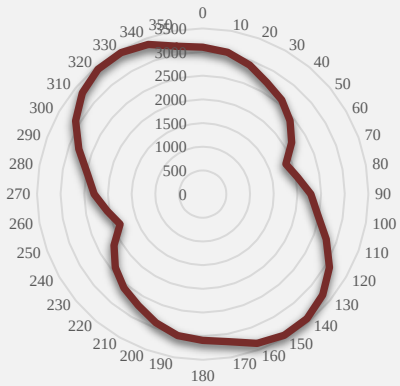
CORTANTE BASAL (X-X)



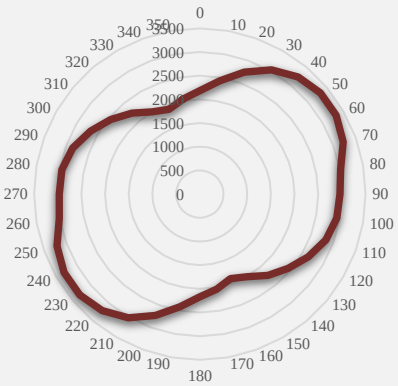
CORTANTE BASAL (Y-Y)



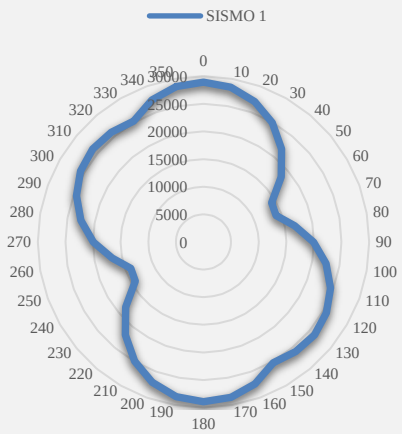
CORTANTE BASAL (X-X)



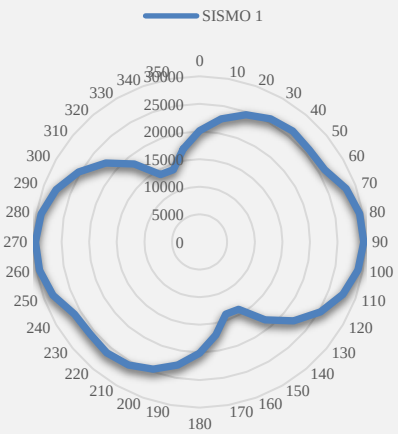
CORTANTE BASAL (Y-Y)



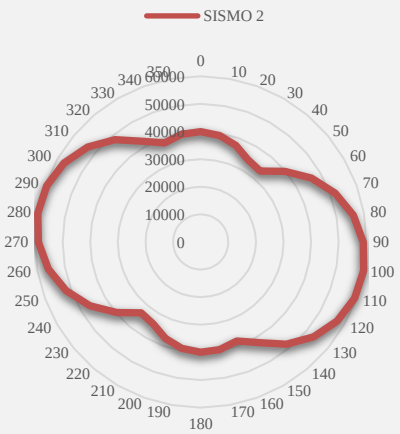
MOMENTO ENVOLVENTE (X-X)



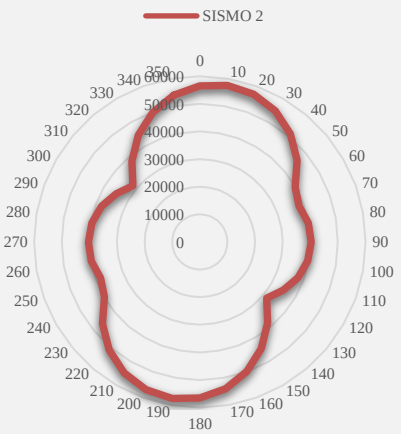
MOMENTO ENVOLVENTE (Y-Y)



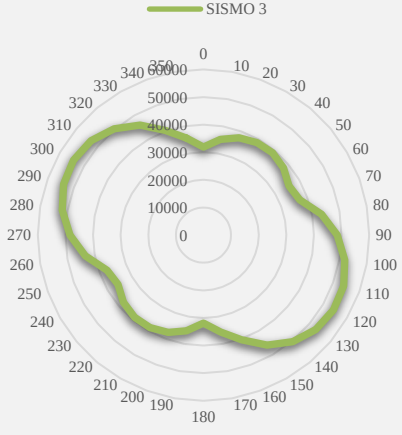
MOMENTO ENVOLVENTE (X-X)



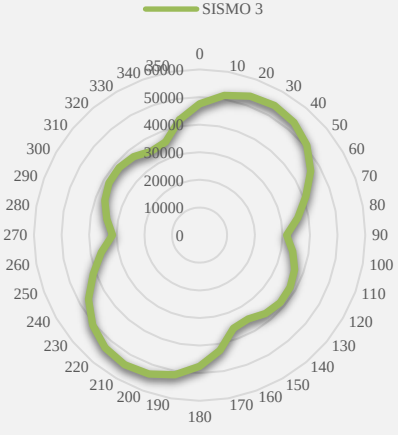
MOMENTO ENVOLVENTE (Y-Y)



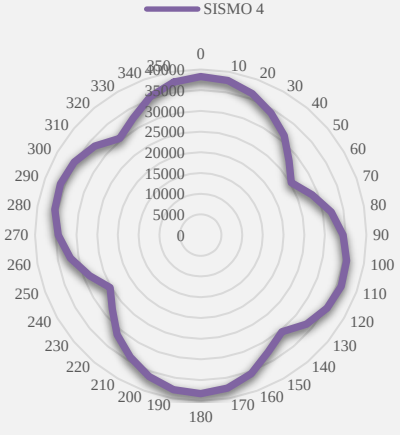
MOMENTO ENVOLVENTE (X-X)



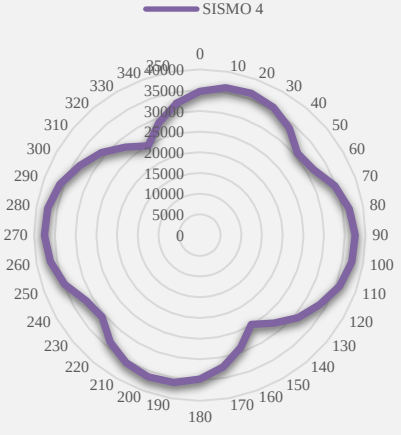
MOMENTO ENVOLVENTE (Y-Y)

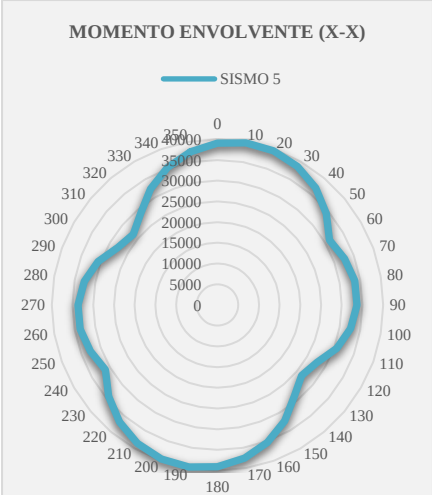


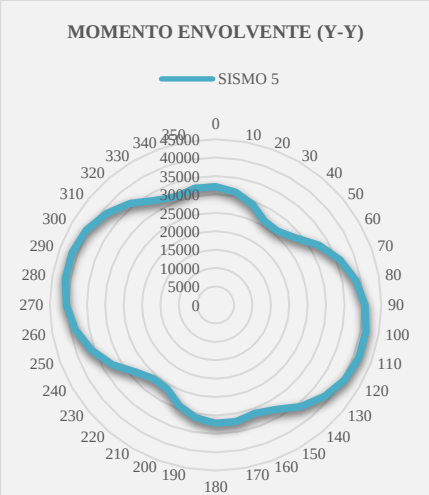
MOMENTO ENVOLVENTE (X-X)

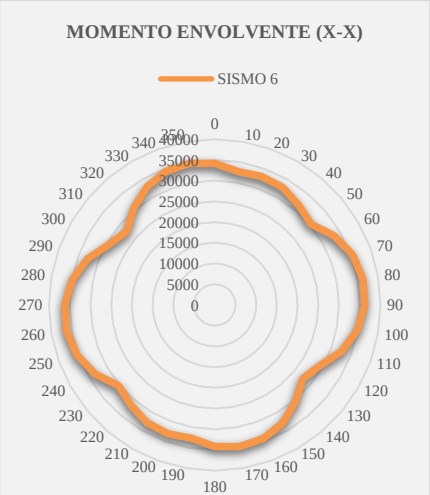


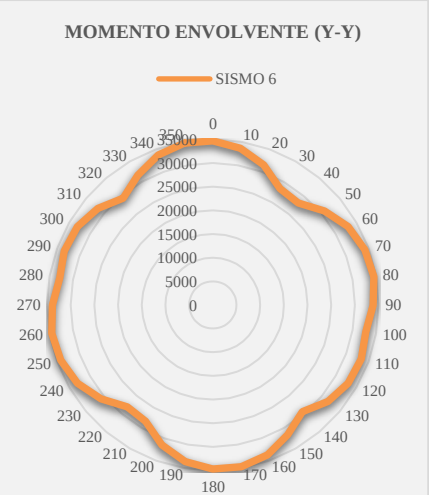
MOMENTO ENVOLVENTE (Y-Y)

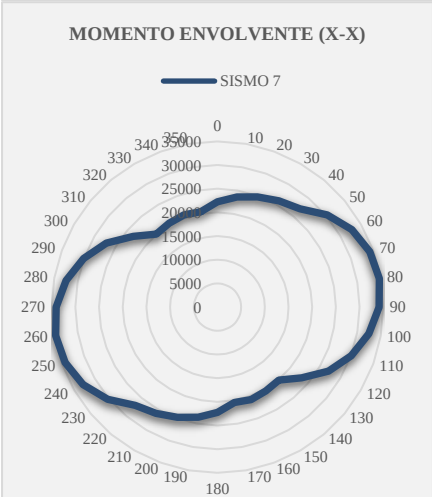


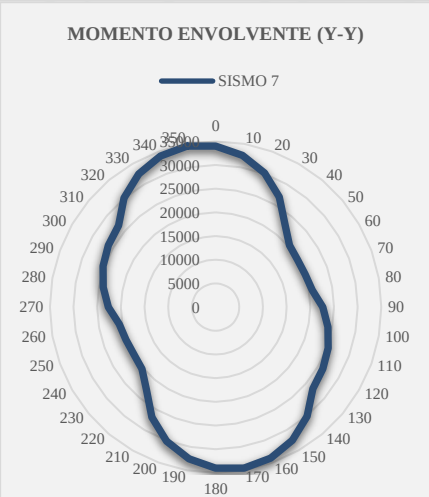

MOMENTO ENVOLVENTE (X-X)
SISMO 5

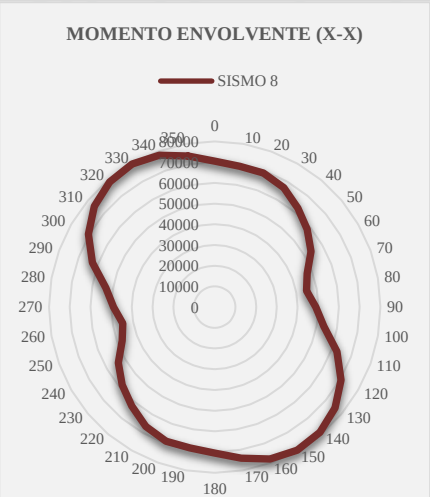

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

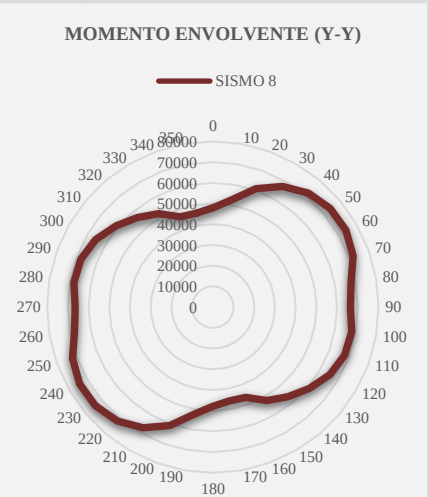

MOMENTO ENVOLVENTE (X-X)
SISMO 6

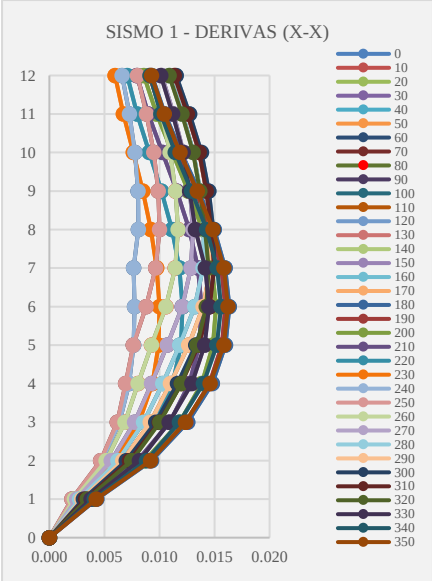

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

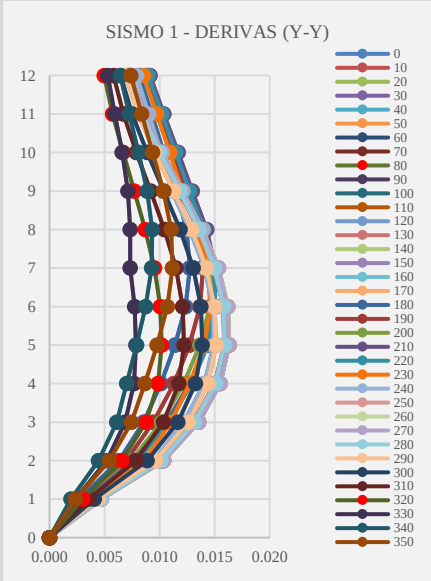

MOMENTO ENVOLVENTE (X-X)
SISMO 7

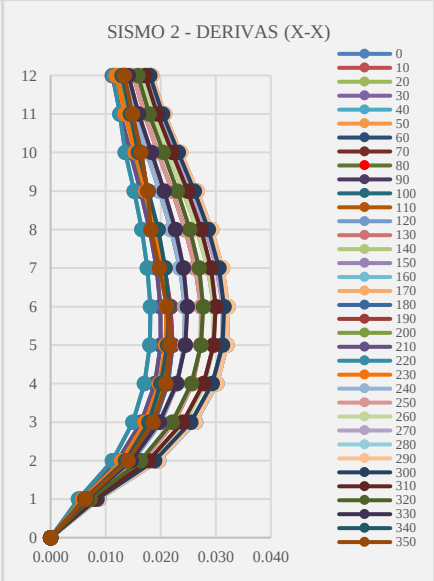

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

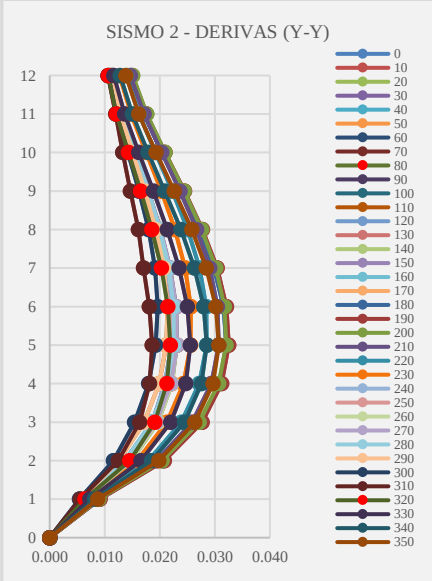

MOMENTO ENVOLVENTE (X-X)
SISMO 8

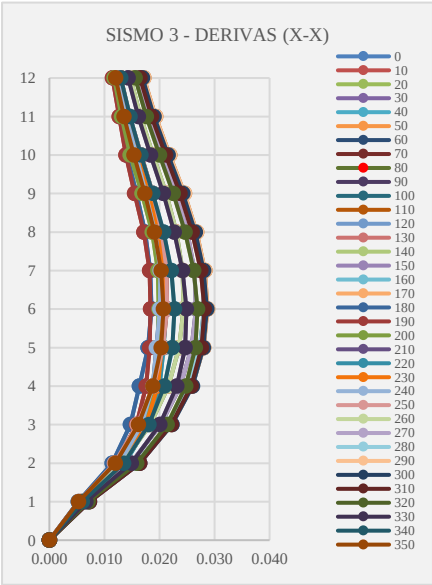

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

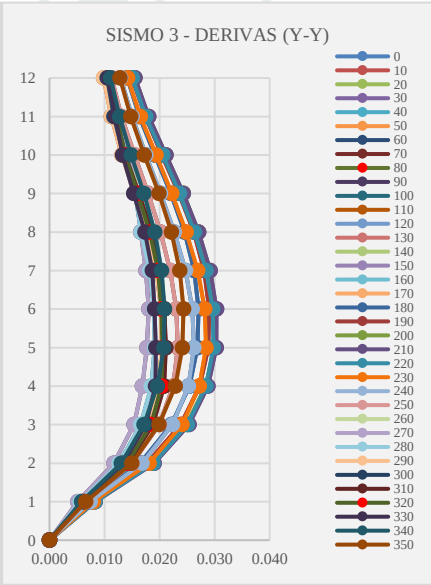

SISMO 1 - DERIVAS (X-X)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

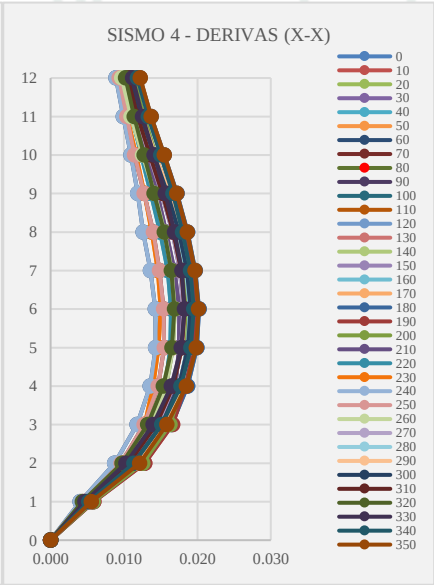

SISMO 1 - DERIVAS (Y-Y)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

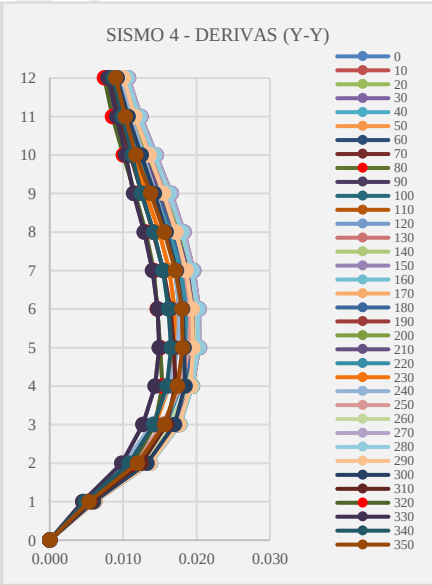

SISMO 2 - DERIVAS (X-X)
0.000 0.010 0.020 0.030 0.040
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

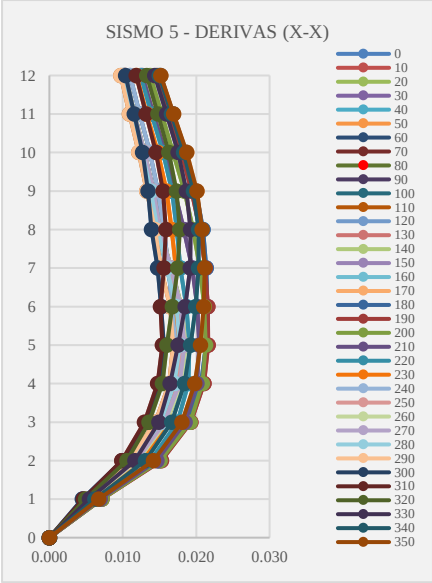

SISMO 2 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030 0.040
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

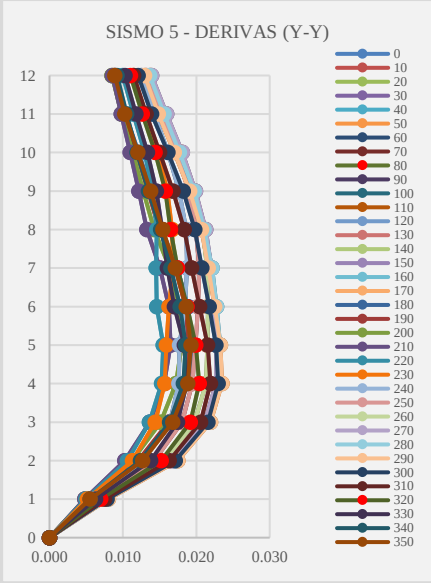

SISMO 3 - DERIVAS (X-X)
0.000 0.010 0.020 0.030 0.040
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

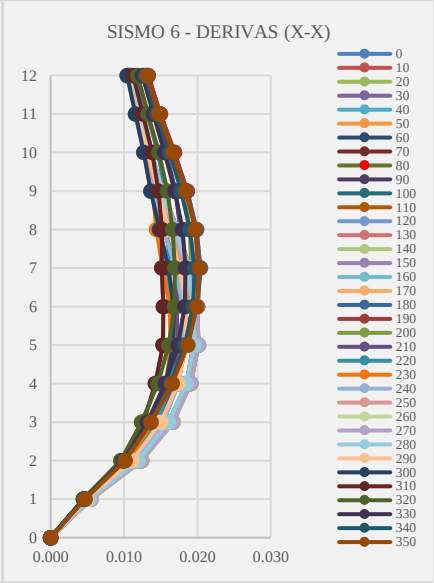

SISMO 3 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030 0.040
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

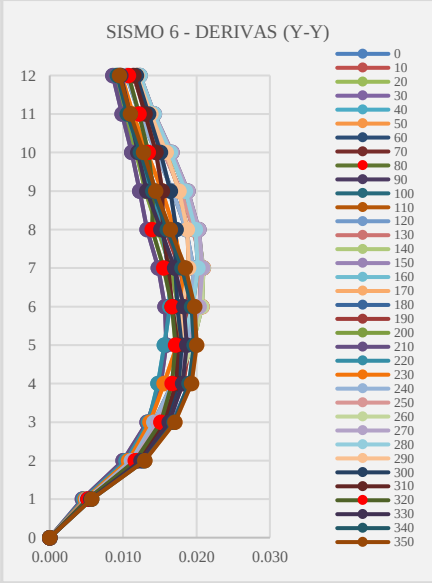

SISMO 4 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

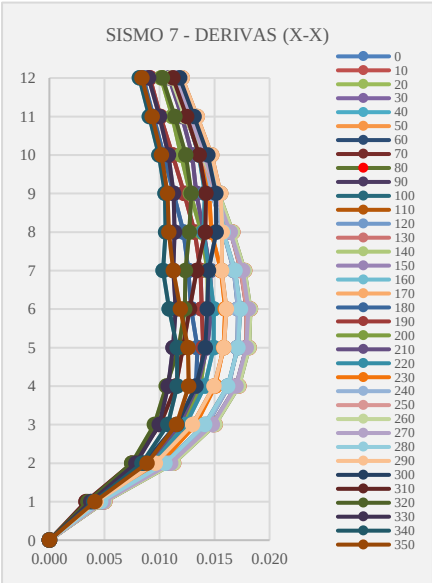

SISMO 4 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

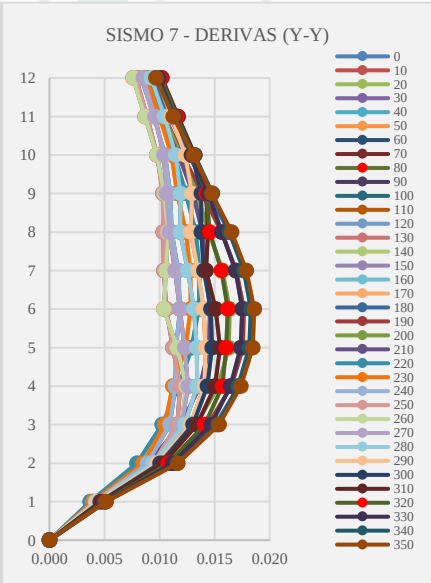

SISMO 5 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

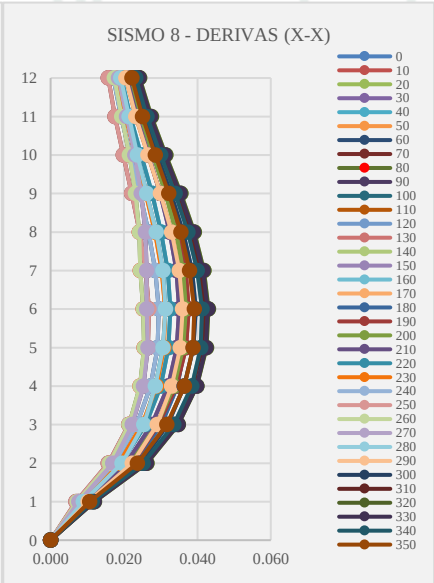

SISMO 5 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

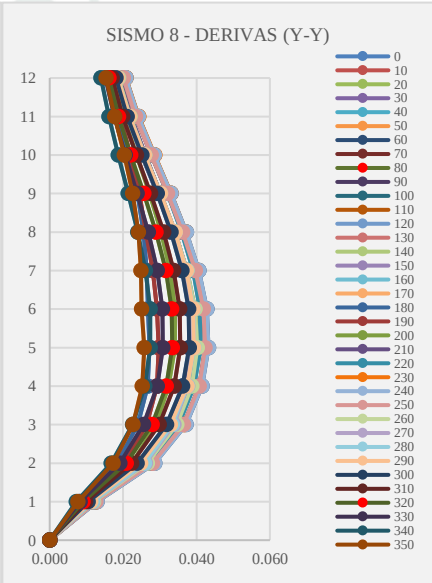

SISMO 6 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (X-X)
0.000 0.020 0.040 0.060
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

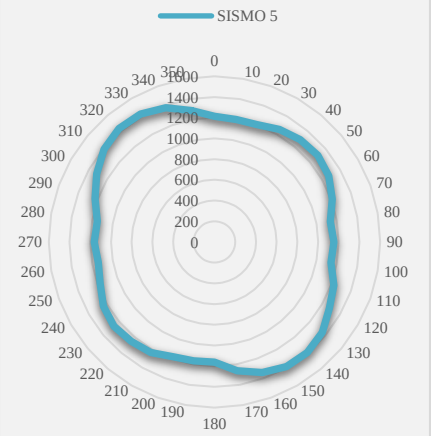

SISMO 8 - DERIVAS (Y-Y)
0.000 0.020 0.040 0.060
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

MODELO 7

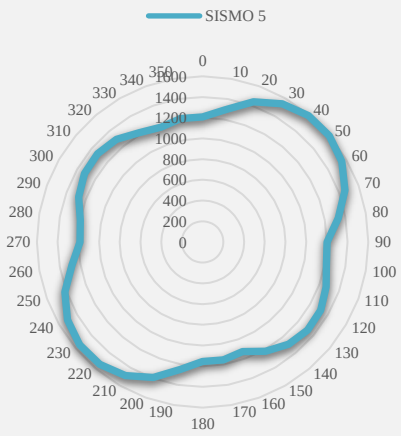
Para 4 pisos:



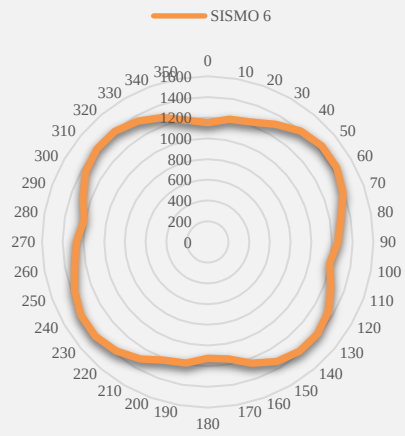
CORTANTE BASAL (X-X)



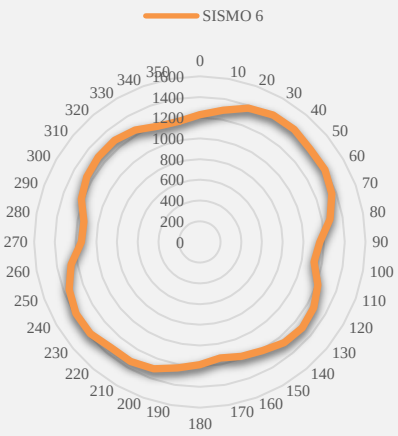
CORTANTE BASAL (Y-Y)



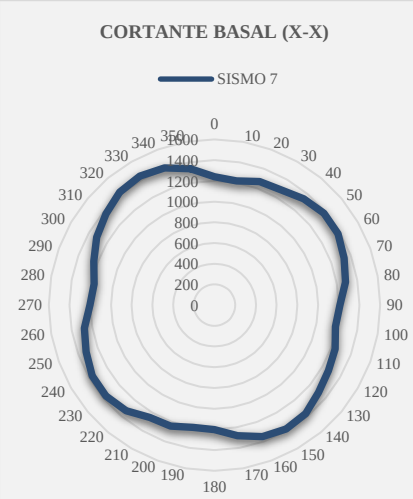
CORTANTE BASAL (X-X)



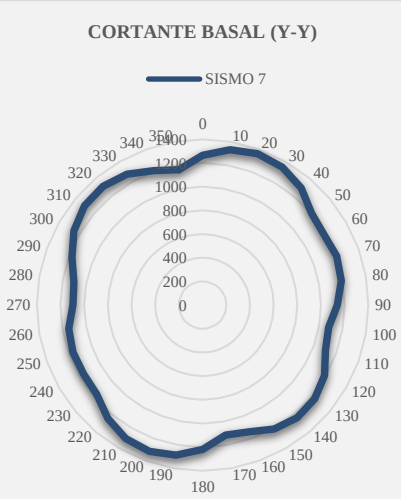
CORTANTE BASAL (Y-Y)



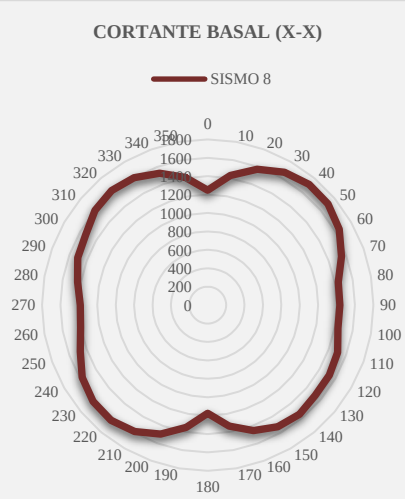
CORTANTE BASAL (X-X)



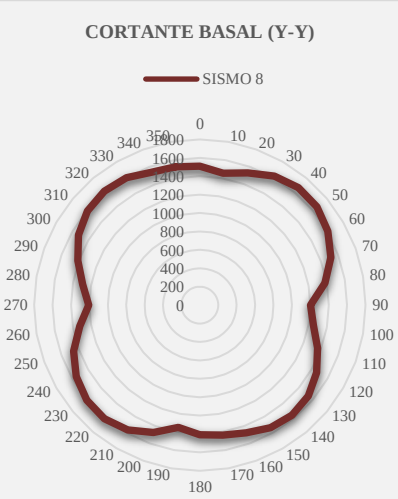
CORTANTE BASAL (Y-Y)



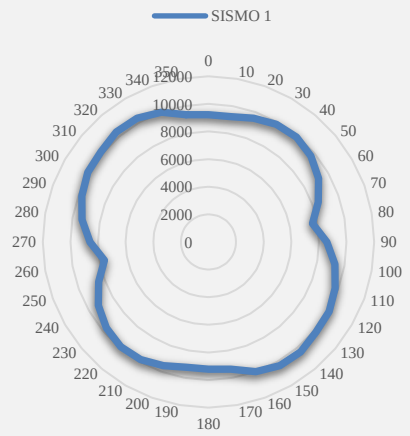
CORTANTE BASAL (X-X)



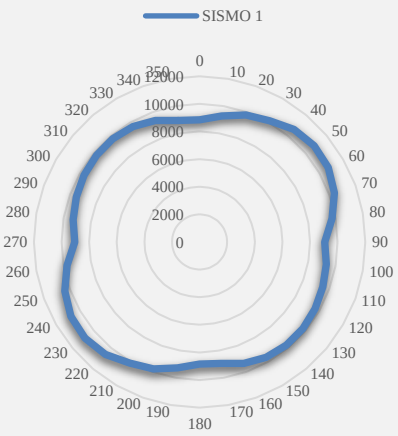
CORTANTE BASAL (Y-Y)



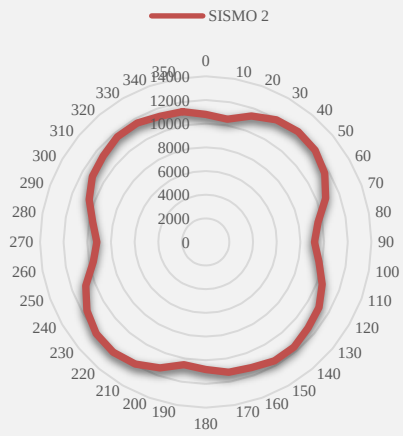
MOMENTO ENVOLVENTE (X-X)



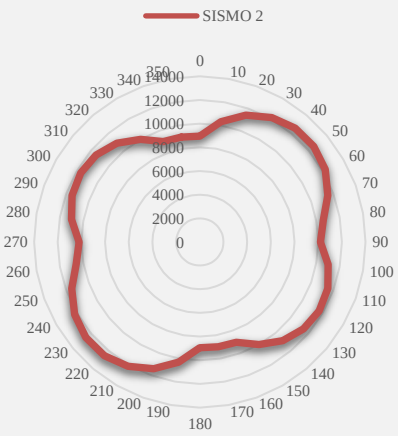
MOMENTO ENVOLVENTE (Y-Y)



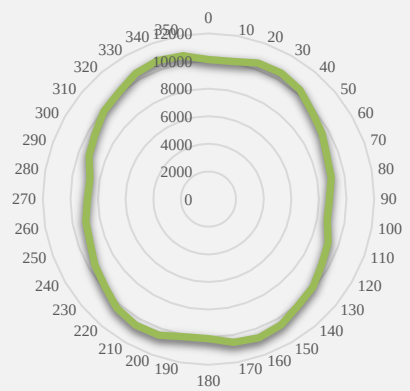
MOMENTO ENVOLVENTE (X-X)



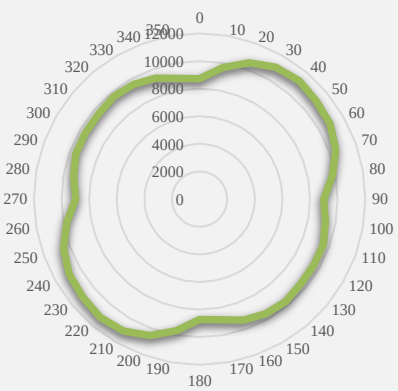
MOMENTO ENVOLVENTE (Y-Y)



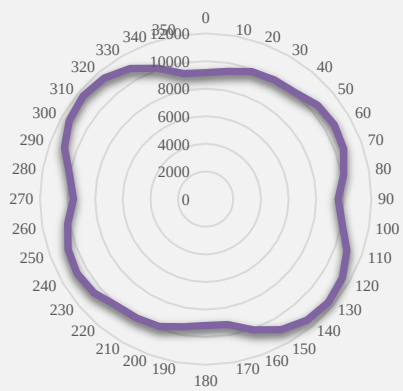
MOMENTO ENVOLVENTE (X-X)



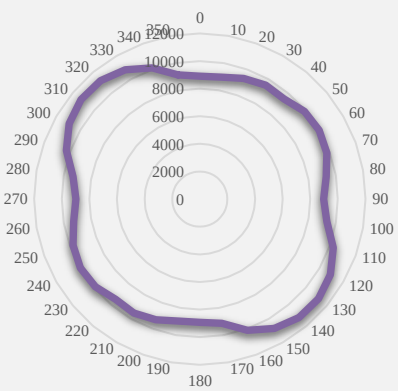
MOMENTO ENVOLVENTE (Y-Y)



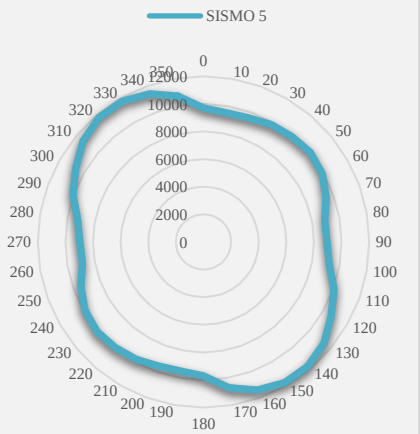
MOMENTO ENVOLVENTE (X-X)



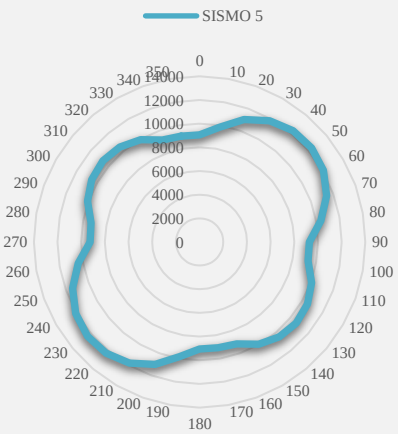
MOMENTO ENVOLVENTE (Y-Y)



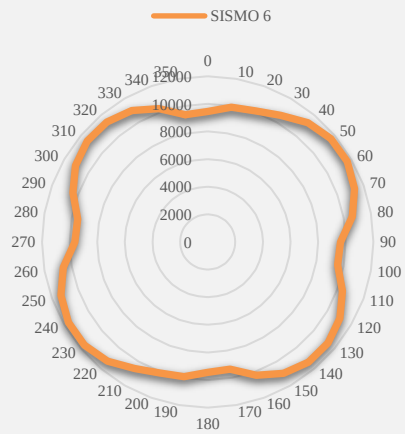
MOMENTO ENVOLVENTE (X-X)



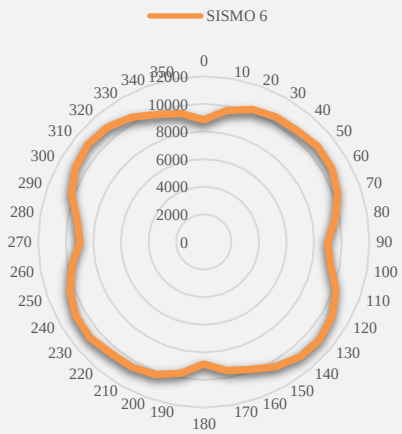
MOMENTO ENVOLVENTE (Y-Y)



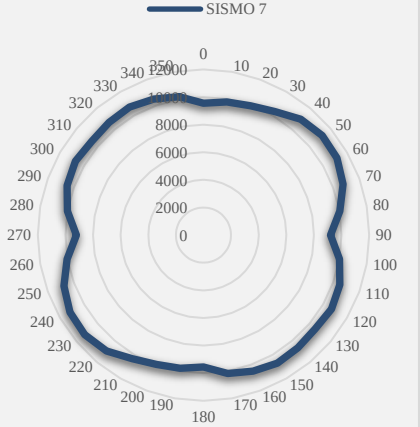
MOMENTO ENVOLVENTE (X-X)



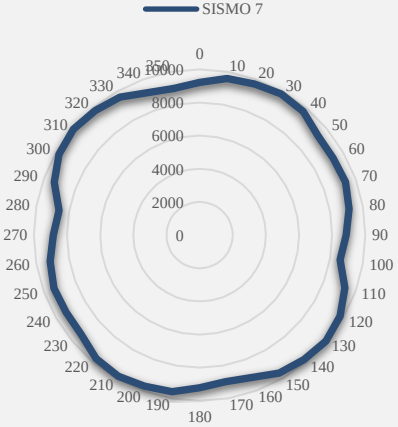
MOMENTO ENVOLVENTE (Y-Y)



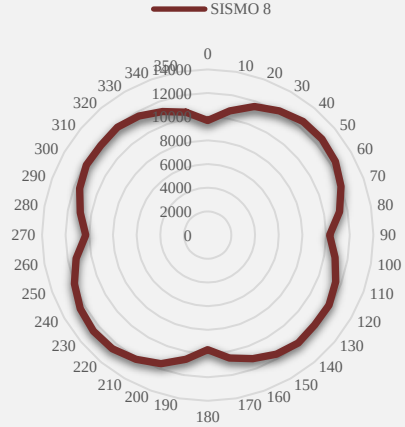
MOMENTO ENVOLVENTE (X-X)



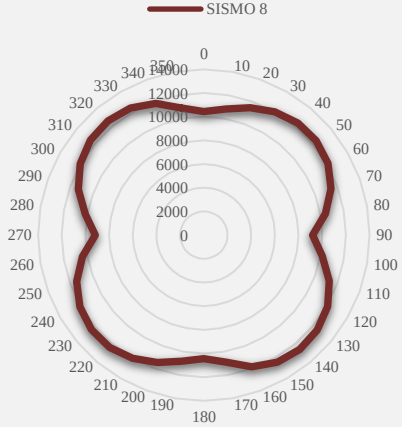
MOMENTO ENVOLVENTE (Y-Y)

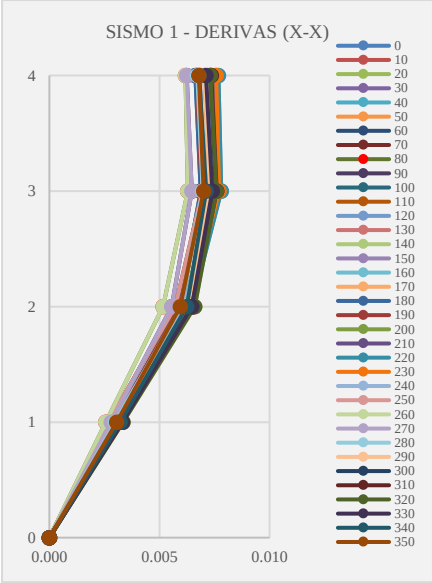


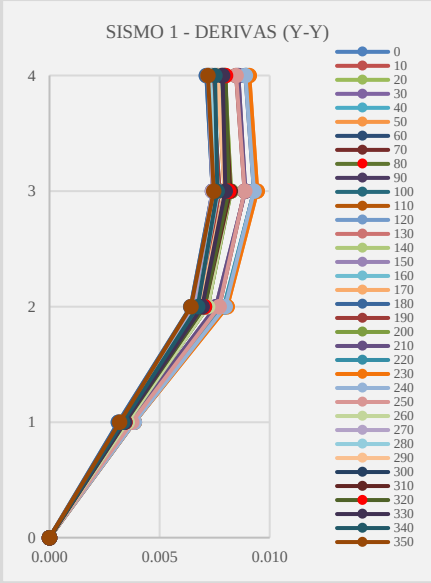
MOMENTO ENVOLVENTE (X-X)

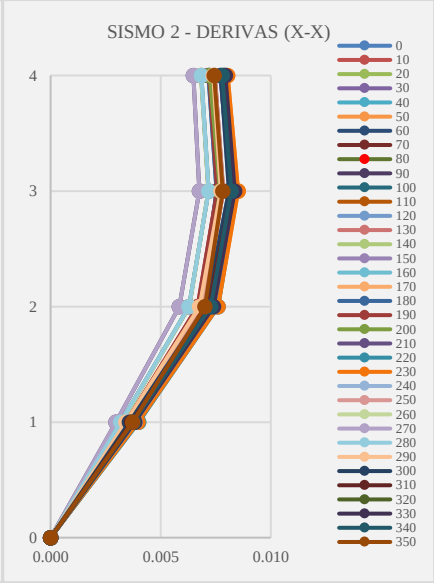


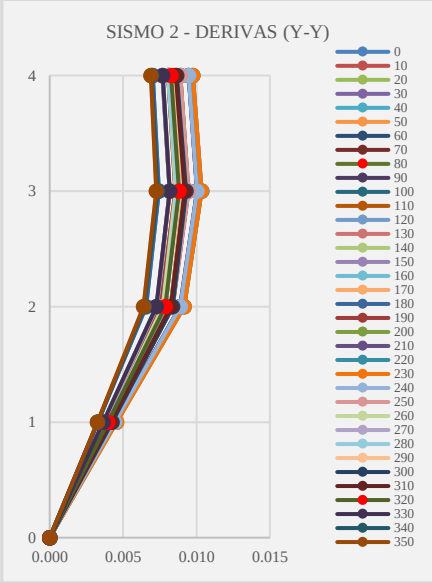
MOMENTO ENVOLVENTE (Y-Y)

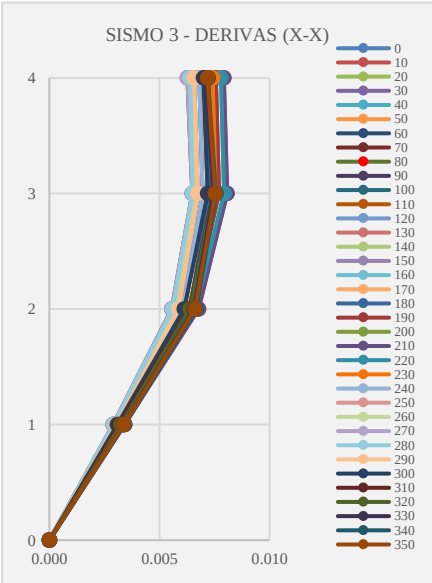


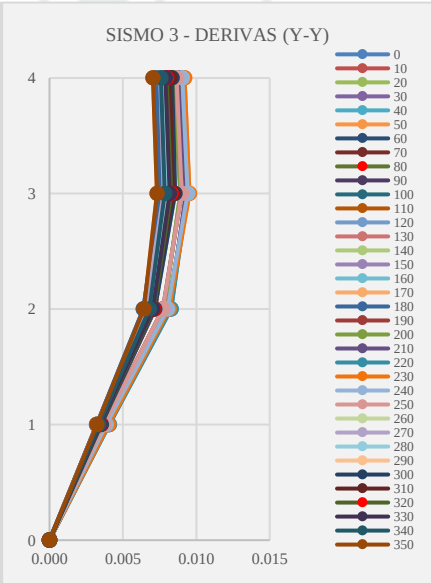

SISMO 1 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

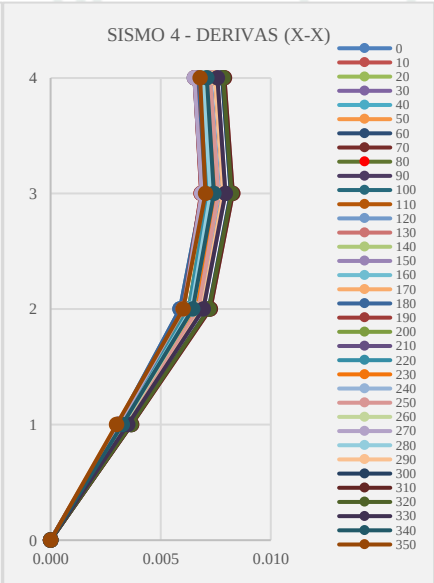

SISMO 1 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

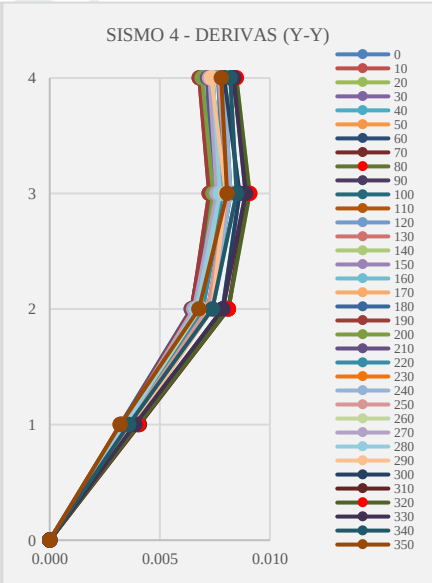

SISMO 2 - DERIVAS (X-X)
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3
4
0.000
0.005
0.010
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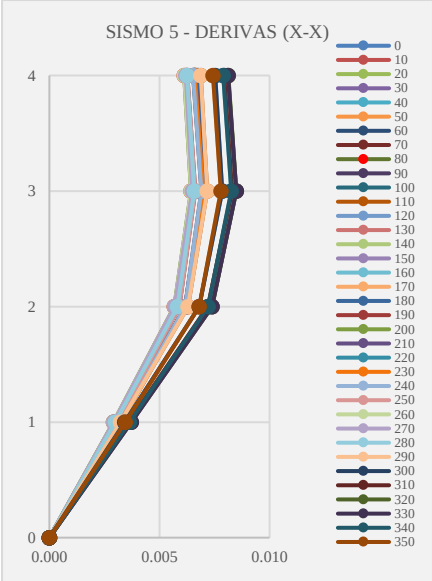

SISMO 2 - DERIVAS (Y-Y)
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1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

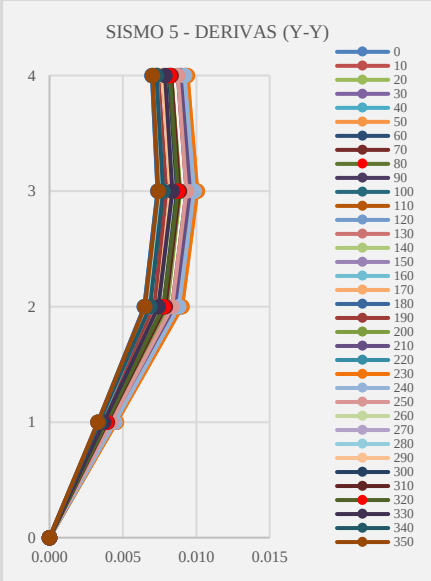

SISMO 3 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
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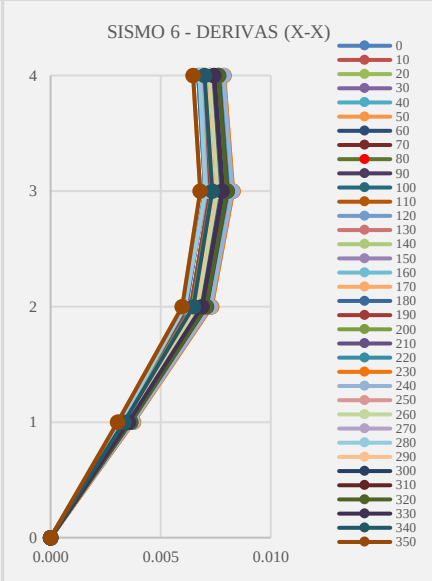

SISMO 3 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0.015
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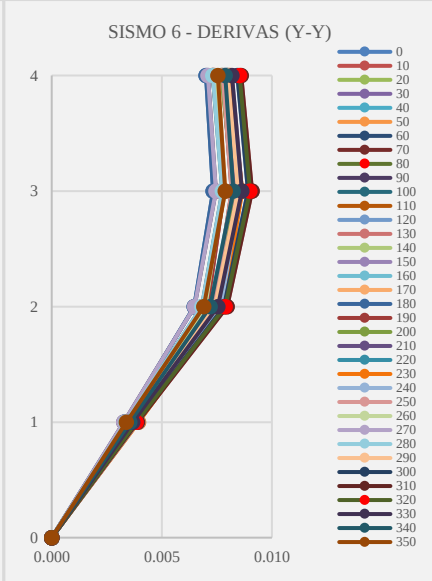

SISMO 4 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
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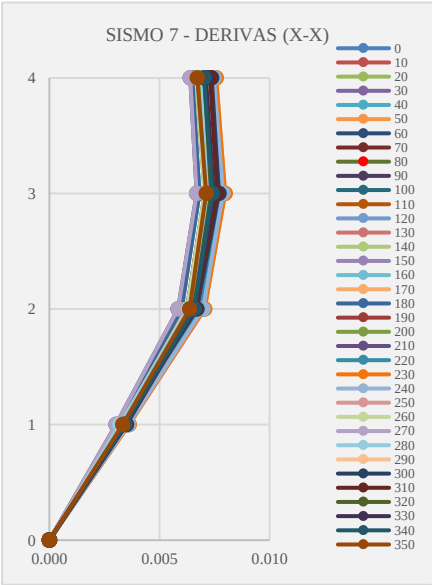

SISMO 4 - DERIVAS (Y-Y)
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1
2
3
4
0.000
0.005
0.010
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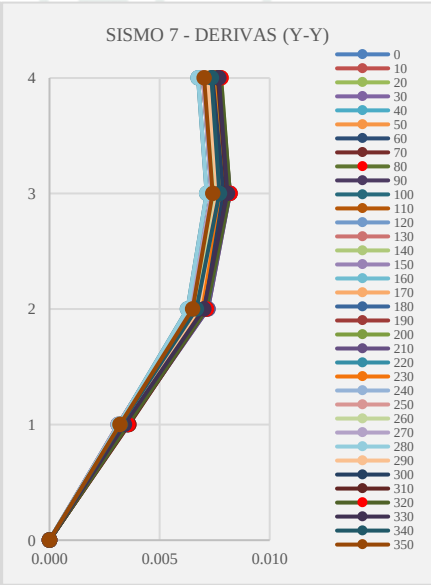

SISMO 5 - DERIVAS (X-X)
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2
3
4
0.000
0.005
0.010
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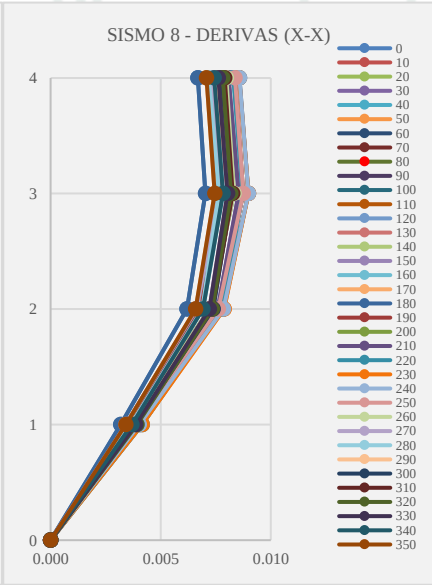

SISMO 5 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

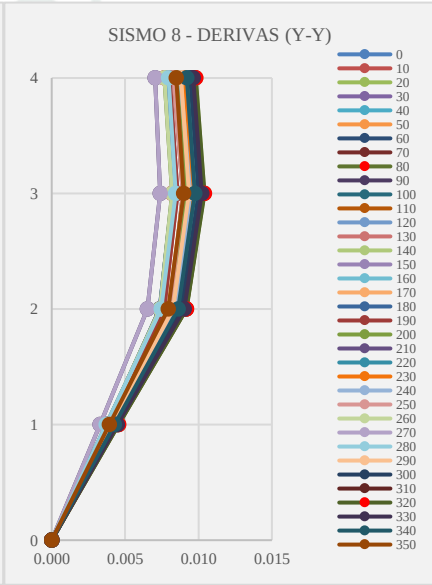

SISMO 6 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

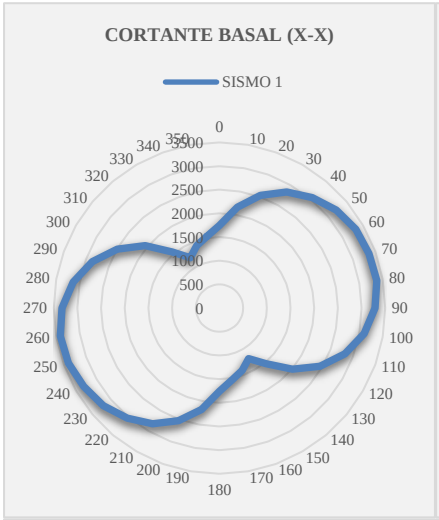

SISMO 7 - DERIVAS (X-X)
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4
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0.005
0.010
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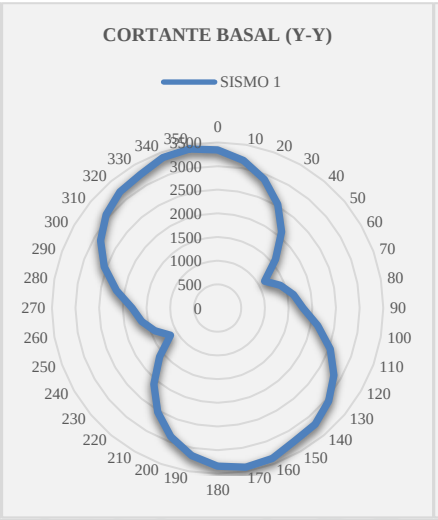

SISMO 7 - DERIVAS (Y-Y)
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0.005
0.010
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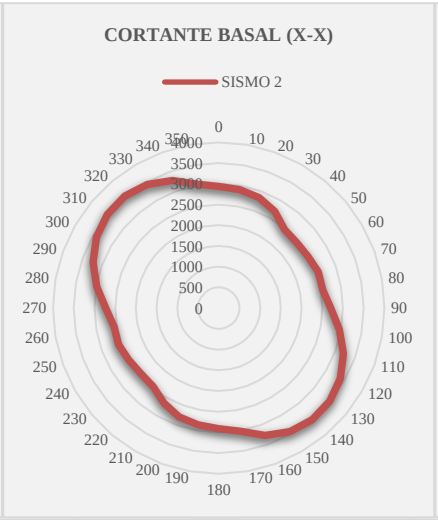

SISMO 8 - DERIVAS (X-X)
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0.005
0.010
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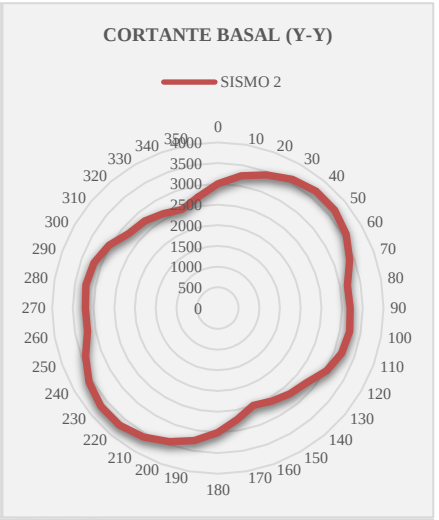

SISMO 8 - DERIVAS (Y-Y)
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1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

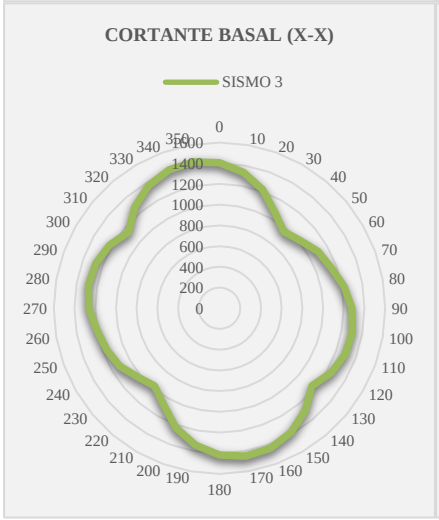
Para 8 pisos:

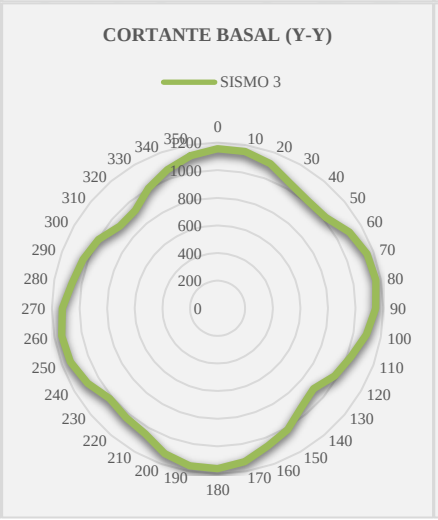

CORTANTE BASAL (X-X)
SISMO 1

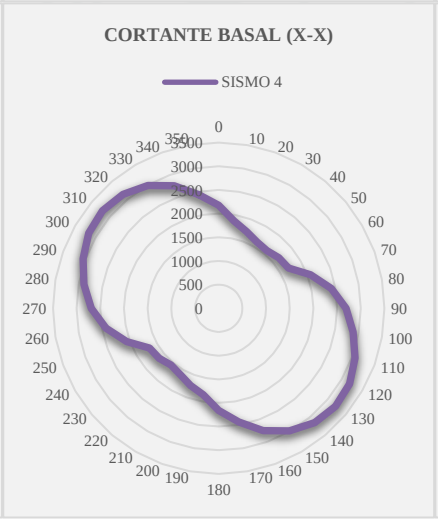

CORTANTE BASAL (Y-Y)
SISMO 1

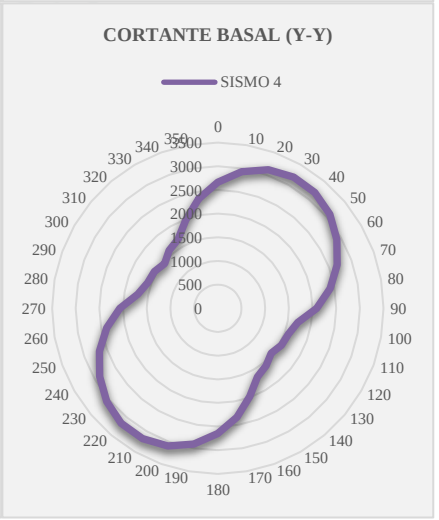

CORTANTE BASAL (X-X)
SISMO 2


CORTANTE BASAL (Y-Y)
SISMO 2

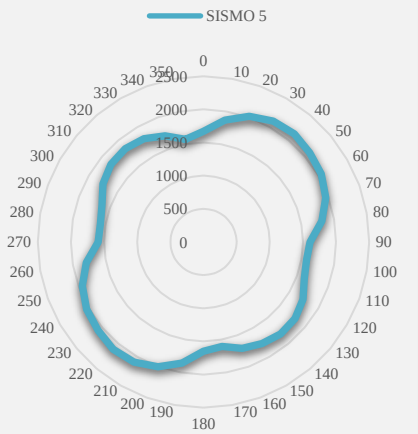

CORTANTE BASAL (X-X)
SISMO 3


CORTANTE BASAL (Y-Y)
SISMO 3

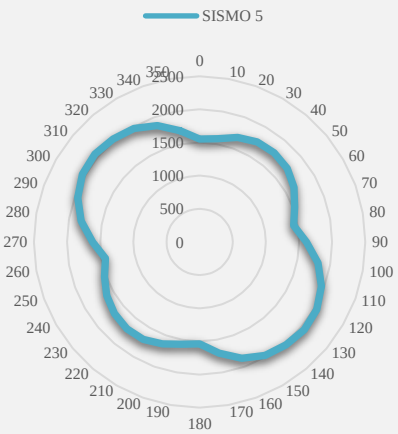

CORTANTE BASAL (X-X)
SISMO 4


CORTANTE BASAL (Y-Y)
SISMO 4

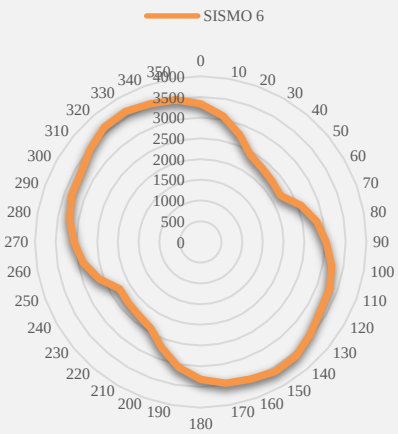
CORTANTE BASAL (X-X)



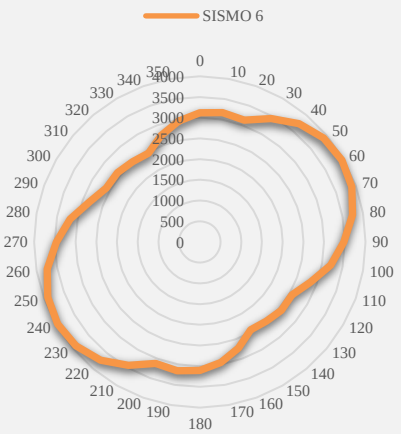
CORTANTE BASAL (Y-Y)



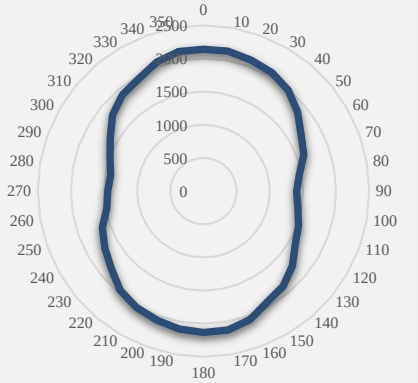
CORTANTE BASAL (X-X)



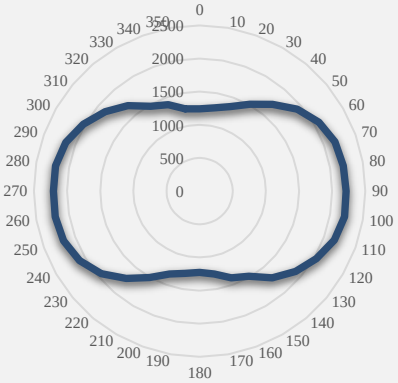
CORTANTE BASAL (Y-Y)



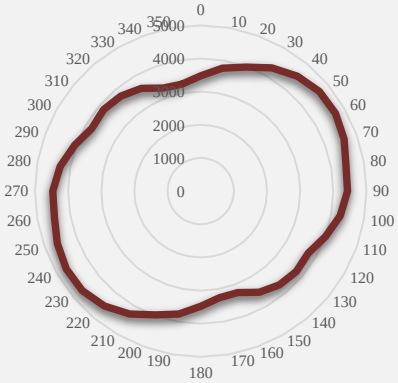
CORTANTE BASAL (X-X)



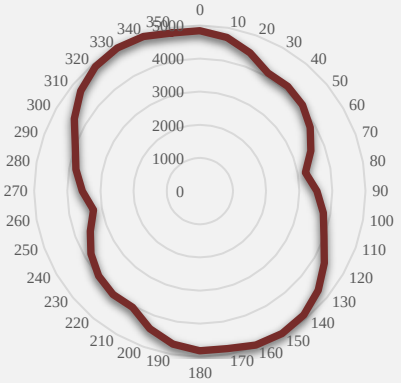
CORTANTE BASAL (Y-Y)

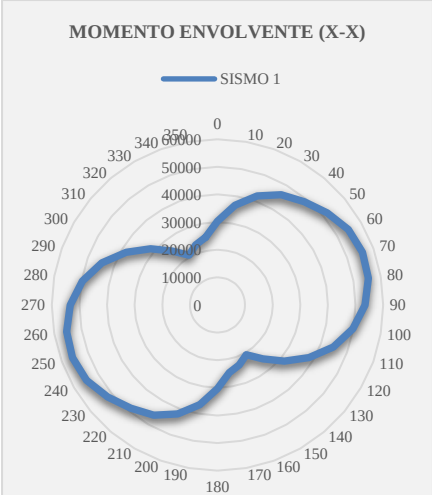


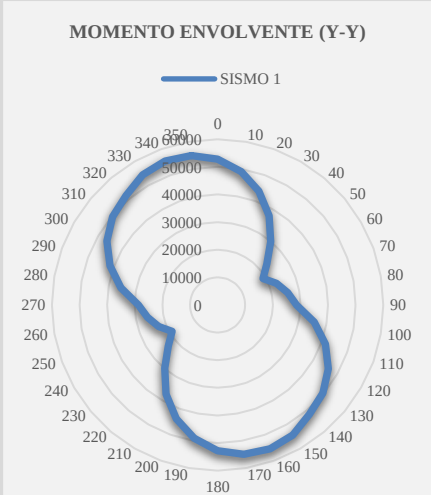
CORTANTE BASAL (X-X)

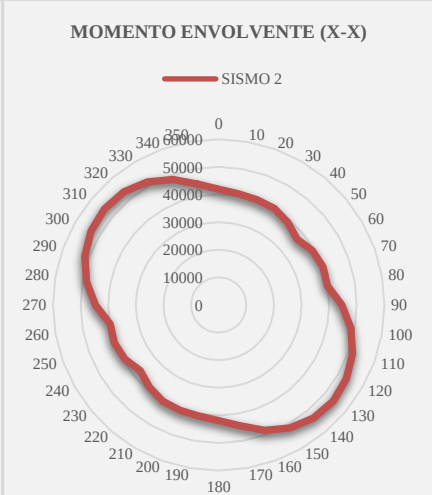


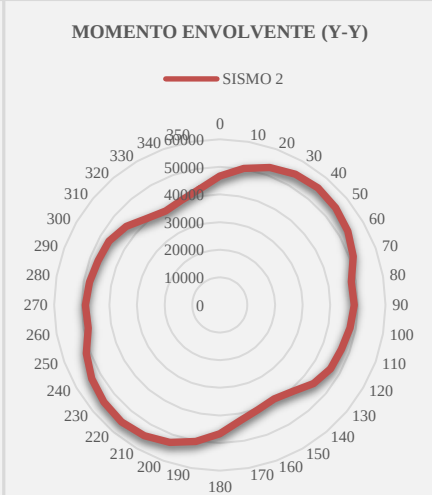
CORTANTE BASAL (Y-Y)

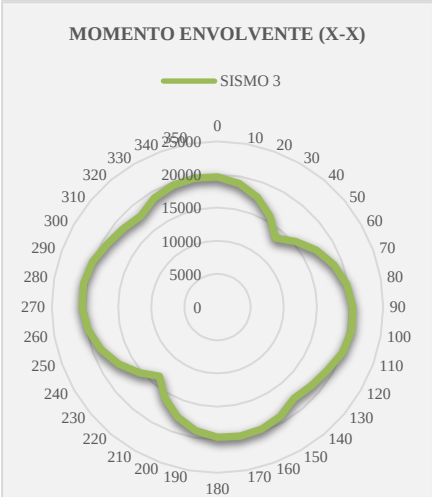


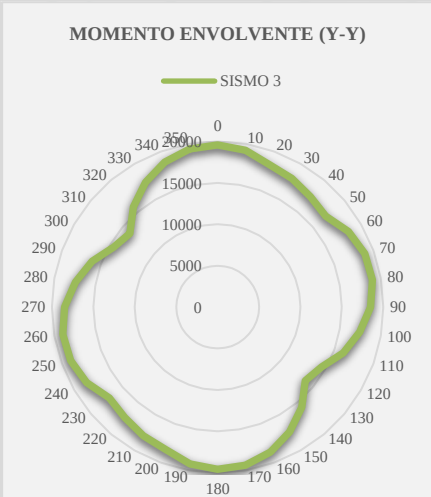

MOMENTO ENVOLVENTE (X-X)
SISMO 1

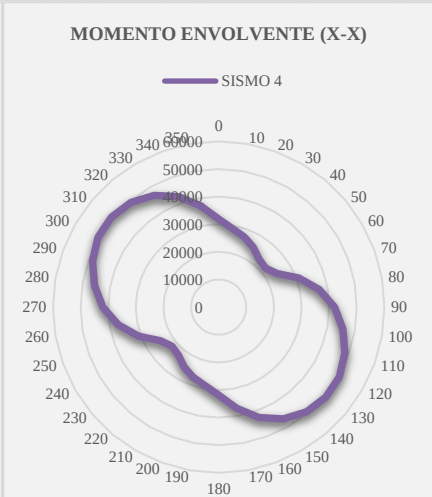

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

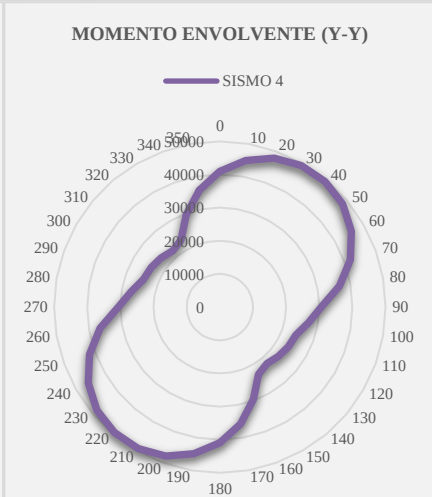

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

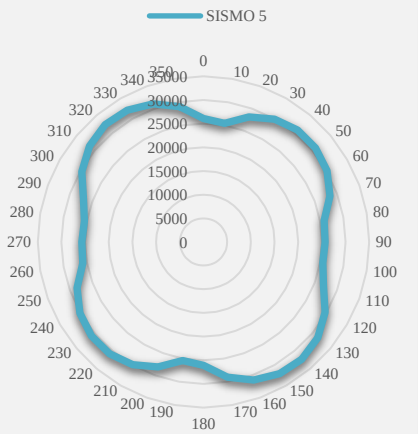

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

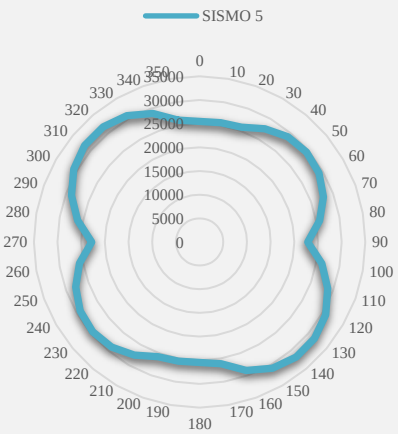

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

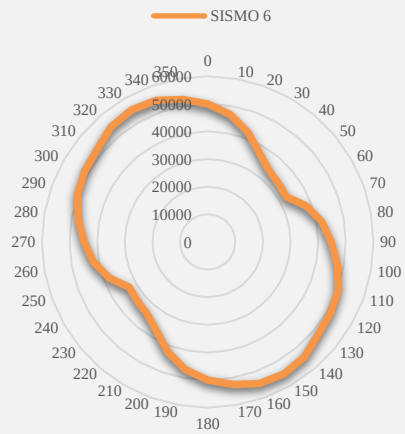
MOMENTO ENVOLVENTE (X-X)



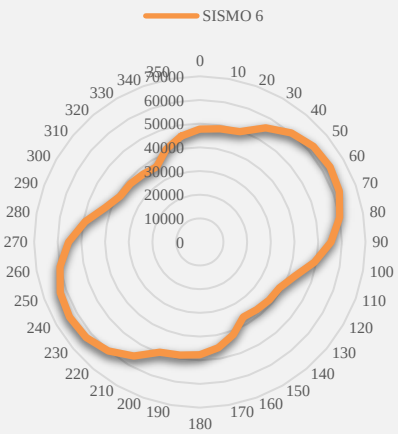
MOMENTO ENVOLVENTE (Y-Y)



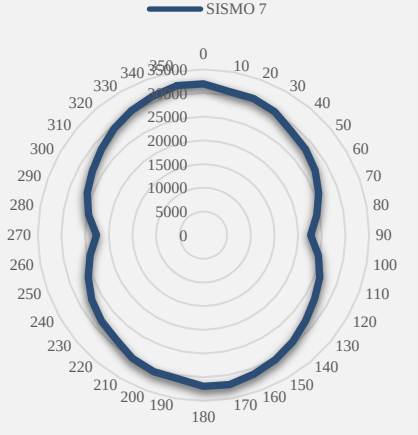
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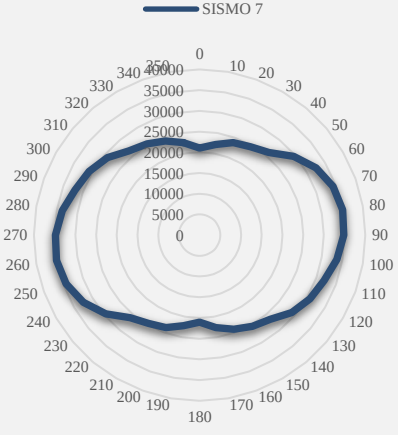
MOMENTO ENVOLVENTE (Y-Y)



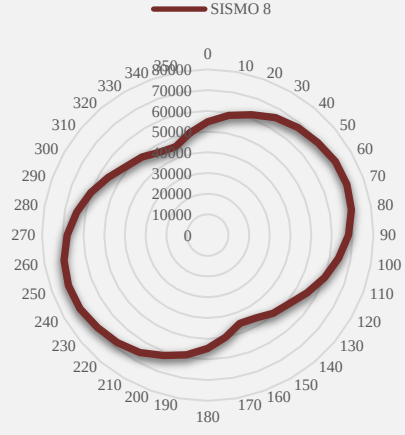
MOMENTO ENVOLVENTE (X-X)



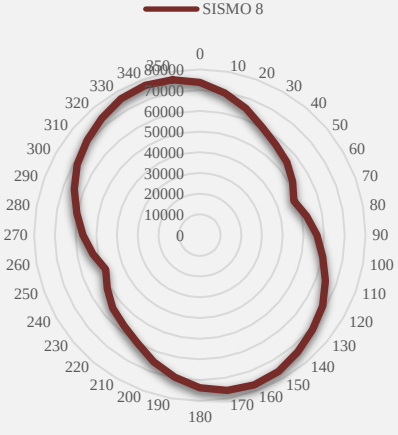
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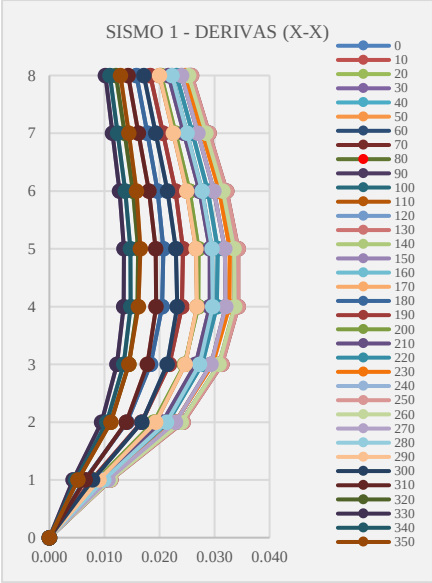


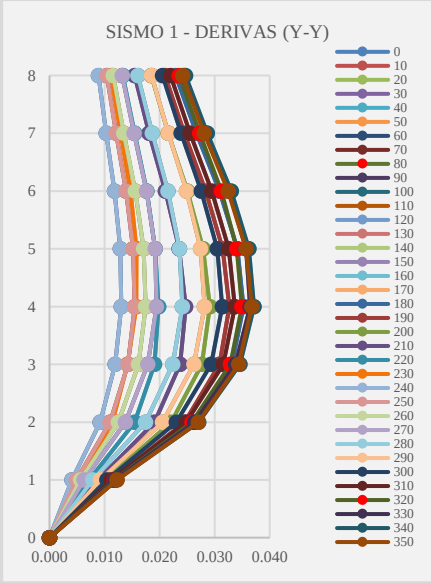
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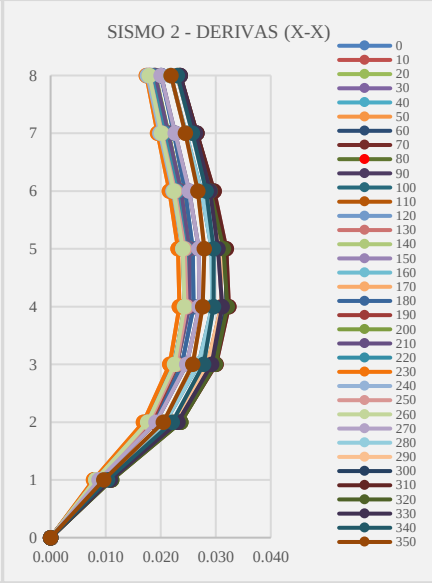


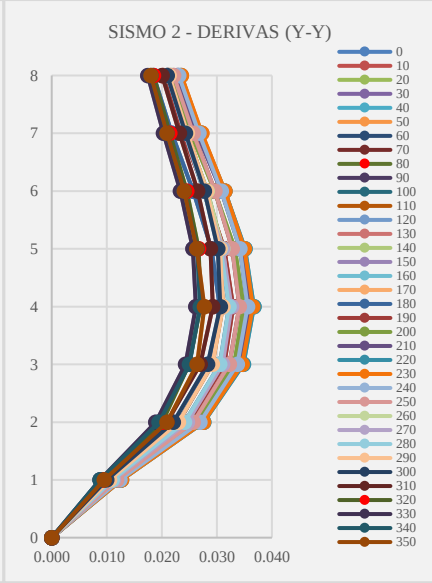
MOMENTO ENVOLVENTE (Y-Y)

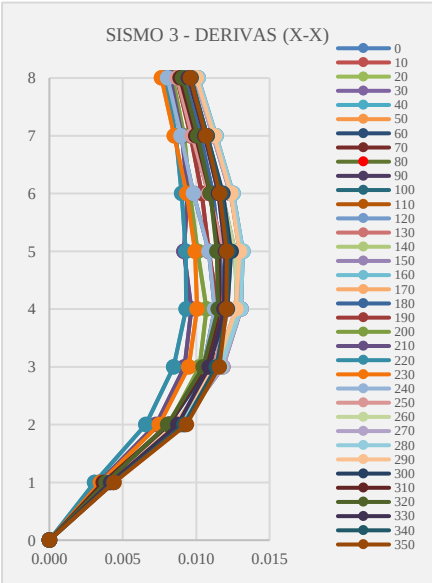


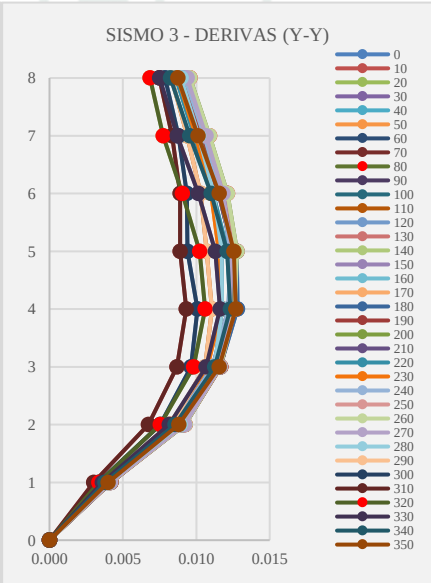

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

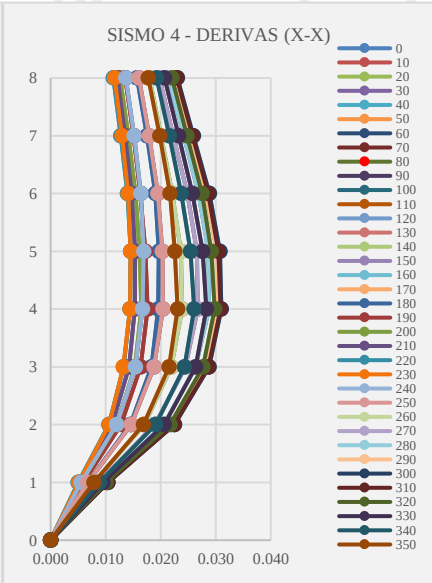

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

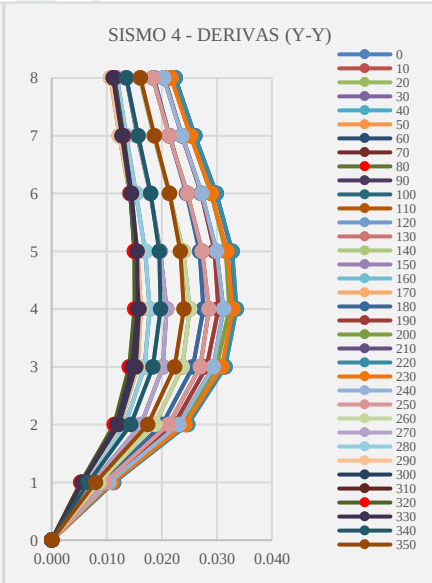

SISMO 2 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030 0.040
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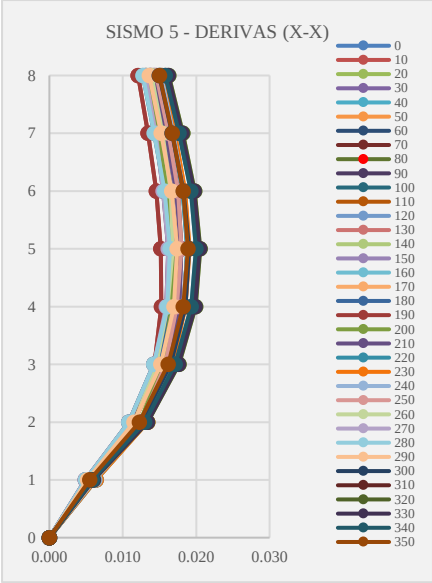

SISMO 2 - DERIVAS (Y-Y)
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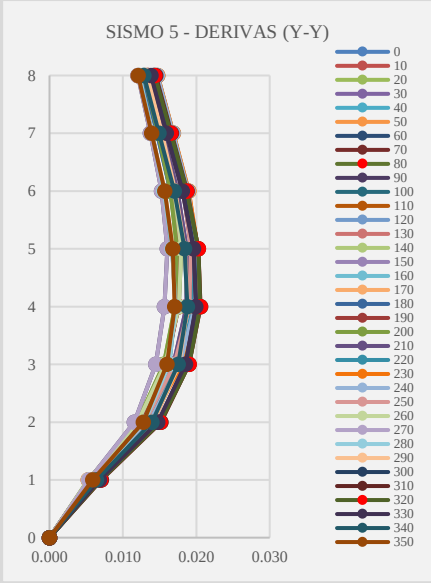

SISMO 3 - DERIVAS (X-X)
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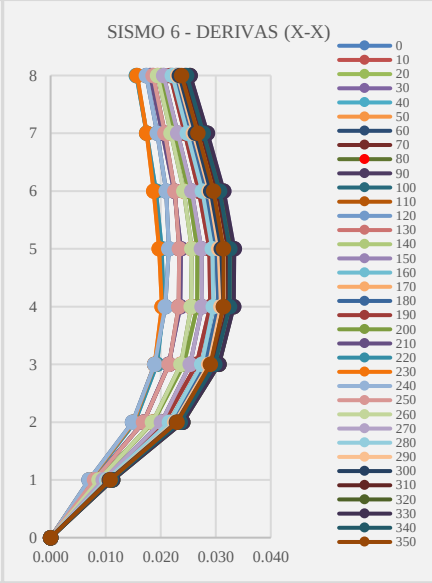

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

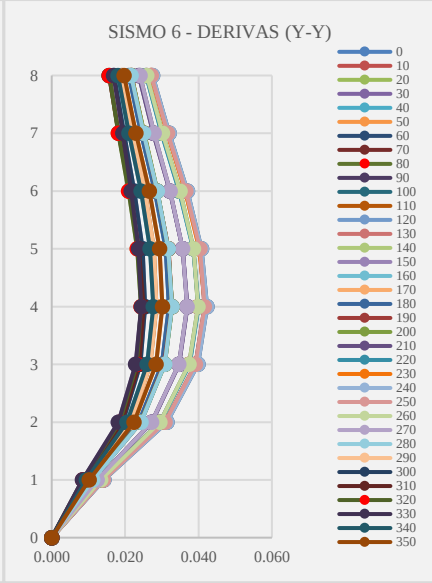

SISMO 4 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

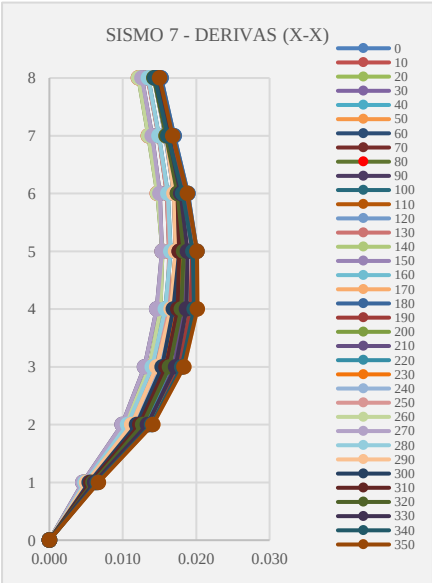

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

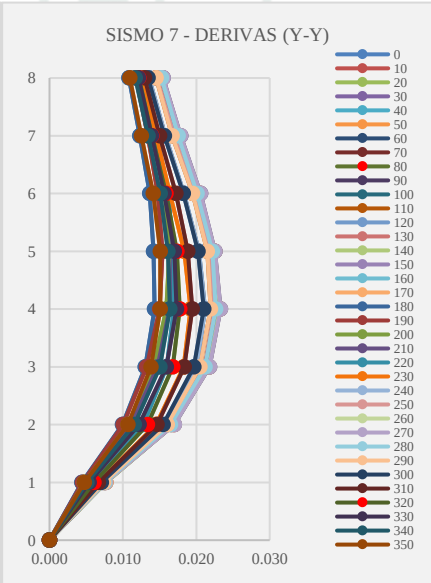

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

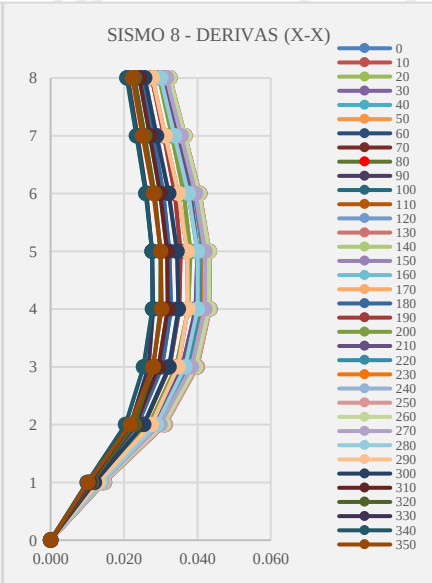

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

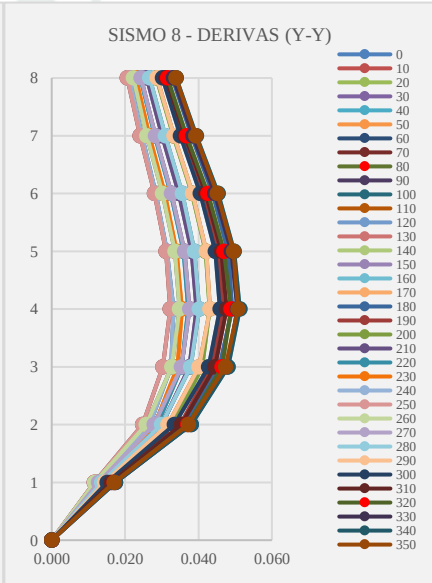

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

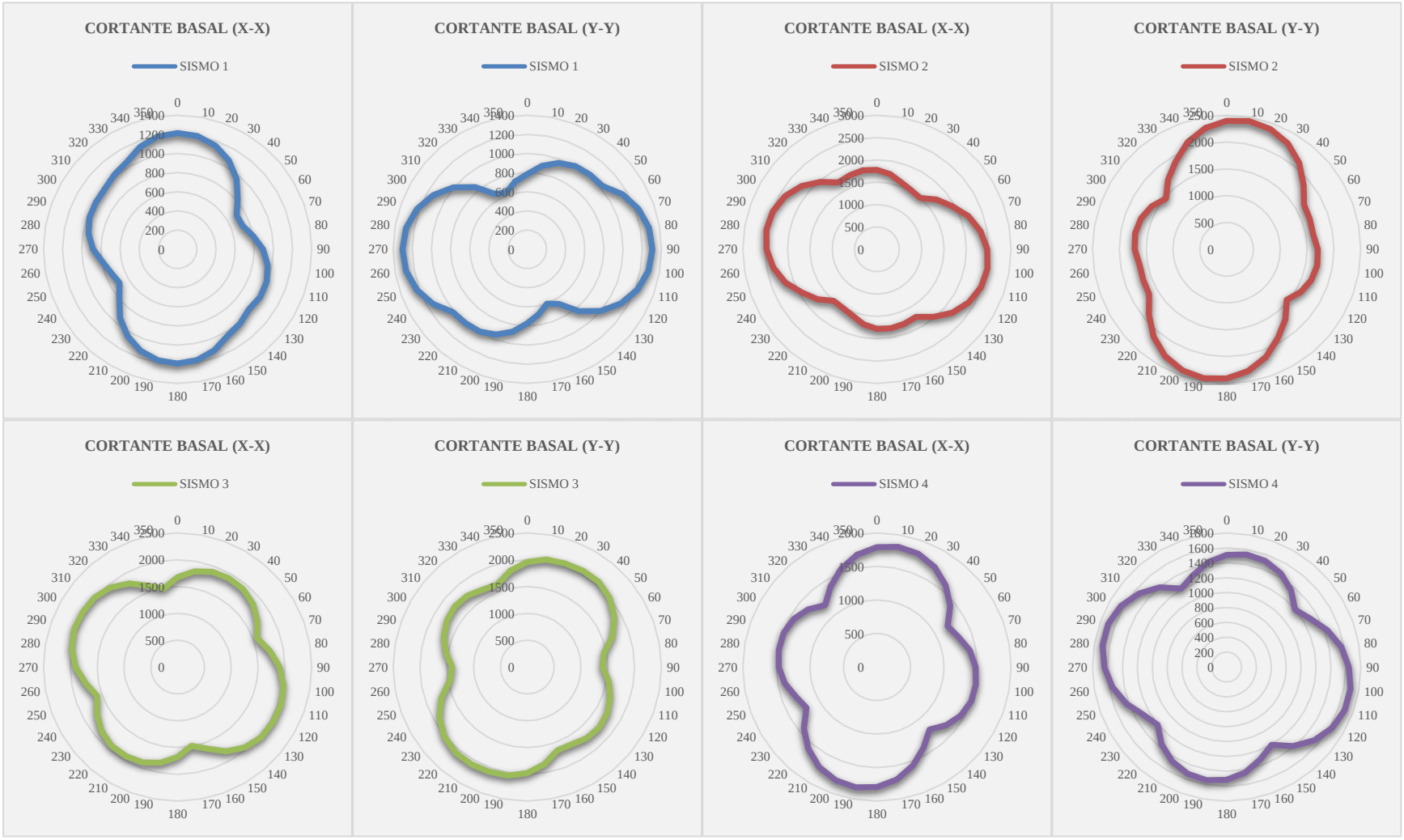

SISMO 7 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

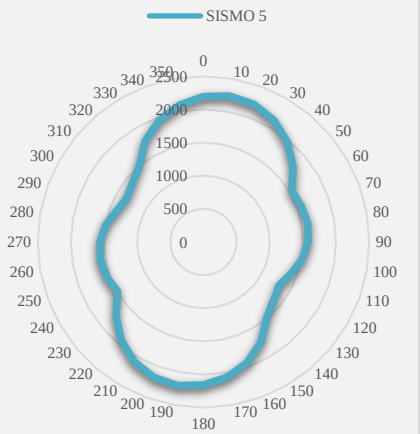

SISMO 8 - DERIVAS (X-X)
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0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

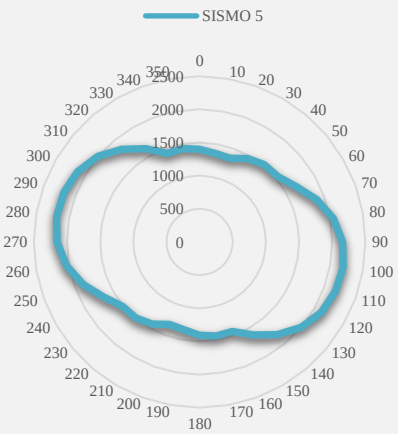
Para 12 pisos:



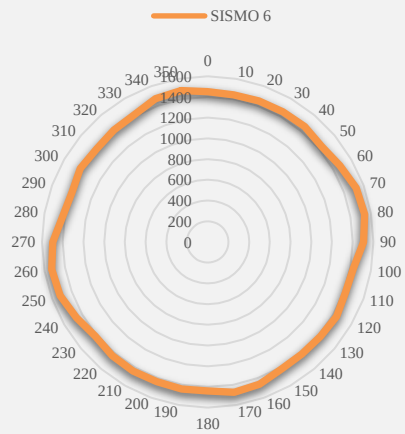
CORTANTE BASAL (X-X)



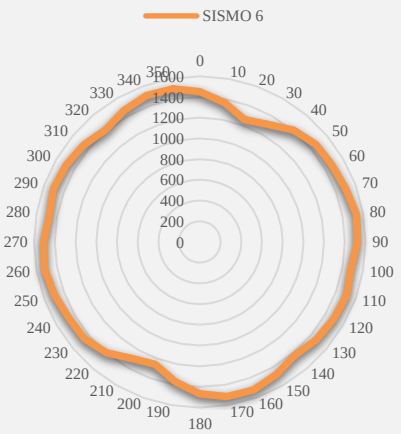
CORTANTE BASAL (Y-Y)



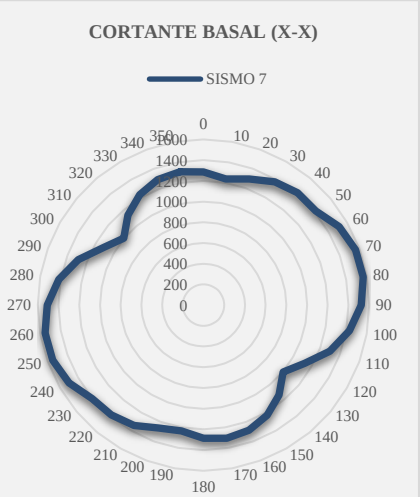
CORTANTE BASAL (X-X)



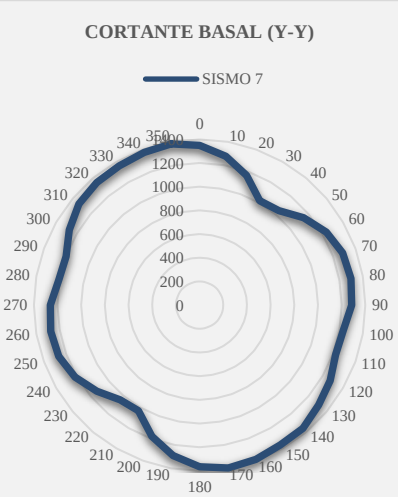
CORTANTE BASAL (Y-Y)



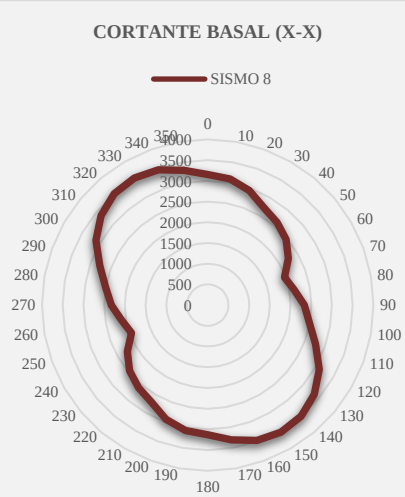
CORTANTE BASAL (X-X)



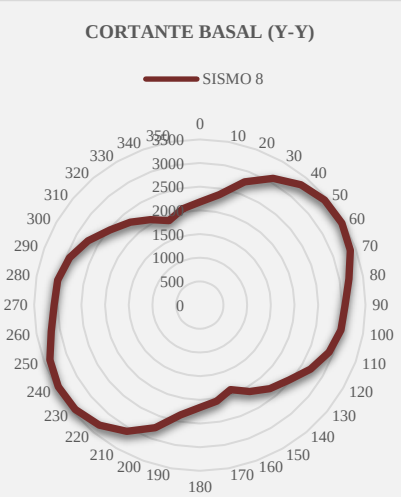
CORTANTE BASAL (Y-Y)

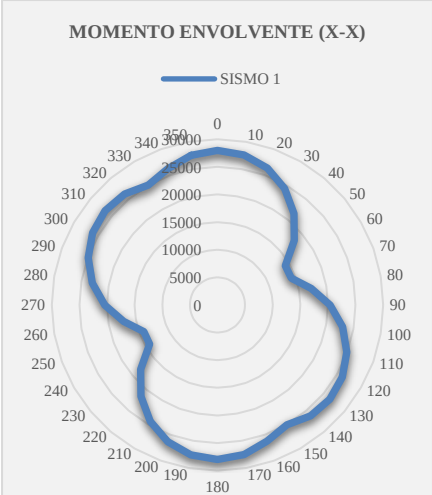


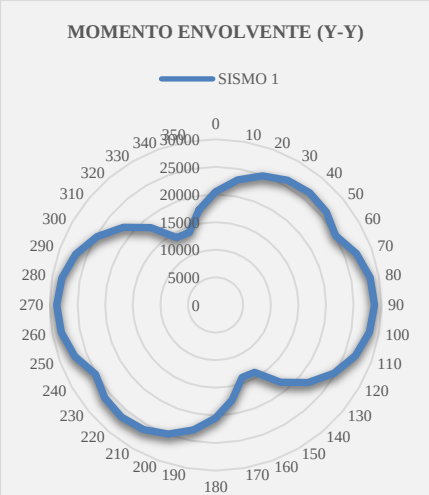
CORTANTE BASAL (X-X)

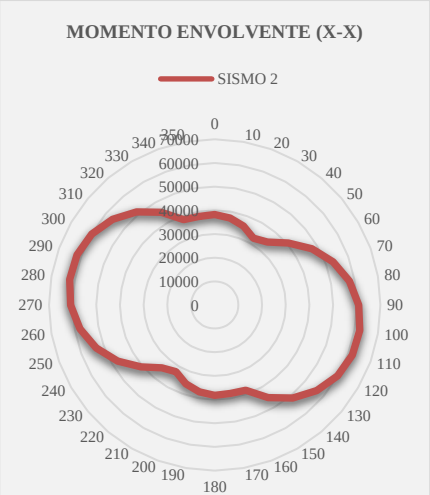


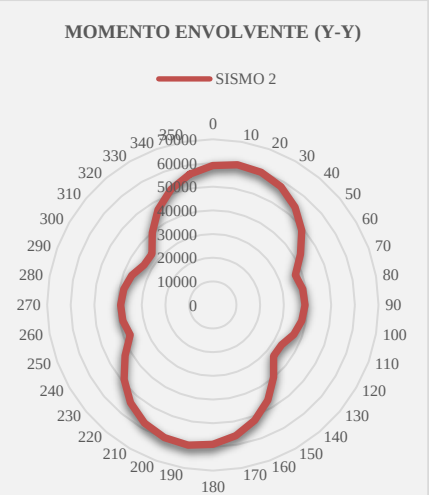
CORTANTE BASAL (Y-Y)

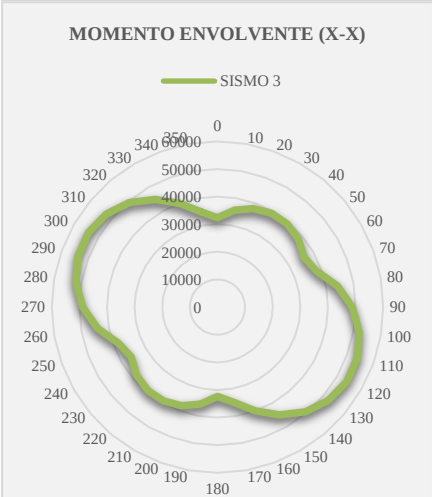


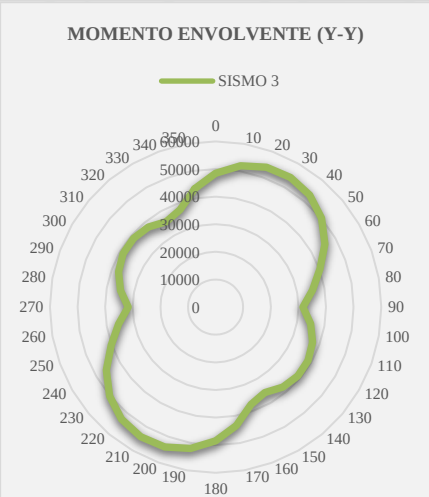

MOMENTO ENVOLVENTE (X-X)
SISMO 1

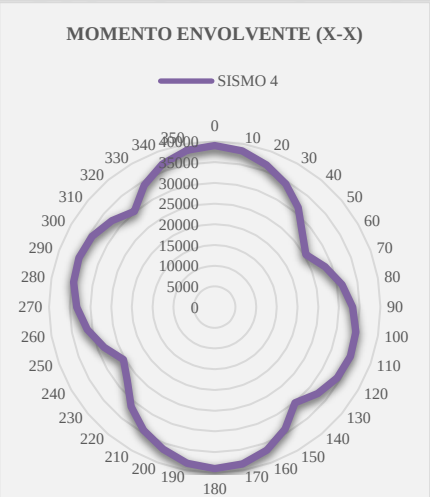

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

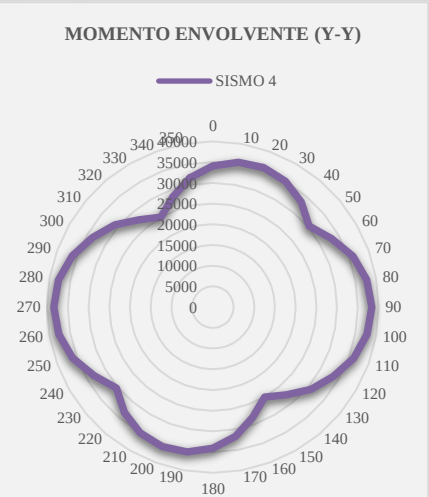

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

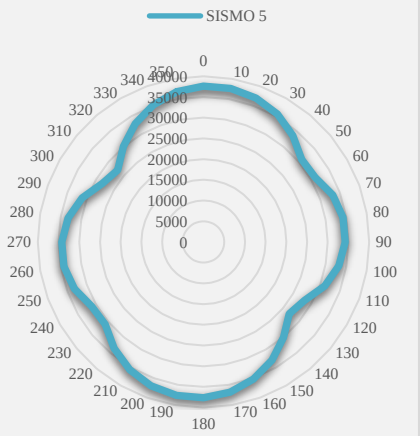

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

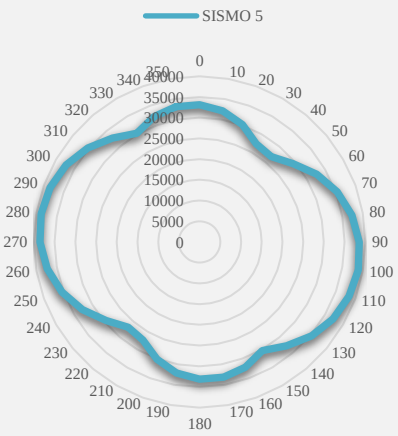

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

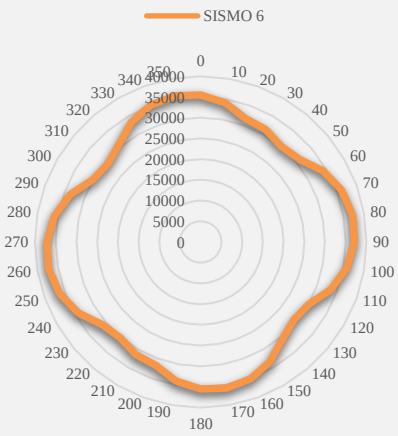
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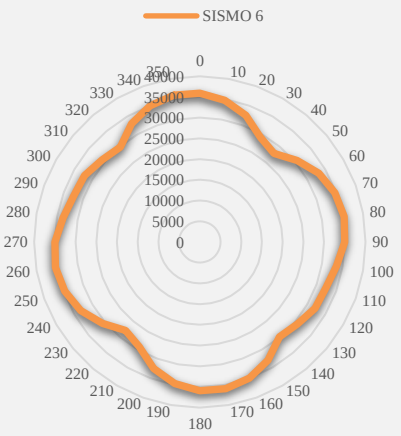
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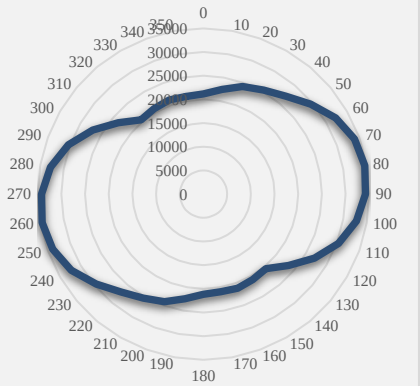
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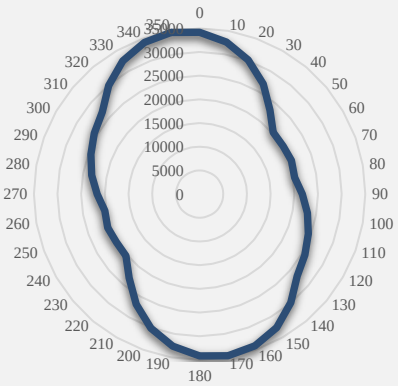
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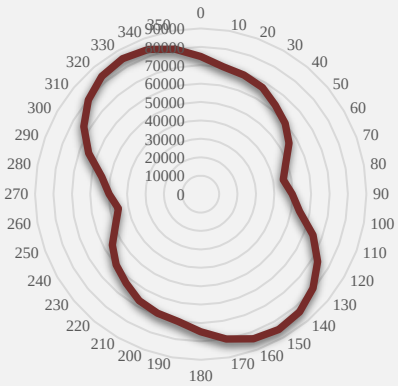
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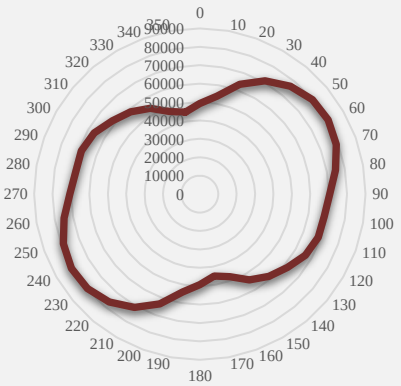
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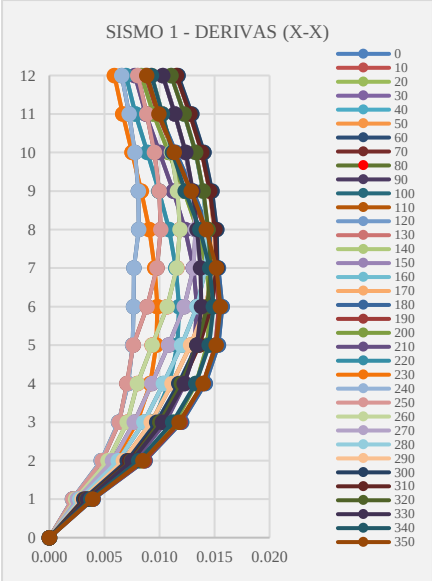


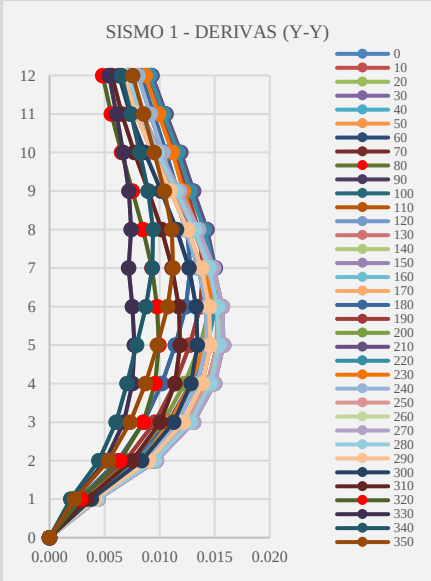
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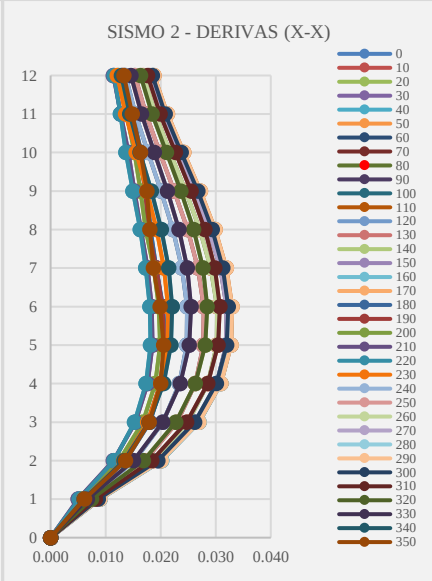


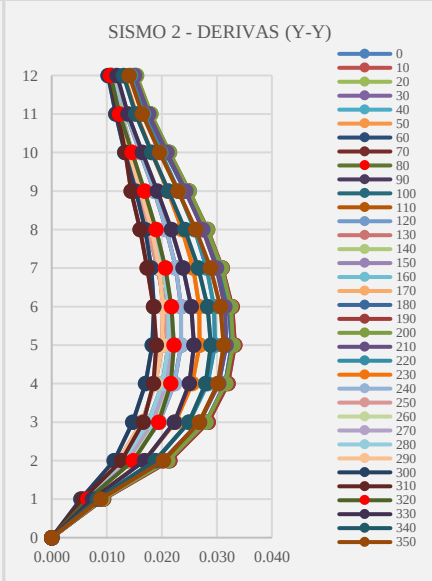
MOMENTO ENVOLVENTE (Y-Y)

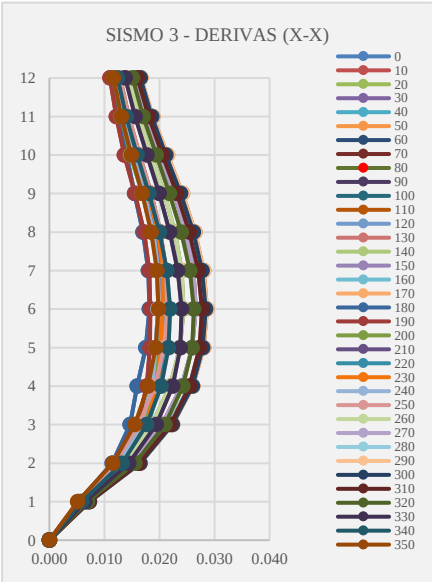


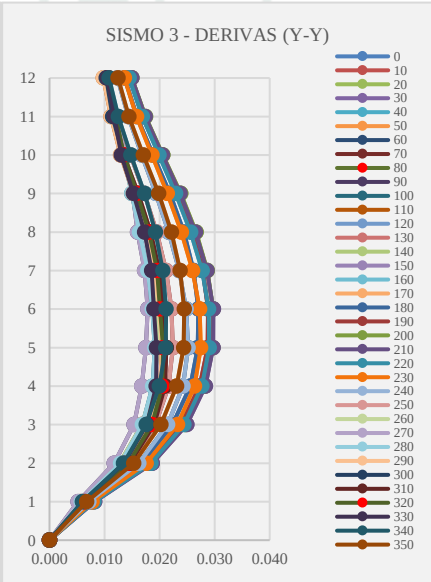

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

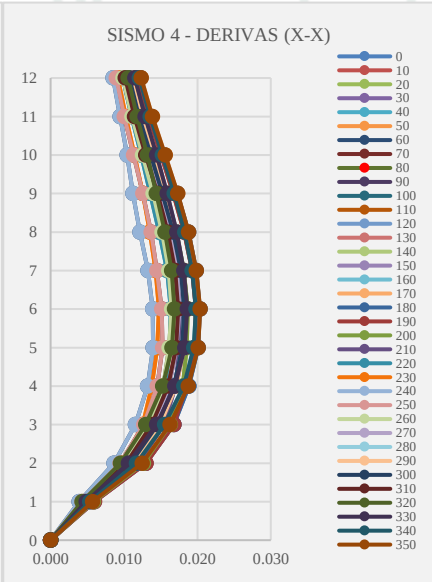

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

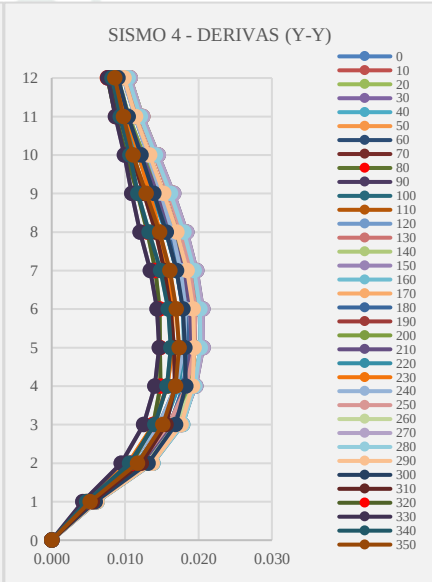

SISMO 2 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

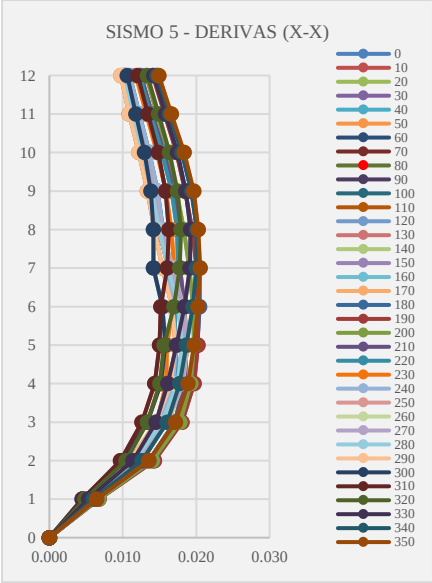

SISMO 2 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

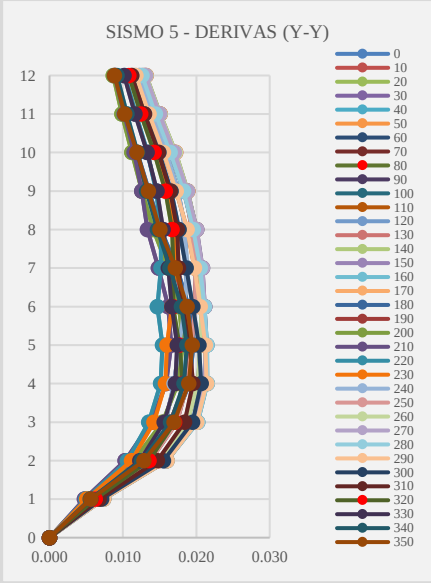

SISMO 3 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

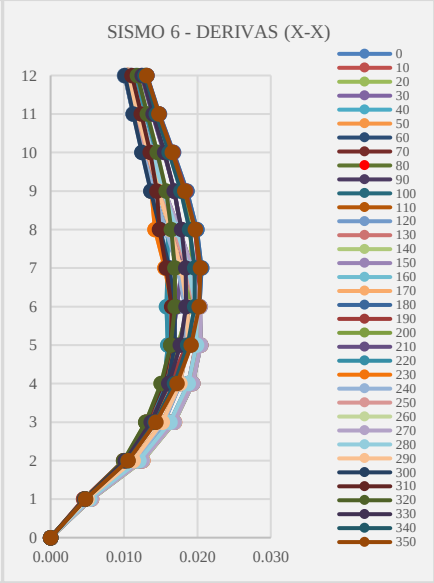

SISMO 3 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

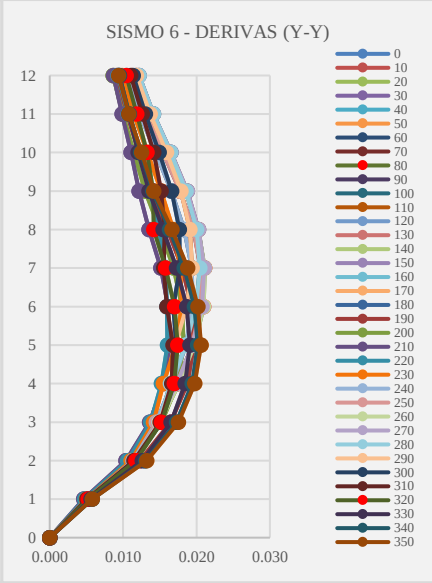

SISMO 4 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

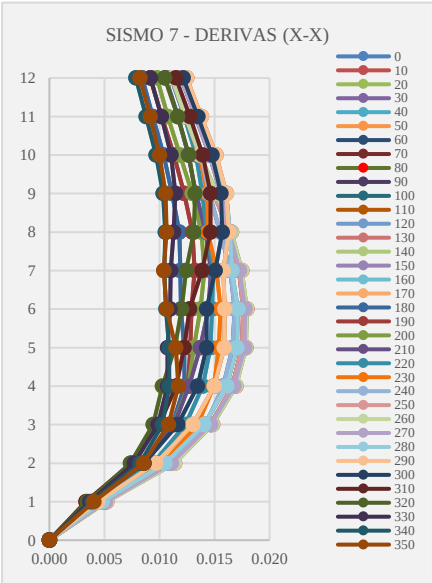

SISMO 4 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

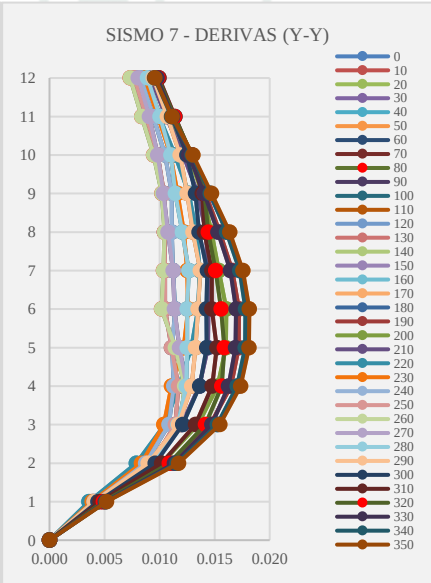

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

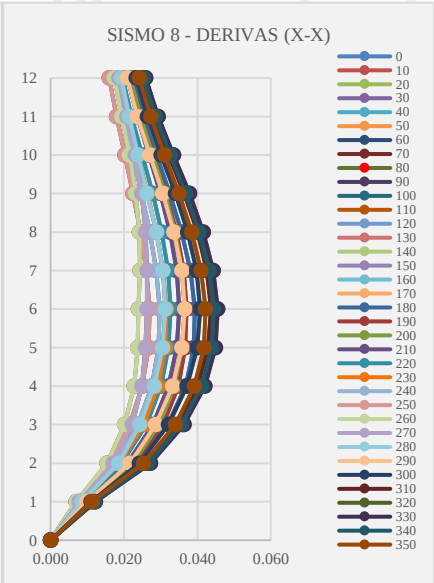

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

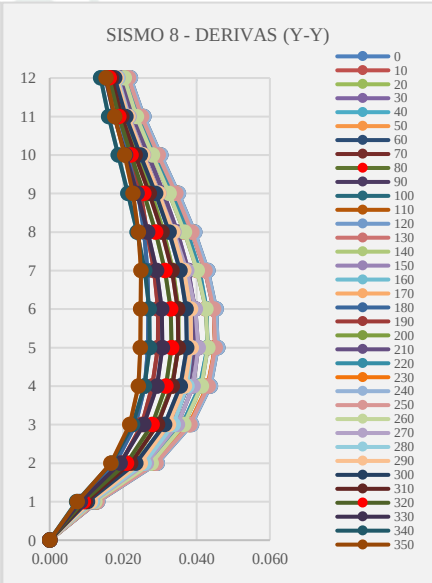

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

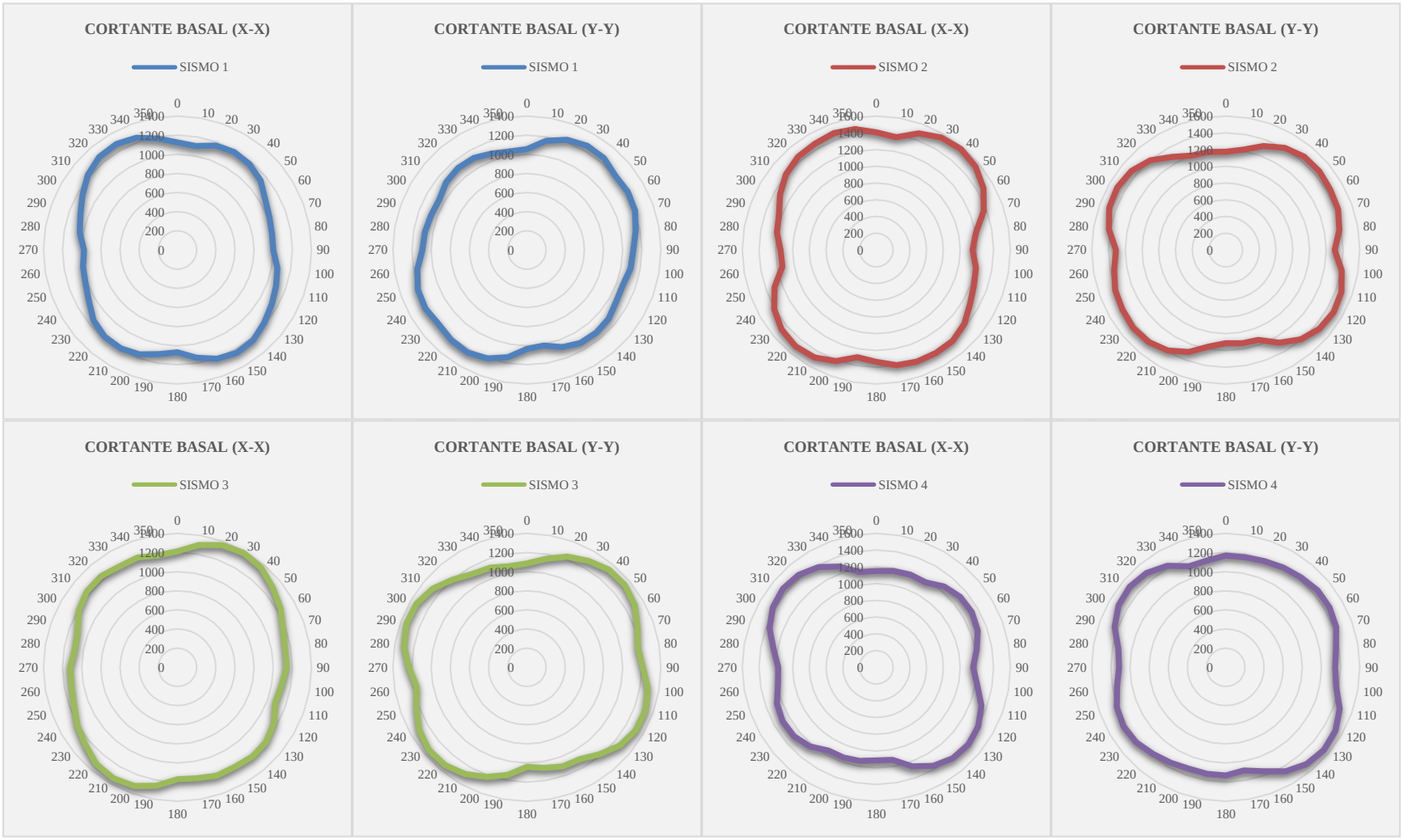

SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

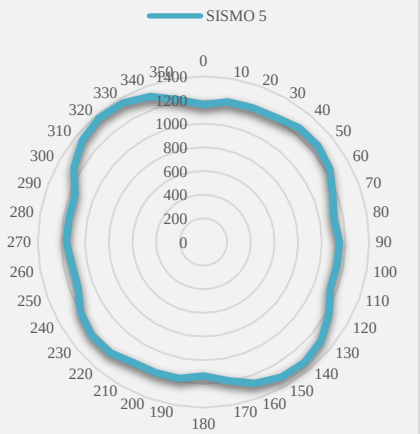

SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

MODELO 8

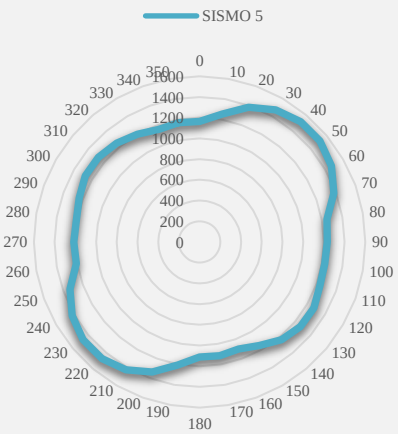
Para 4 pisos:



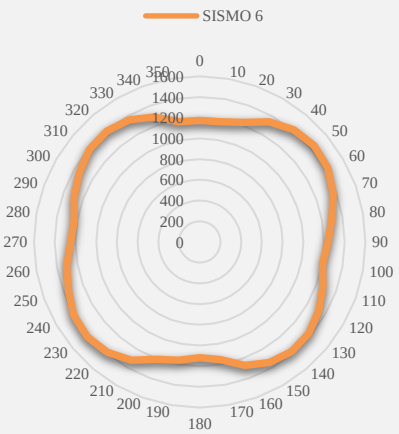
CORTANTE BASAL (X-X)



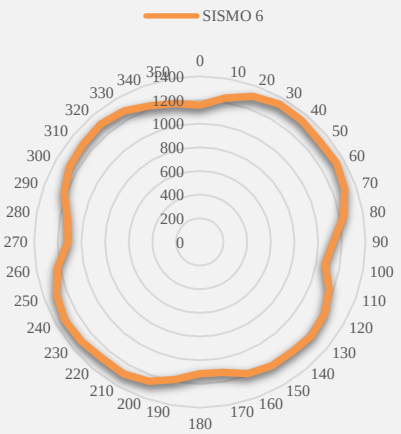
CORTANTE BASAL (Y-Y)



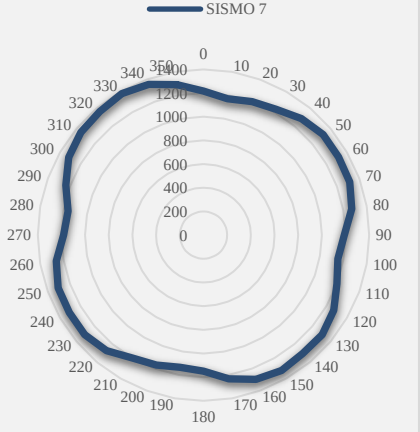
CORTANTE BASAL (X-X)



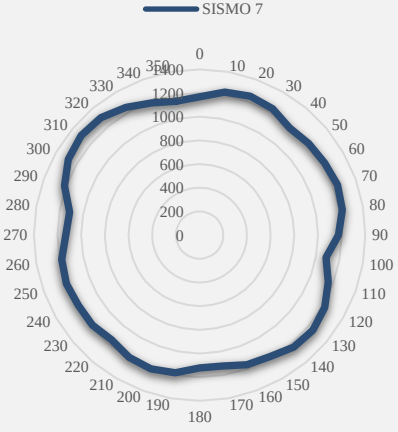
CORTANTE BASAL (Y-Y)



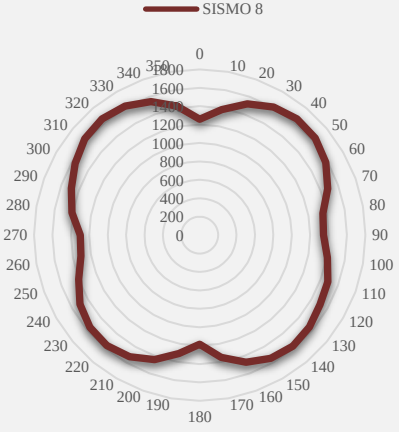
CORTANTE BASAL (X-X)



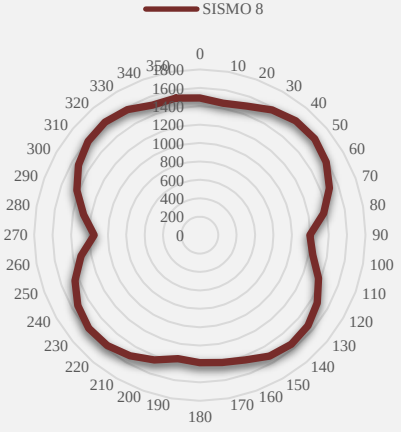
CORTANTE BASAL (Y-Y)

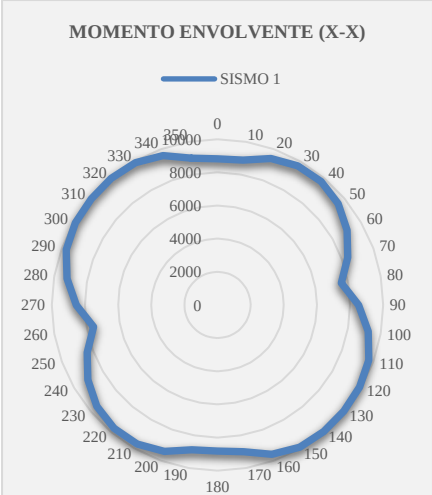


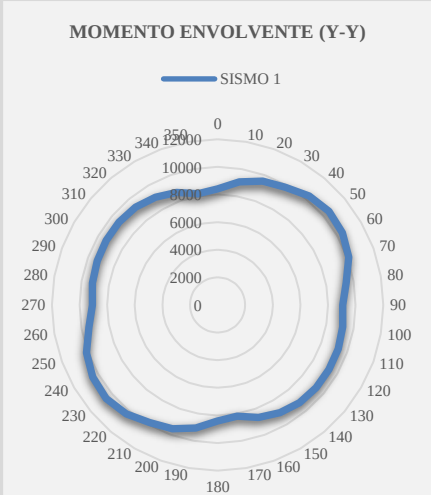
CORTANTE BASAL (X-X)

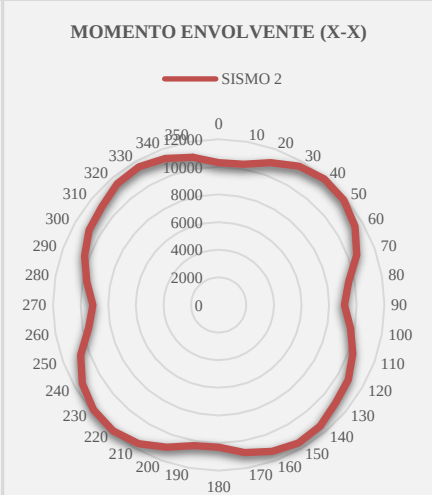


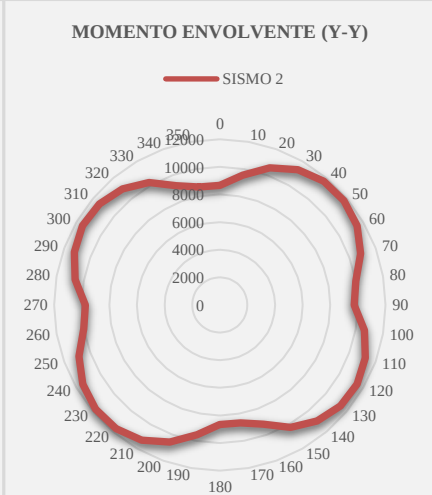
CORTANTE BASAL (Y-Y)

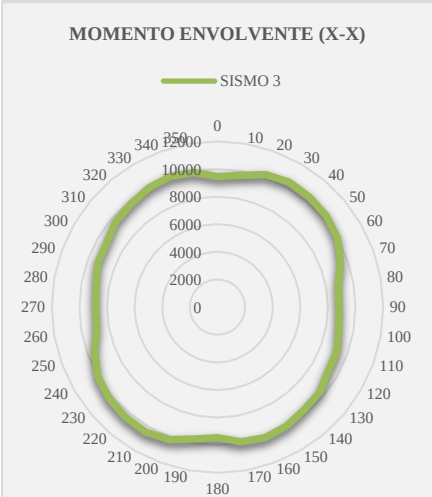


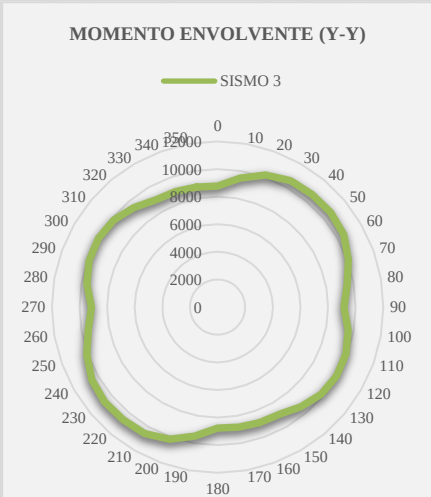

MOMENTO ENVOLVENTE (X-X)
SISMO 1

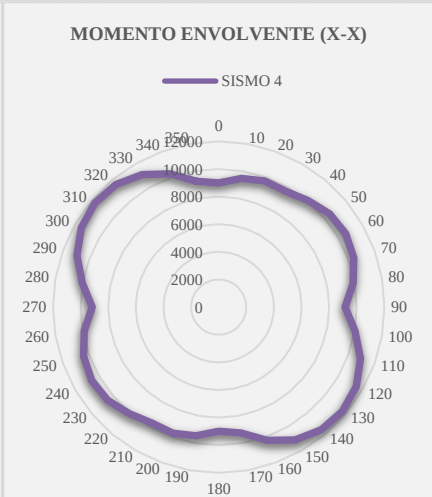

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

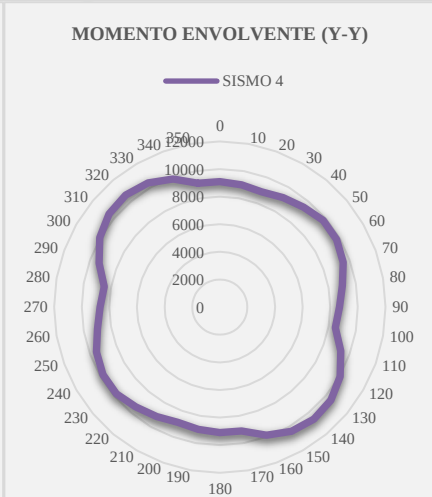

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

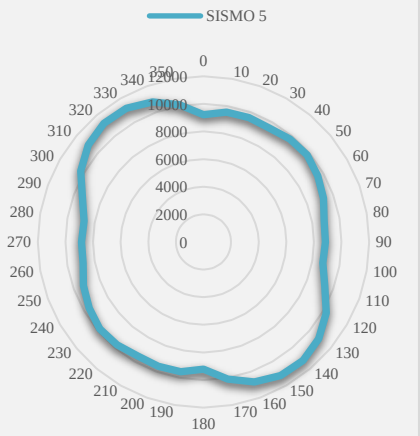

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

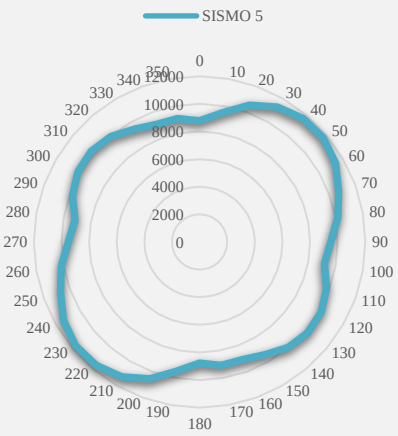

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

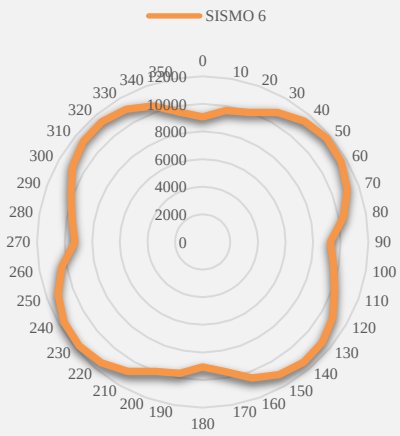
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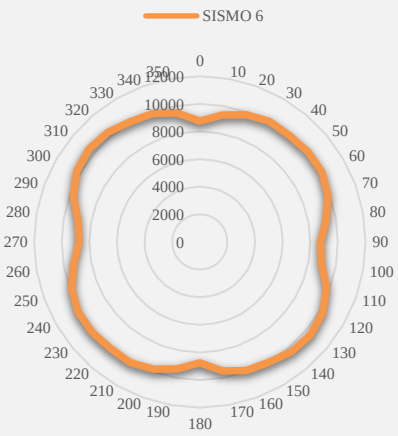
MOMENTO ENVOLVENTE (Y-Y)



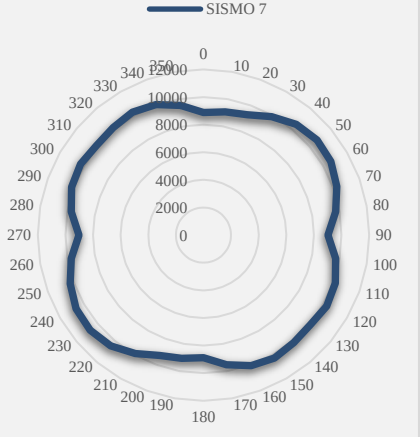
MOMENTO ENVOLVENTE (X-X)



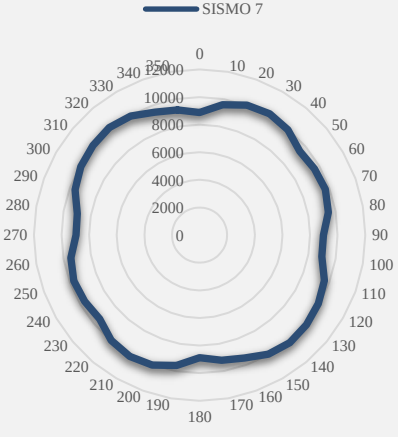
MOMENTO ENVOLVENTE (Y-Y)



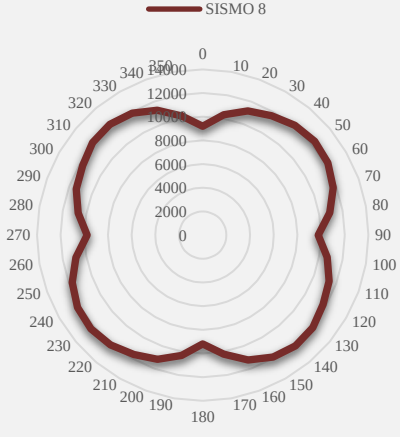
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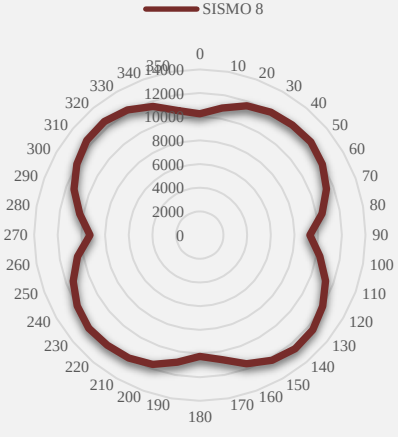
MOMENTO ENVOLVENTE (Y-Y)

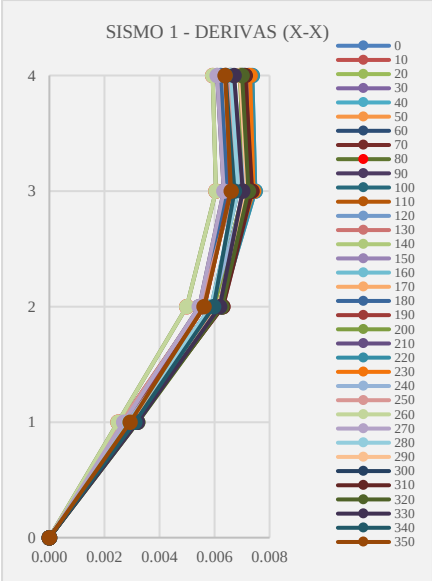


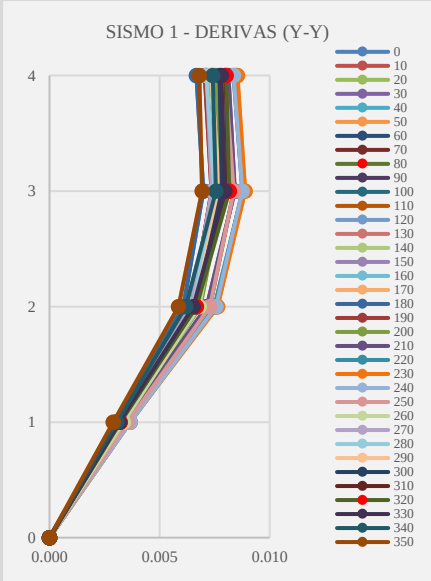
MOMENTO ENVOLVENTE (X-X)

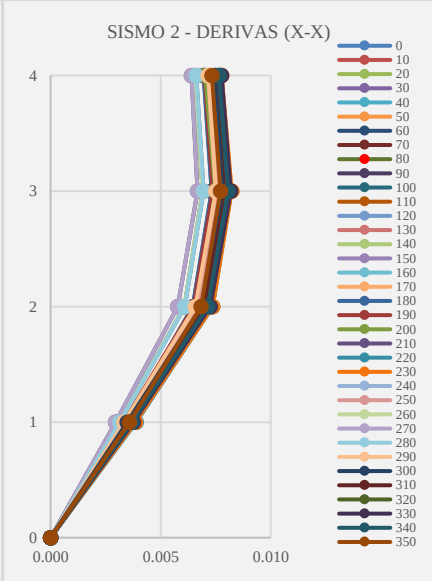


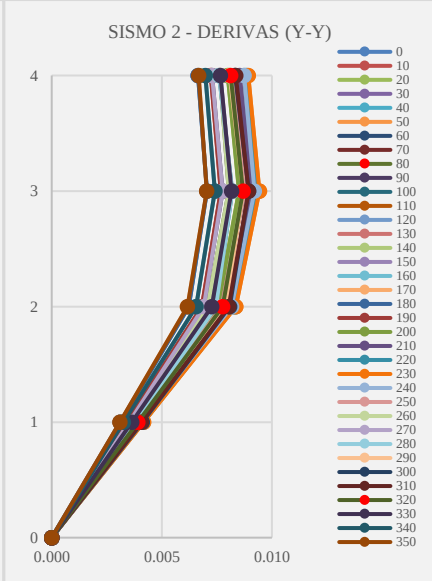
MOMENTO ENVOLVENTE (Y-Y)

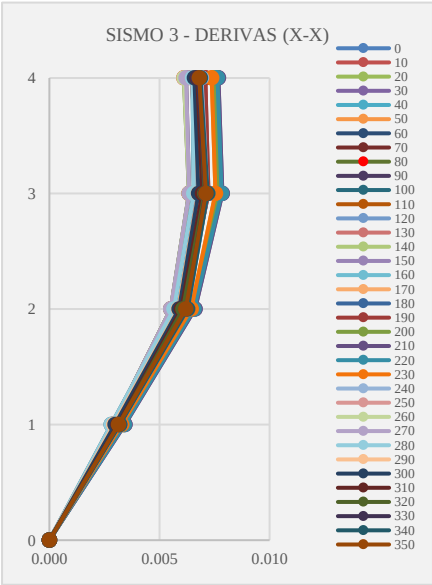


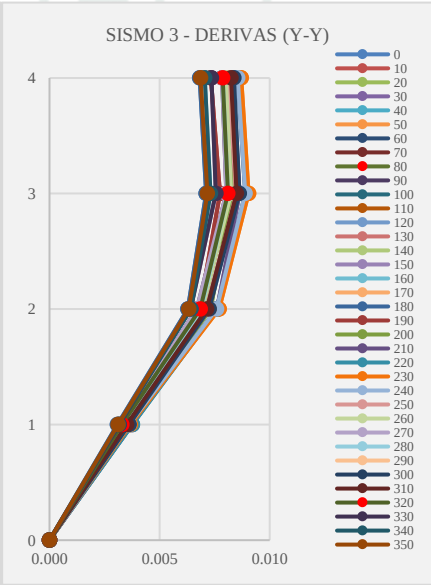

SISMO 1 - DERIVAS (X-X)
0
1
2
3
4
0.000
0.002
0.004
0.006
0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

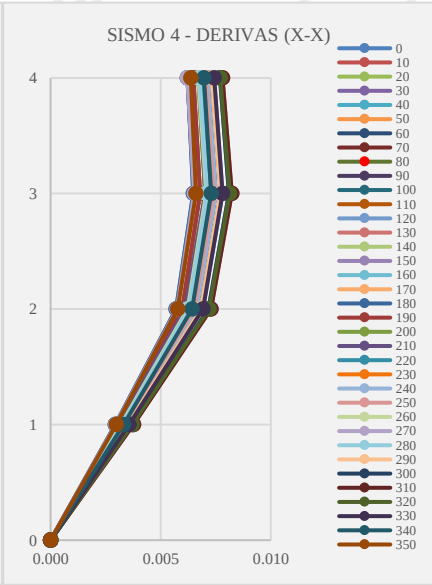

SISMO 1 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

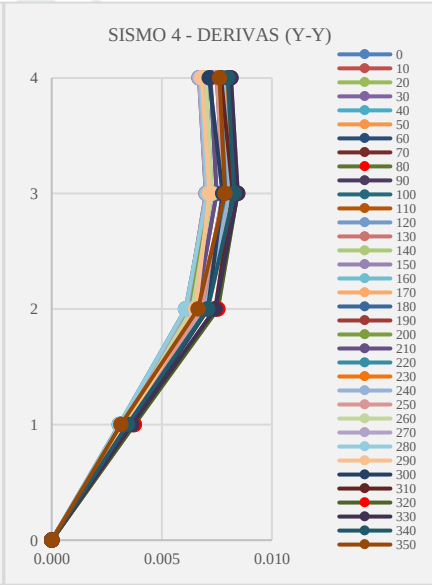

SISMO 2 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
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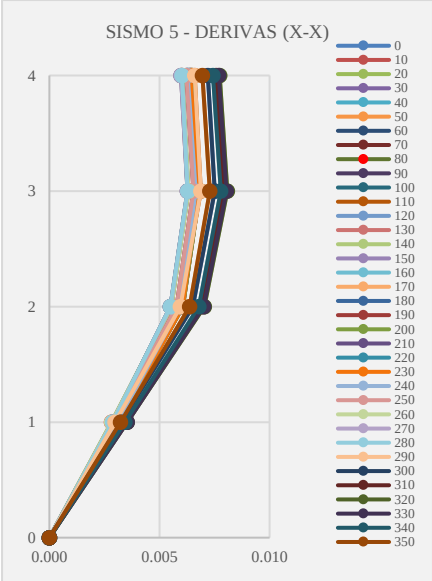

SISMO 2 - DERIVAS (Y-Y)
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1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

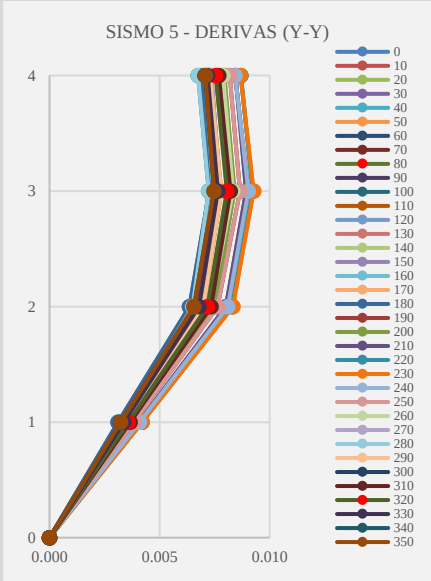

SISMO 3 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

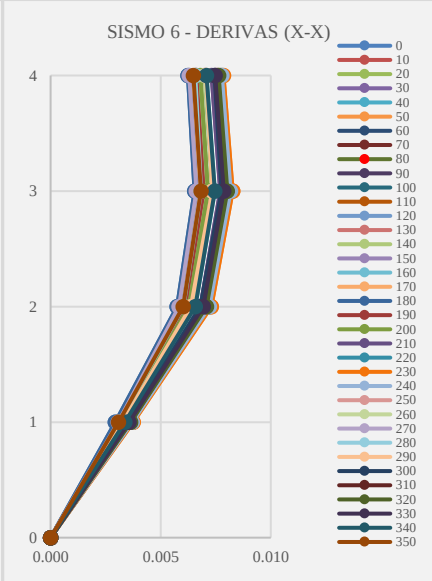

SISMO 3 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

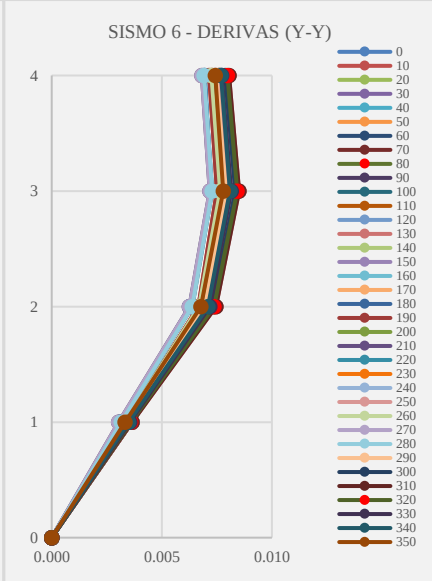

SISMO 4 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
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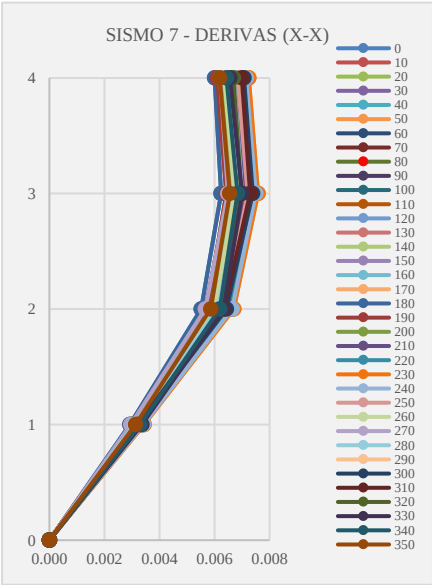

SISMO 4 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

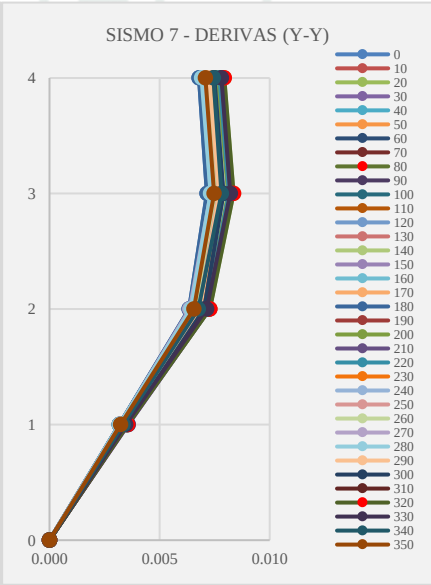

SISMO 5 - DERIVAS (X-X)
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2
3
4
0.000
0.005
0.010
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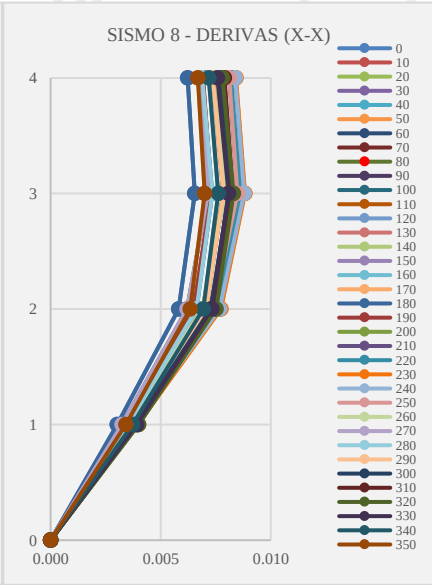

SISMO 5 - DERIVAS (Y-Y)
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1
2
3
4
0.000
0.005
0.010
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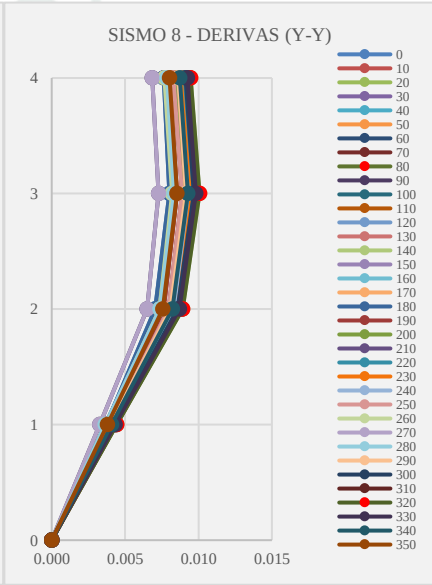

SISMO 6 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

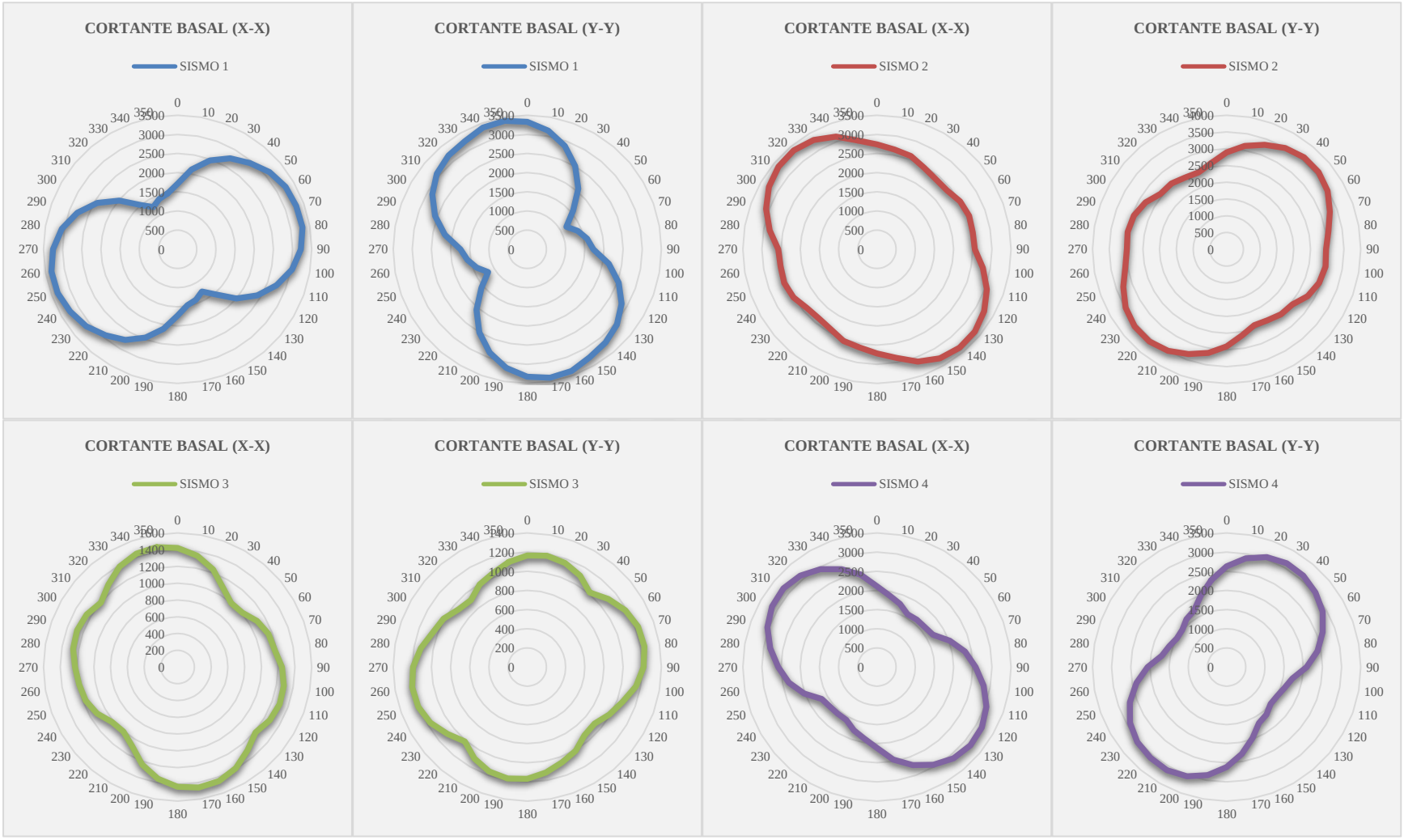

SISMO 7 - DERIVAS (X-X)
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1
2
3
4
0.000
0.002
0.004
0.006
0.008
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SISMO 7 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

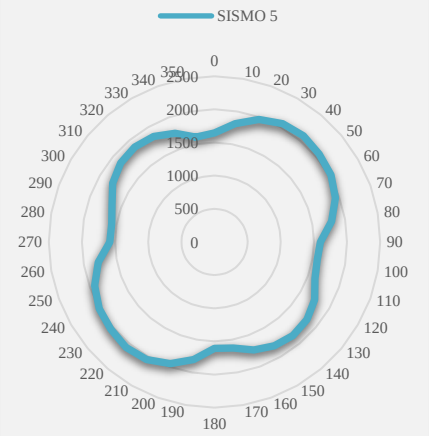

SISMO 8 - DERIVAS (X-X)
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1
2
3
4
0.000
0.005
0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0
1
2
3
4
0.000
0.005
0.010
0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

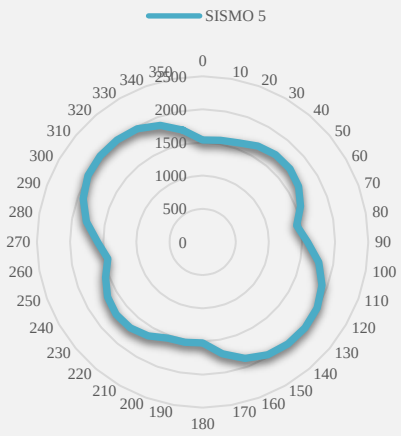
Para 8 pisos:


CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

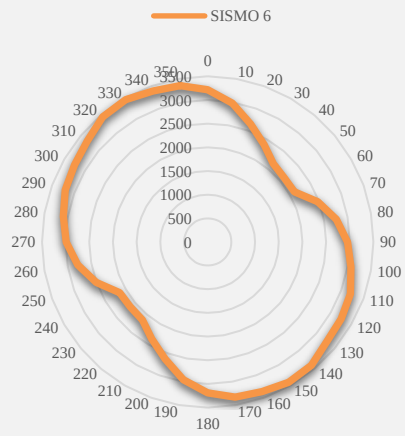
CORTANTE BASAL (X-X)



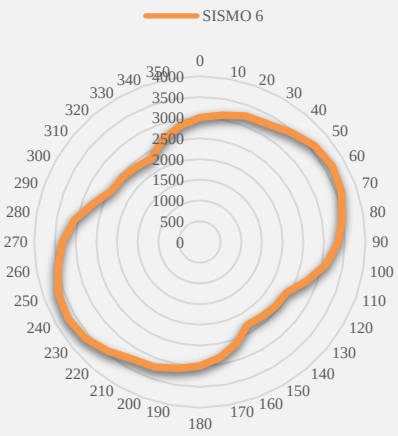
CORTANTE BASAL (Y-Y)



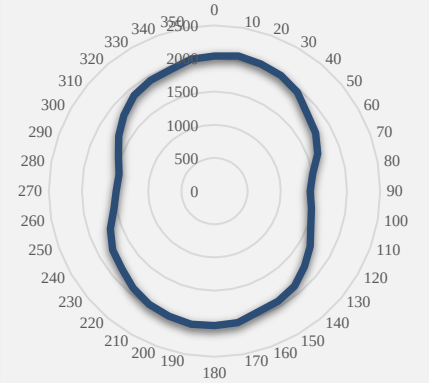
CORTANTE BASAL (X-X)



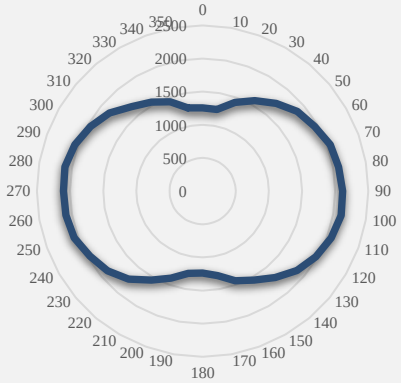
CORTANTE BASAL (Y-Y)



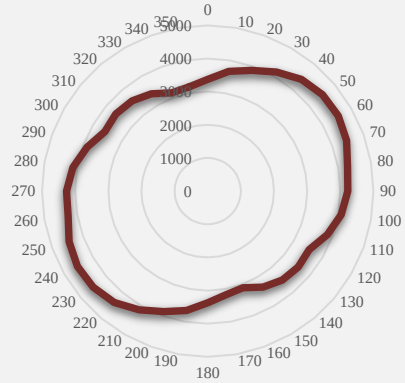
CORTANTE BASAL (X-X)



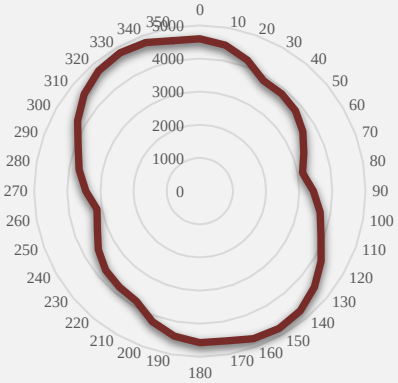
CORTANTE BASAL (Y-Y)

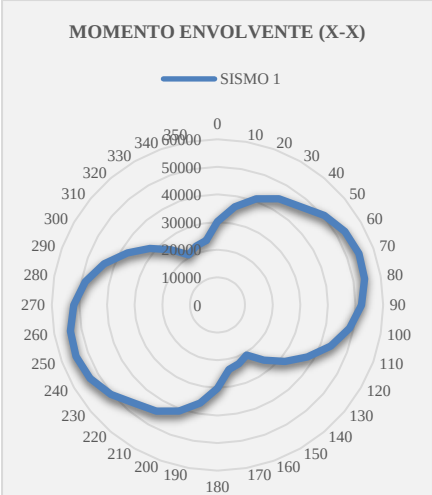


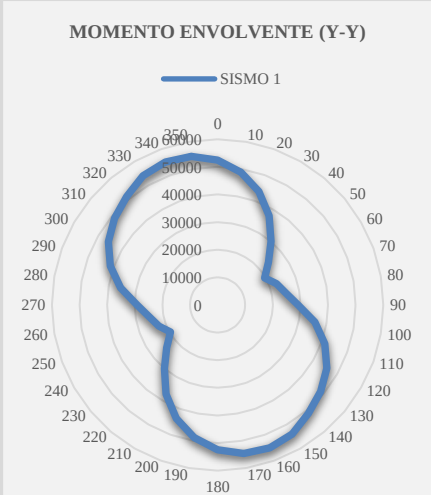
CORTANTE BASAL (X-X)

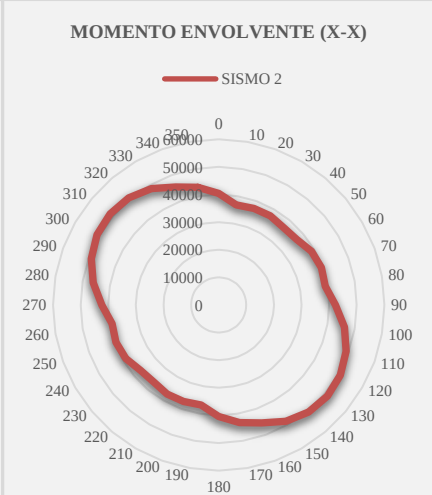


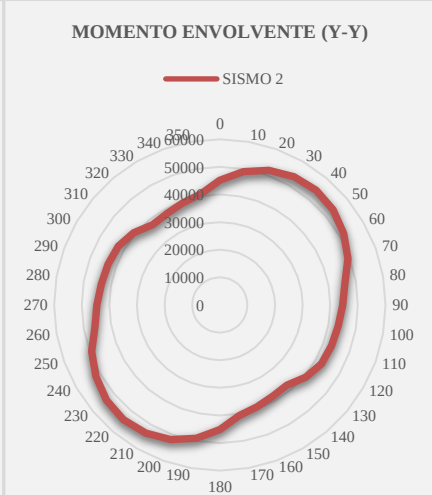
CORTANTE BASAL (Y-Y)

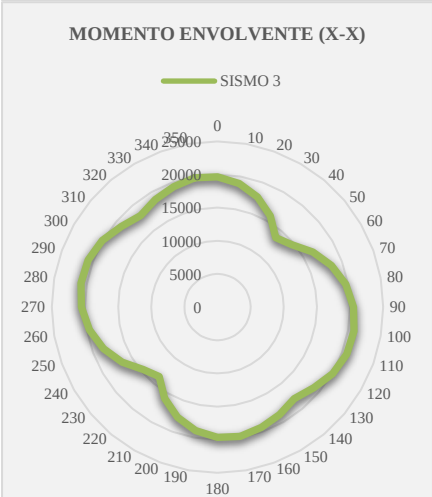


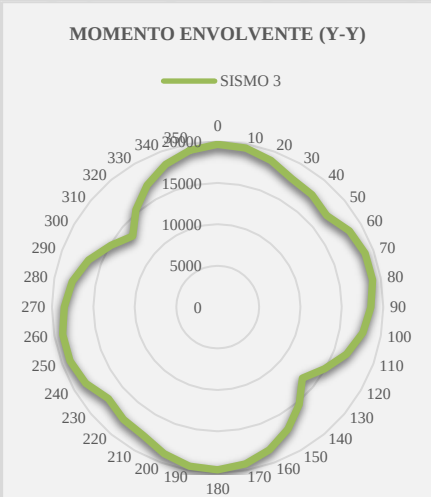

MOMENTO ENVOLVENTE (X-X)
SISMO 1

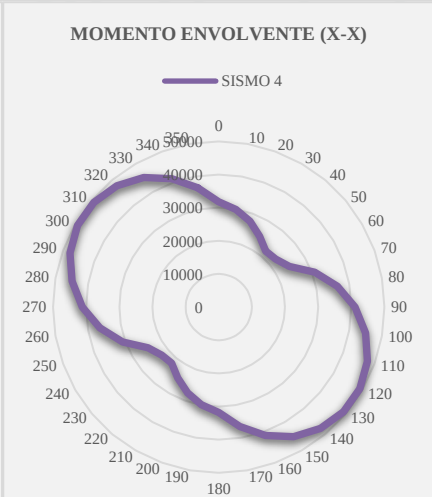

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

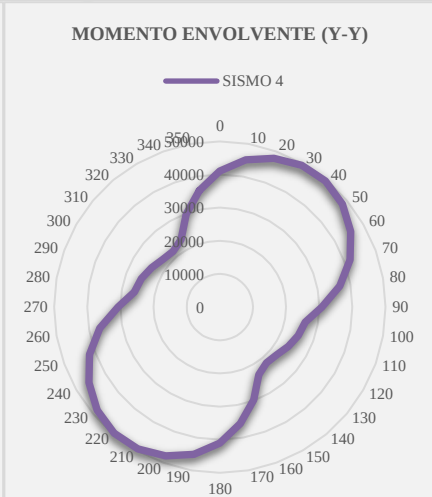

MOMENTO ENVOLVENTE (X-X)
SISMO 2

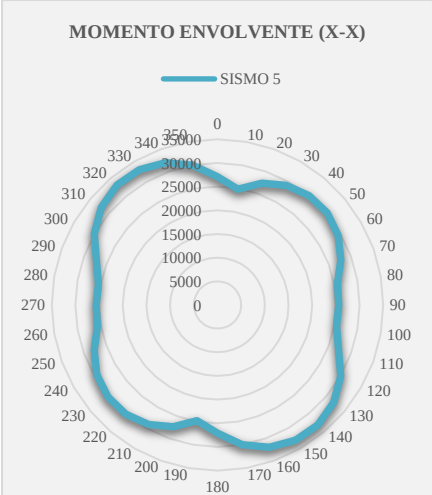

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

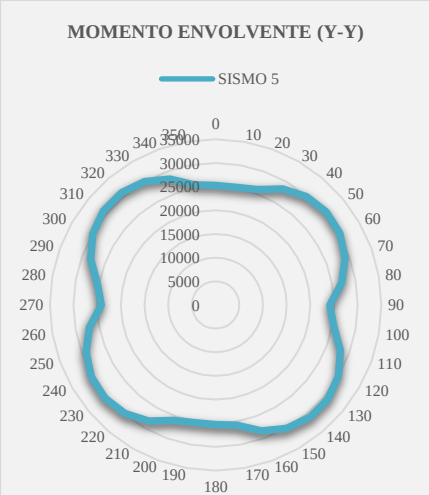

MOMENTO ENVOLVENTE (X-X)
SISMO 3

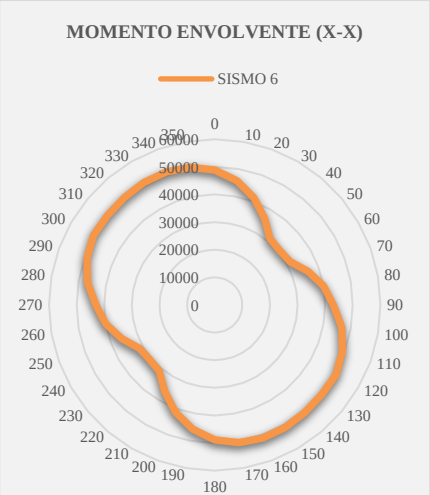

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

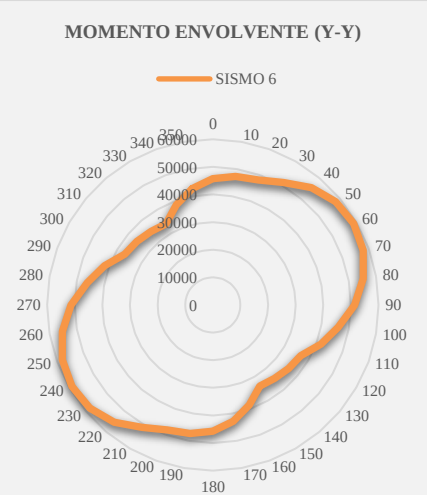

MOMENTO ENVOLVENTE (X-X)
SISMO 4

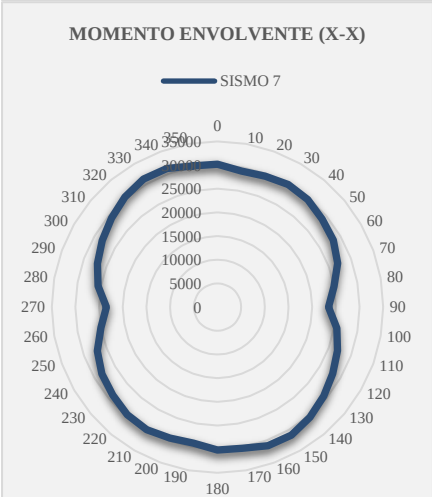

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

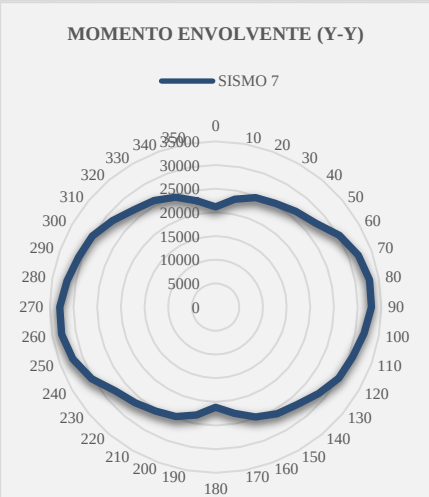

MOMENTO ENVOLVENTE (X-X)
SISMO 5

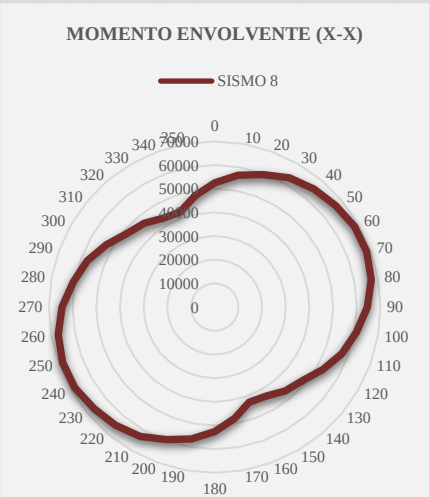

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

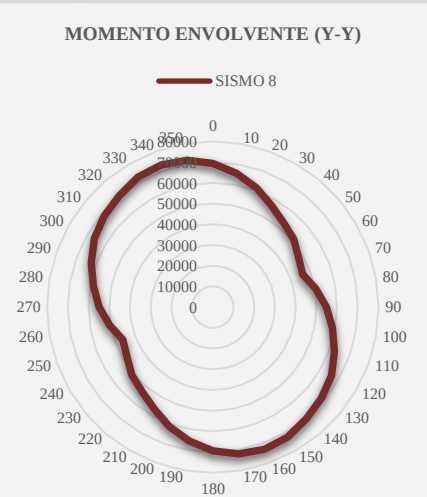

MOMENTO ENVOLVENTE (X-X)
SISMO 6

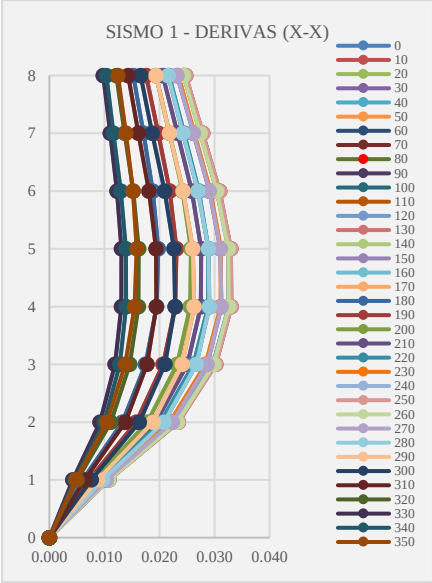

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

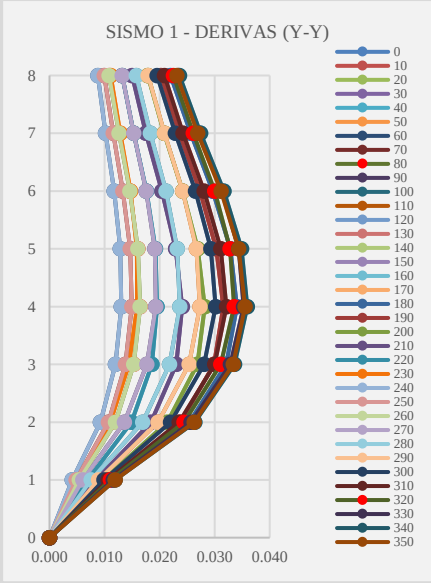

MOMENTO ENVOLVENTE (X-X)
SISMO 7

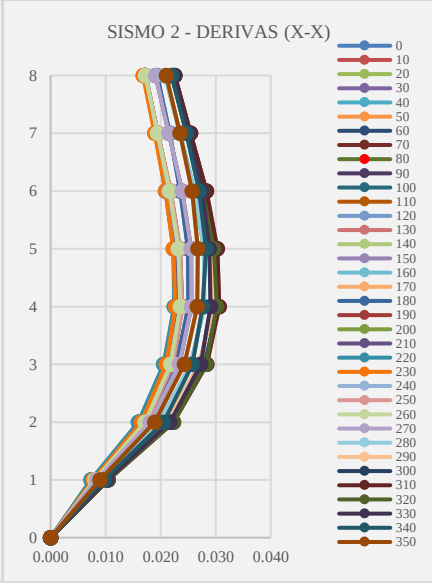

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

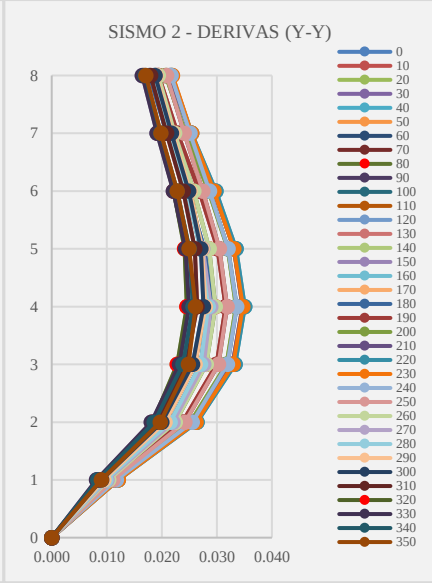

MOMENTO ENVOLVENTE (X-X)
SISMO 8

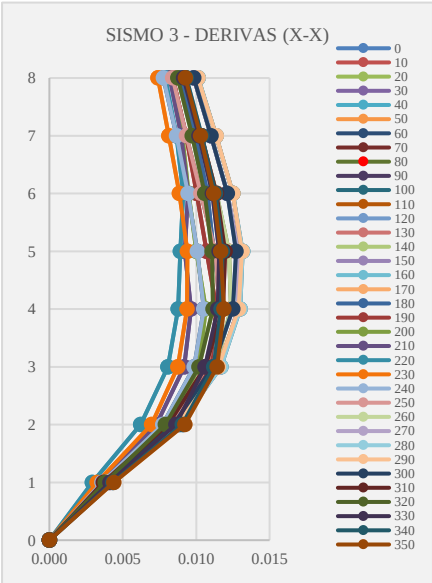

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

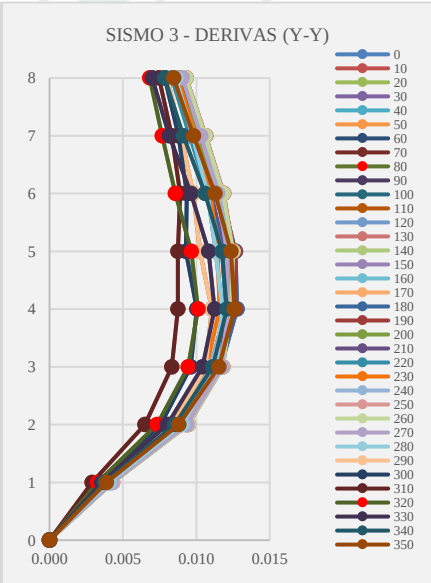

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

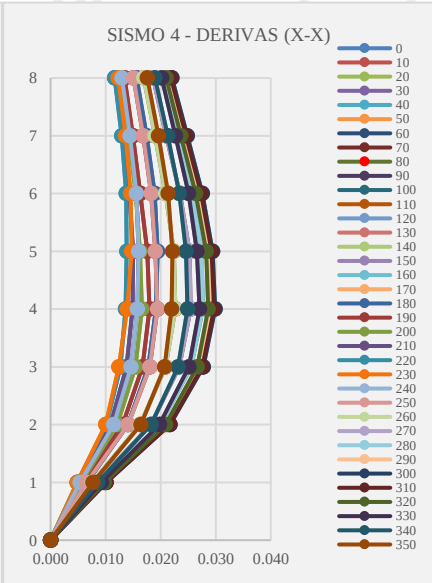

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

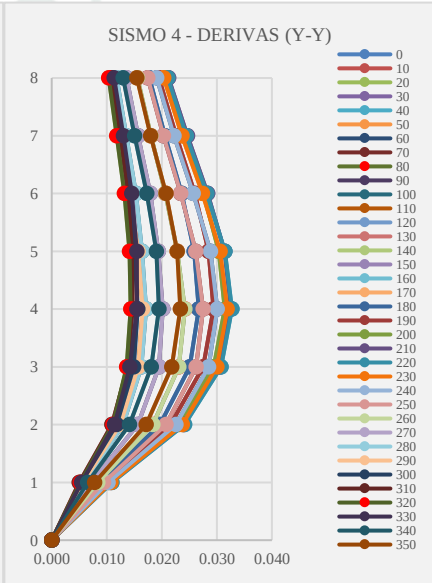

SISMO 2 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

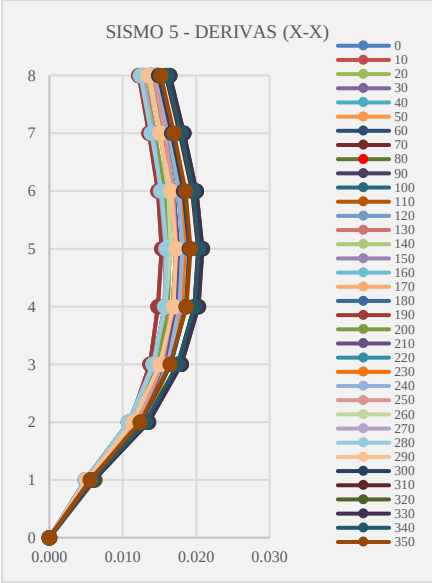

SISMO 2 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

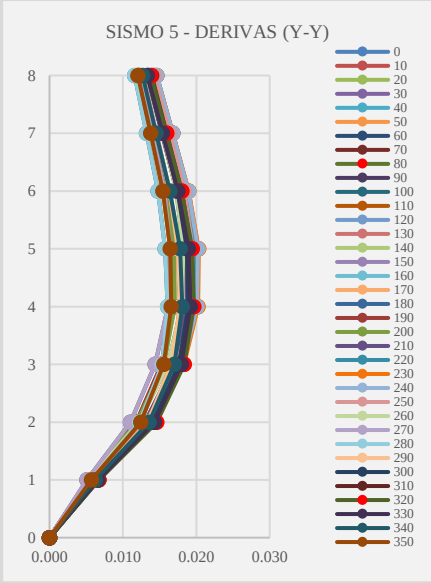

SISMO 3 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

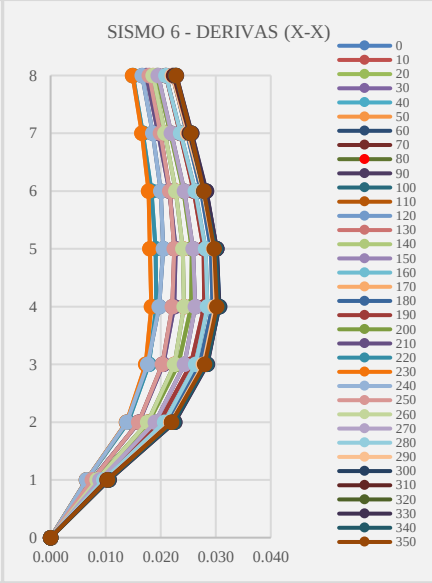

SISMO 3 - DERIVAS (Y-Y)
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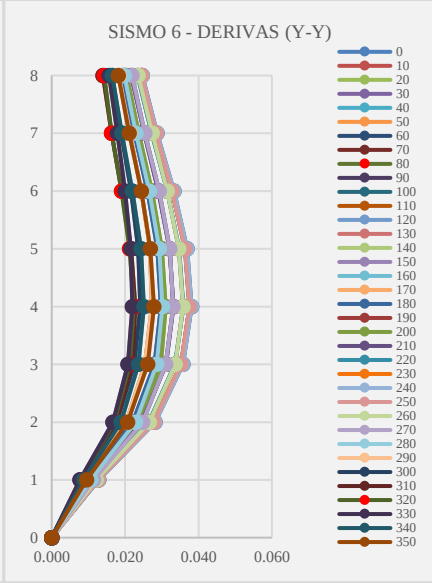

SISMO 4 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030 0.040

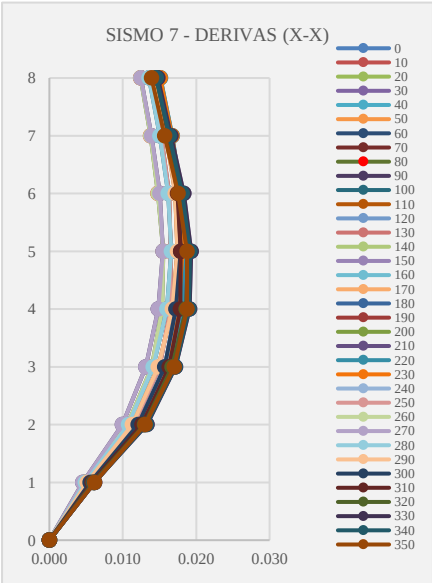

SISMO 4 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040

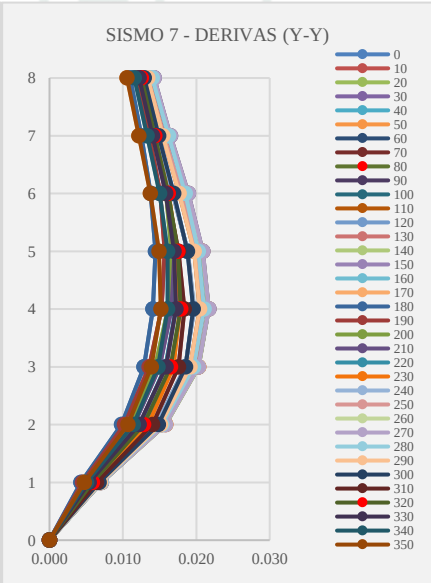

SISMO 5 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
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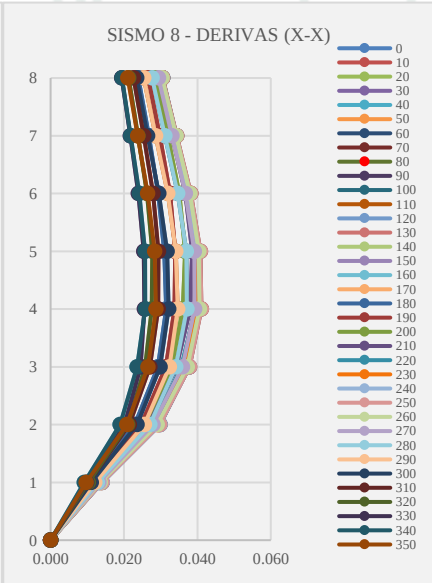

SISMO 5 - DERIVAS (Y-Y)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

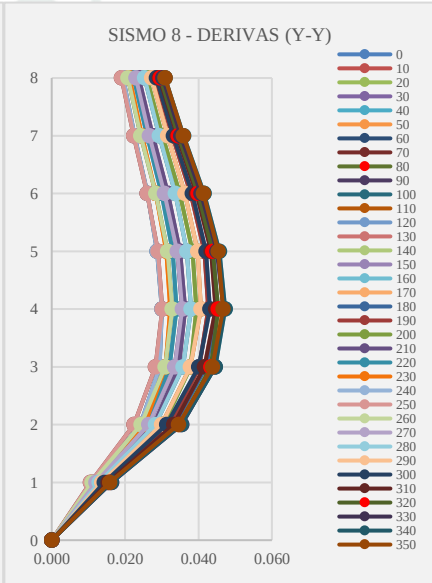

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030 0.040
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

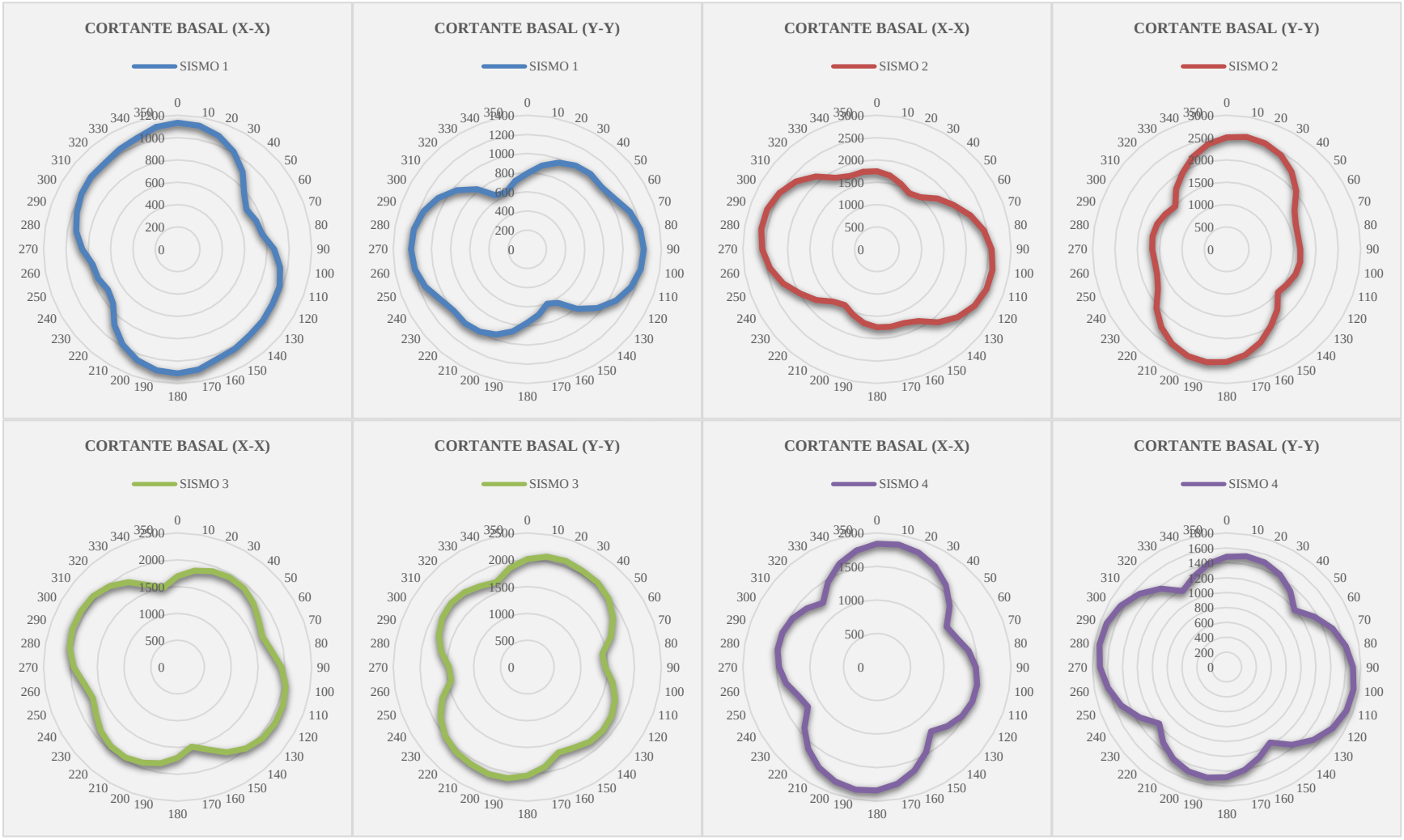

SISMO 7 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
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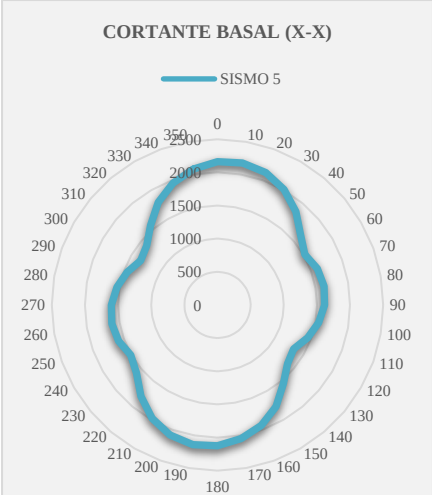

SISMO 7 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030
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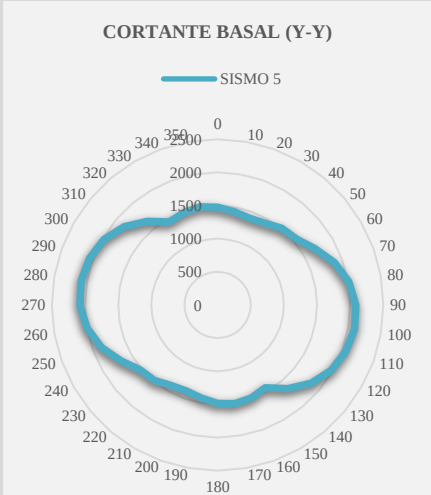

SISMO 8 - DERIVAS (X-X)
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0.000 0.020 0.040 0.060
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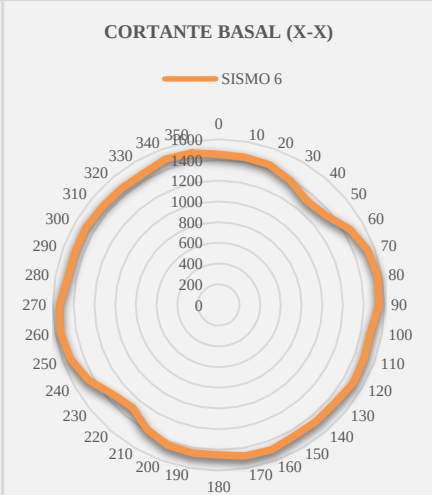

SISMO 8 - DERIVAS (Y-Y)
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0.000 0.020 0.040 0.060
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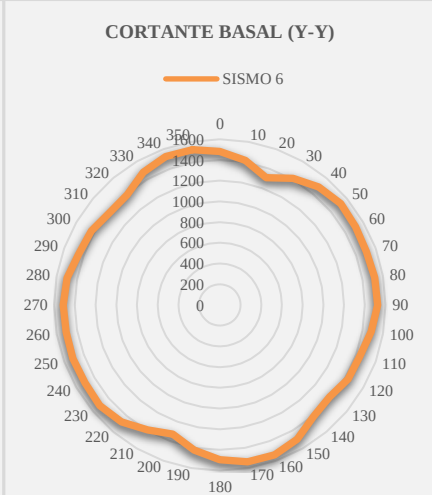
Para 12 pisos:

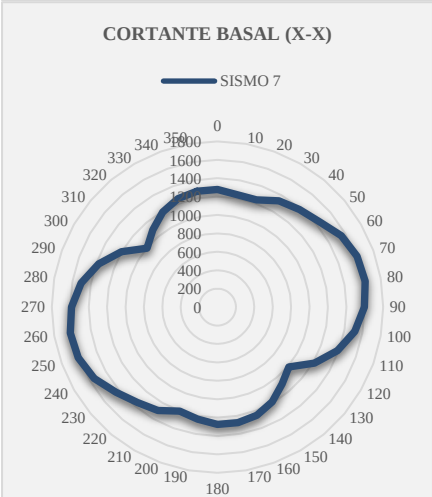


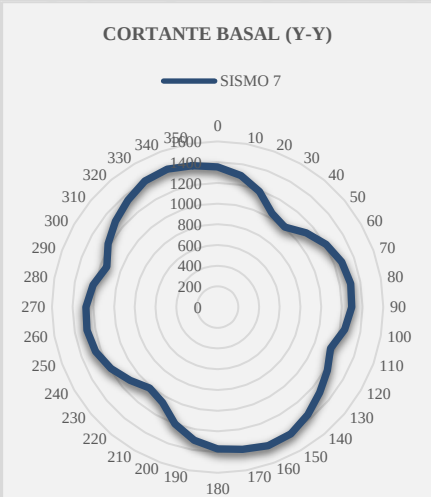

CORTANTE BASAL (X-X)
SISMO 5

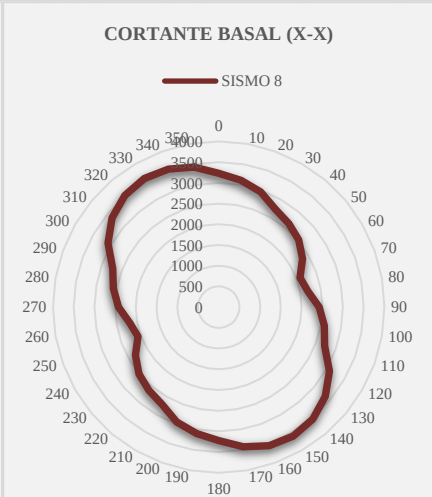

CORTANTE BASAL (Y-Y)
SISMO 5

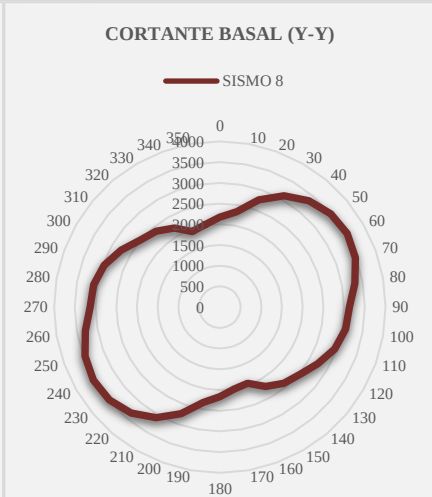

CORTANTE BASAL (X-X)
SISMO 6

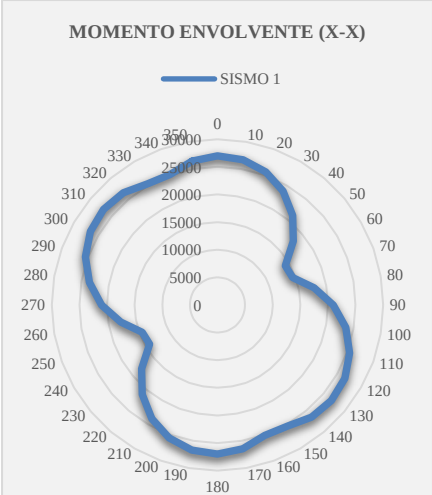

CORTANTE BASAL (Y-Y)
SISMO 6

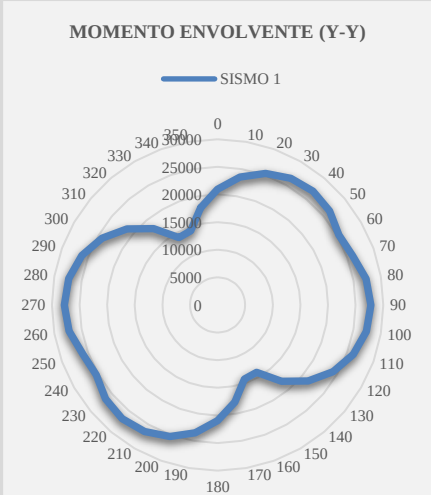

CORTANTE BASAL (X-X)
SISMO 7

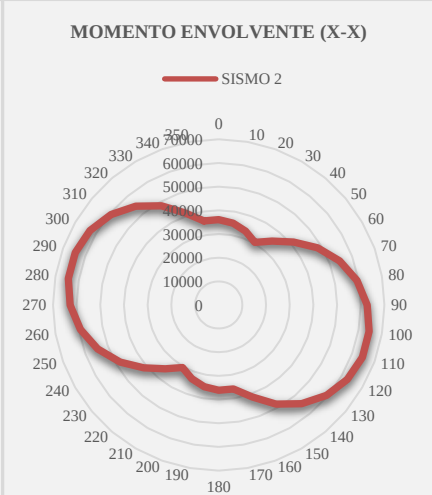

CORTANTE BASAL (Y-Y)
SISMO 7

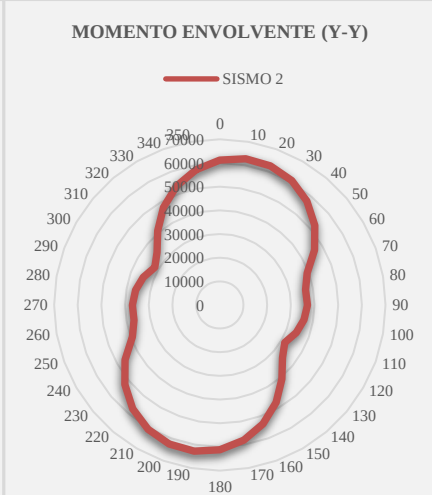

CORTANTE BASAL (X-X)
SISMO 8

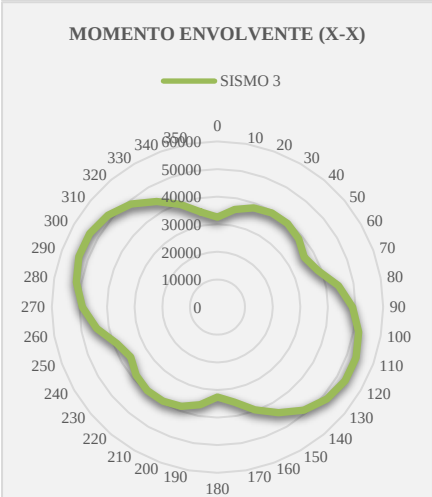

CORTANTE BASAL (Y-Y)
SISMO 8

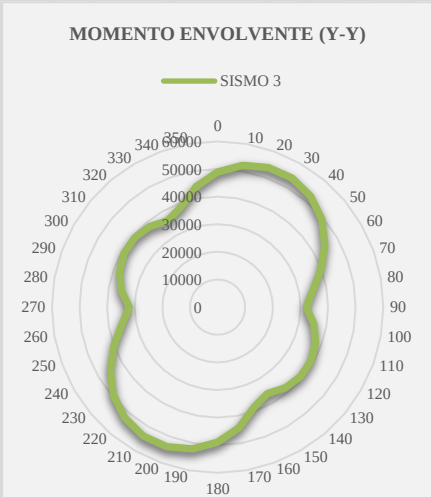

MOMENTO ENVOLVENTE (X-X)
SISMO 1

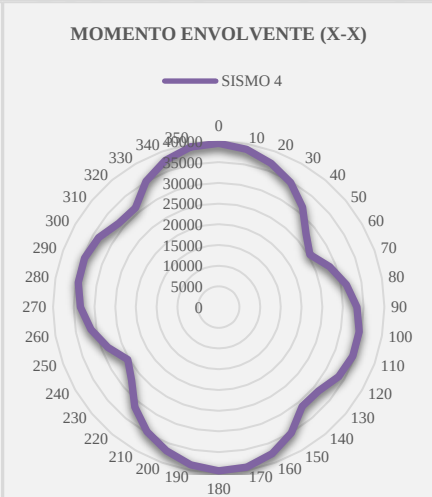

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

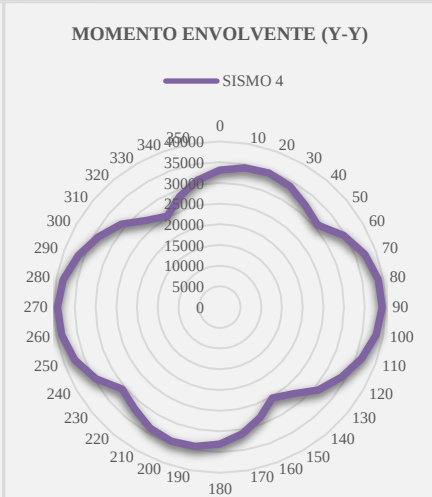

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

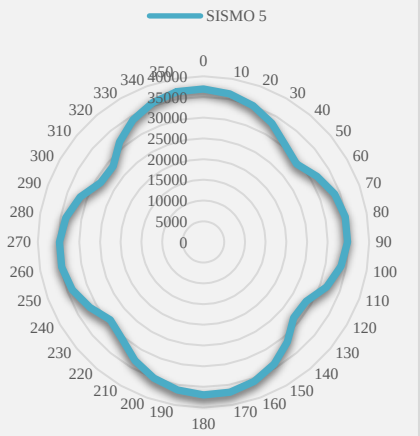

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

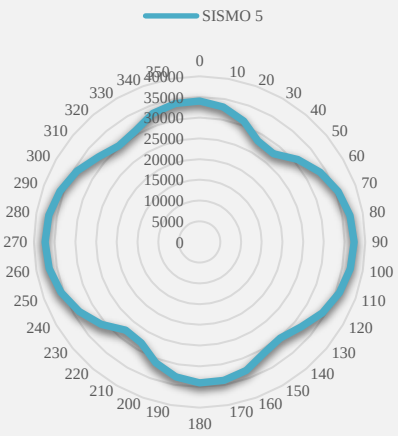

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

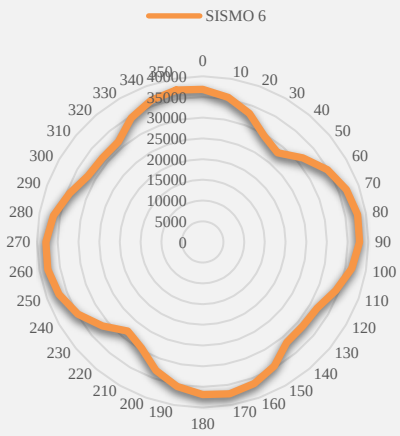
MOMENTO ENVOLVENTE (X-X)



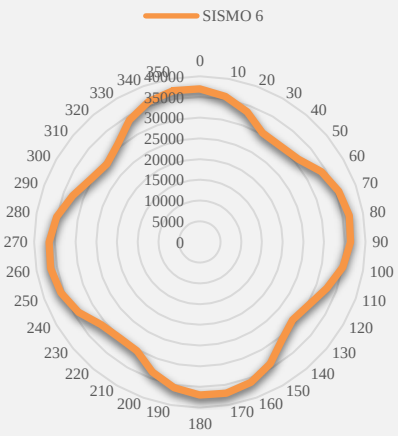
MOMENTO ENVOLVENTE (Y-Y)



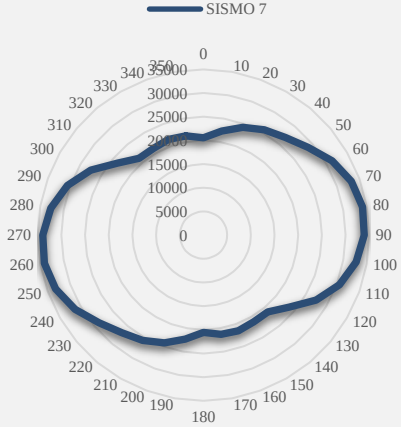
MOMENTO ENVOLVENTE (X-X)



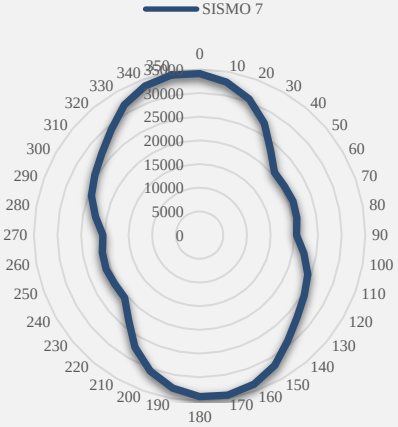
MOMENTO ENVOLVENTE (Y-Y)



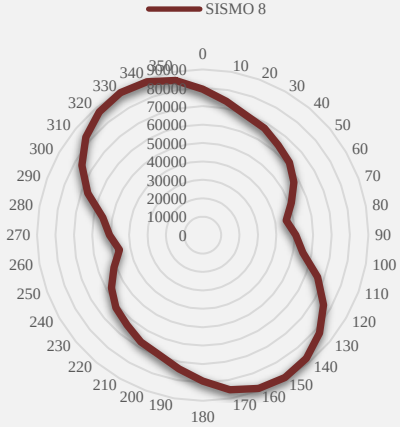
MOMENTO ENVOLVENTE (X-X)



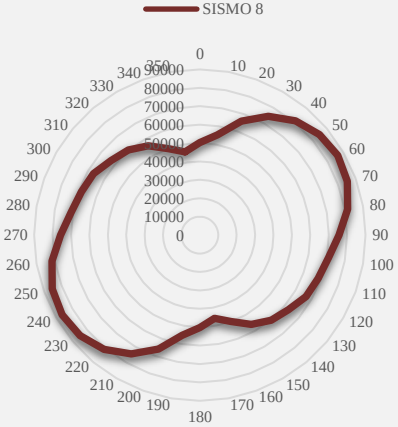
MOMENTO ENVOLVENTE (Y-Y)

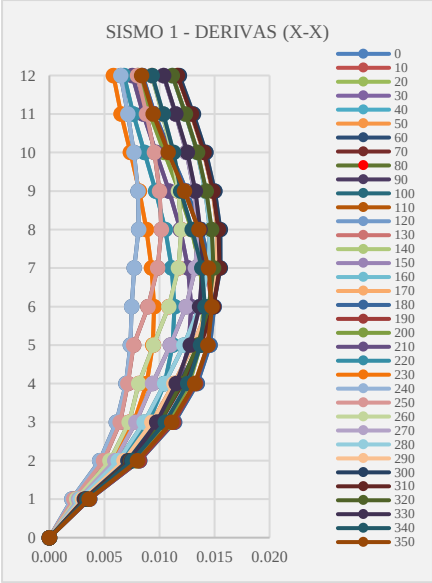


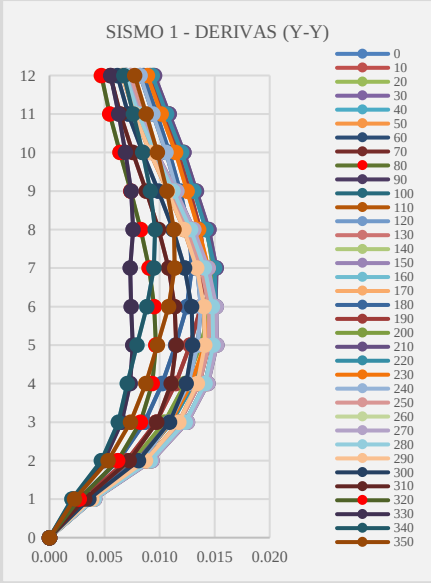
MOMENTO ENVOLVENTE (X-X)

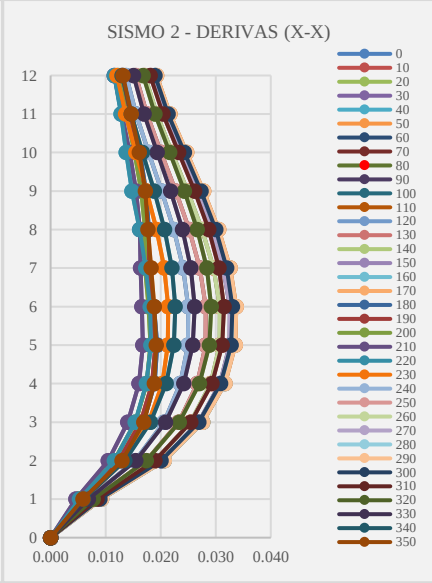


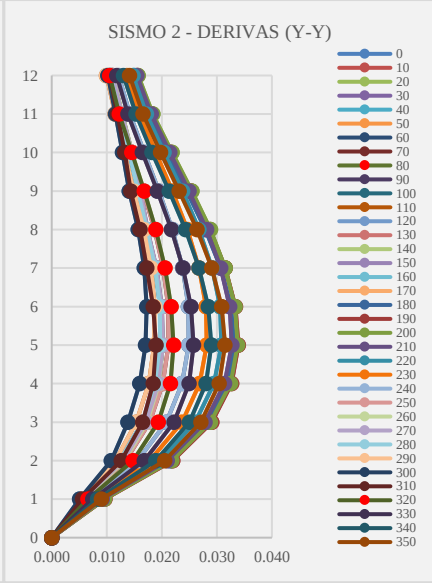
MOMENTO ENVOLVENTE (Y-Y)

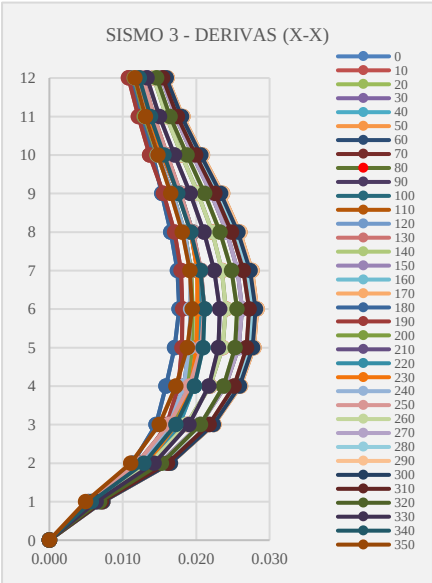


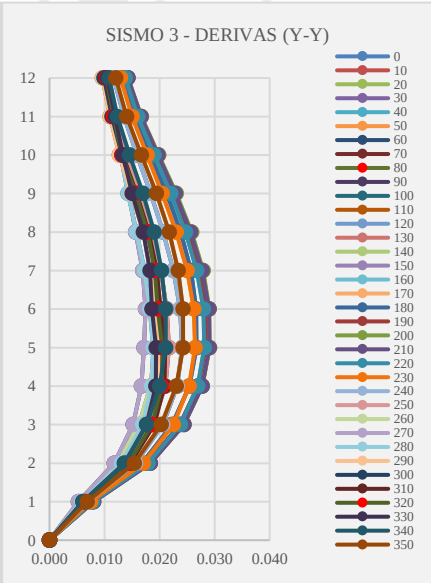

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

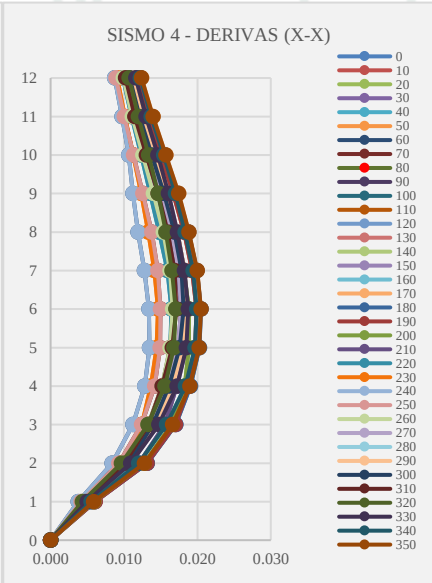

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

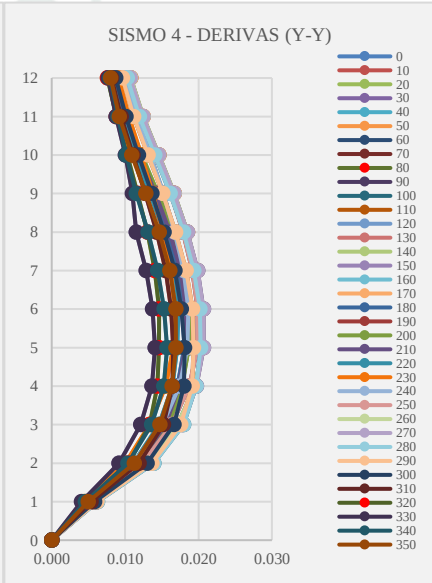

SISMO 2 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

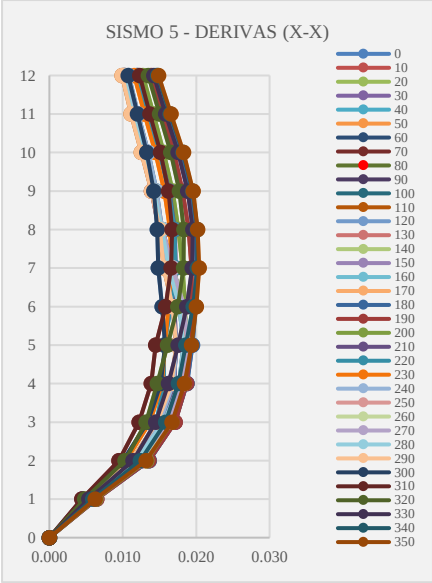

SISMO 2 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

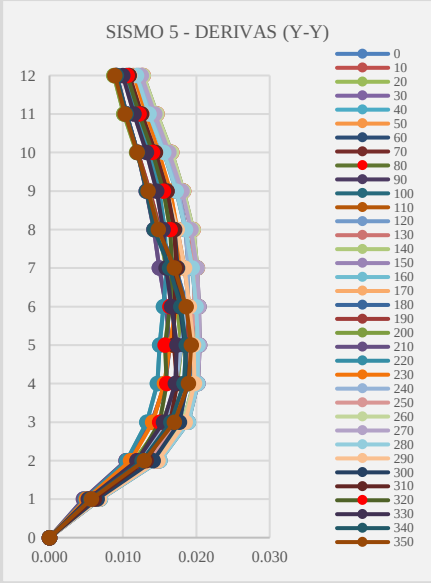

SISMO 3 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

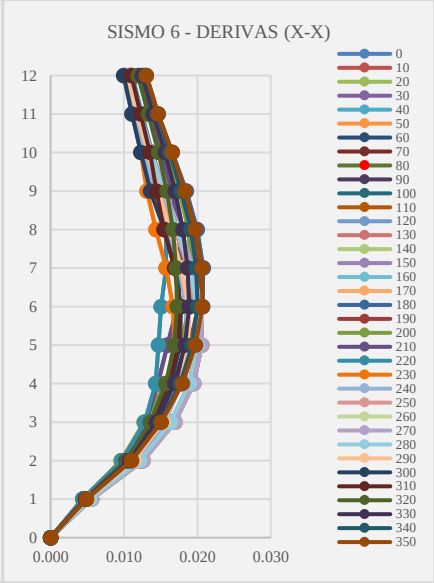

SISMO 3 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

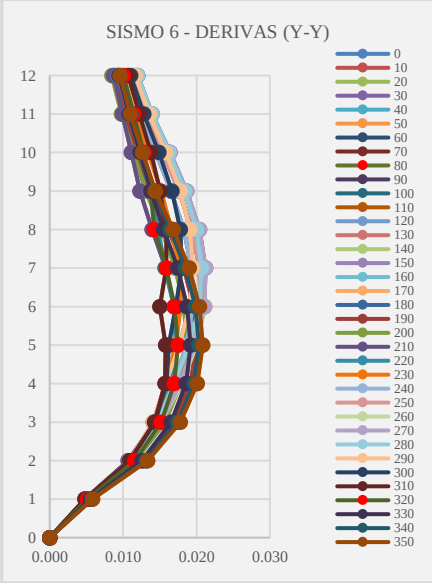

SISMO 4 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

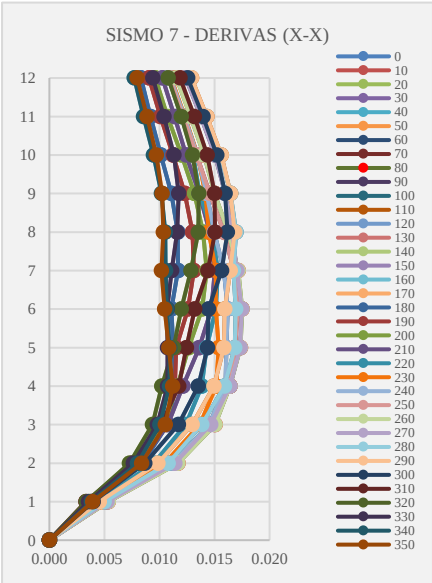

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

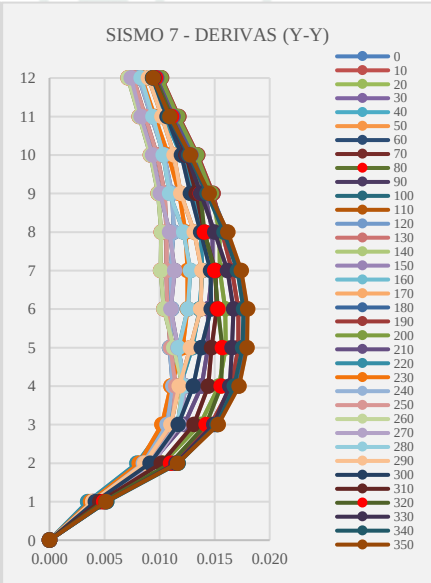

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

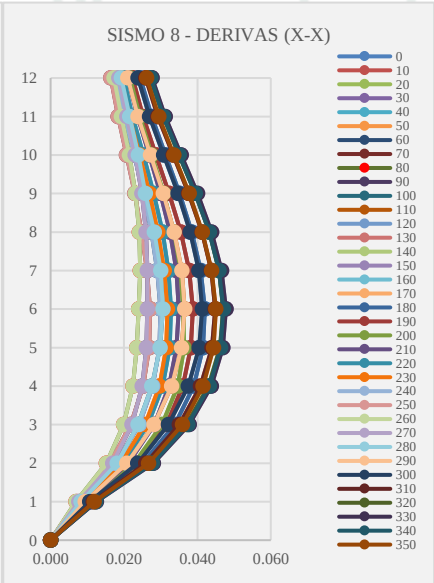

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

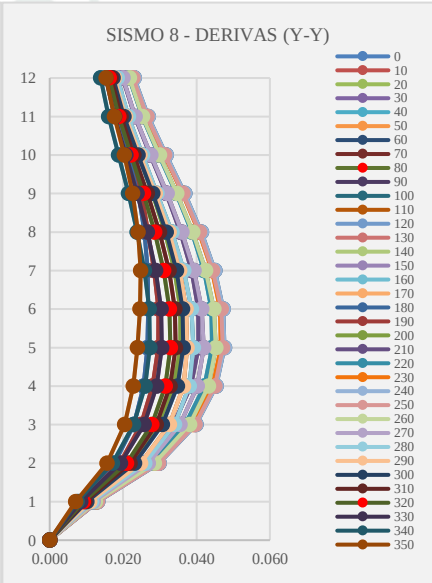

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

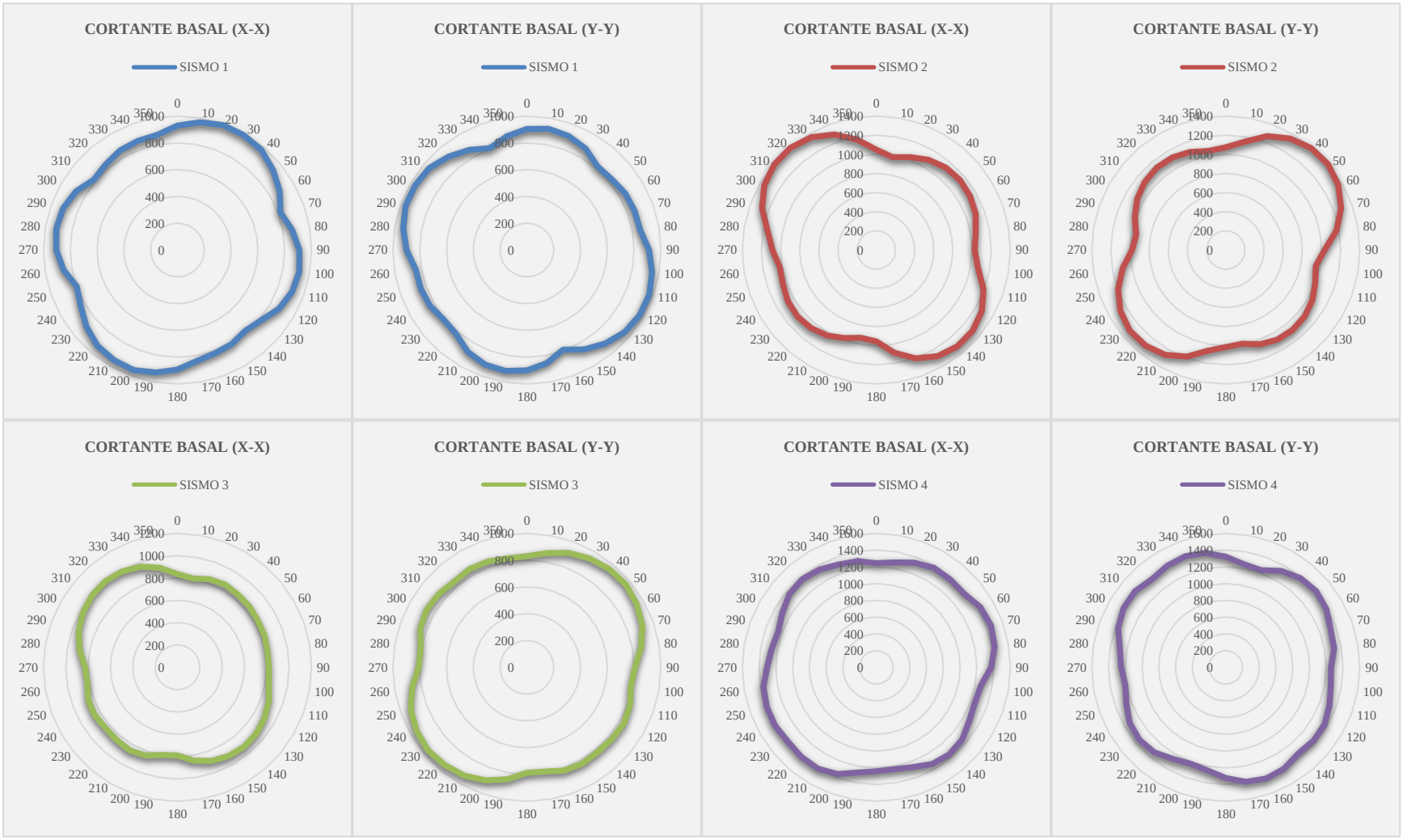

SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

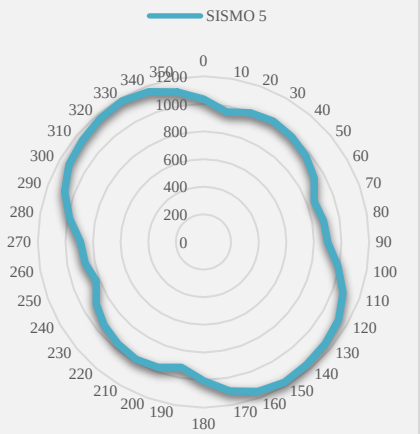

SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

MODELO 9

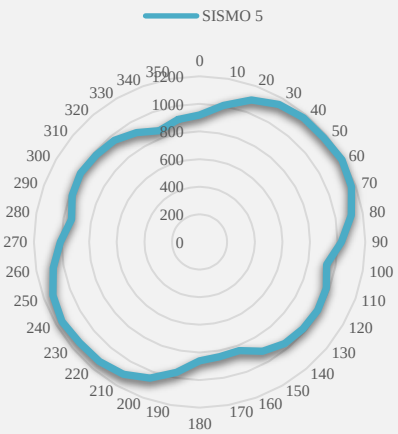
Para 4 pisos:



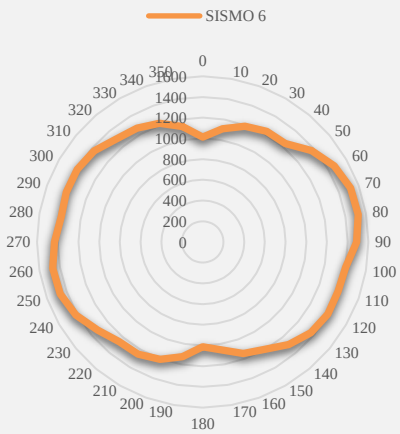
CORTANTE BASAL (X-X)



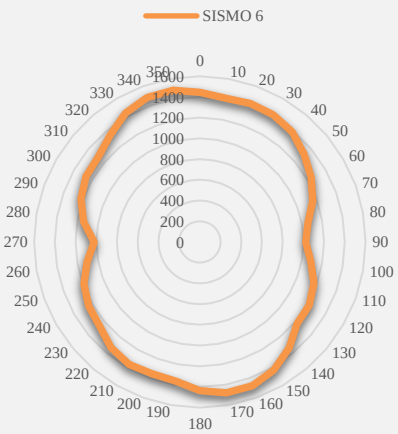
CORTANTE BASAL (Y-Y)



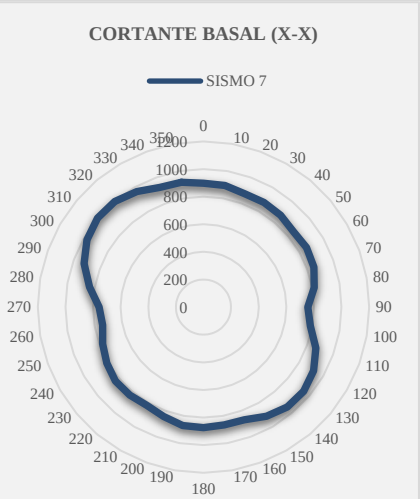
CORTANTE BASAL (X-X)



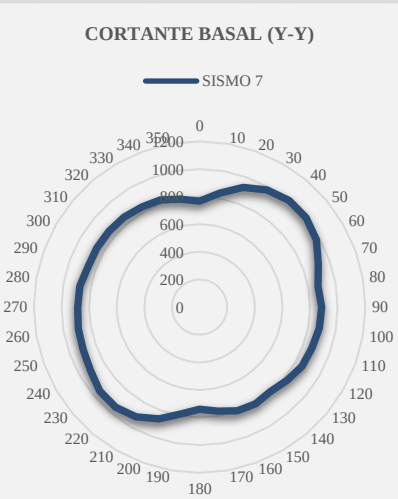
CORTANTE BASAL (Y-Y)



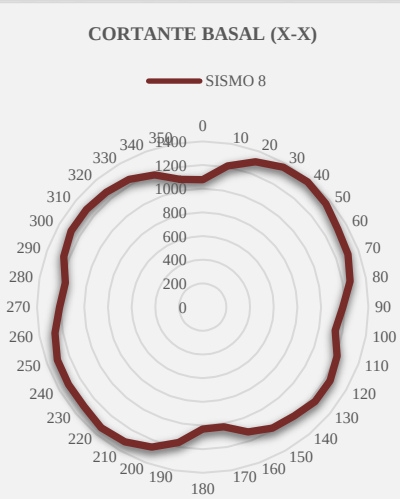
CORTANTE BASAL (X-X)



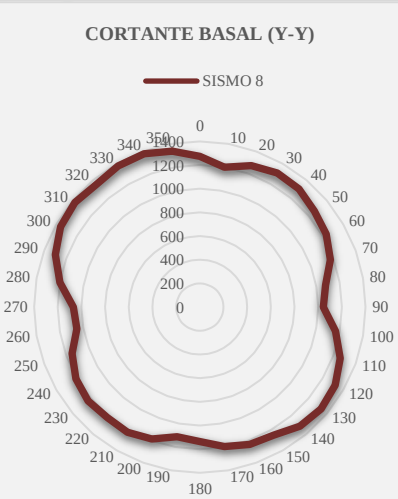
CORTANTE BASAL (Y-Y)

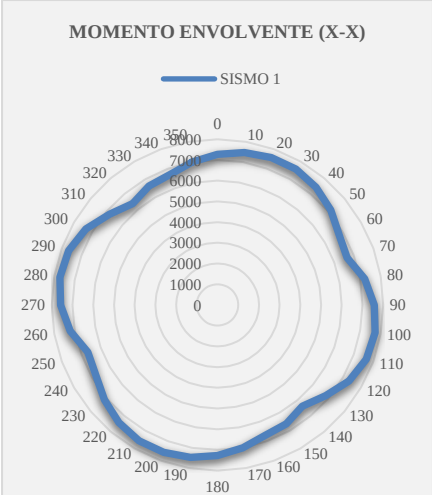


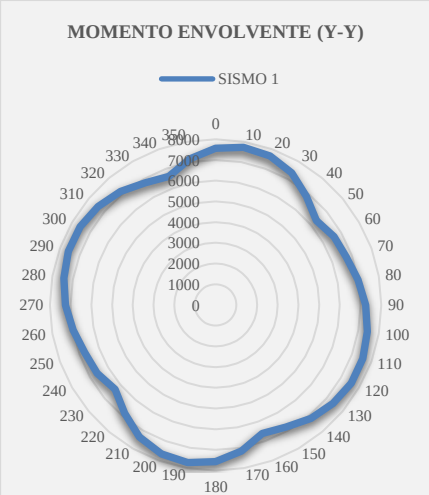
CORTANTE BASAL (X-X)

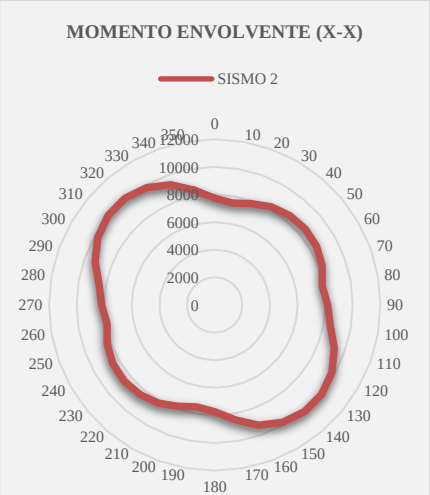


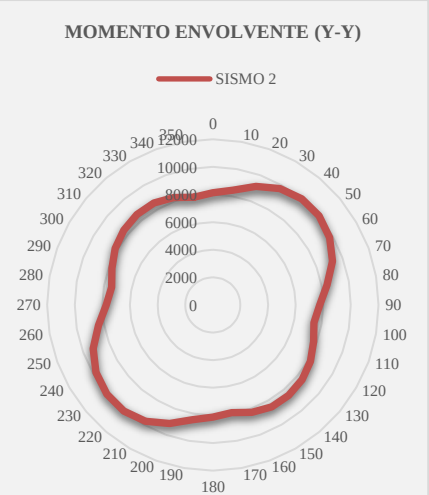
CORTANTE BASAL (Y-Y)

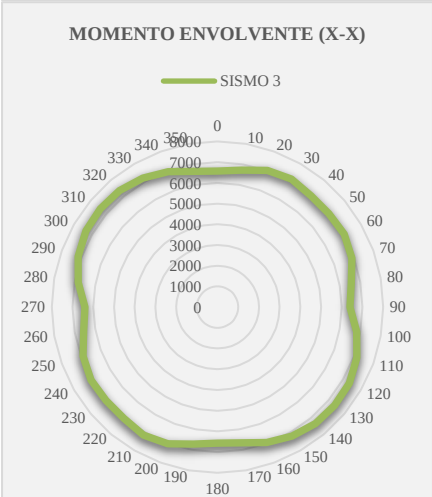


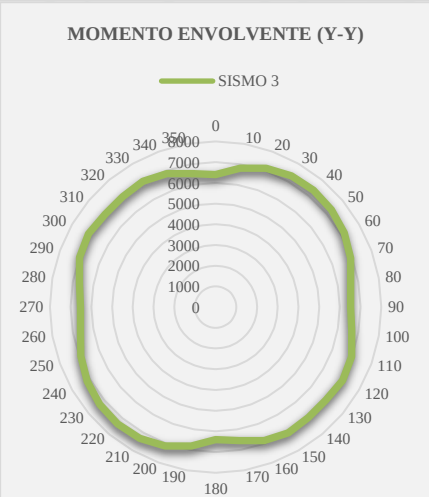

MOMENTO ENVOLVENTE (X-X)
SISMO 1

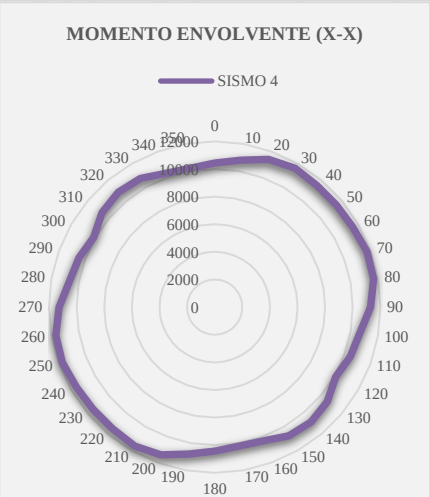

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

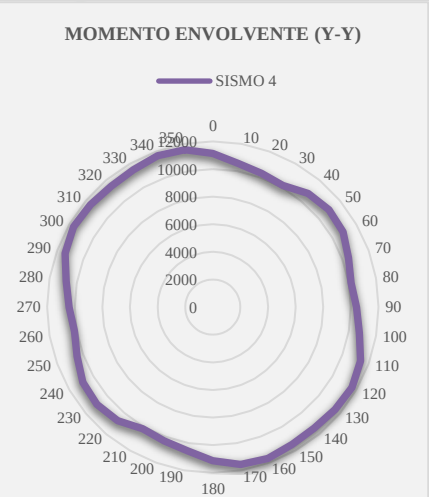

MOMENTO ENVOLVENTE (X-X)
SISMO 2

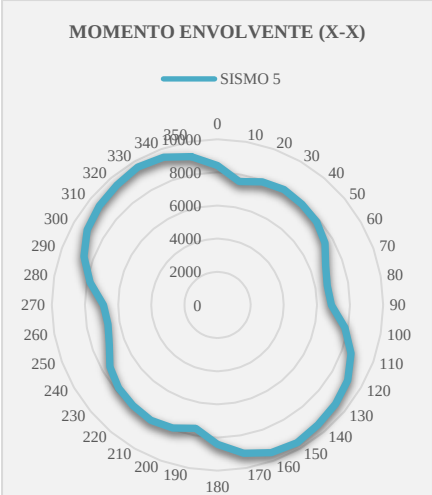

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

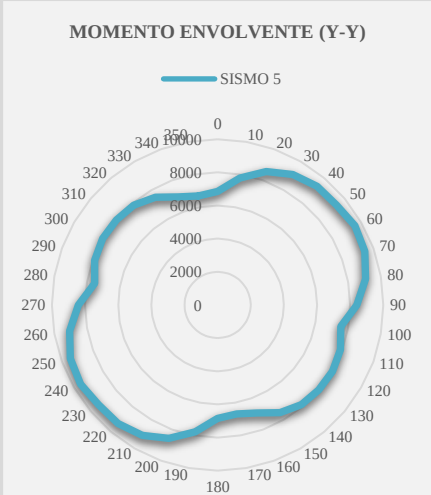

MOMENTO ENVOLVENTE (X-X)
SISMO 3

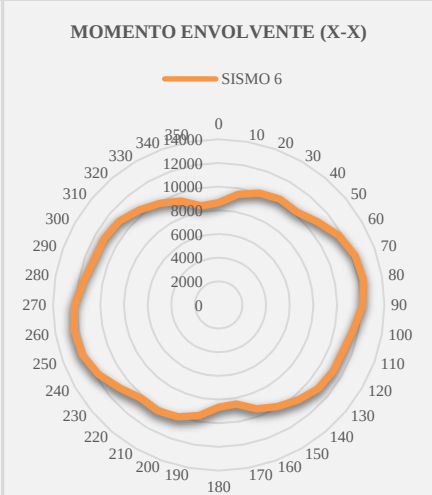

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

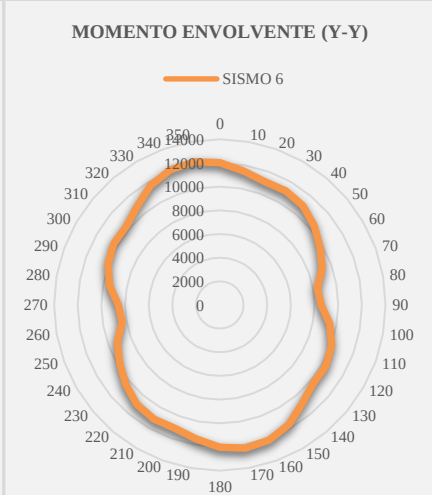

MOMENTO ENVOLVENTE (X-X)
SISMO 4

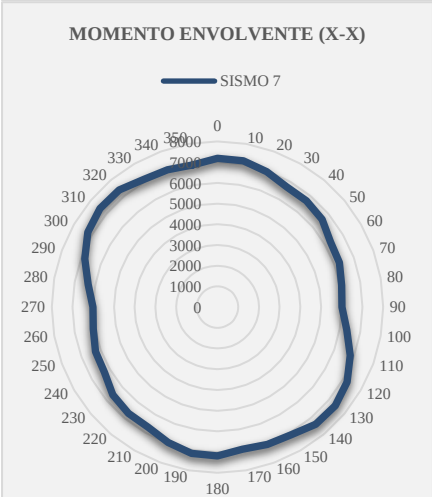

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

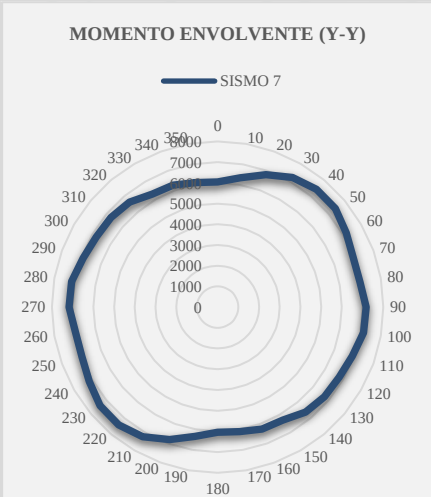

MOMENTO ENVOLVENTE (X-X)
SISMO 5

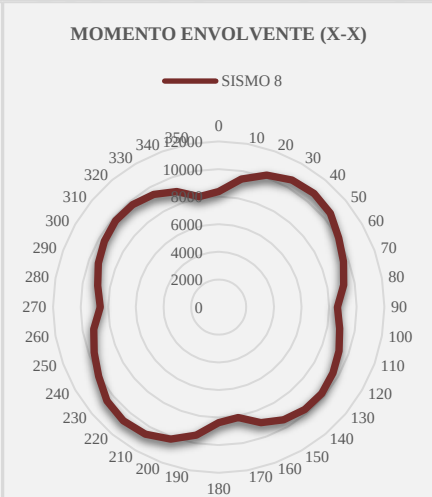

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

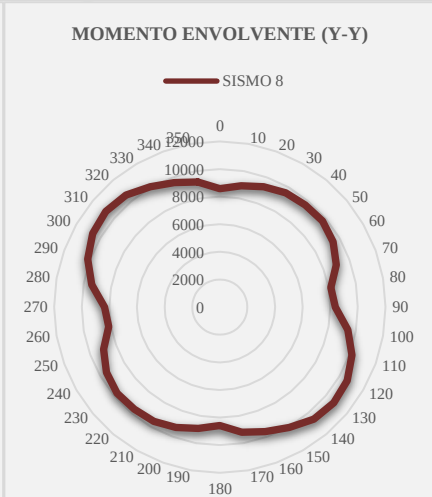

MOMENTO ENVOLVENTE (X-X)
SISMO 6

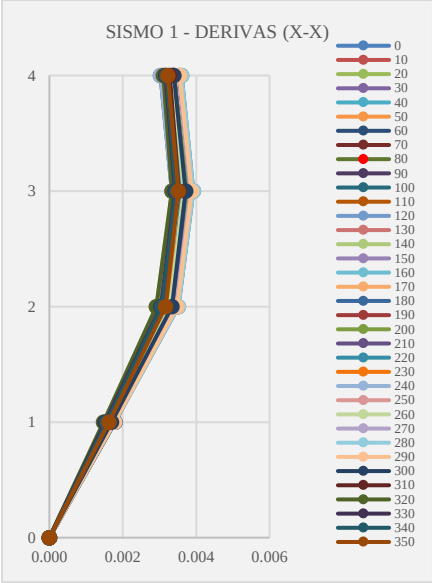

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

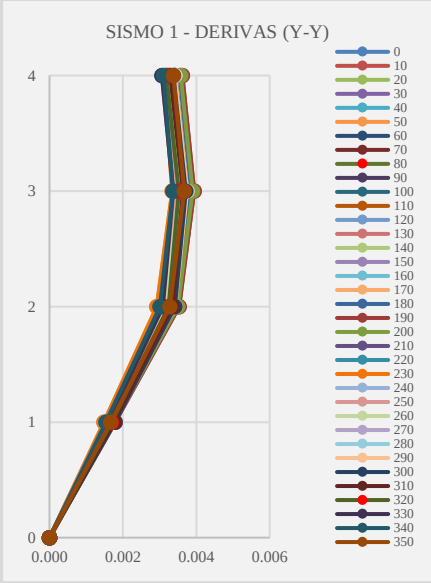

MOMENTO ENVOLVENTE (X-X)
SISMO 7

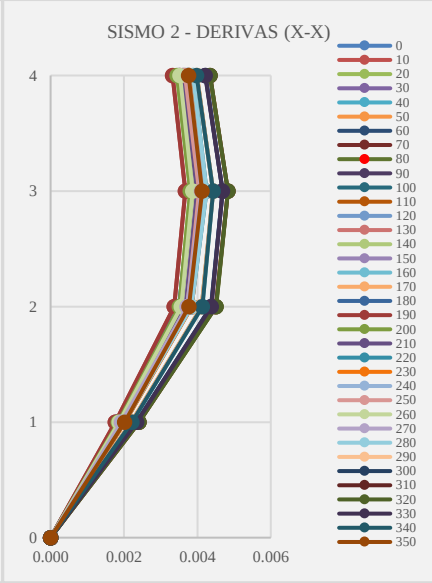

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

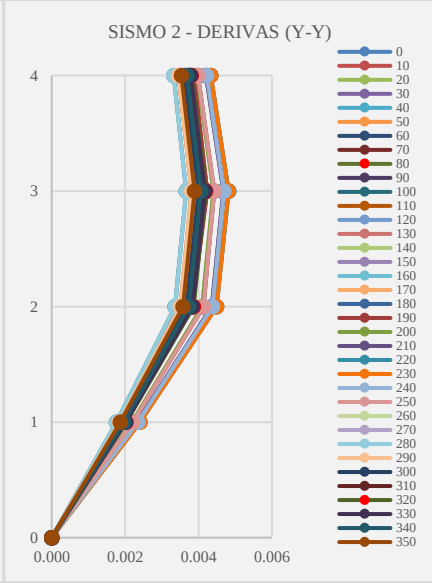

MOMENTO ENVOLVENTE (X-X)
SISMO 8

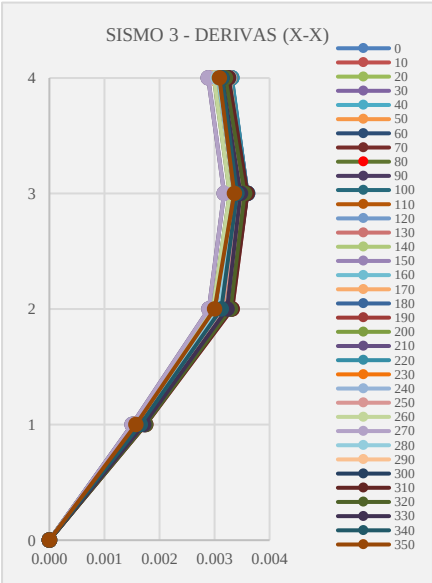

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

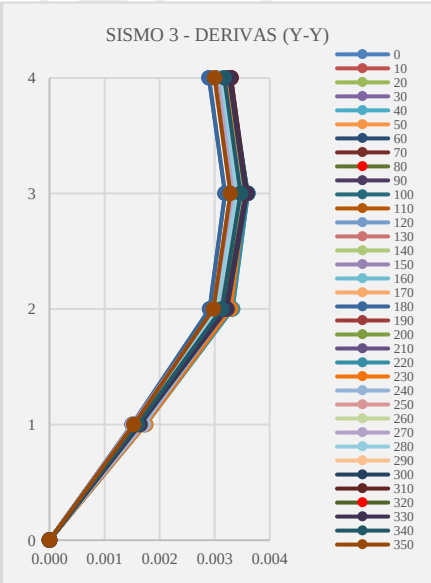

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

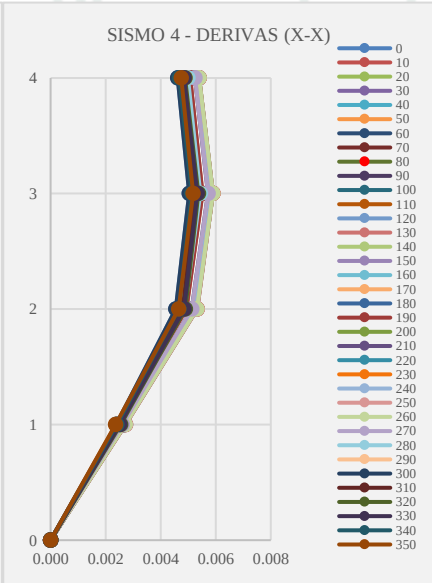

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

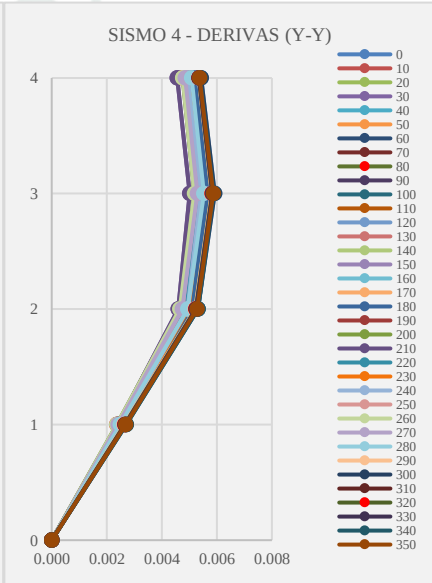

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

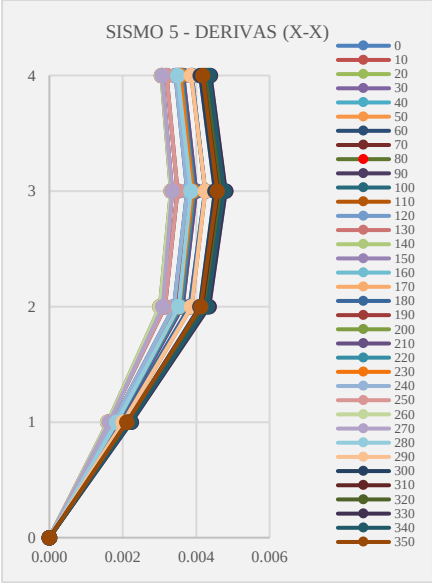

SISMO 2 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

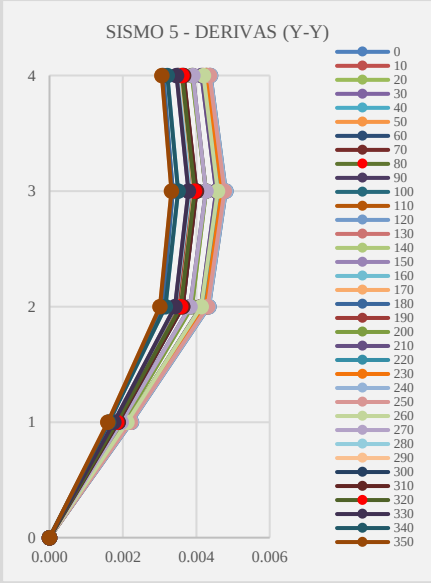

SISMO 3 - DERIVAS (X-X)
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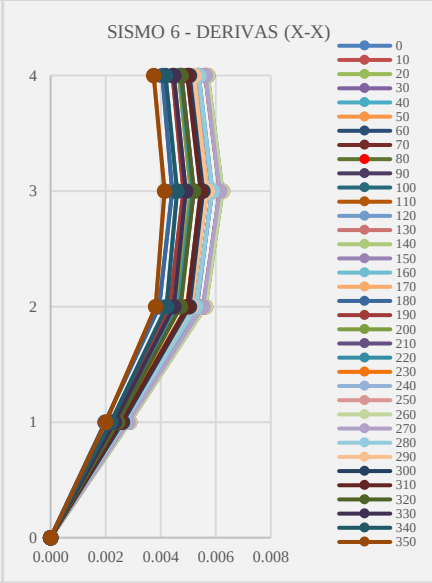

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.001 0.002 0.003 0.004
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

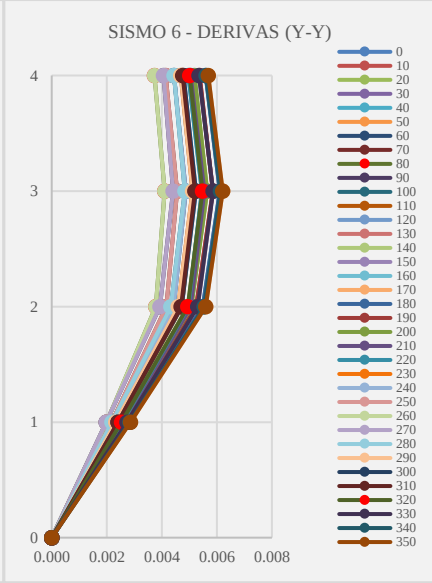

SISMO 4 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

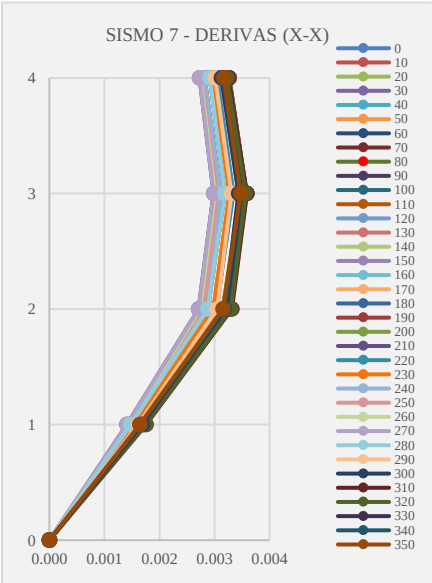

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

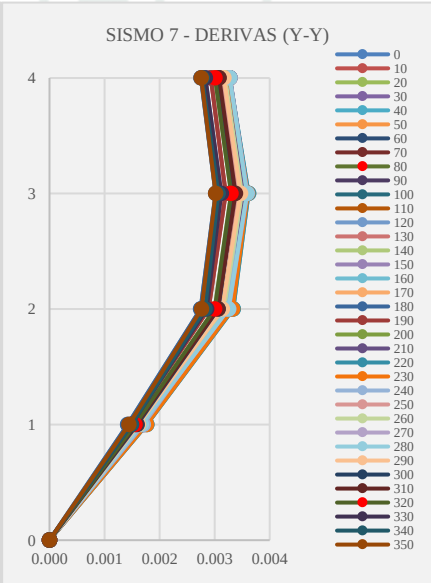

SISMO 5 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

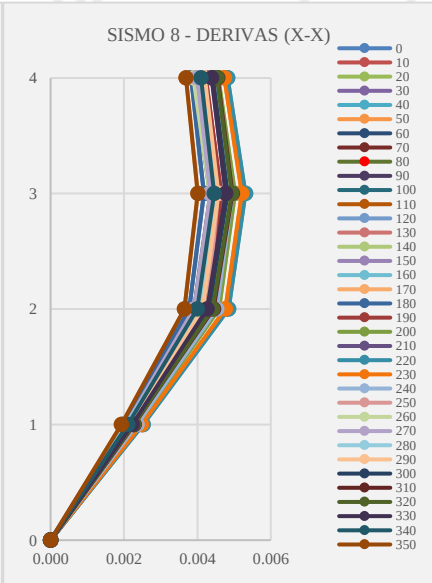

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

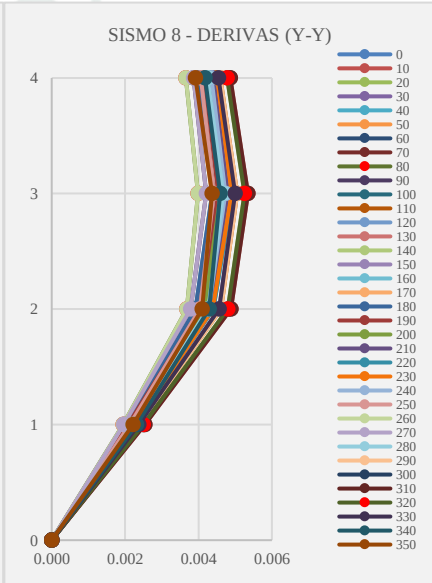

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

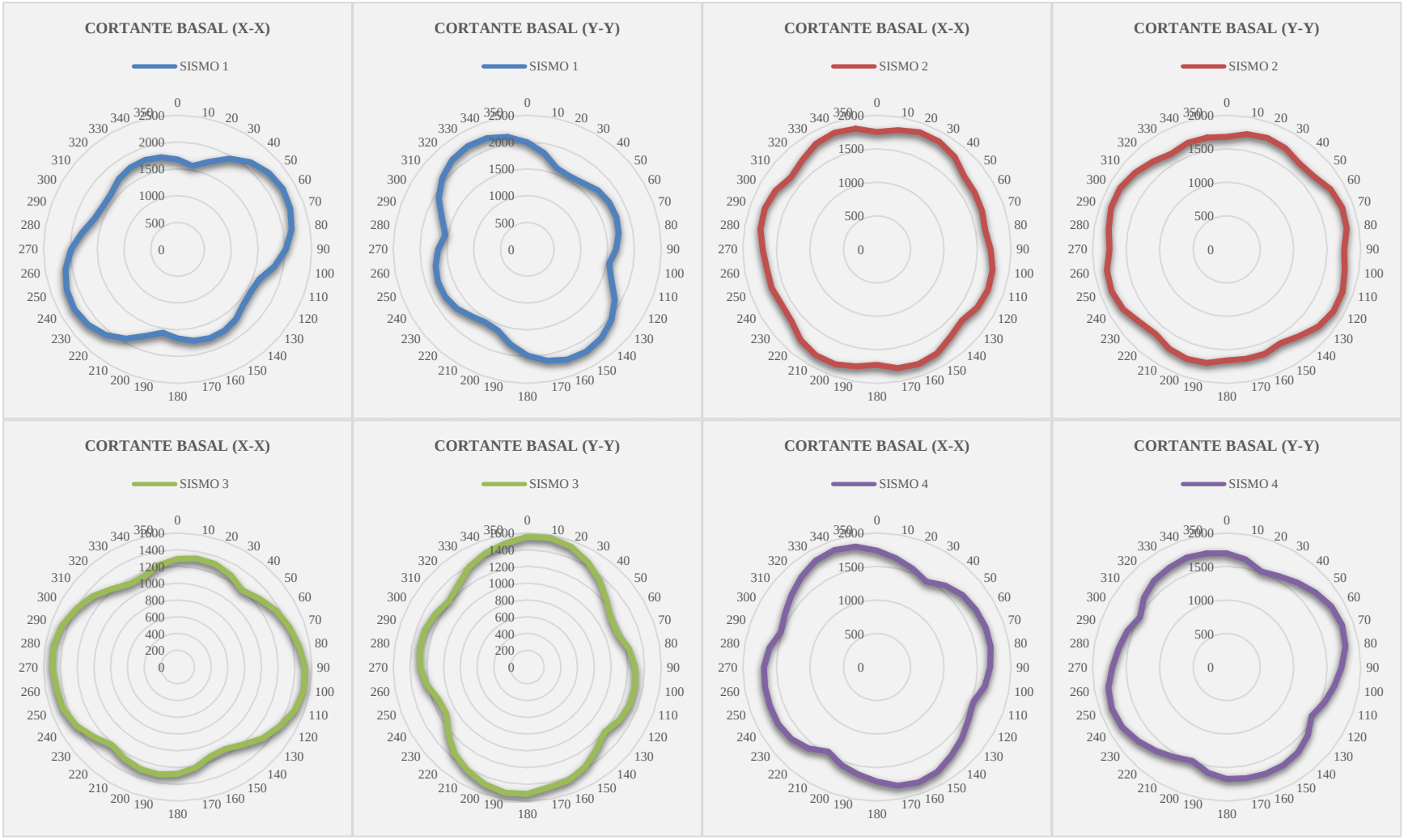

SISMO 7 - DERIVAS (X-X)
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0.000 0.001 0.002 0.003 0.004
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.001 0.002 0.003 0.004
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

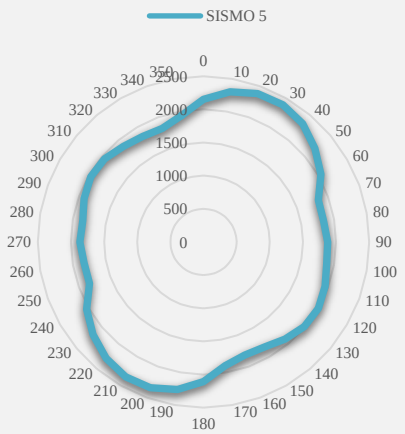

SISMO 8 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

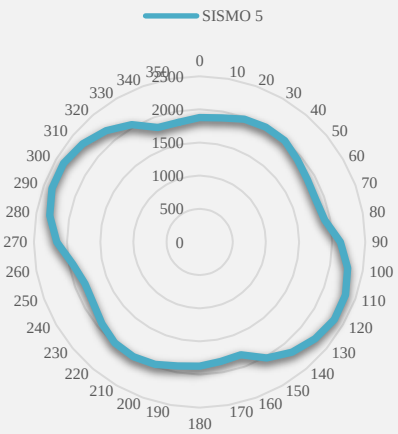
Para 8 pisos:


CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

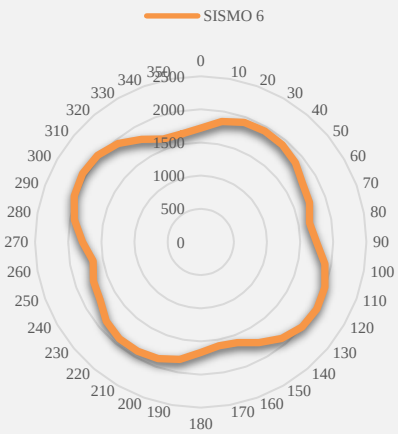
CORTANTE BASAL (X-X)



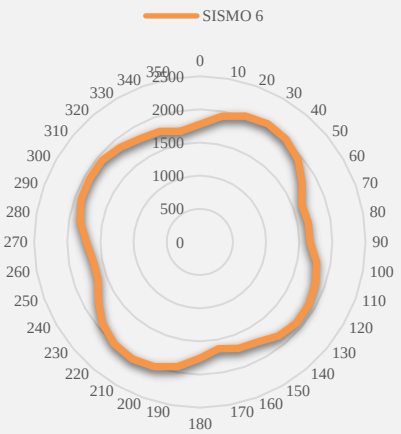
CORTANTE BASAL (Y-Y)



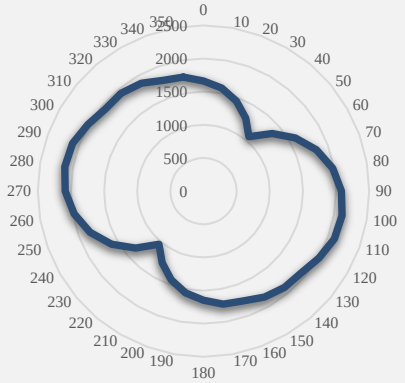
CORTANTE BASAL (X-X)



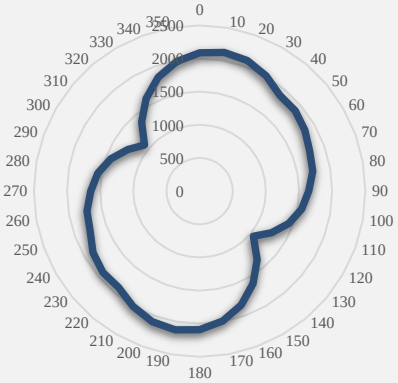
CORTANTE BASAL (Y-Y)



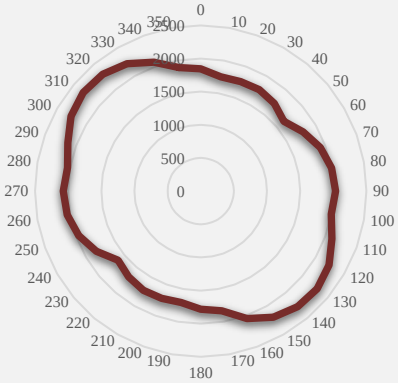
CORTANTE BASAL (X-X)



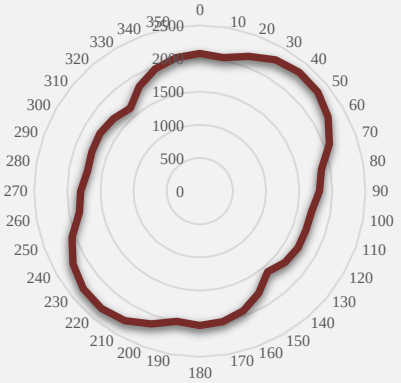
CORTANTE BASAL (Y-Y)

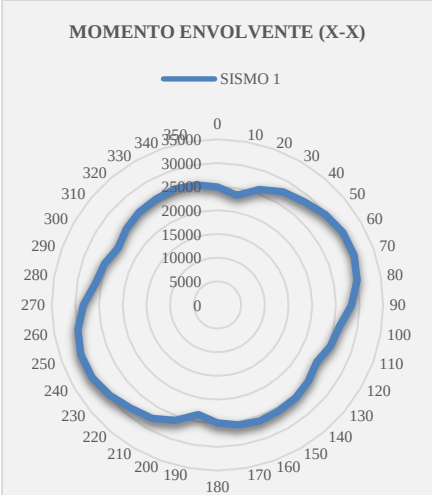


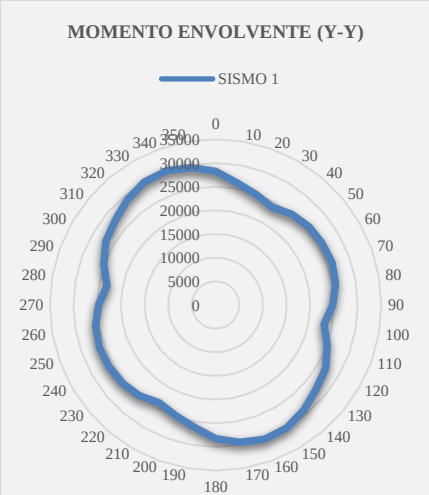
CORTANTE BASAL (X-X)

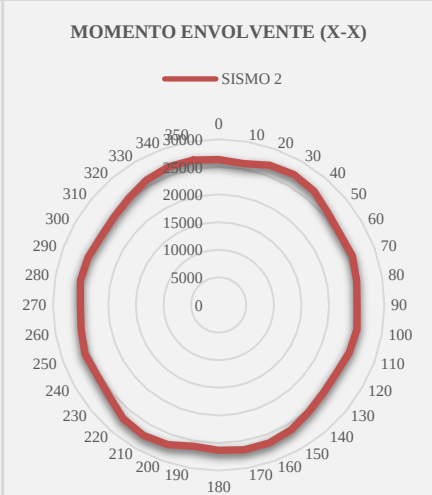


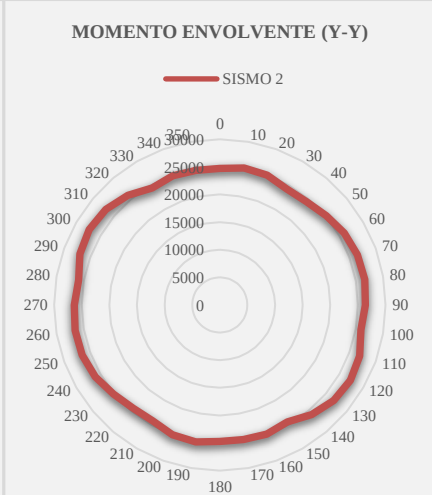
CORTANTE BASAL (Y-Y)

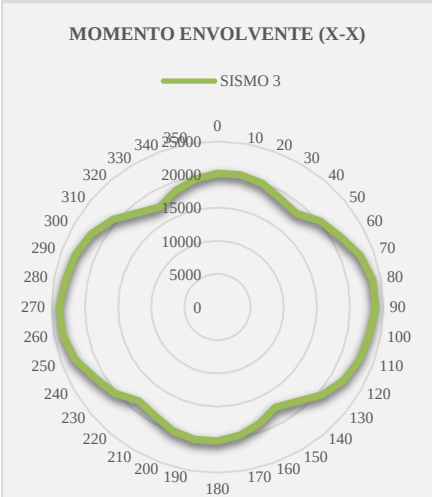


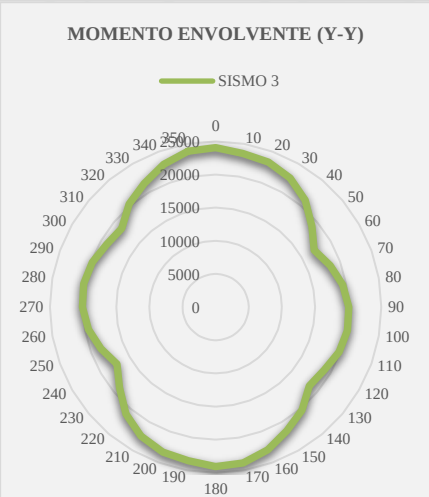

MOMENTO ENVOLVENTE (X-X)
SISMO 1

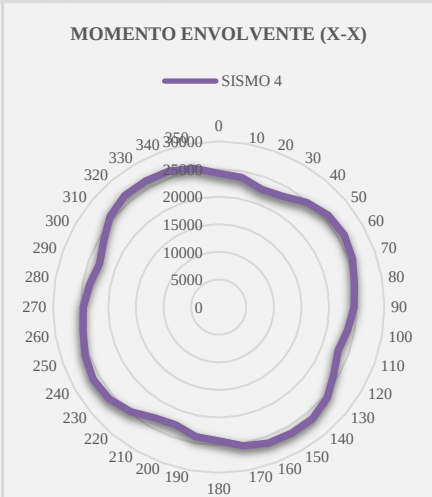

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

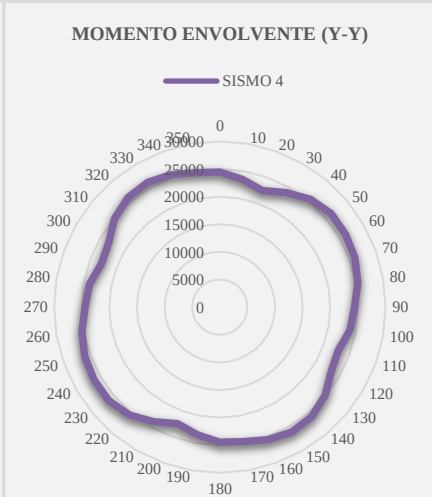

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

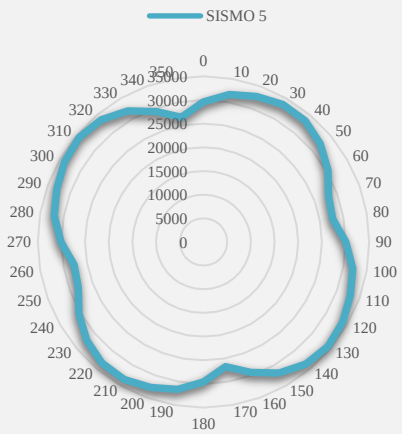

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

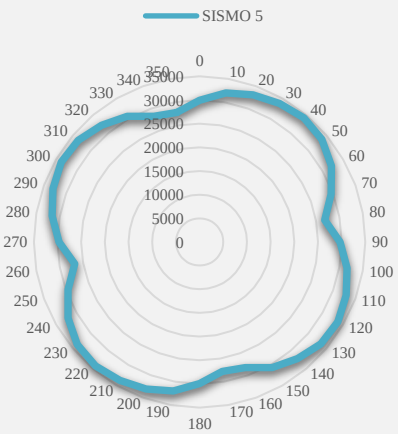

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

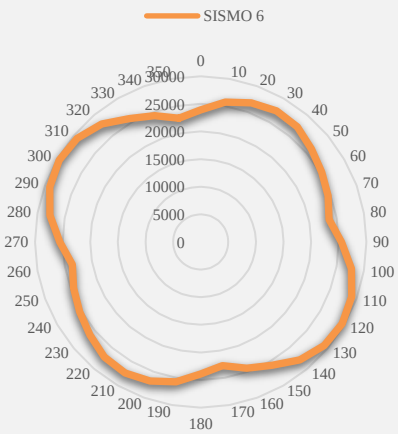
MOMENTO ENVOLVENTE (X-X)



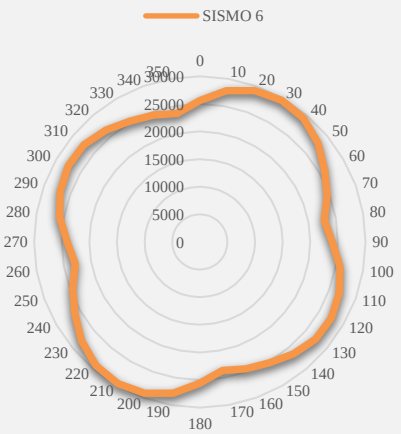
MOMENTO ENVOLVENTE (Y-Y)



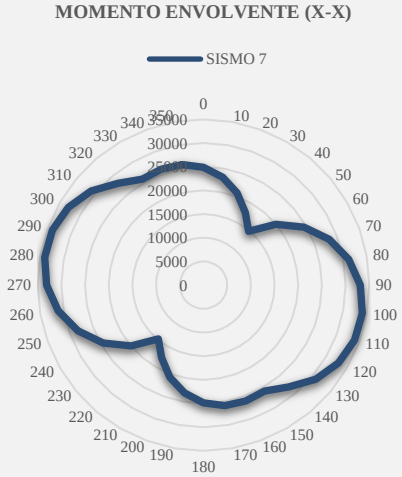
MOMENTO ENVOLVENTE (X-X)



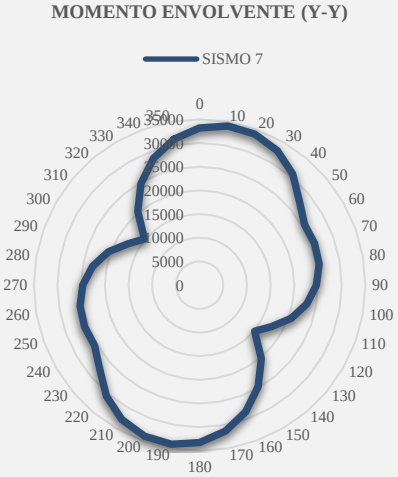
MOMENTO ENVOLVENTE (Y-Y)



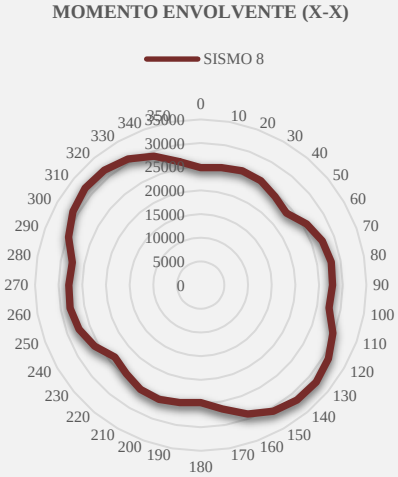
MOMENTO ENVOLVENTE (X-X)



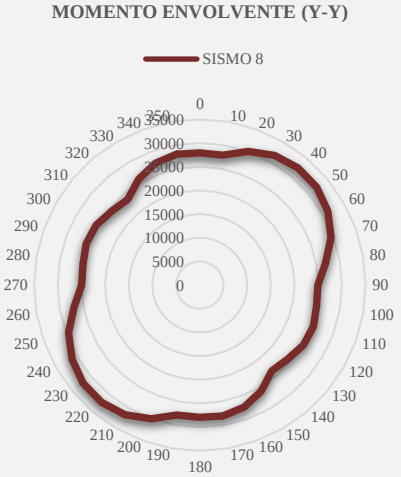
MOMENTO ENVOLVENTE (Y-Y)

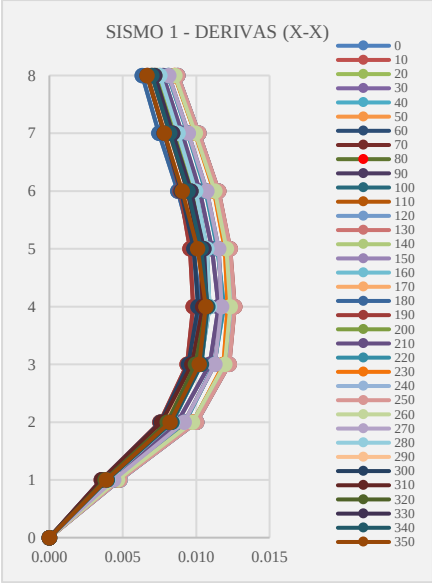


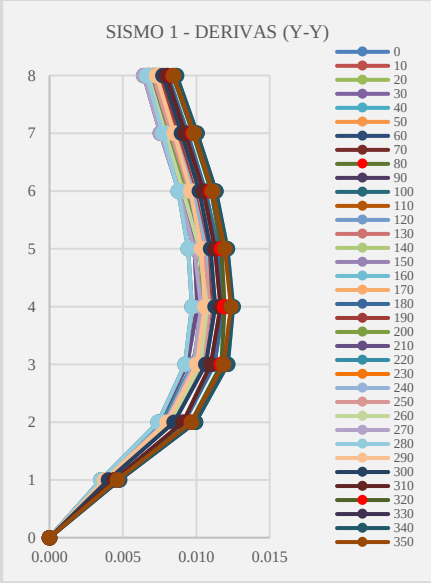
MOMENTO ENVOLVENTE (X-X)

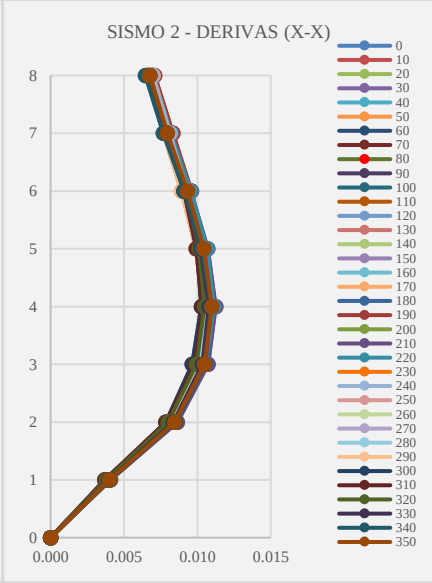


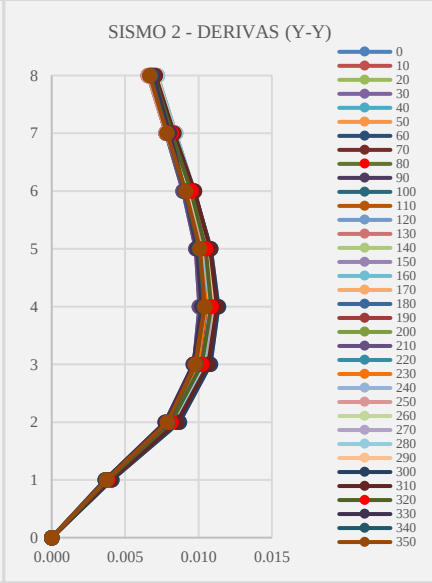
MOMENTO ENVOLVENTE (Y-Y)

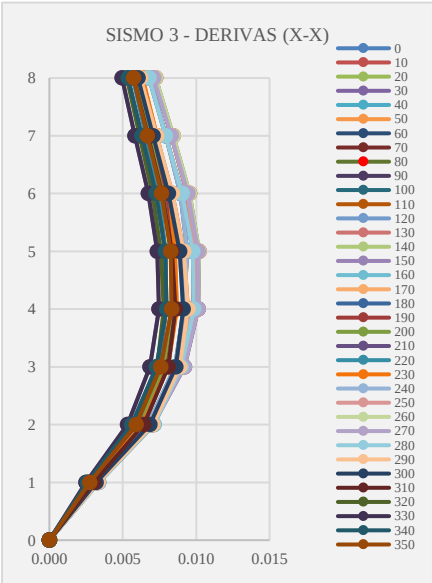


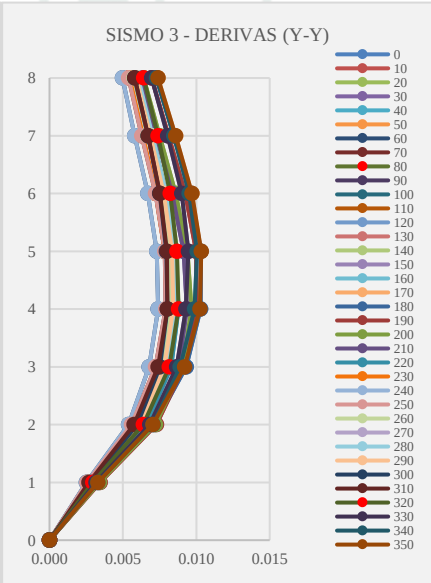

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

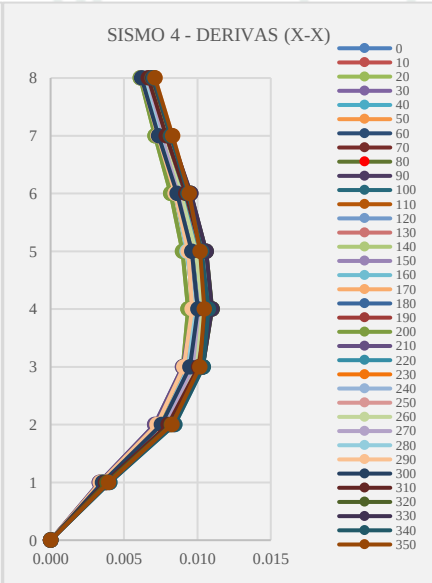

SISMO 1 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

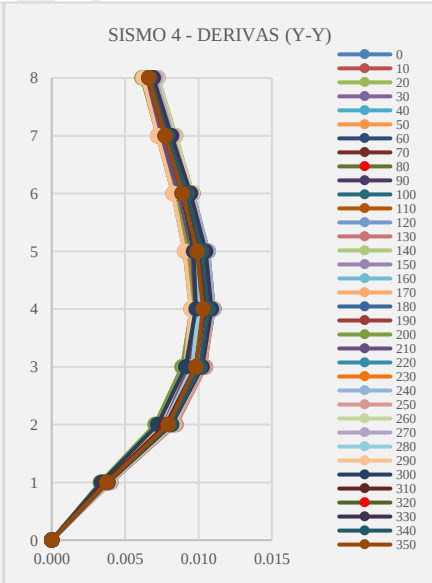

SISMO 2 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

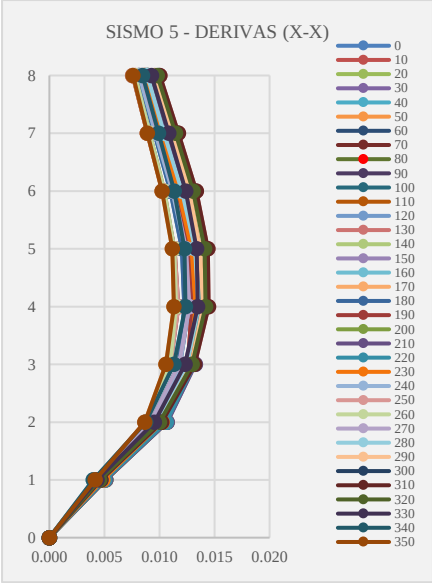

SISMO 2 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

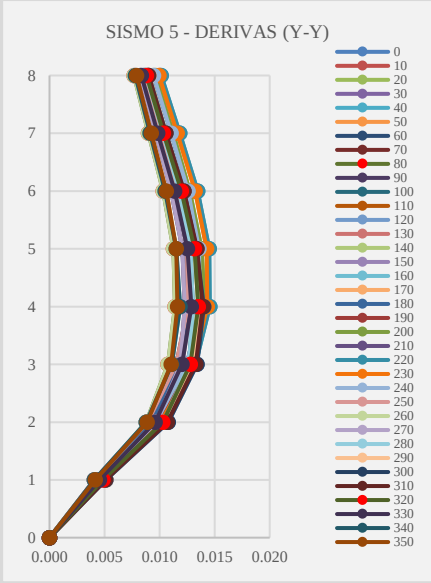

SISMO 3 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

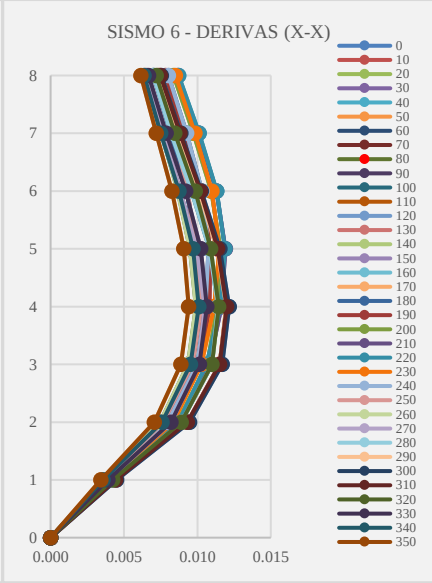

SISMO 3 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

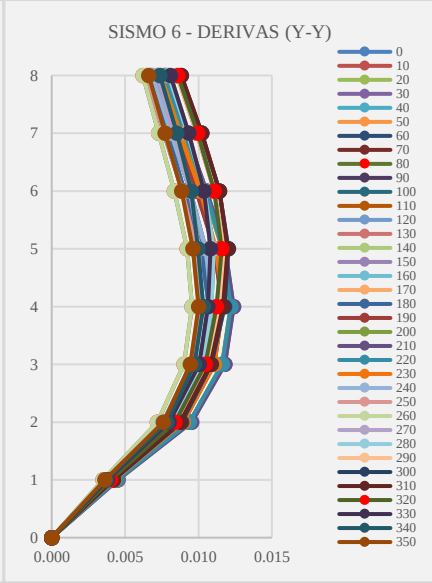

SISMO 4 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

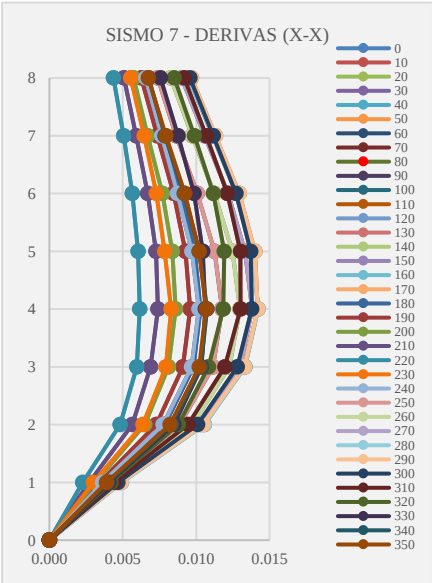

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015

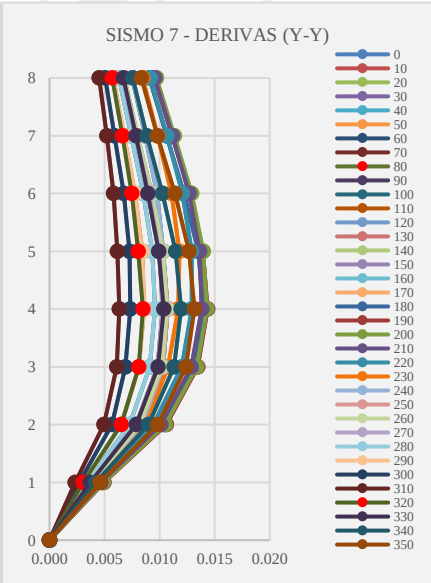

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

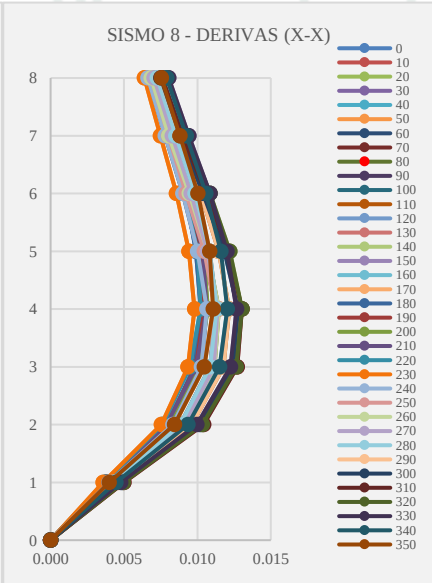

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

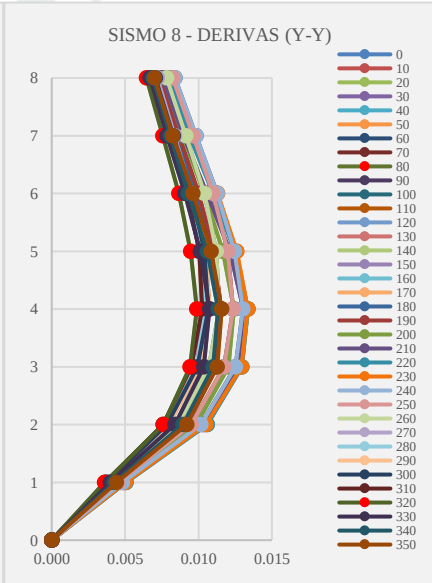

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

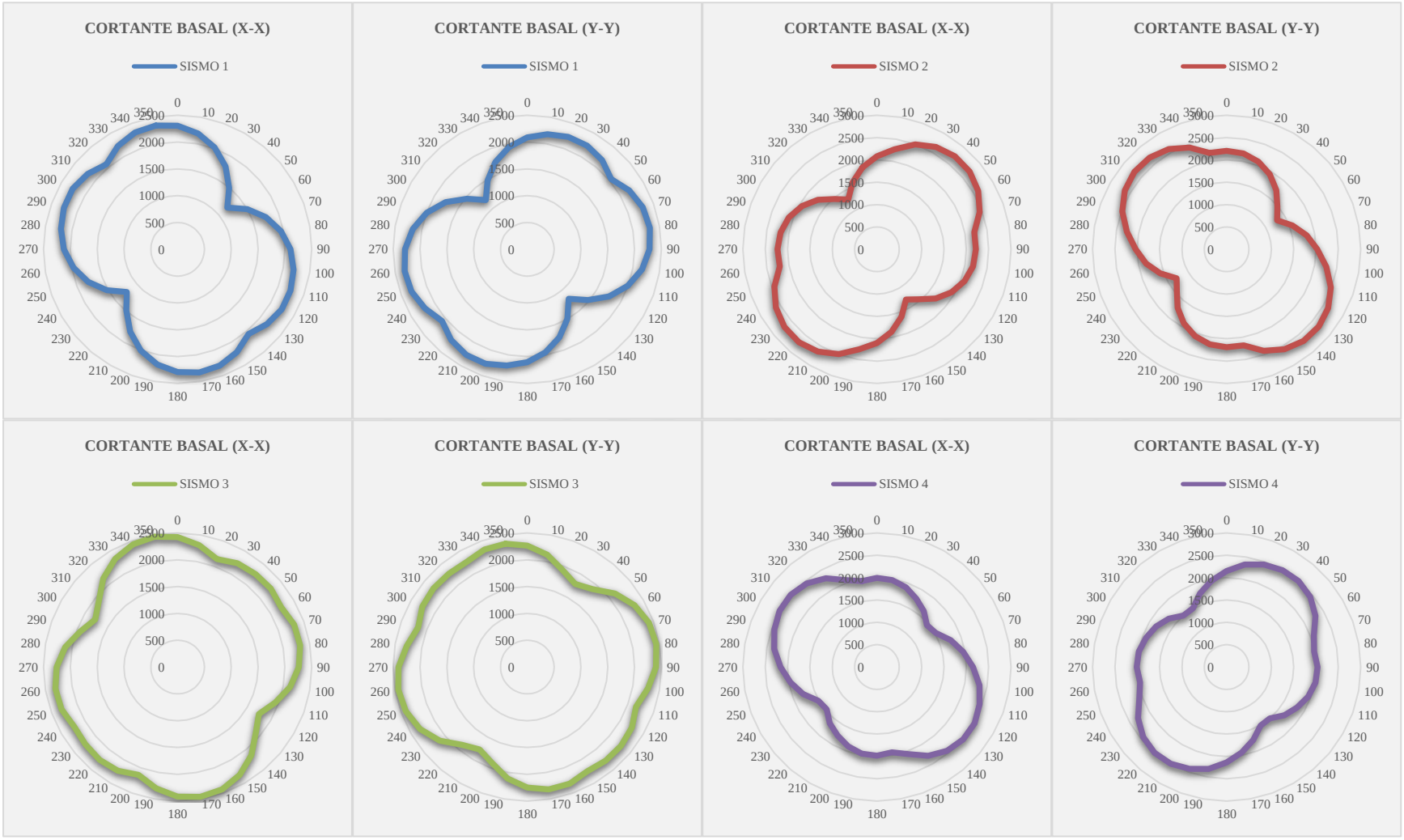

SISMO 7 - DERIVAS (X-X)
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0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

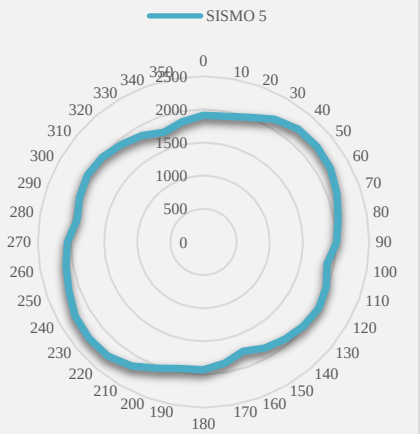

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

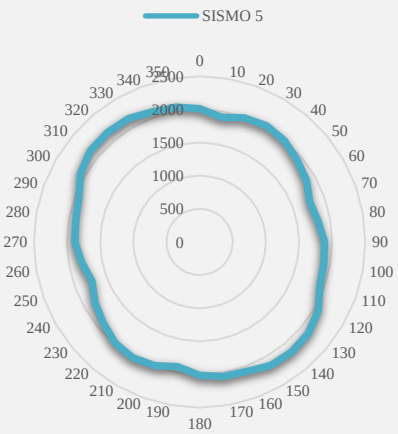
Para 12 pisos:



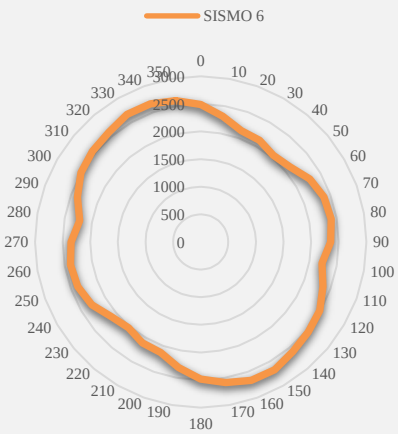
CORTANTE BASAL (X-X)



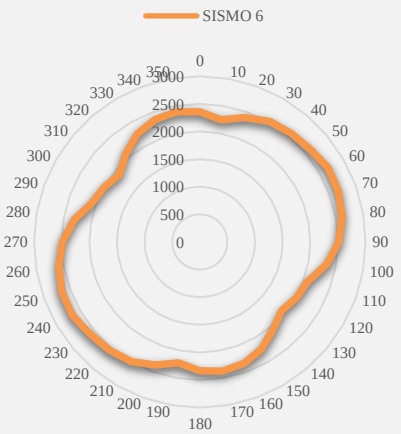
CORTANTE BASAL (Y-Y)



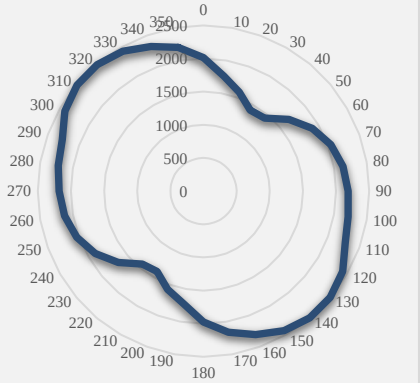
CORTANTE BASAL (X-X)



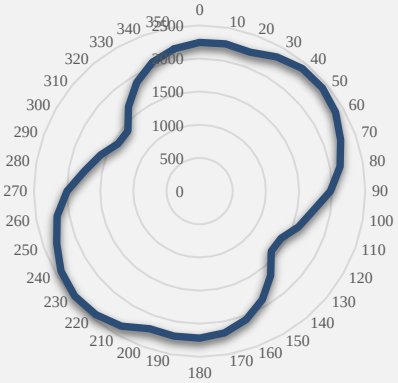
CORTANTE BASAL (Y-Y)



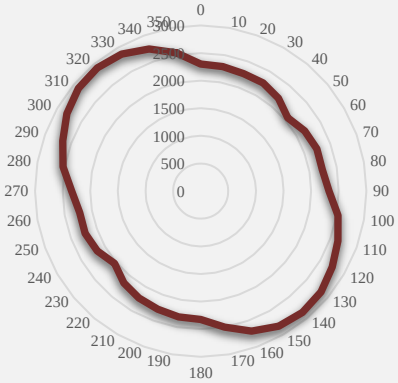
CORTANTE BASAL (X-X)



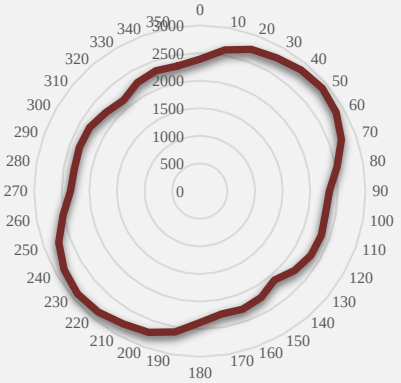
CORTANTE BASAL (Y-Y)

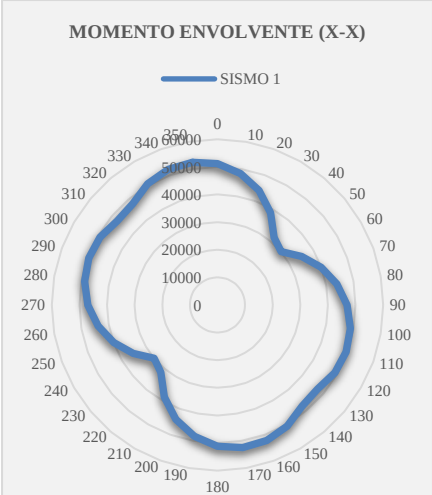


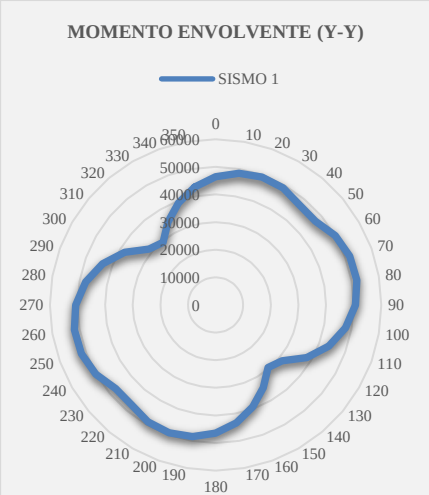
CORTANTE BASAL (X-X)

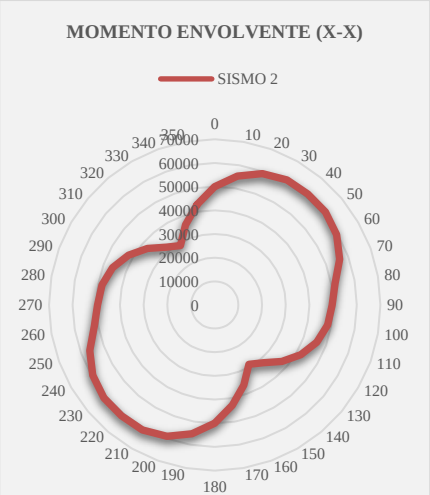


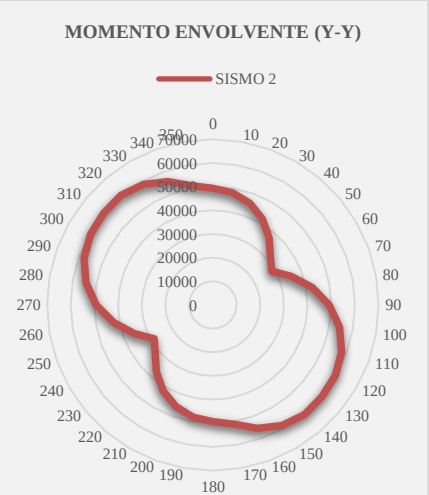
CORTANTE BASAL (Y-Y)

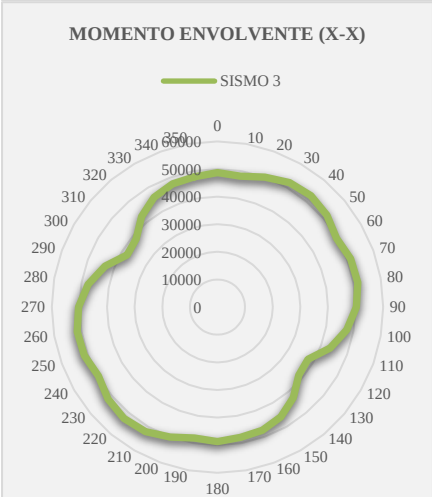


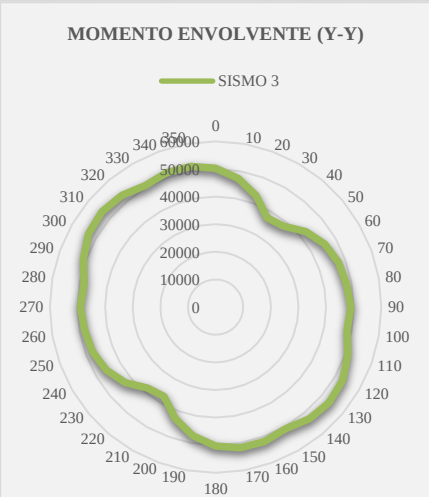

MOMENTO ENVOLVENTE (X-X)
SISMO 1

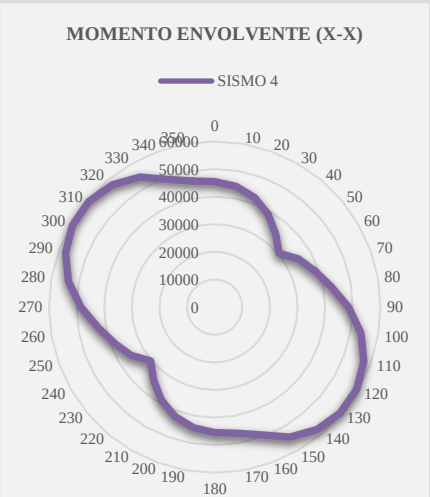

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

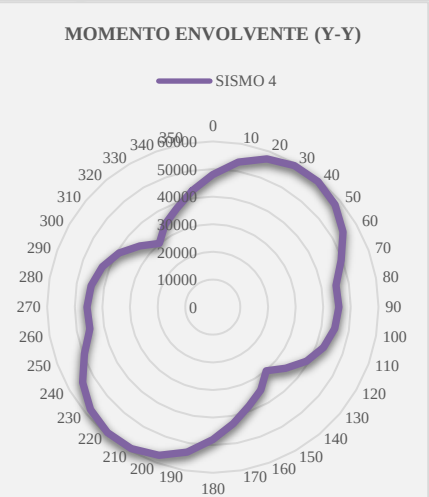

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

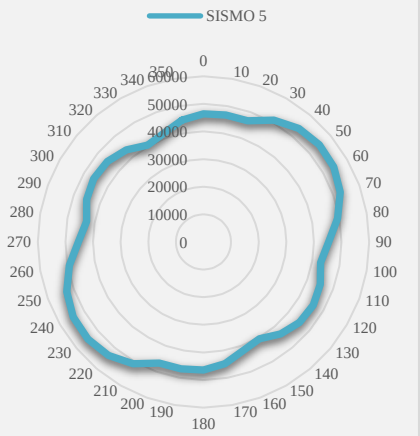

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

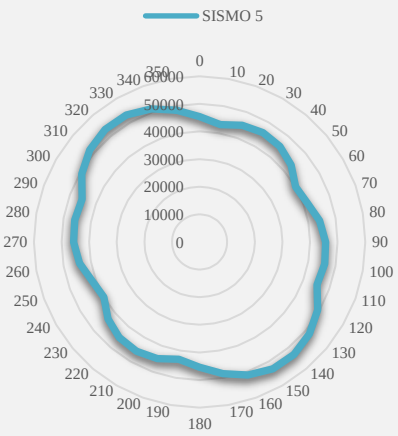

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

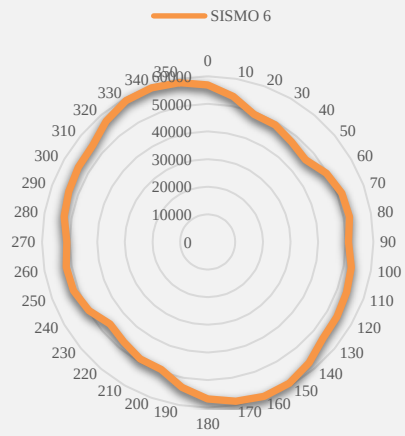
MOMENTO ENVOLVENTE (X-X)



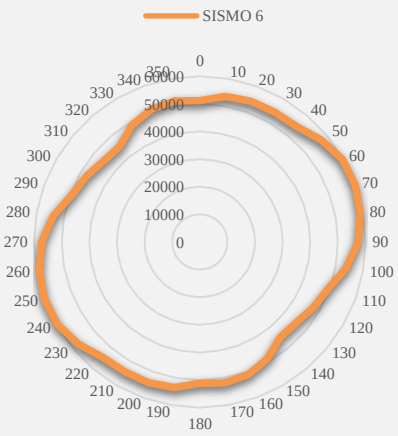
MOMENTO ENVOLVENTE (Y-Y)



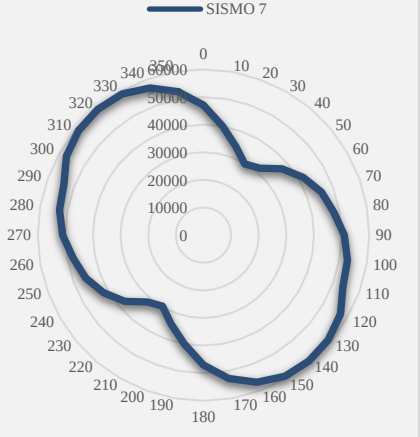
MOMENTO ENVOLVENTE (X-X)



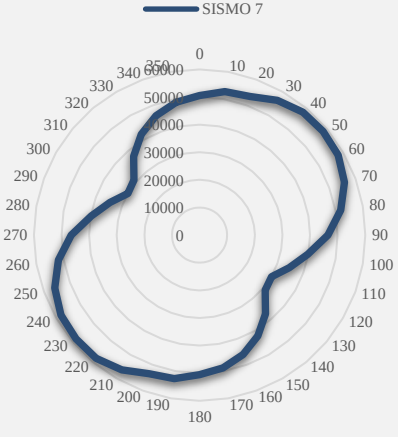
MOMENTO ENVOLVENTE (Y-Y)



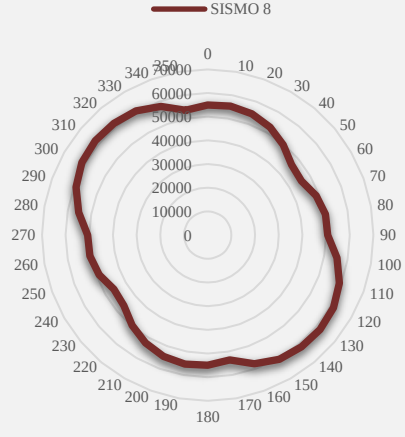
MOMENTO ENVOLVENTE (X-X)



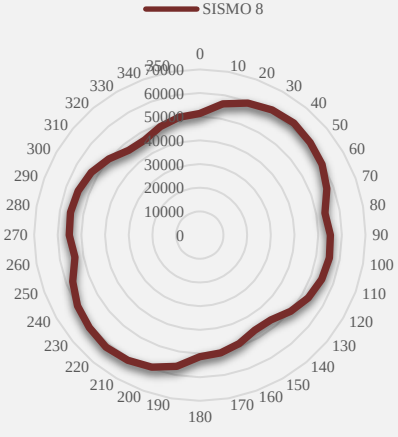
MOMENTO ENVOLVENTE (Y-Y)

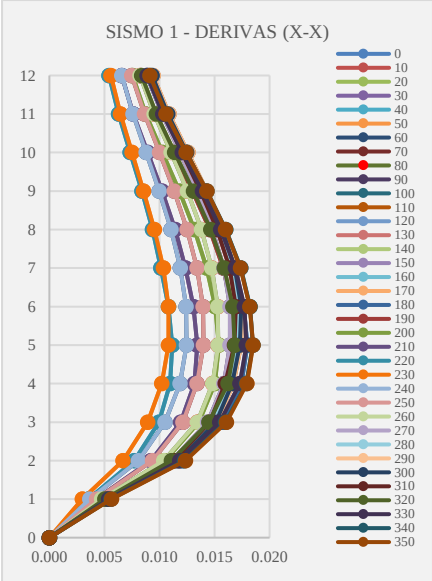


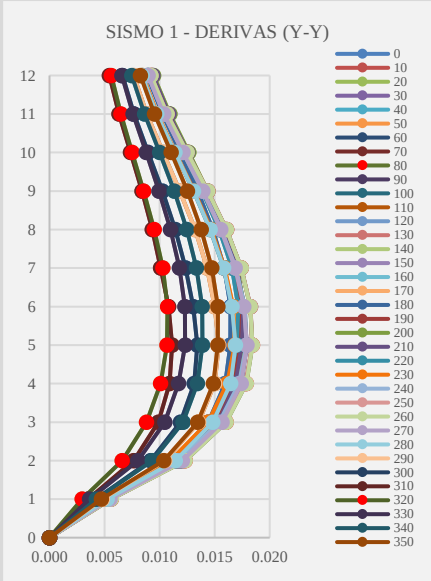
MOMENTO ENVOLVENTE (X-X)

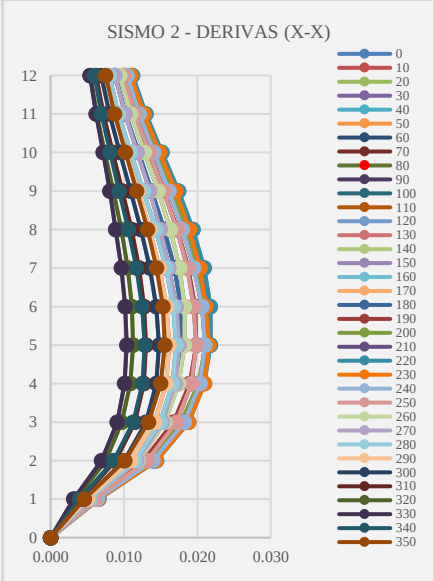


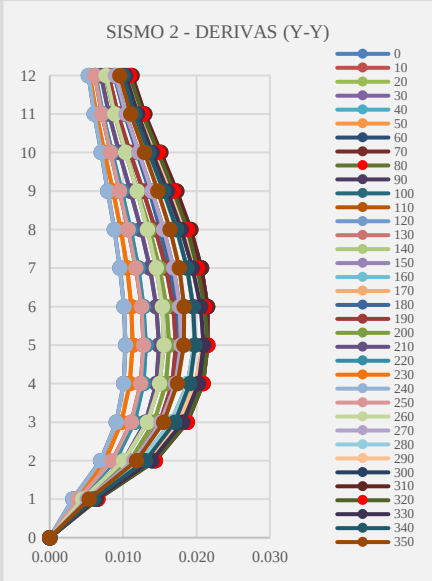
MOMENTO ENVOLVENTE (Y-Y)

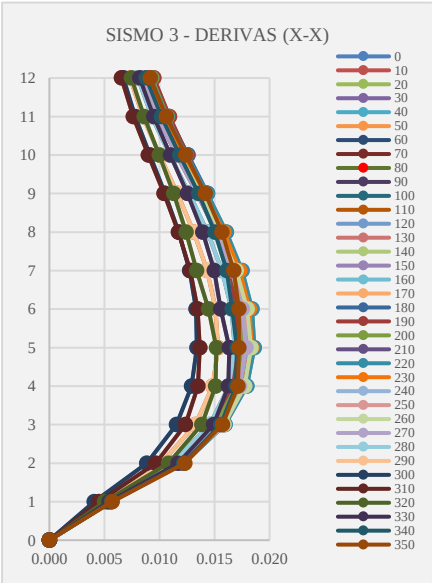


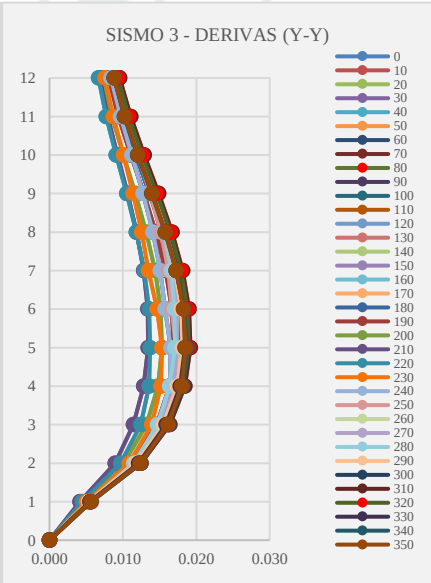

SISMO 1 - DERIVAS (X-X)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

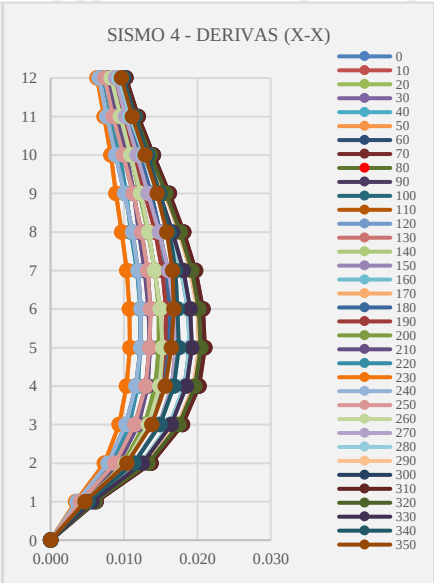

SISMO 1 - DERIVAS (Y-Y)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

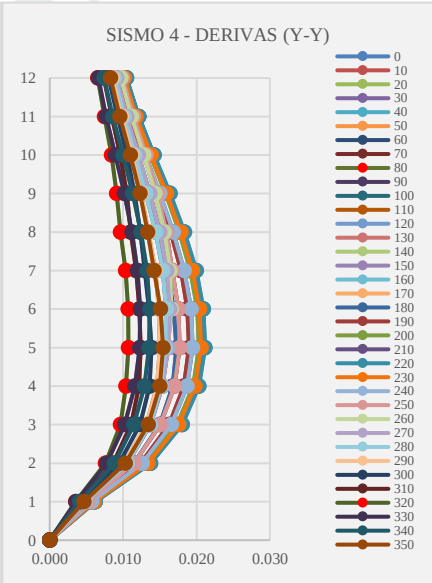

SISMO 2 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

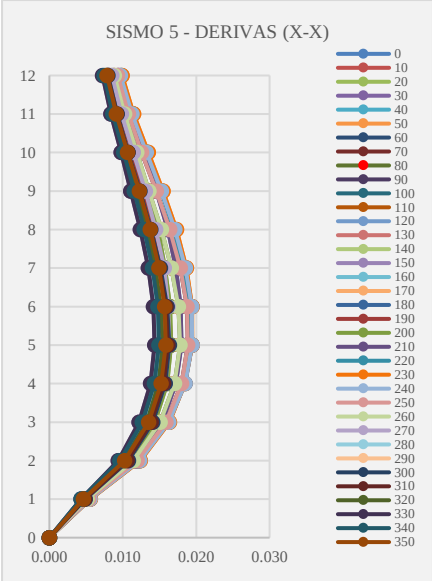

SISMO 2 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

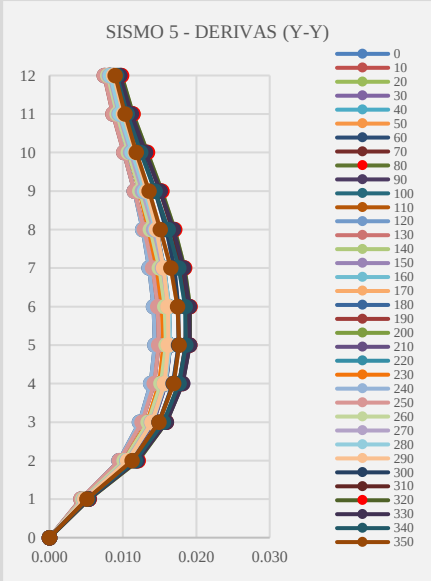

SISMO 3 - DERIVAS (X-X)
0.000 0.005 0.010 0.015 0.020
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

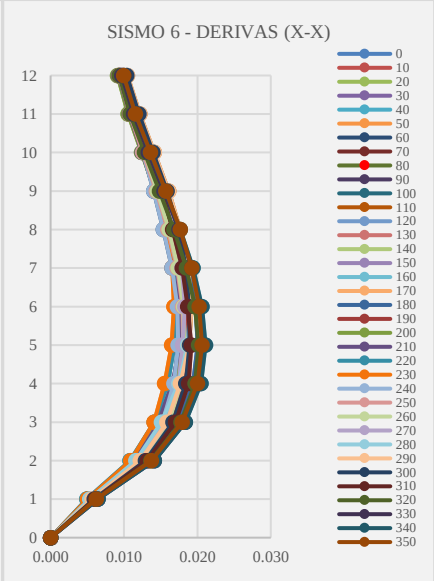

SISMO 3 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

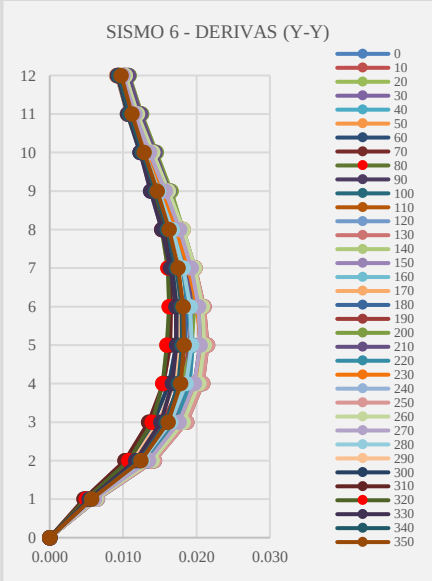

SISMO 4 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

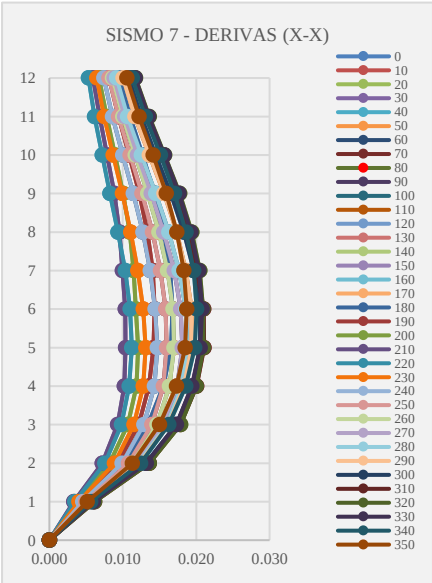

SISMO 4 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

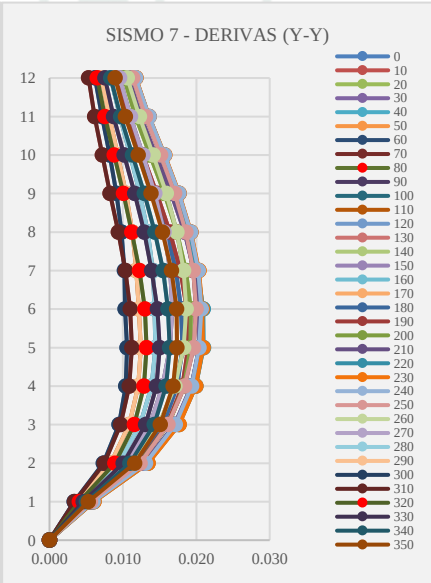

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

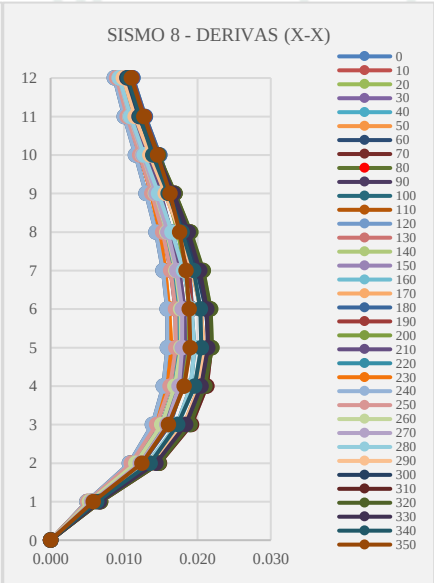

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

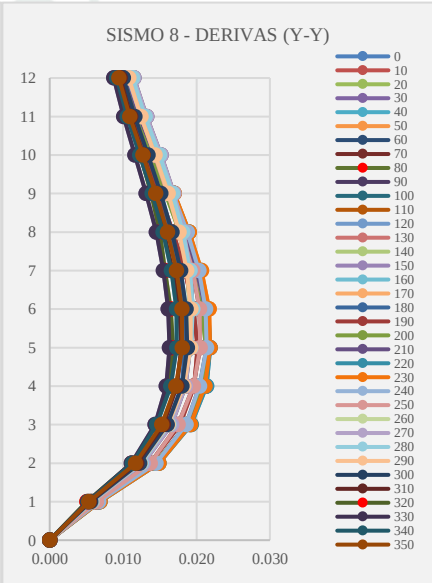

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

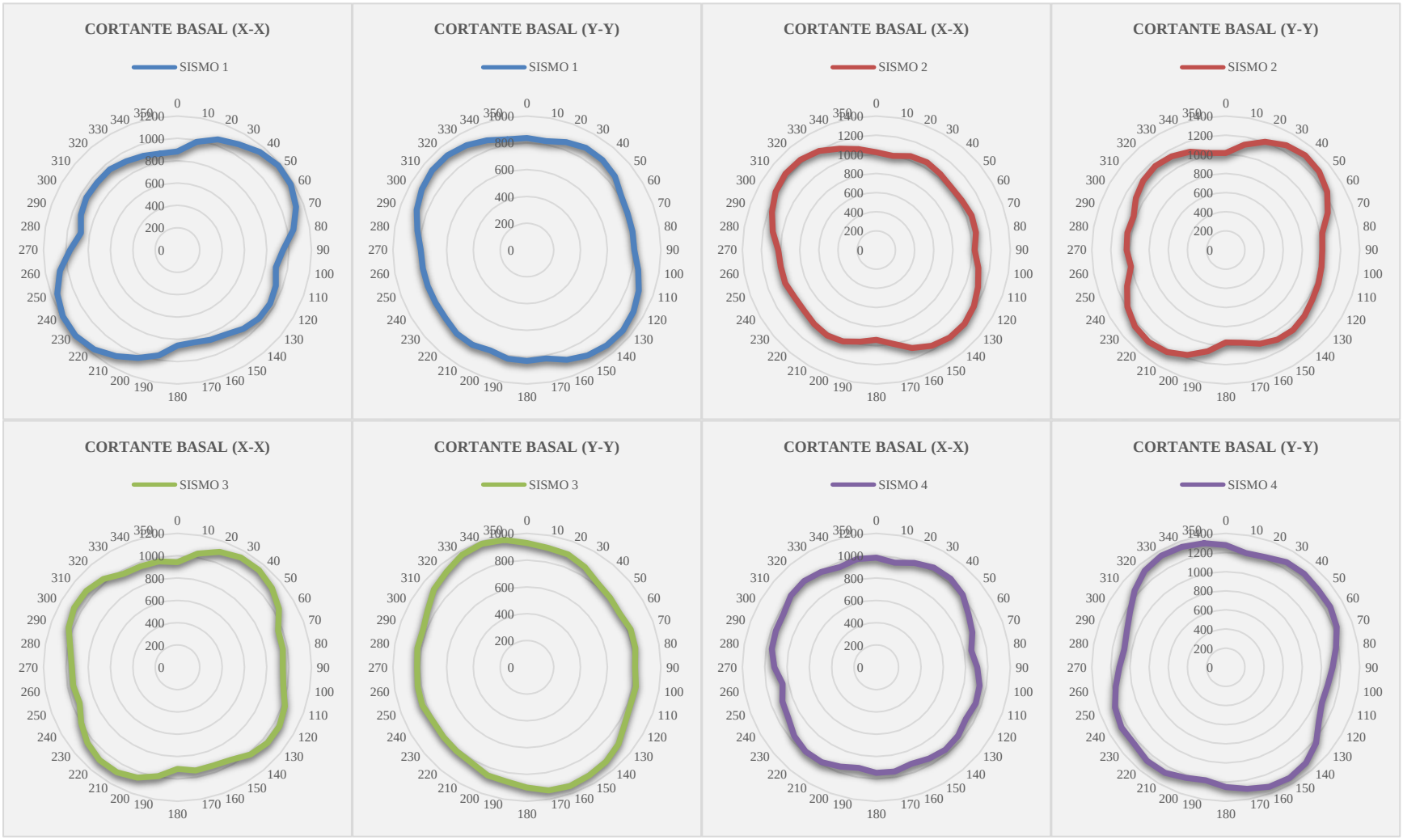

SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

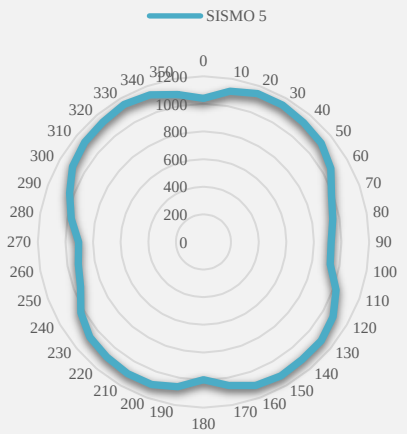

SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

MODELO 10

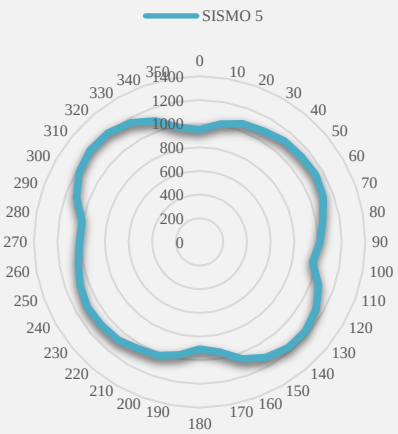
Para 4 pisos:



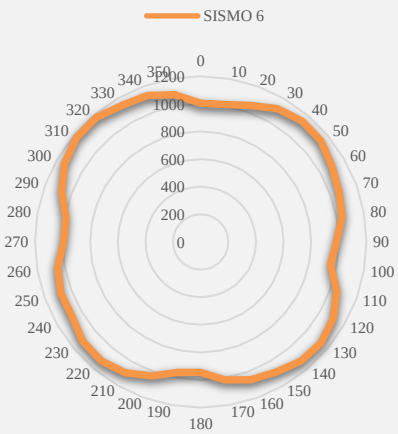
CORTANTE BASAL (X-X)



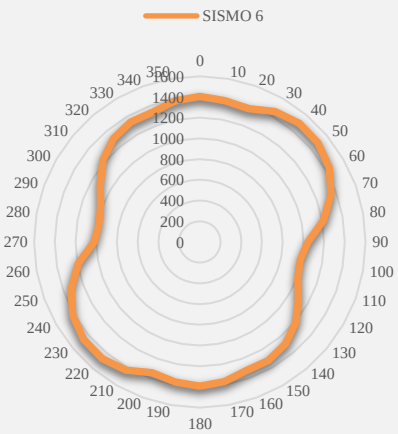
CORTANTE BASAL (Y-Y)



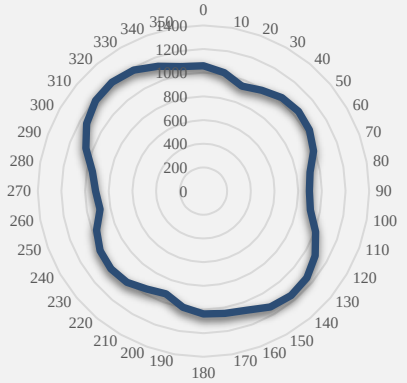
CORTANTE BASAL (X-X)



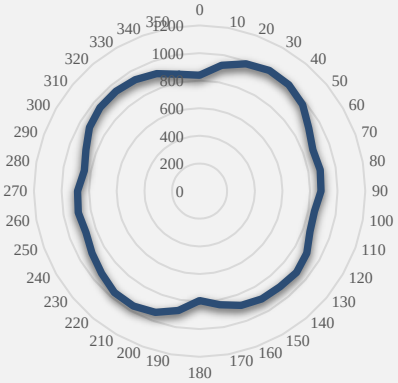
CORTANTE BASAL (Y-Y)



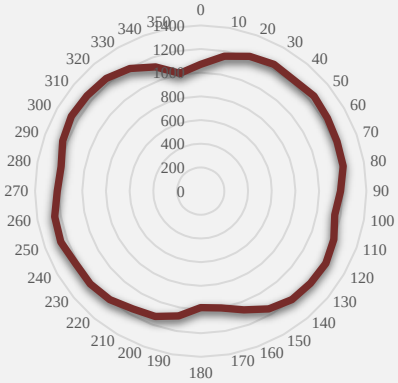
CORTANTE BASAL (X-X)



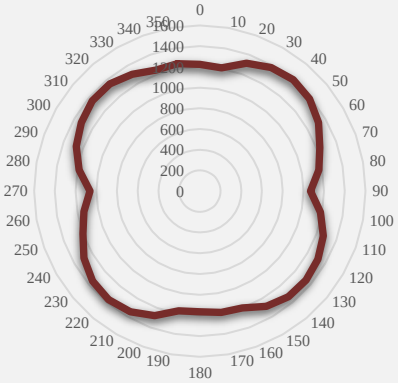
CORTANTE BASAL (Y-Y)



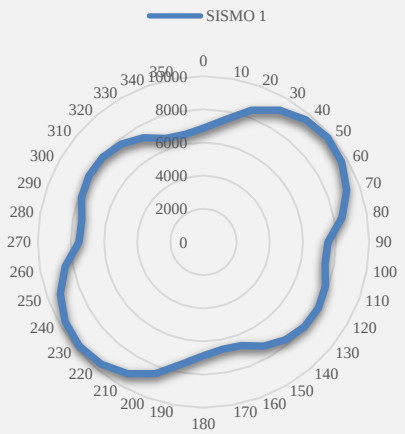
CORTANTE BASAL (X-X)



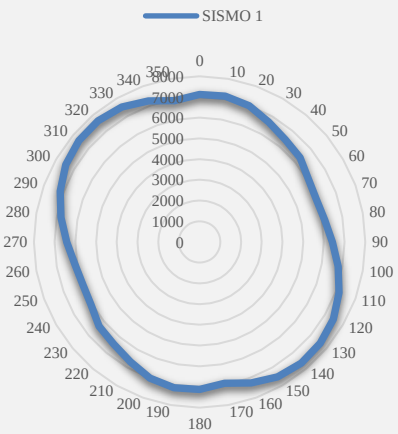
CORTANTE BASAL (Y-Y)



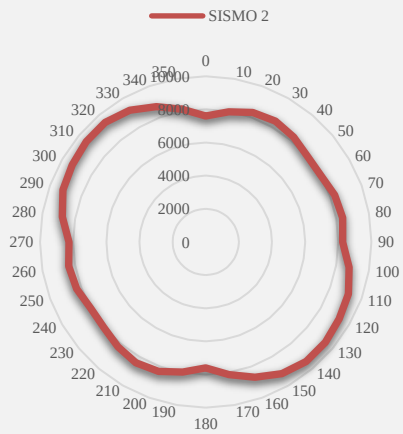
MOMENTO ENVOLVENTE (X-X)



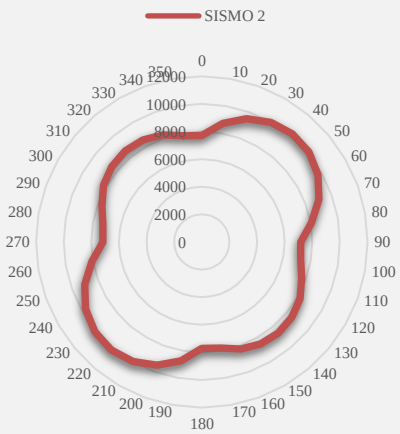
MOMENTO ENVOLVENTE (Y-Y)



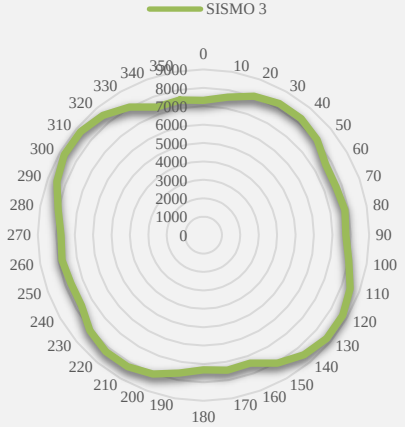
MOMENTO ENVOLVENTE (X-X)



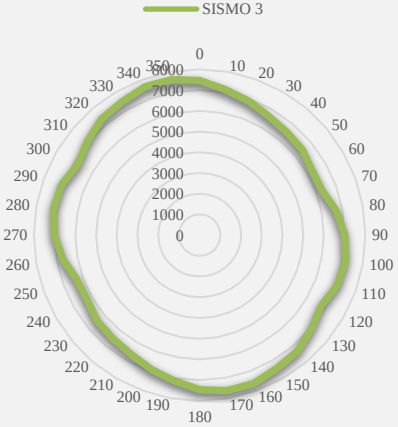
MOMENTO ENVOLVENTE (Y-Y)



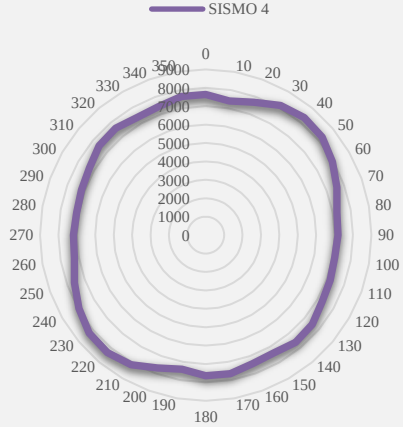
MOMENTO ENVOLVENTE (X-X)



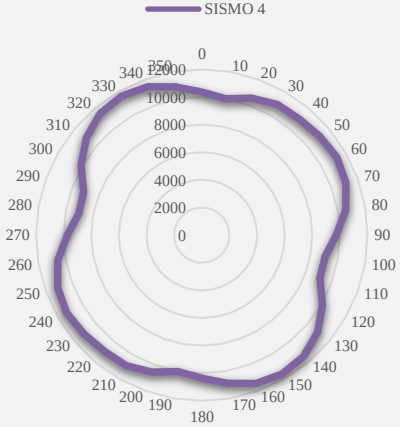
MOMENTO ENVOLVENTE (Y-Y)



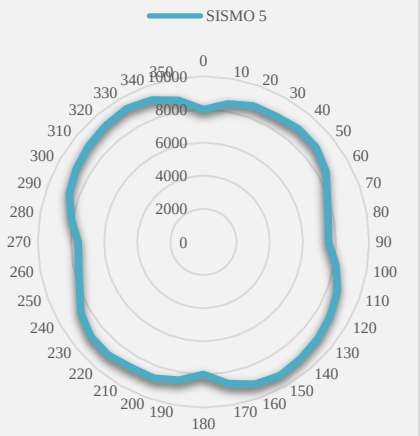
MOMENTO ENVOLVENTE (X-X)



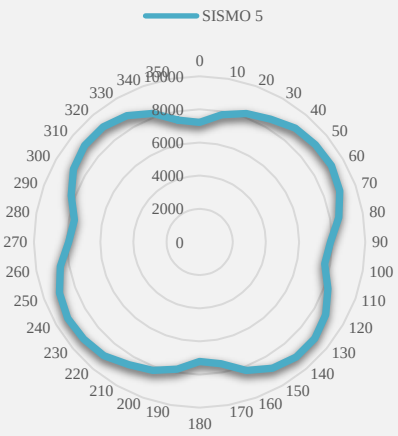
MOMENTO ENVOLVENTE (Y-Y)



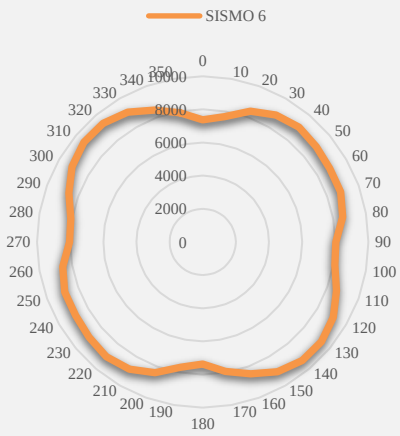
MOMENTO ENVOLVENTE (X-X)



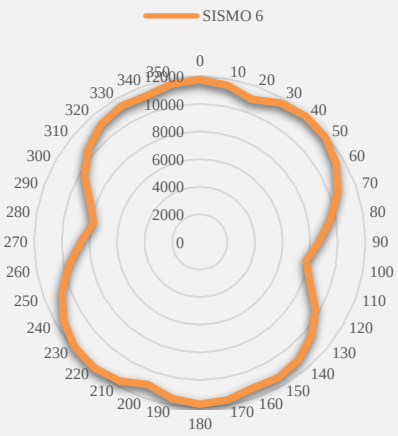
MOMENTO ENVOLVENTE (Y-Y)



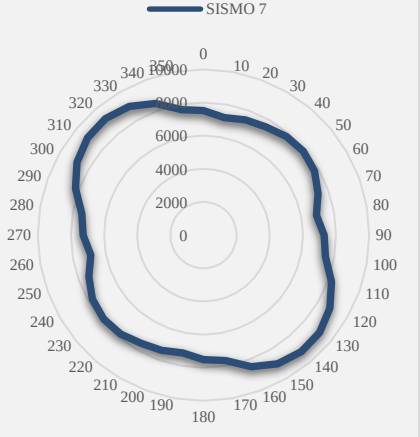
MOMENTO ENVOLVENTE (X-X)



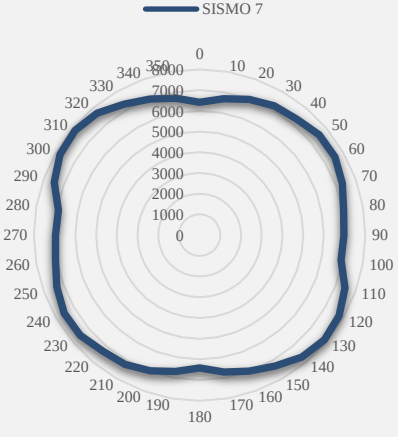
MOMENTO ENVOLVENTE (Y-Y)



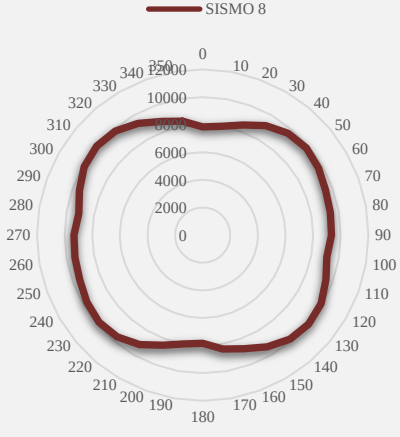
MOMENTO ENVOLVENTE (X-X)



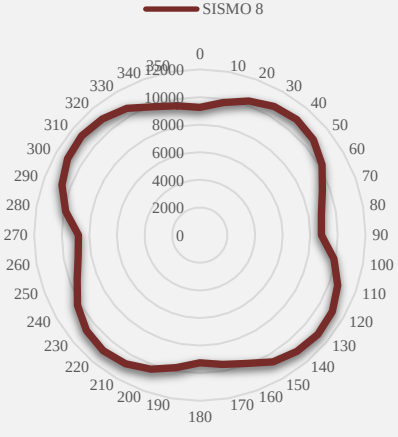
MOMENTO ENVOLVENTE (Y-Y)

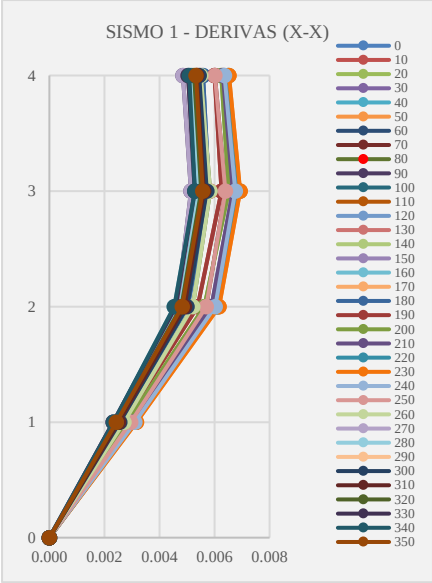


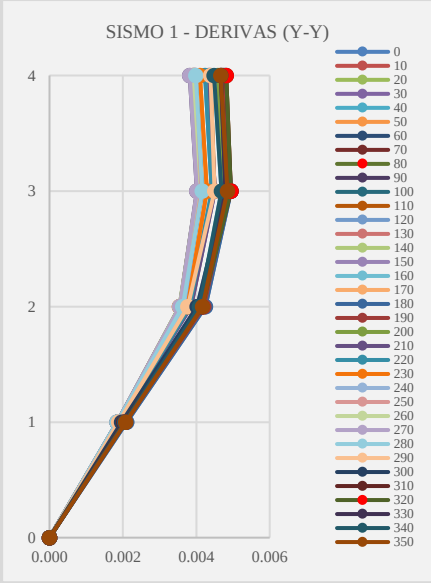
MOMENTO ENVOLVENTE (X-X)

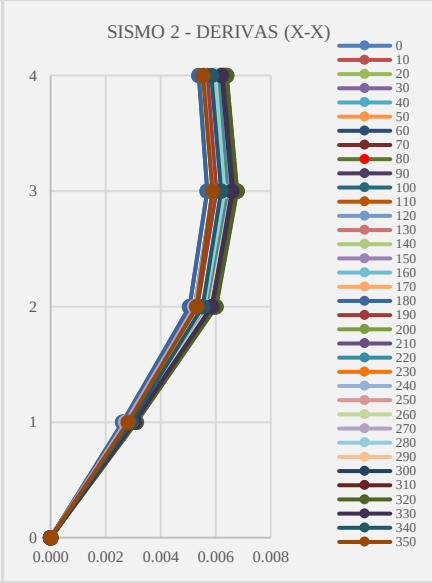


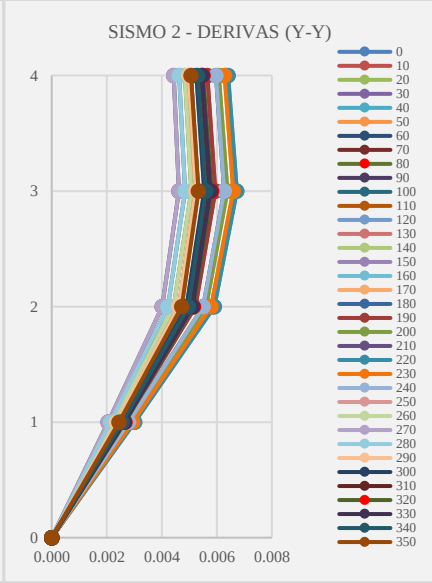
MOMENTO ENVOLVENTE (Y-Y)

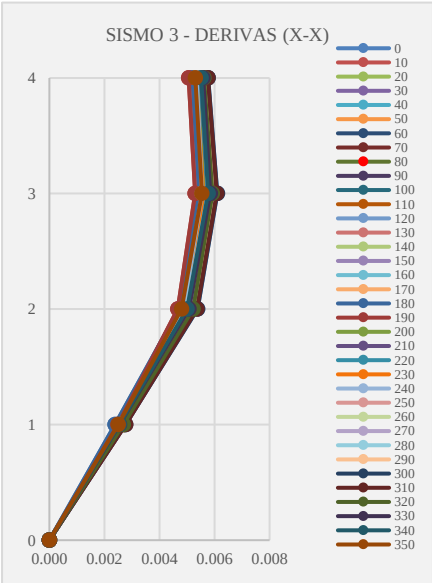


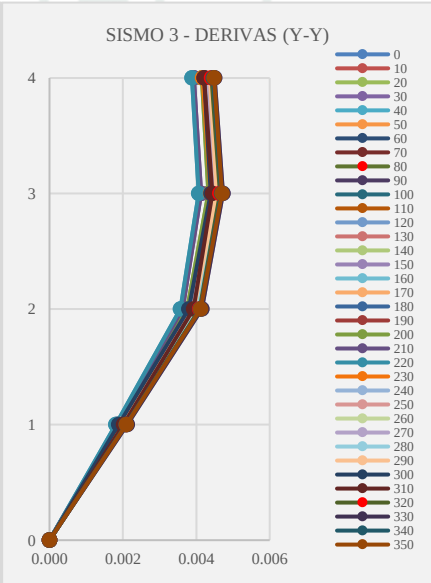

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

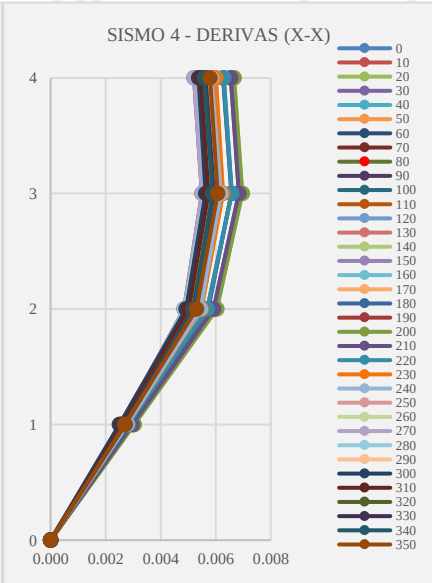

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

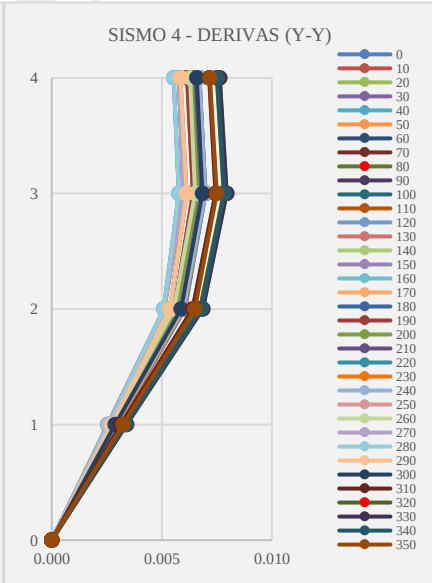

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

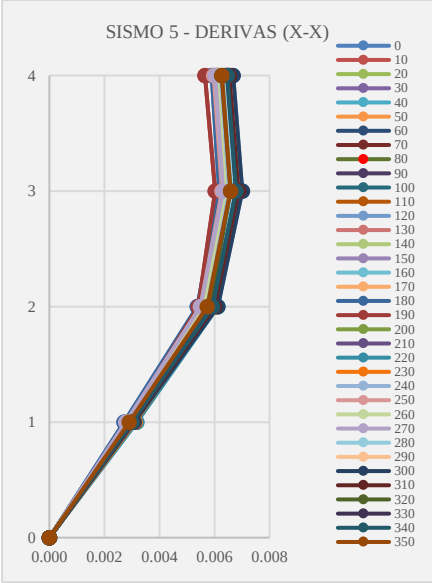

SISMO 2 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

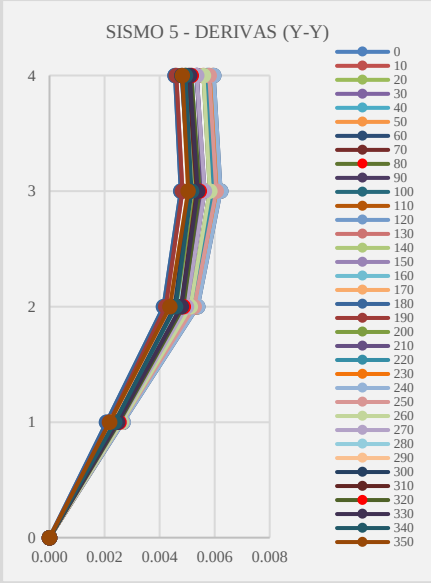

SISMO 3 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

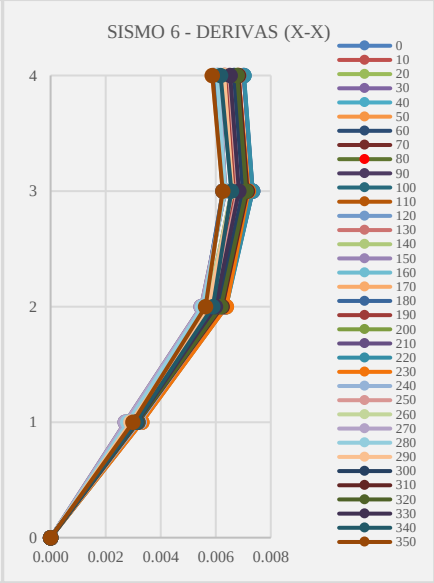

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

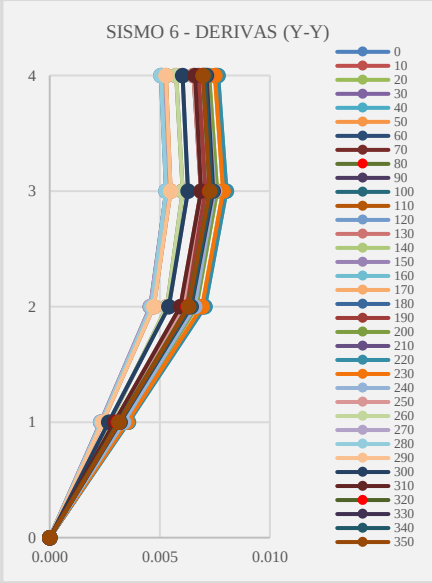

SISMO 4 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

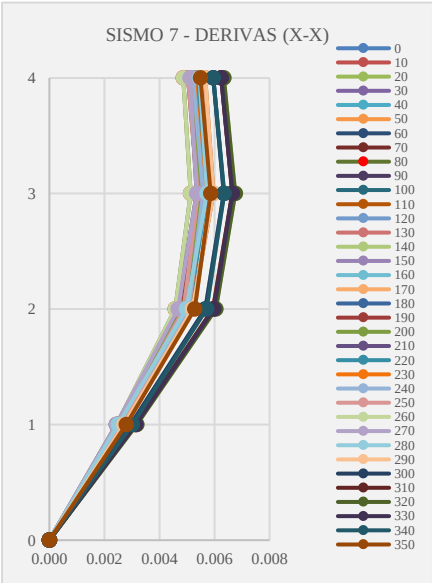

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.005 0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

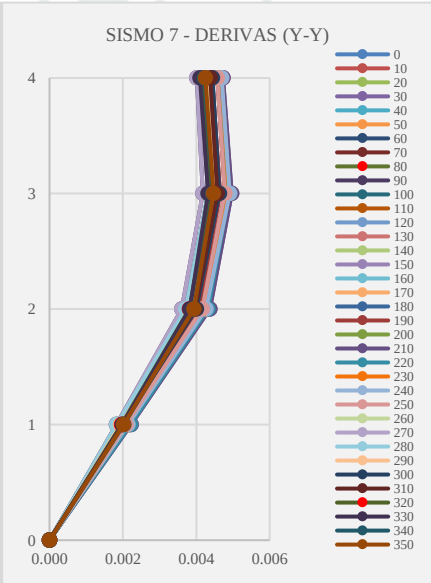

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

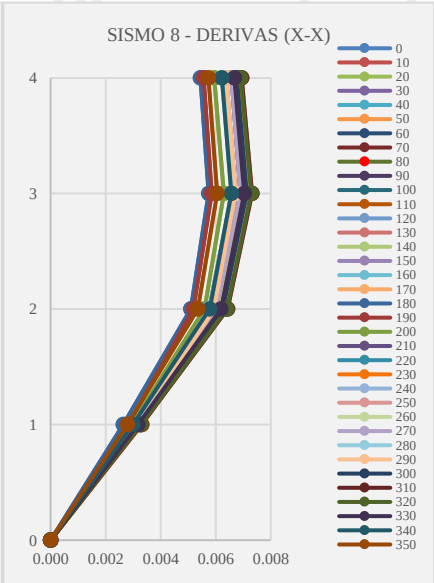

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

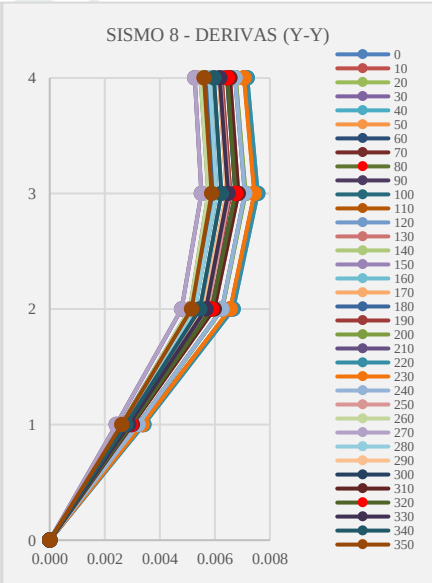

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.005 0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

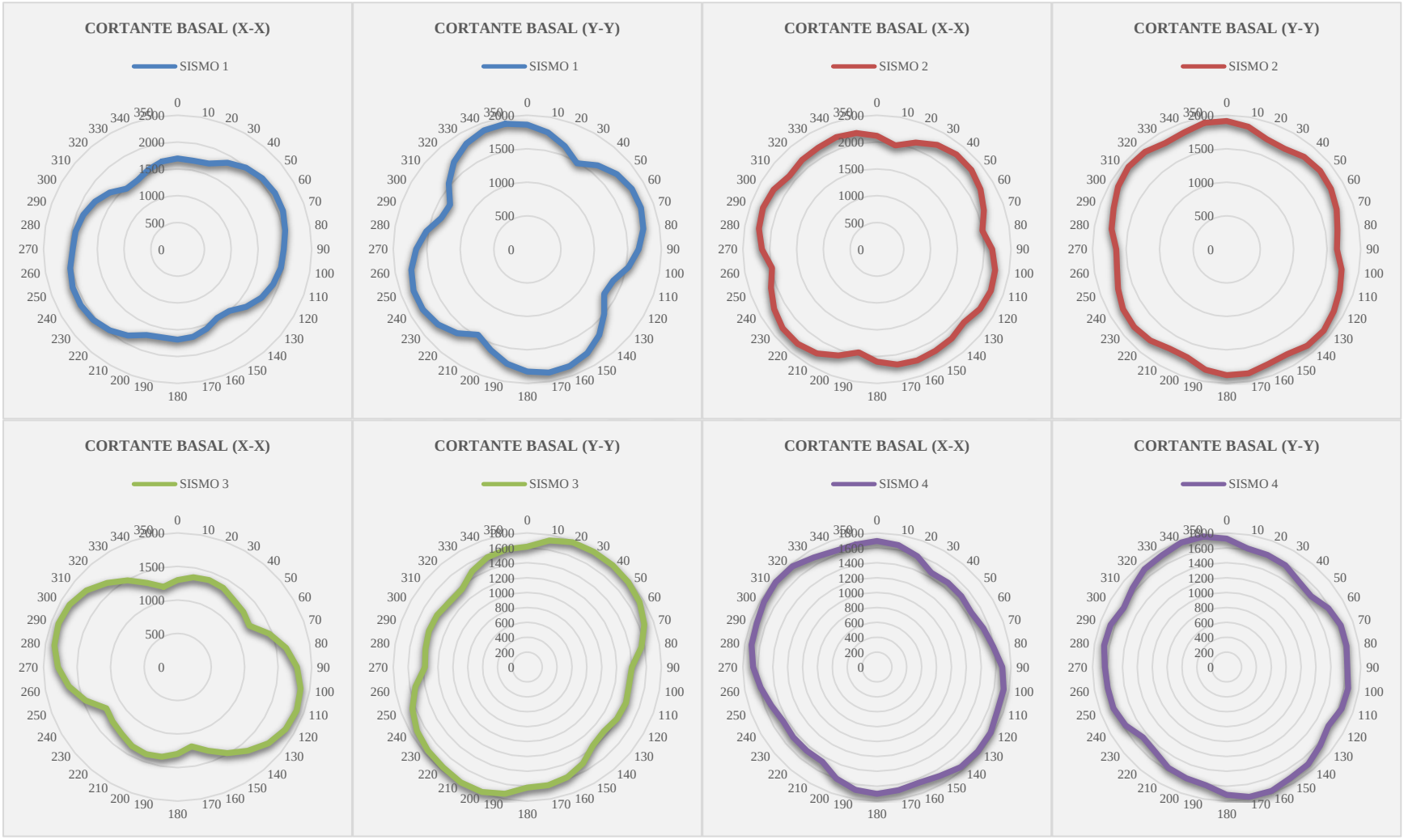

SISMO 7 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

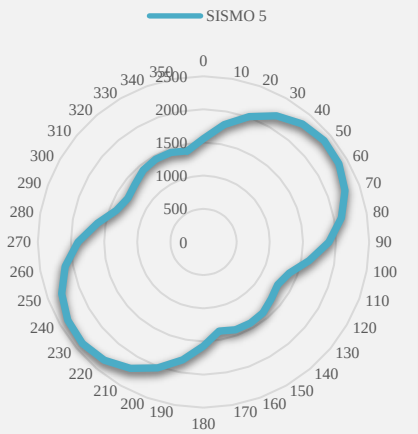

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

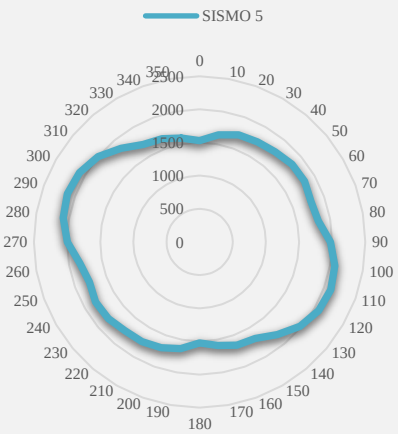
Para 8 pisos:


CORTANTE BASAL (X-X)
SISMO 1
CORTANTE BASAL (Y-Y)
SISMO 1
CORTANTE BASAL (X-X)
SISMO 2
CORTANTE BASAL (Y-Y)
SISMO 2
CORTANTE BASAL (X-X)
SISMO 3
CORTANTE BASAL (Y-Y)
SISMO 3
CORTANTE BASAL (X-X)
SISMO 4
CORTANTE BASAL (Y-Y)
SISMO 4

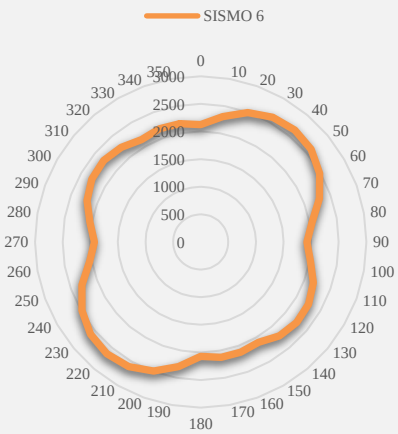
CORTANTE BASAL (X-X)



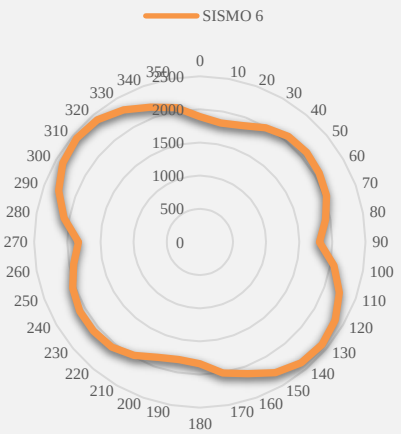
CORTANTE BASAL (Y-Y)



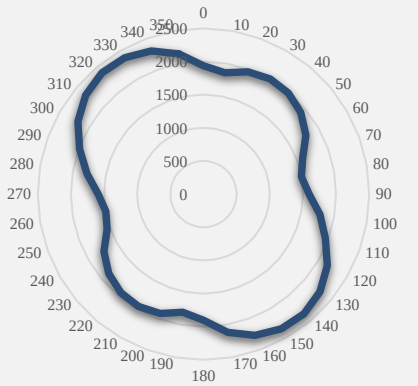
CORTANTE BASAL (X-X)



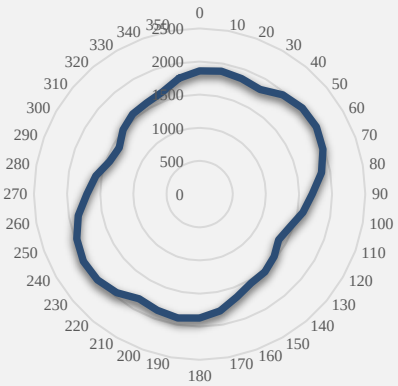
CORTANTE BASAL (Y-Y)



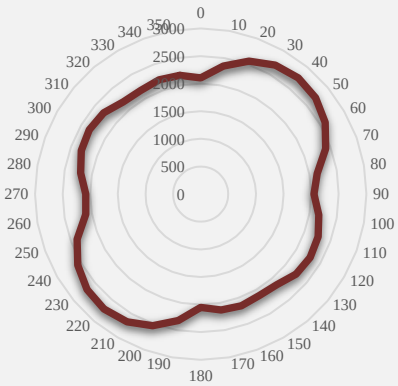
CORTANTE BASAL (X-X)



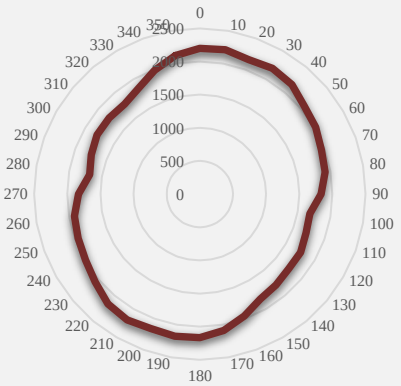
CORTANTE BASAL (Y-Y)

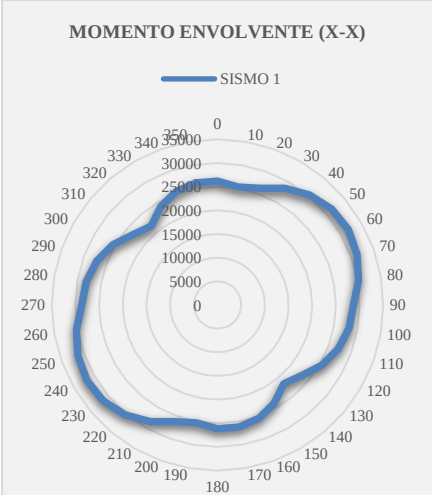


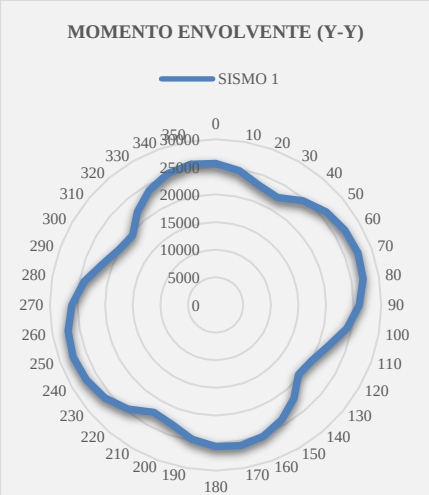
CORTANTE BASAL (X-X)

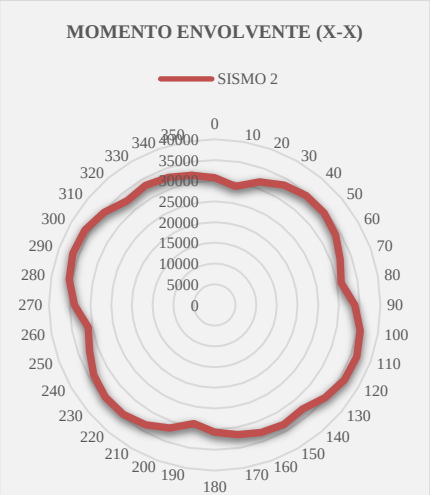


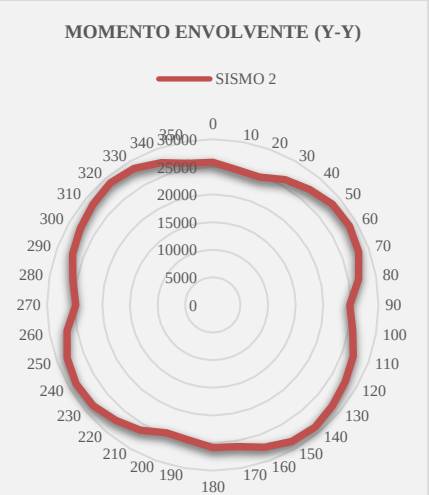
CORTANTE BASAL (Y-Y)

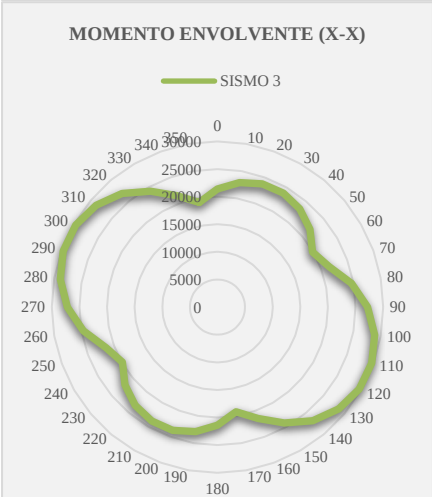


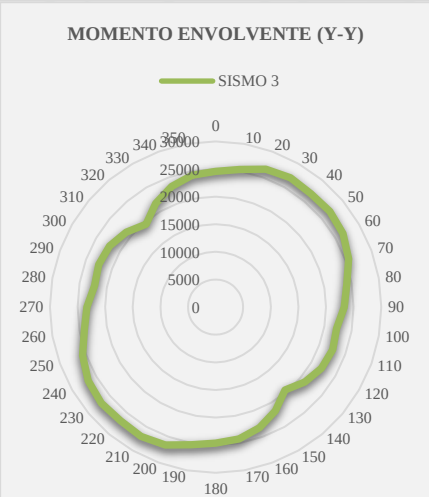

MOMENTO ENVOLVENTE (X-X)
SISMO 1

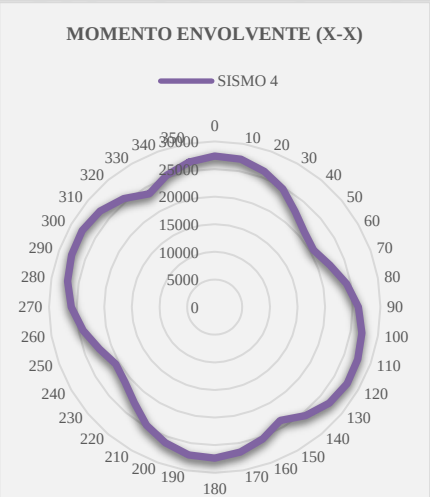

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

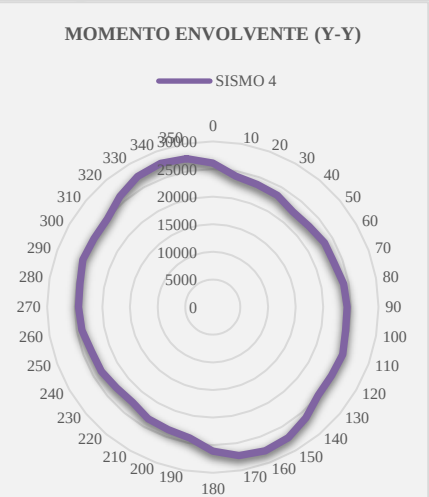

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

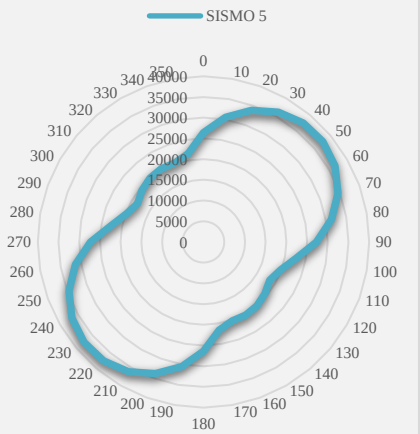

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

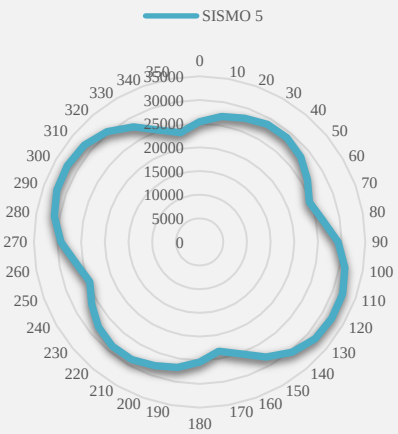

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

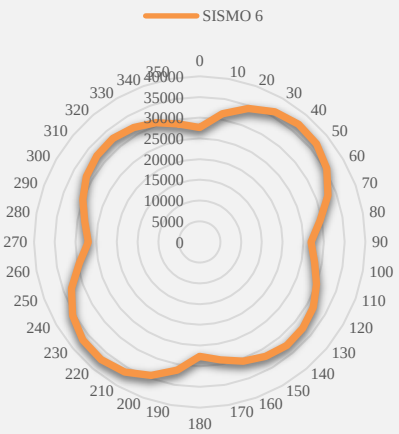
MOMENTO ENVOLVENTE (X-X)



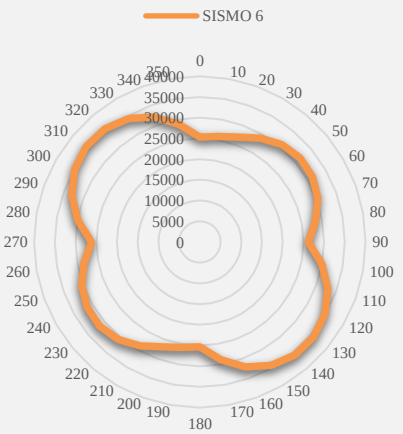
MOMENTO ENVOLVENTE (Y-Y)



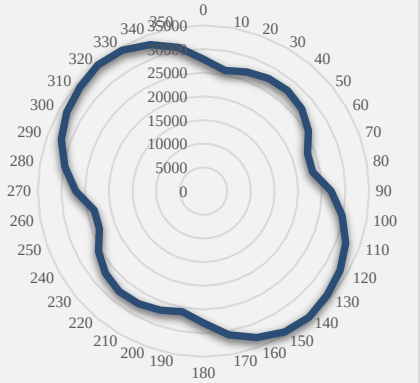
MOMENTO ENVOLVENTE (X-X)



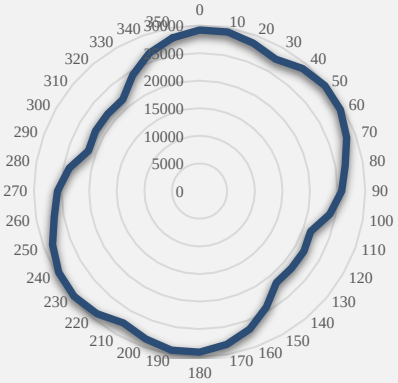
MOMENTO ENVOLVENTE (Y-Y)



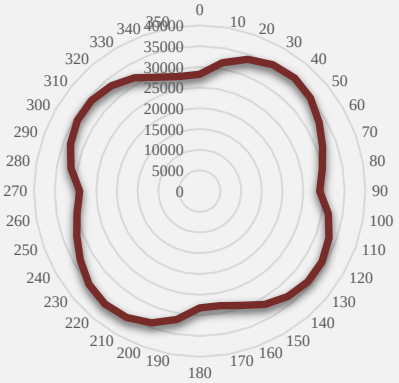
MOMENTO ENVOLVENTE (X-X)



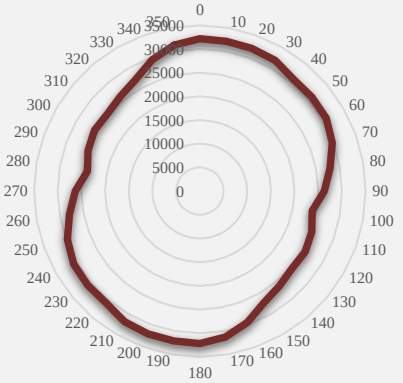
MOMENTO ENVOLVENTE (Y-Y)

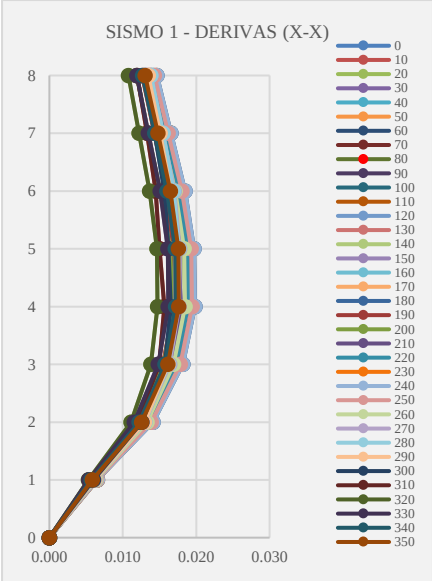


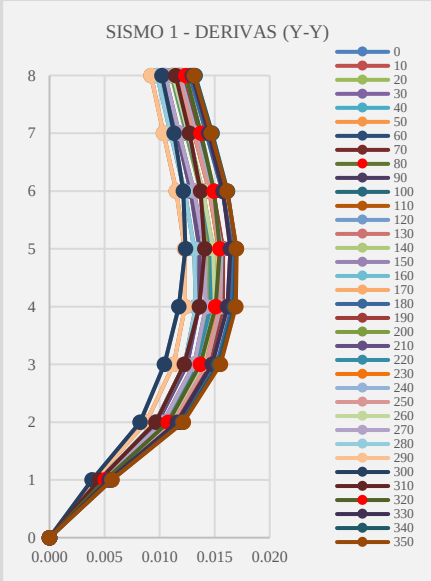
MOMENTO ENVOLVENTE (X-X)

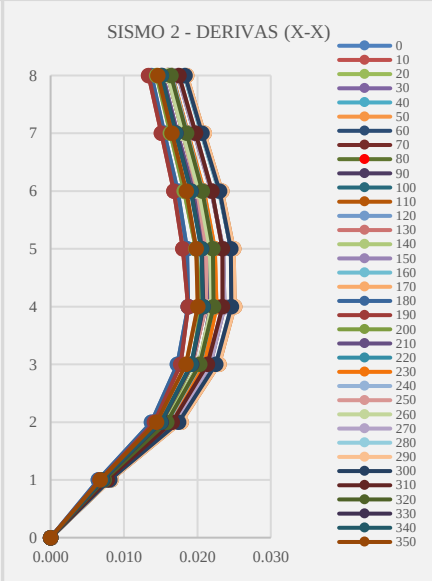


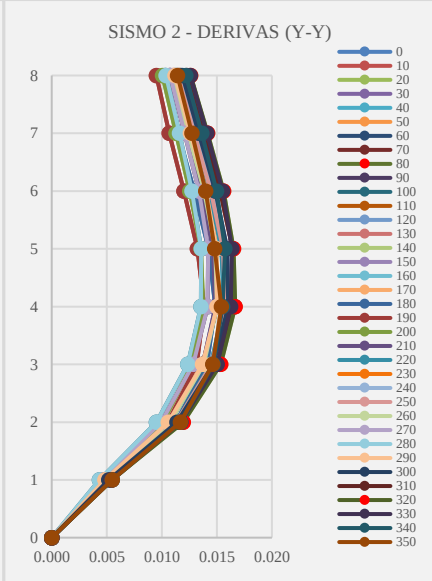
MOMENTO ENVOLVENTE (Y-Y)

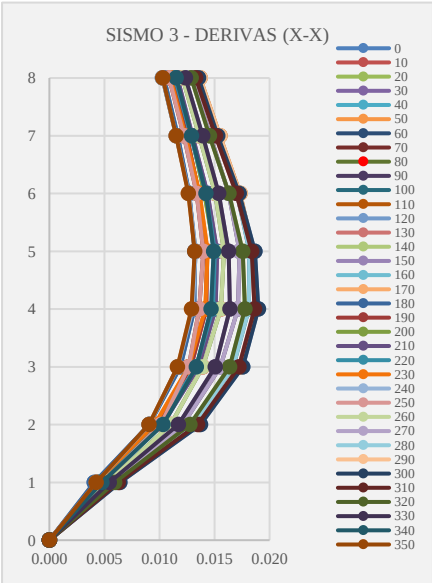


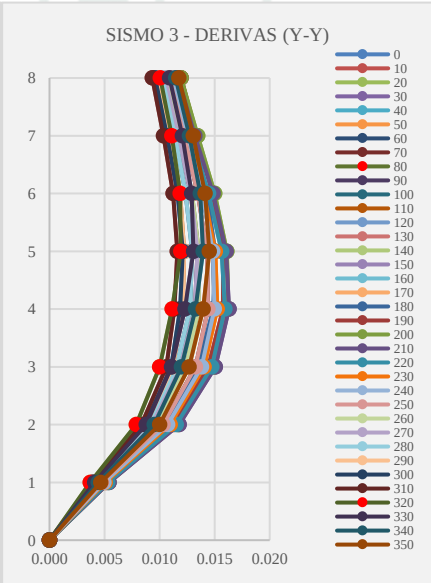

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

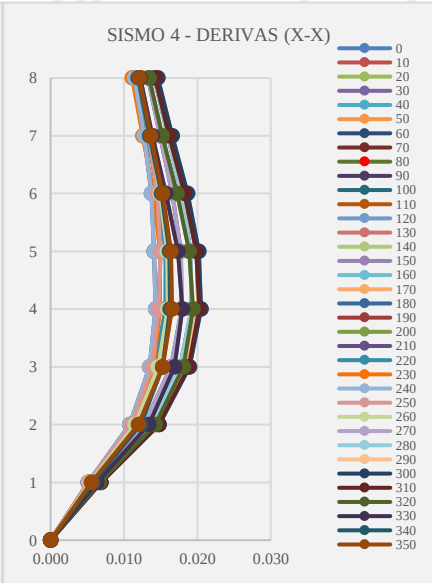

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

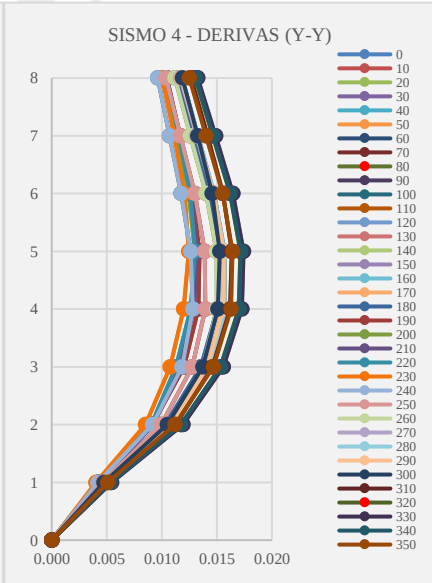

SISMO 2 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

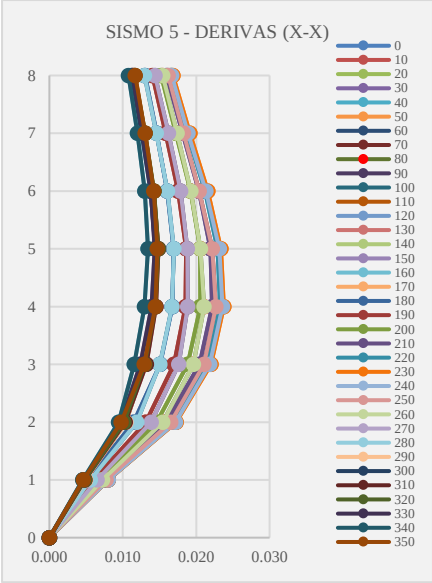

SISMO 2 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

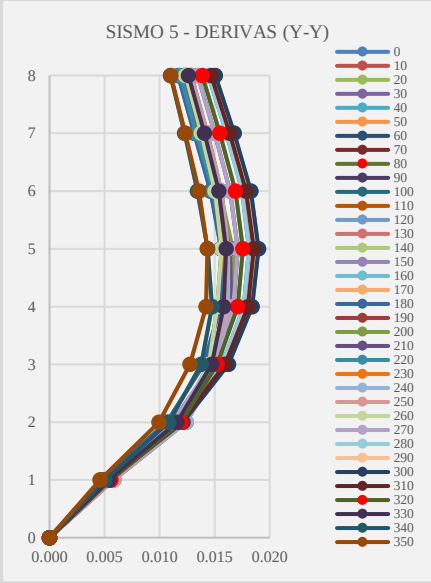

SISMO 3 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

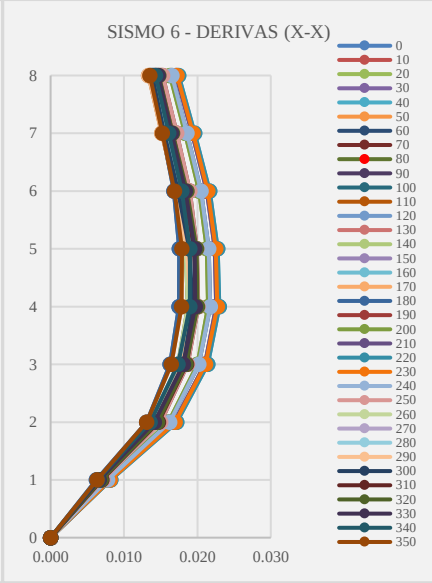

SISMO 3 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

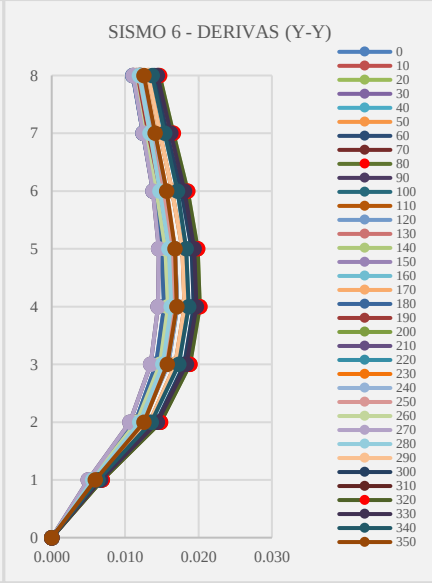

SISMO 4 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

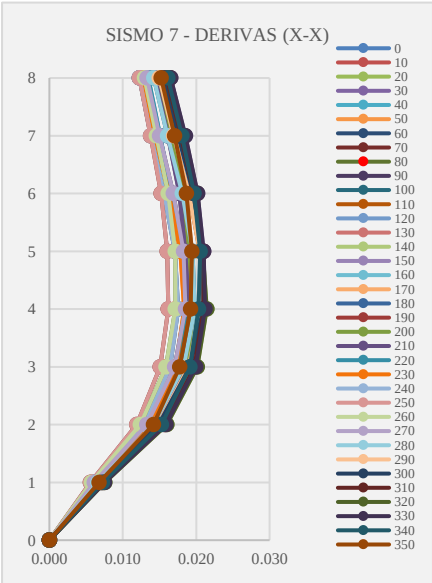

SISMO 4 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

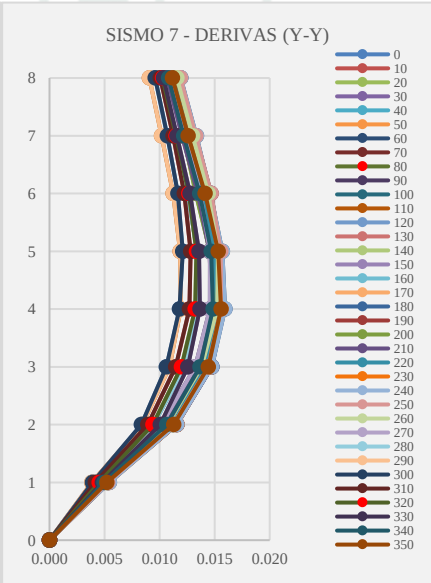

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

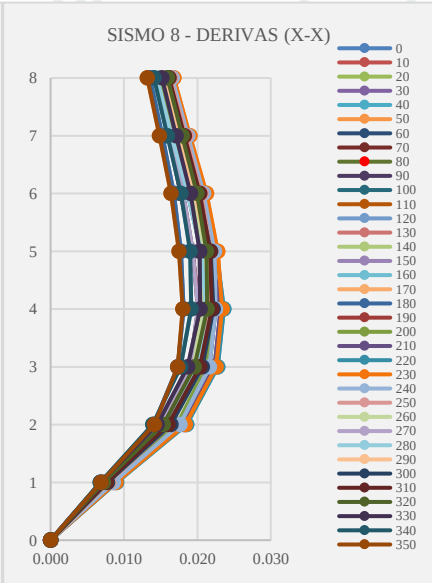

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

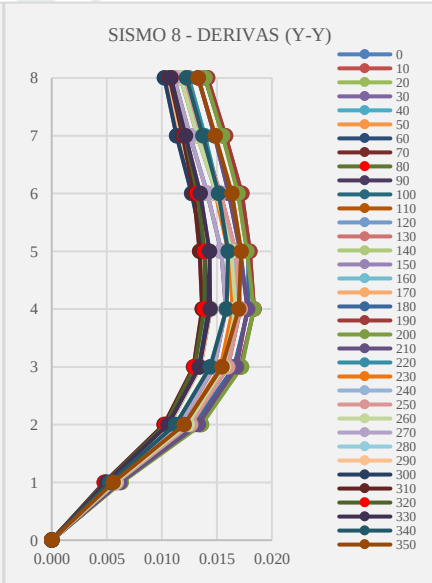

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

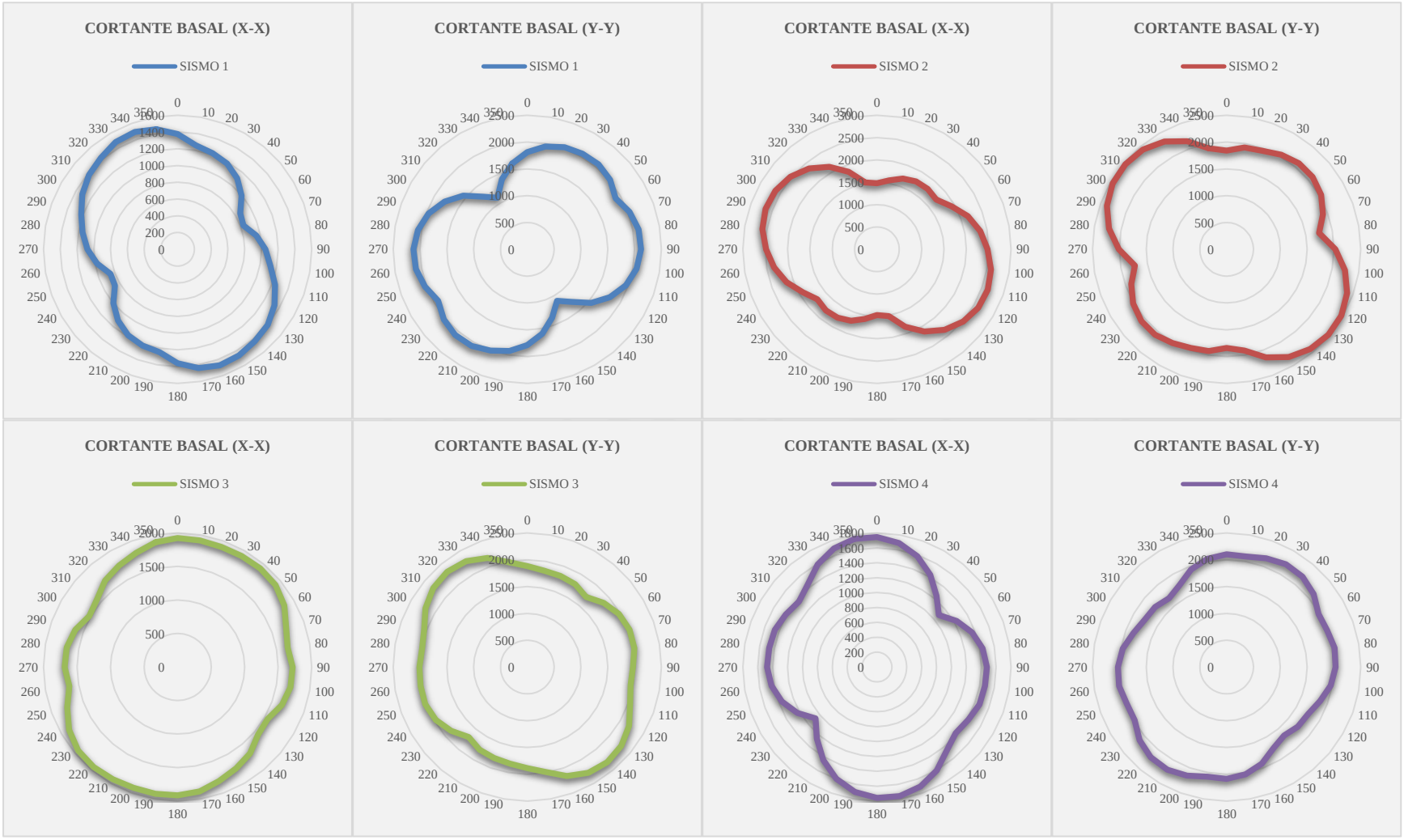

SISMO 7 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

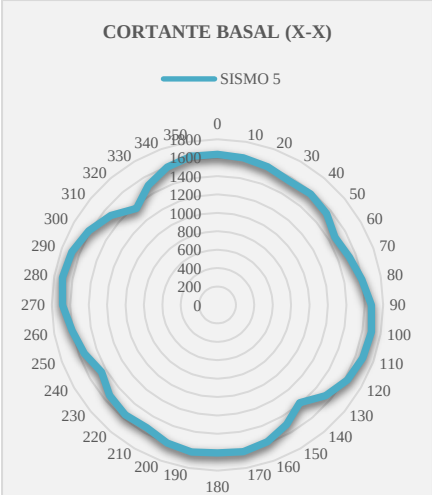

SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

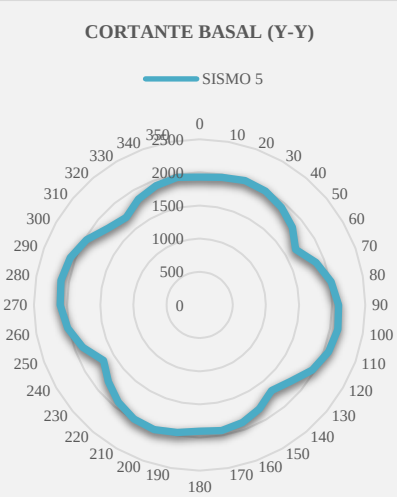

SISMO 8 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

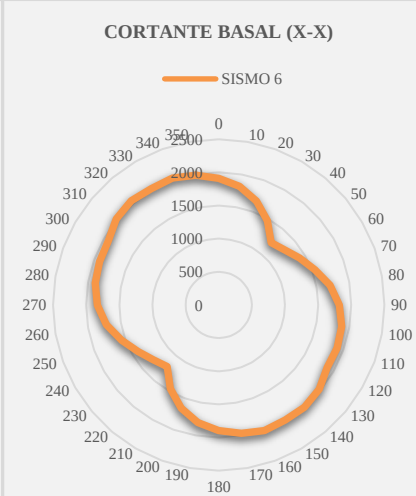

SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

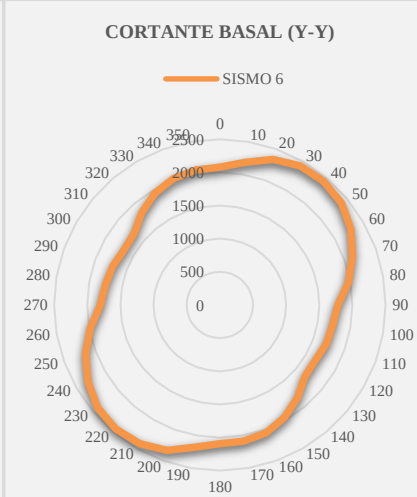
Para 12 pisos:

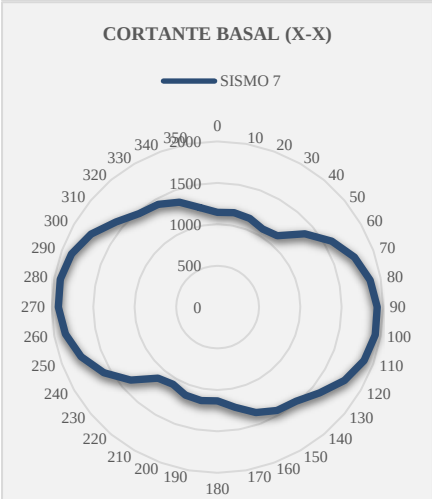


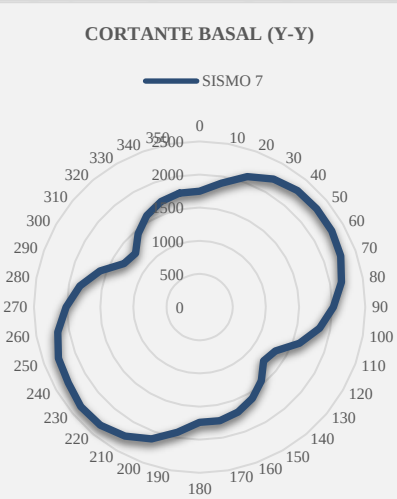

CORTANTE BASAL (X-X)
SISMO 5

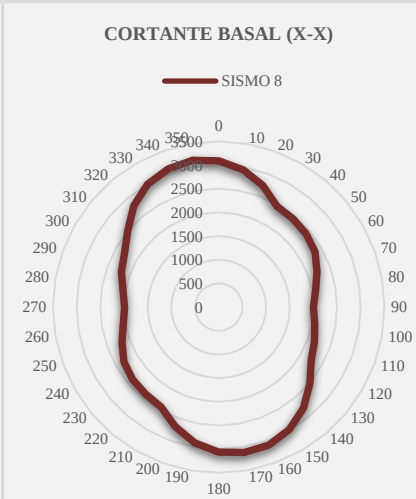

CORTANTE BASAL (Y-Y)
SISMO 5

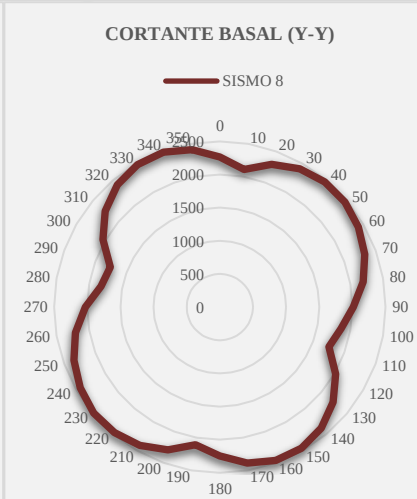

CORTANTE BASAL (X-X)
SISMO 6

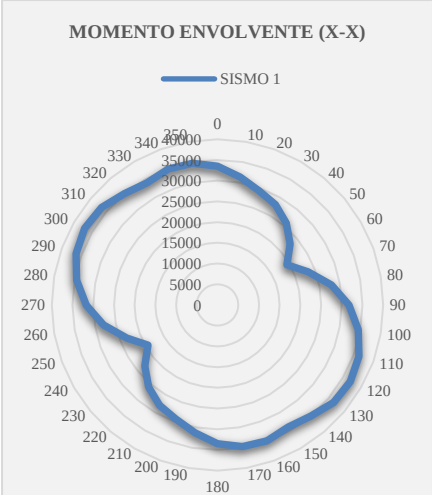

CORTANTE BASAL (Y-Y)
SISMO 6

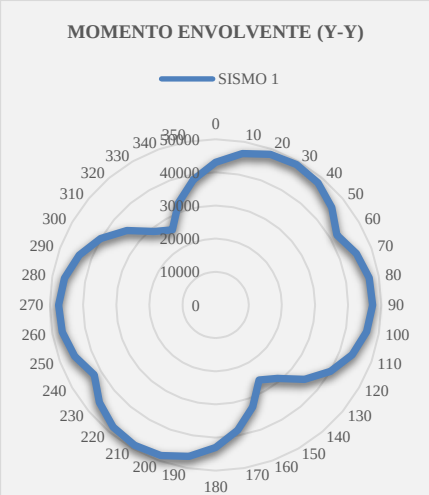

CORTANTE BASAL (X-X)
SISMO 7

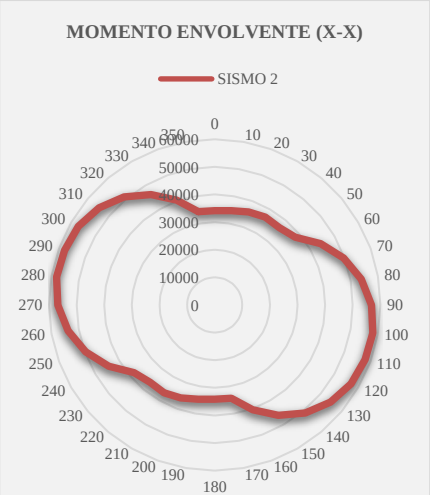

CORTANTE BASAL (Y-Y)
SISMO 7

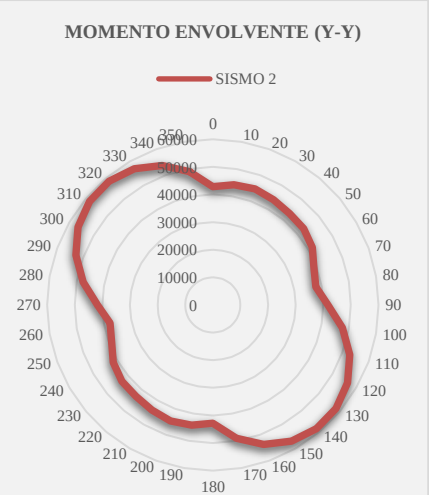

CORTANTE BASAL (X-X)
SISMO 8

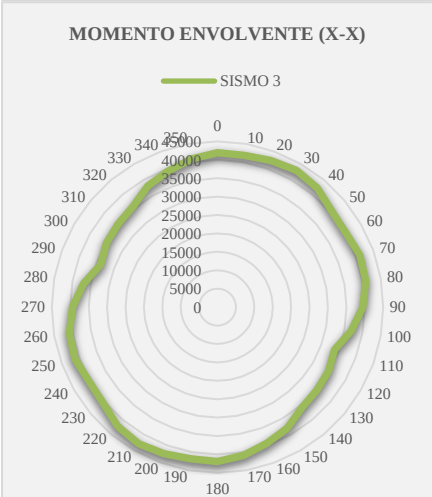

CORTANTE BASAL (Y-Y)
SISMO 8

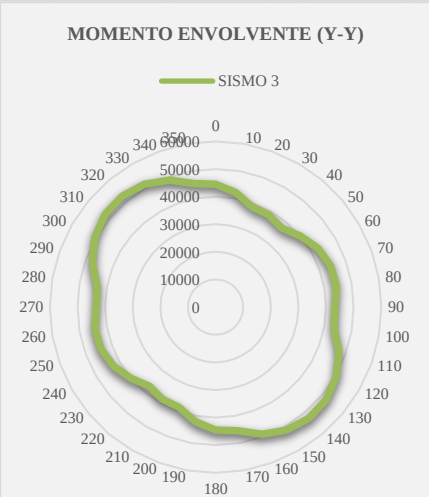

MOMENTO ENVOLVENTE (X-X)
SISMO 1

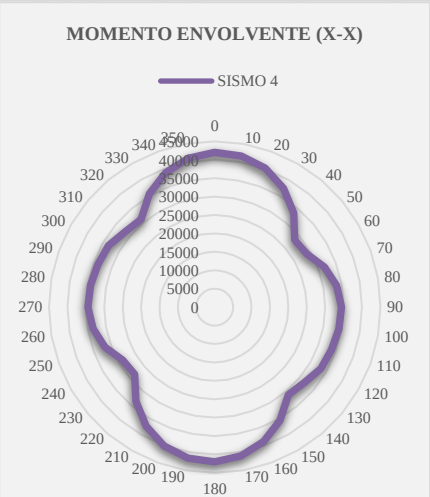

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

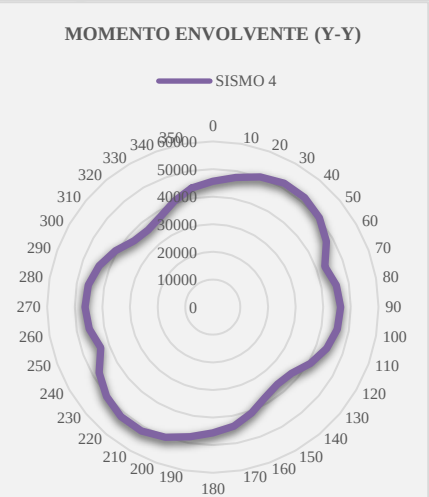

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

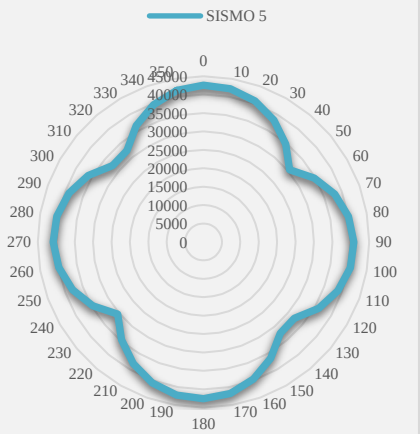

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

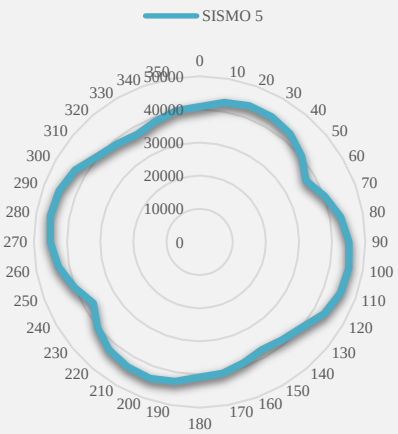

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

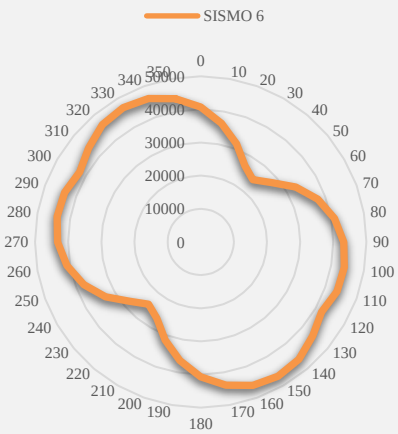
MOMENTO ENVOLVENTE (X-X)



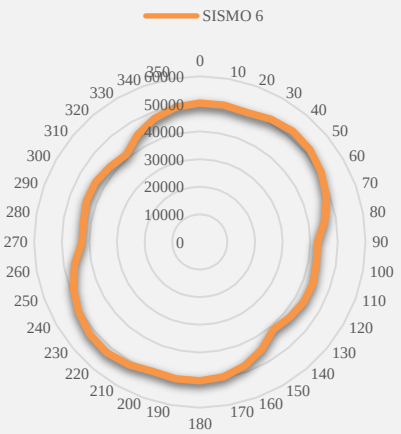
MOMENTO ENVOLVENTE (Y-Y)



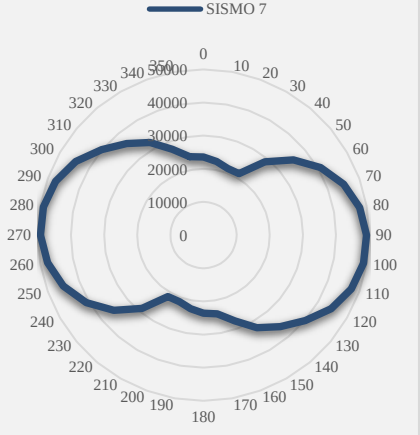
MOMENTO ENVOLVENTE (X-X)



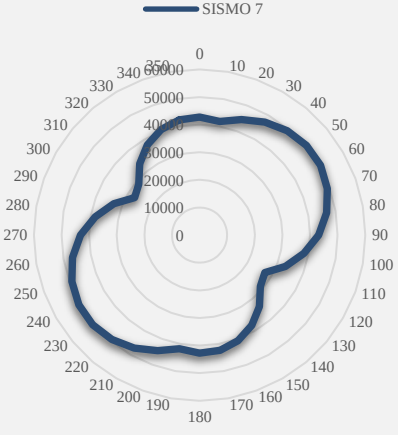
MOMENTO ENVOLVENTE (Y-Y)



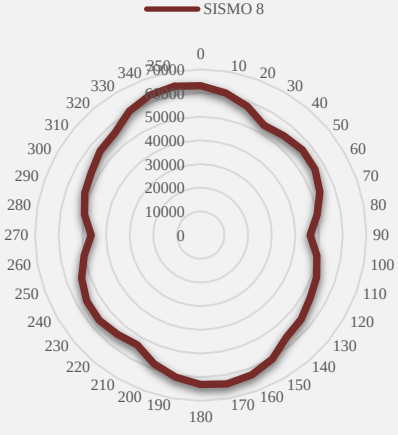
MOMENTO ENVOLVENTE (X-X)



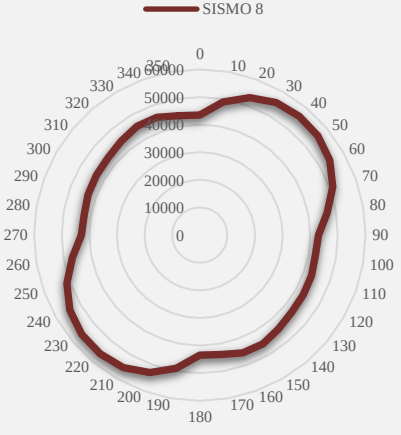
MOMENTO ENVOLVENTE (Y-Y)

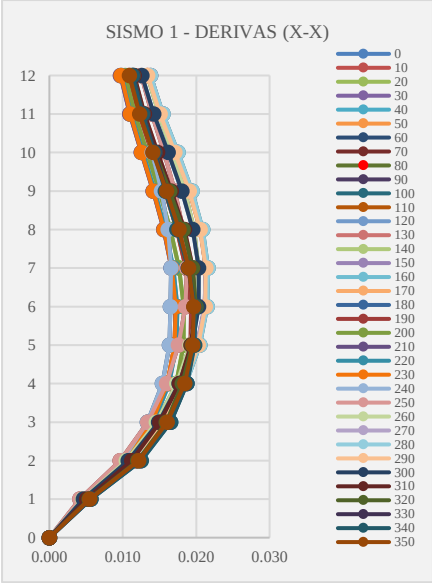


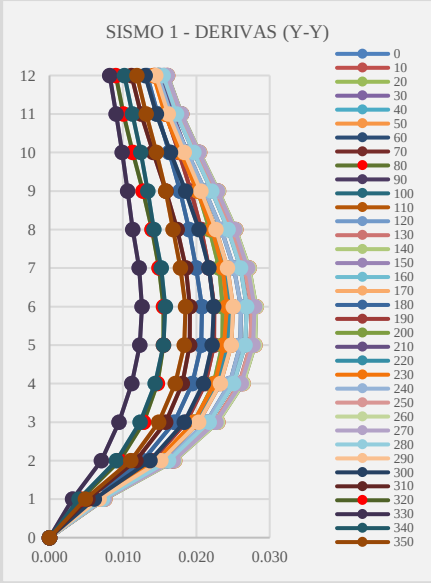
MOMENTO ENVOLVENTE (X-X)

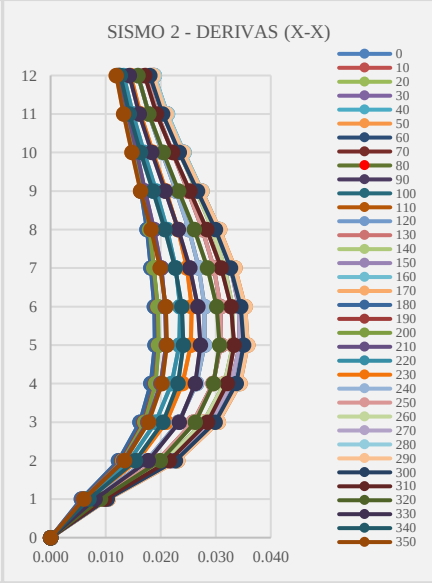


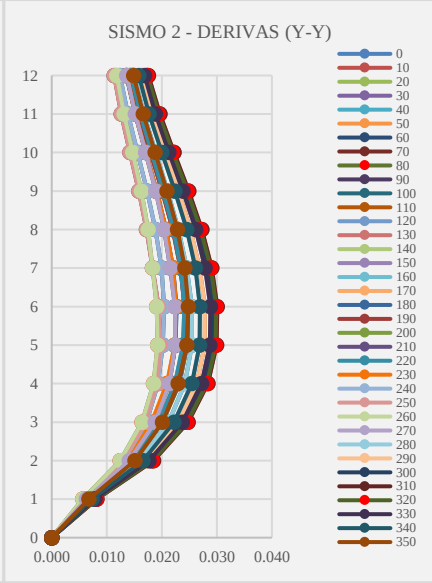
MOMENTO ENVOLVENTE (Y-Y)

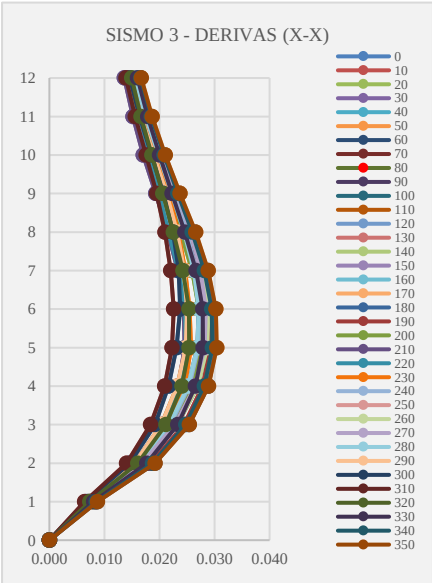


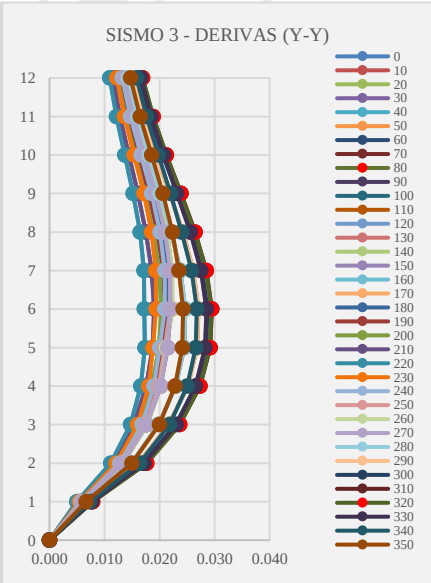

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

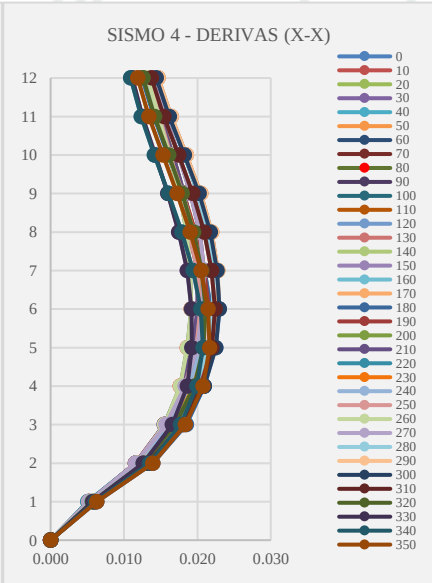

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

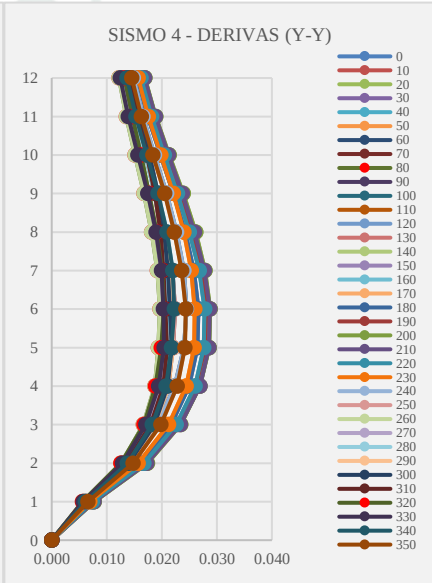

SISMO 2 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

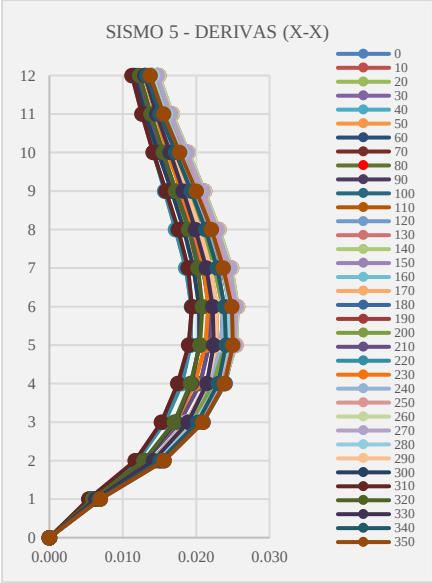

SISMO 2 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

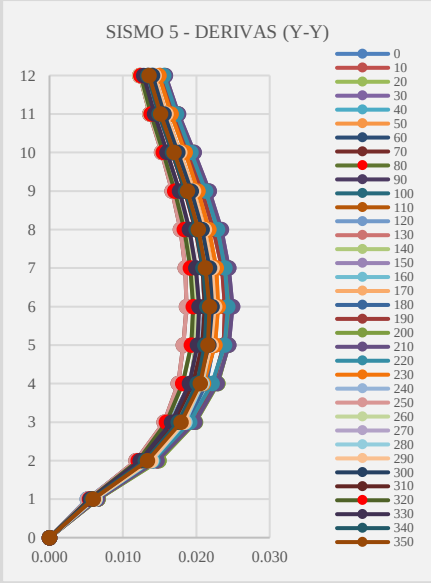

SISMO 3 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

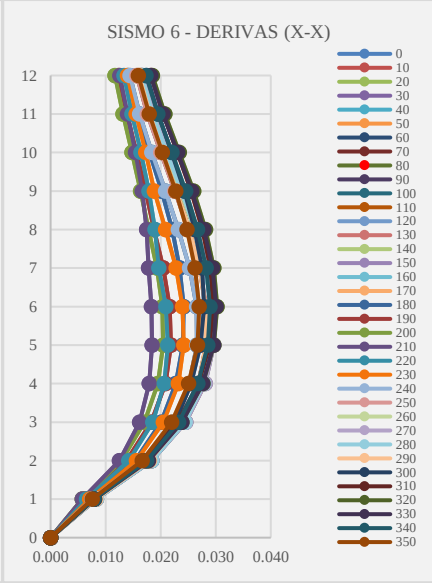

SISMO 3 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

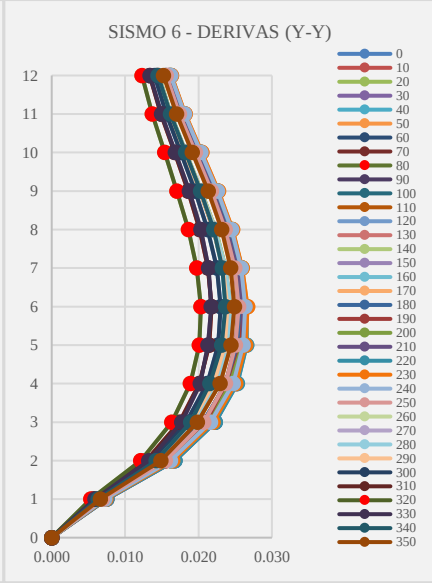

SISMO 4 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

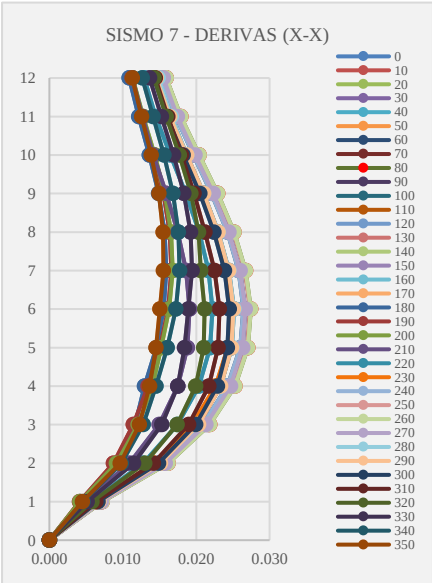

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

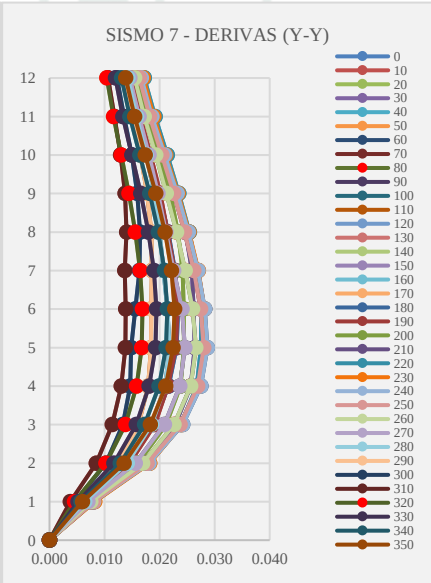

SISMO 5 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

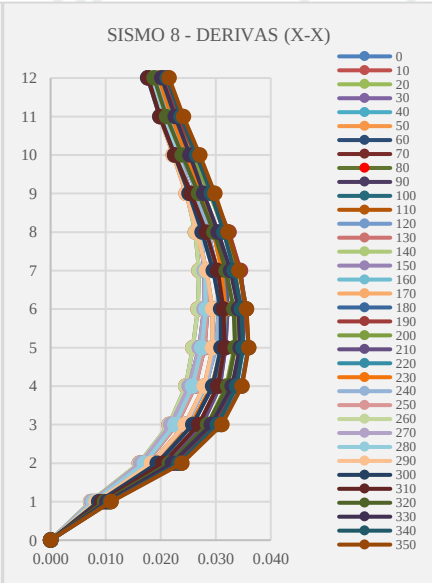

SISMO 5 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

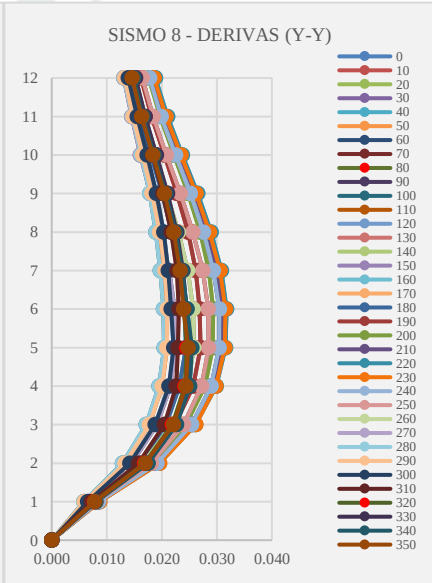

SISMO 6 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040


SISMO 6 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030


SISMO 7 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

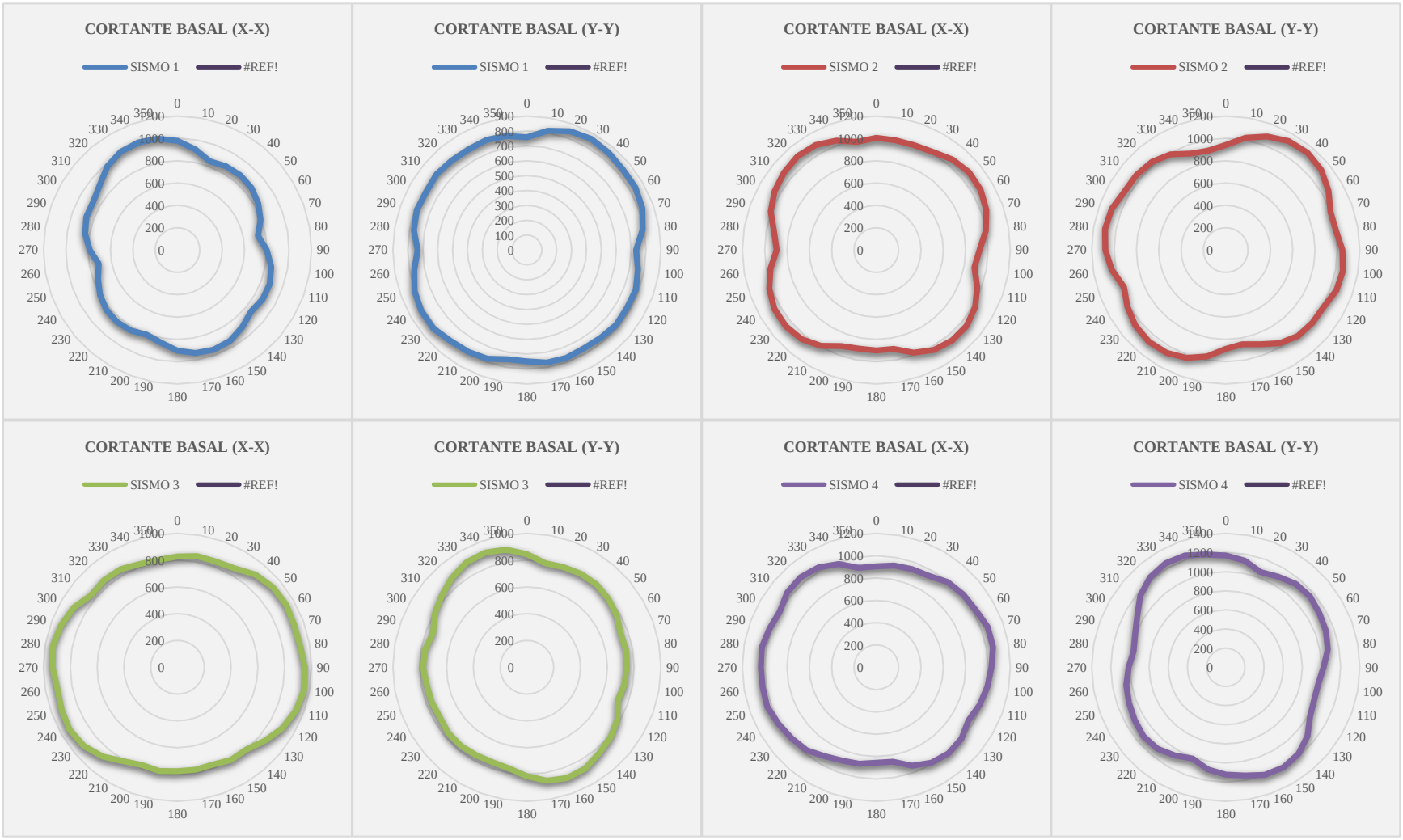

SISMO 7 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

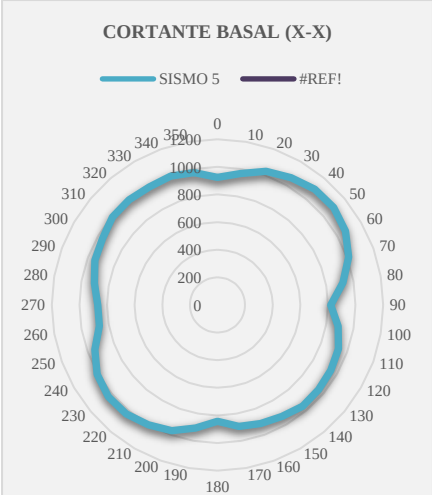

SISMO 8 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

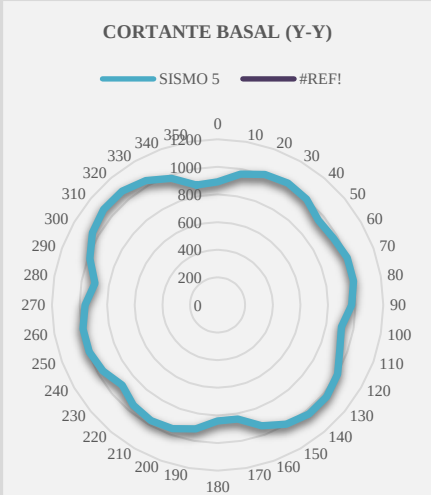

SISMO 8 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

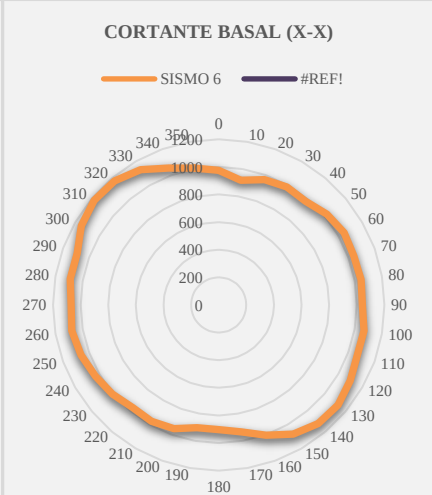
MODELO 11

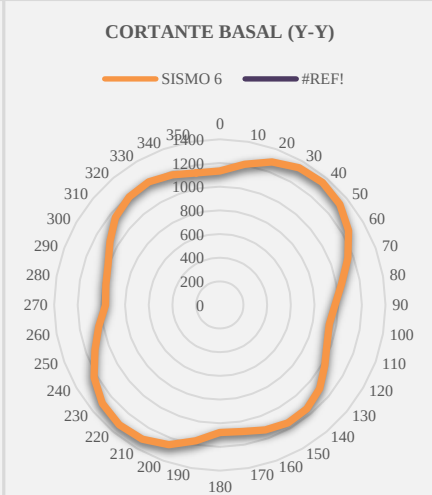
Para 4 pisos:

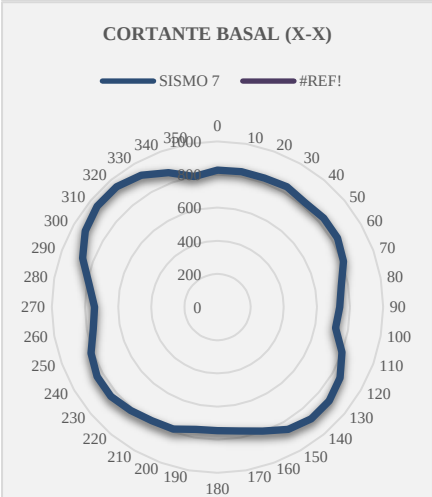


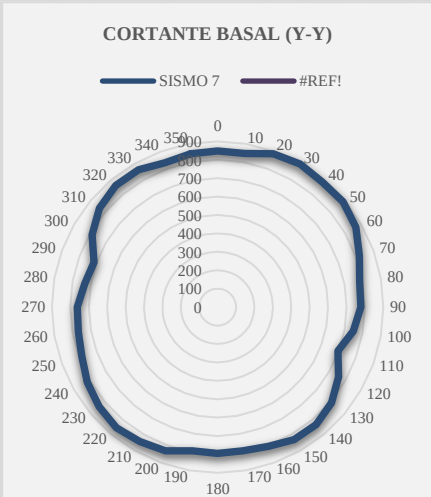

CORTANTE BASAL (X-X)
SISMO 5
#REF!

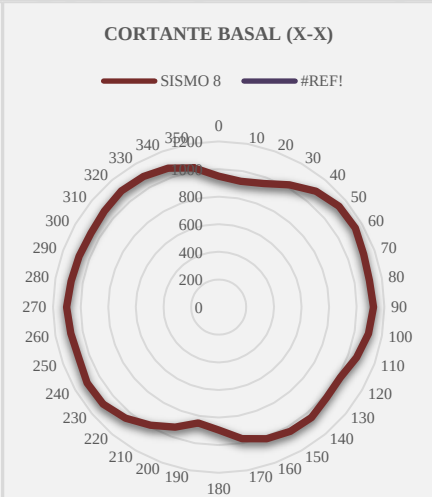

CORTANTE BASAL (Y-Y)
SISMO 5
#REF!

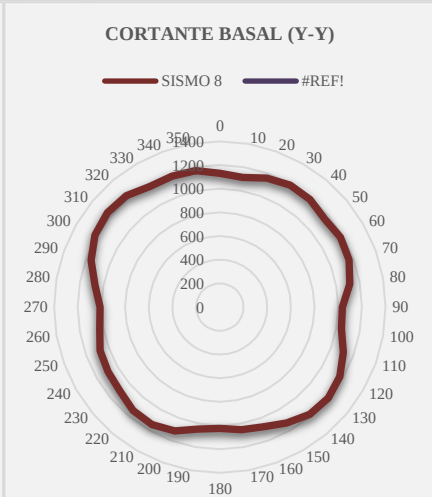

CORTANTE BASAL (X-X)
SISMO 6
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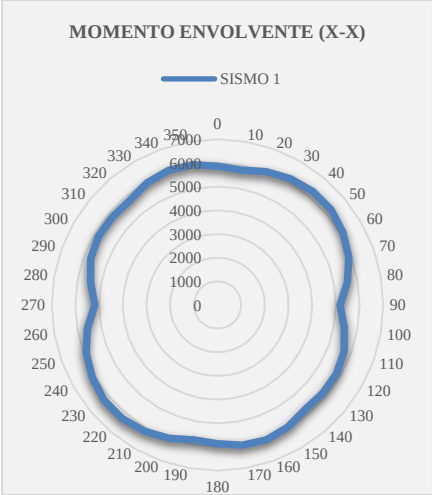

CORTANTE BASAL (Y-Y)
SISMO 6
#REF!

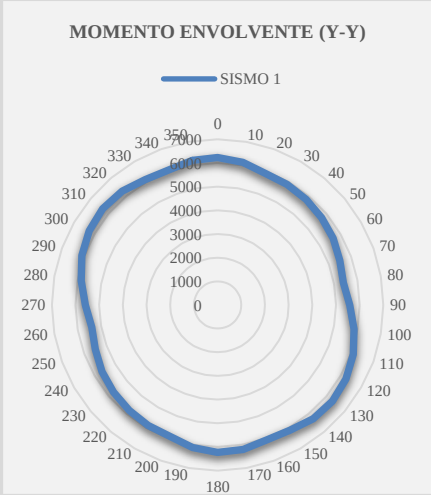

CORTANTE BASAL (X-X)
SISMO 7
#REF!

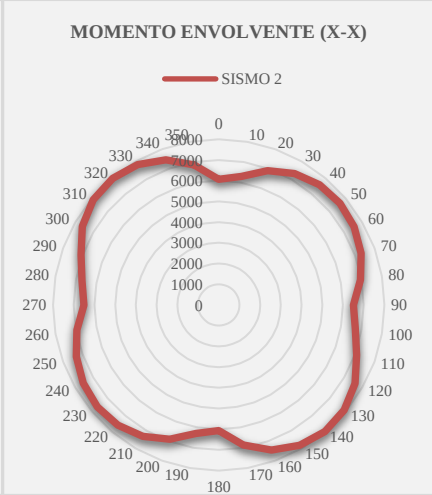

CORTANTE BASAL (Y-Y)
SISMO 7
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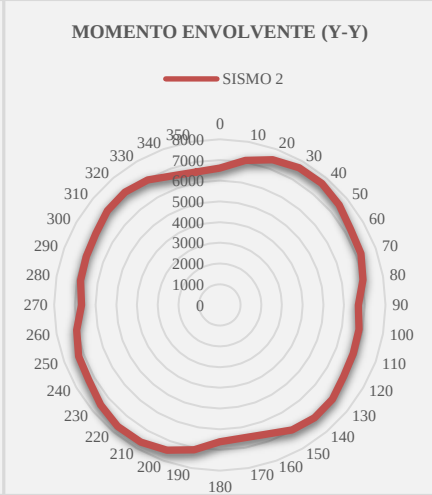

CORTANTE BASAL (X-X)
SISMO 8
#REF!

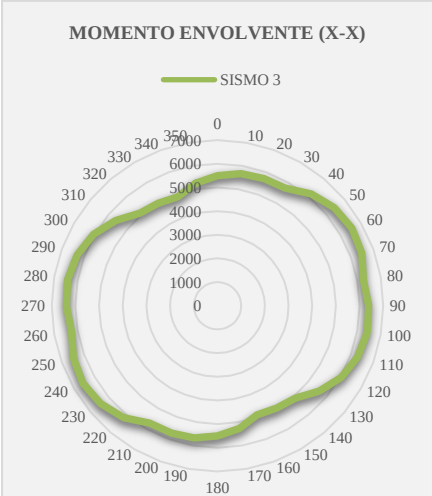

CORTANTE BASAL (Y-Y)
SISMO 8
#REF!

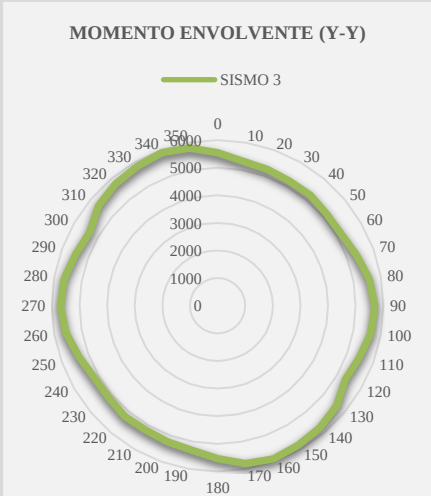

MOMENTO ENVOLVENTE (X-X)
SISMO 1

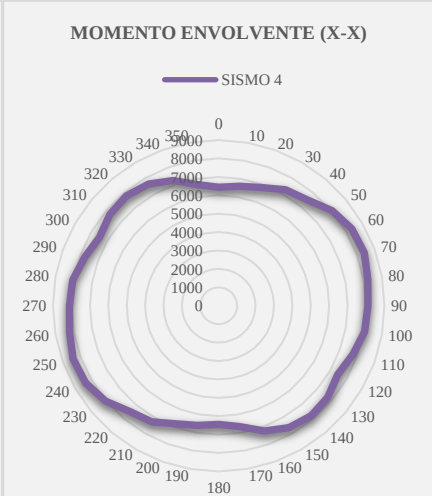

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

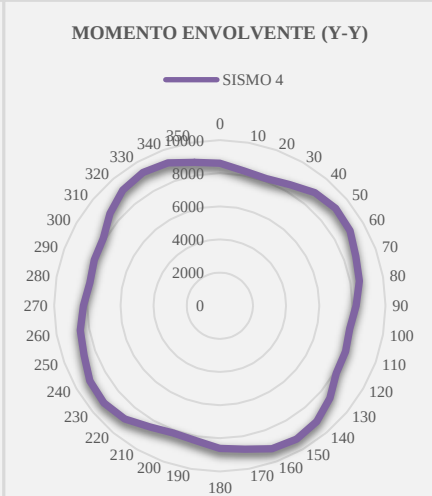

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

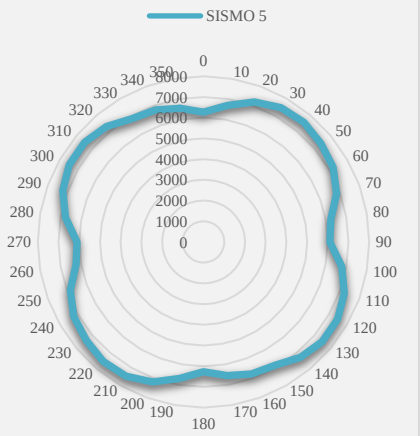

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

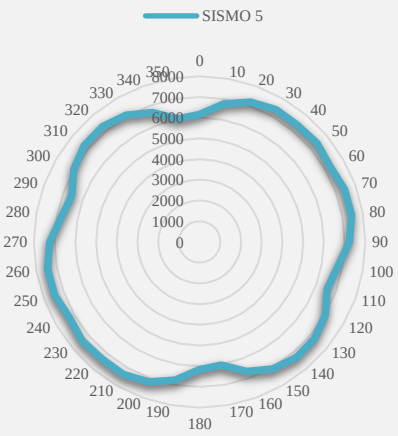

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

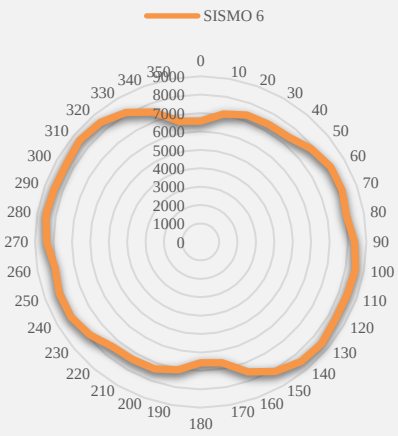
MOMENTO ENVOLVENTE (X-X)



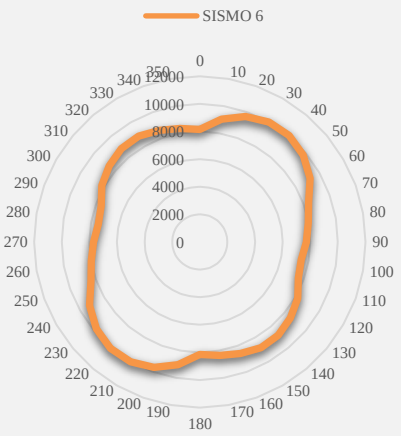
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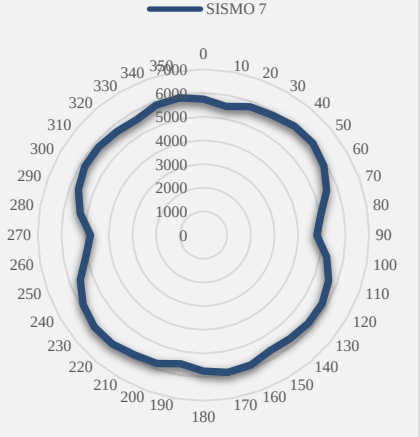
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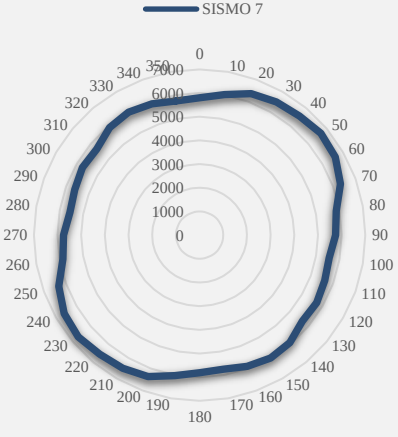
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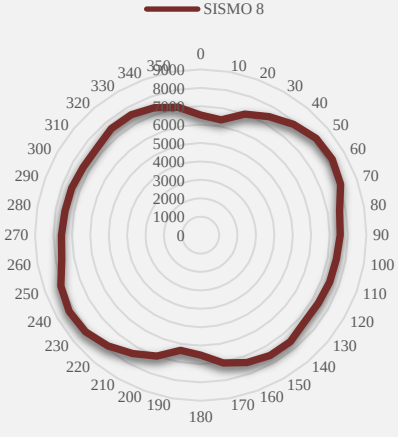
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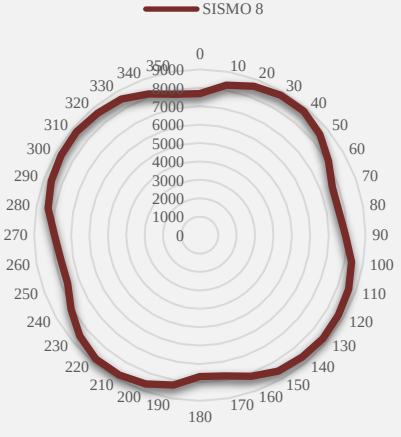
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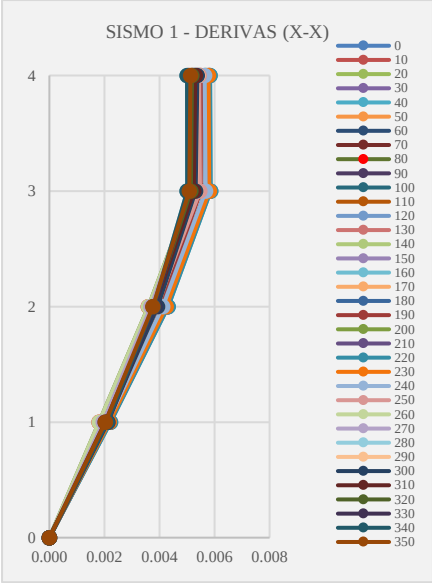


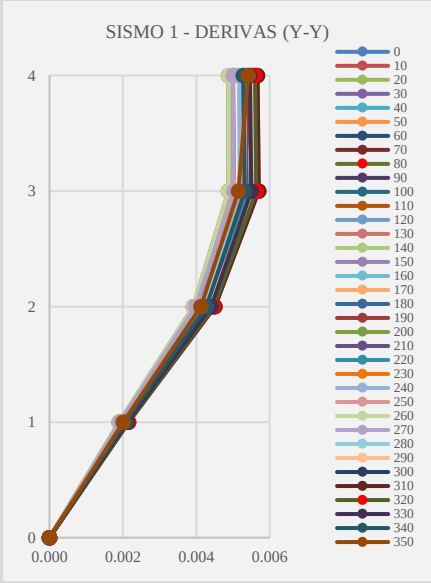
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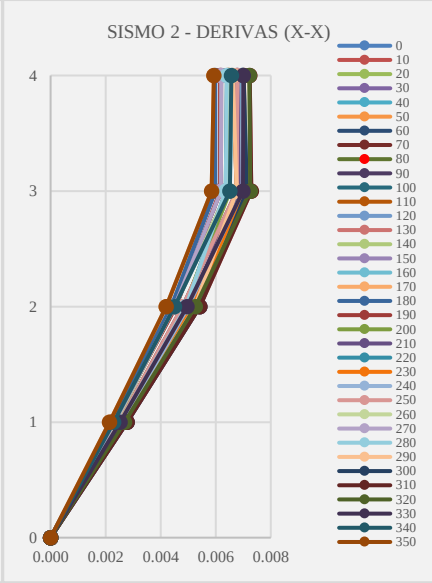


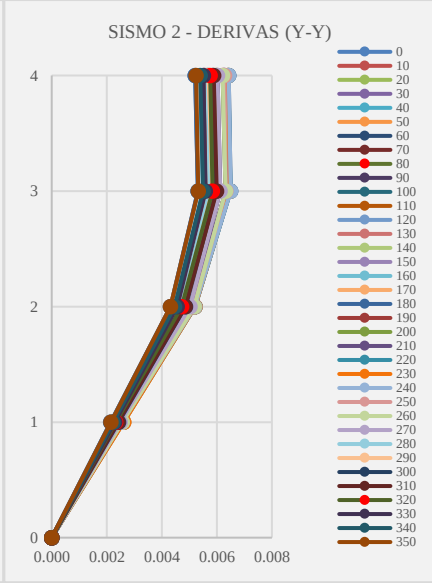
MOMENTO ENVOLVENTE (Y-Y)

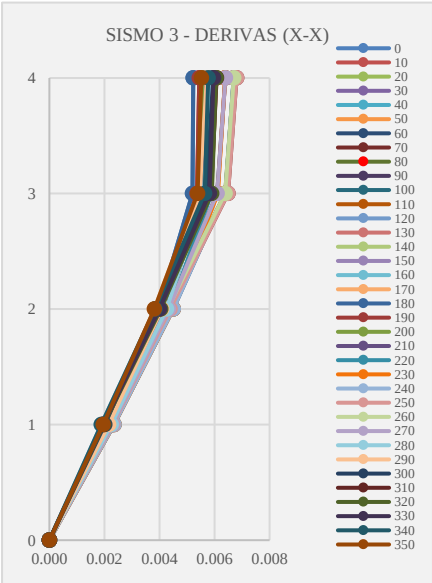


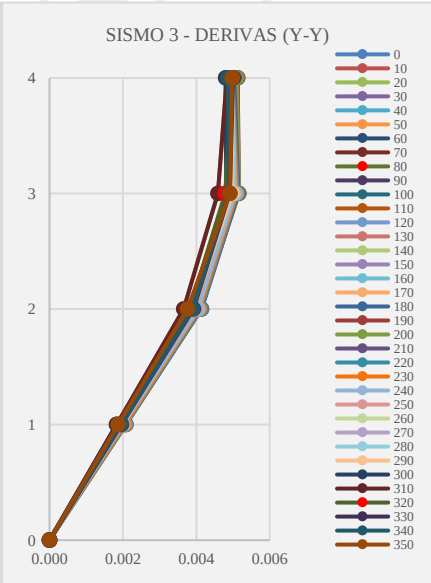

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

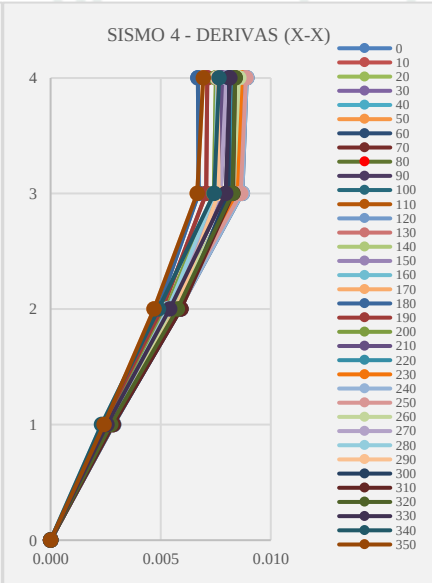

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

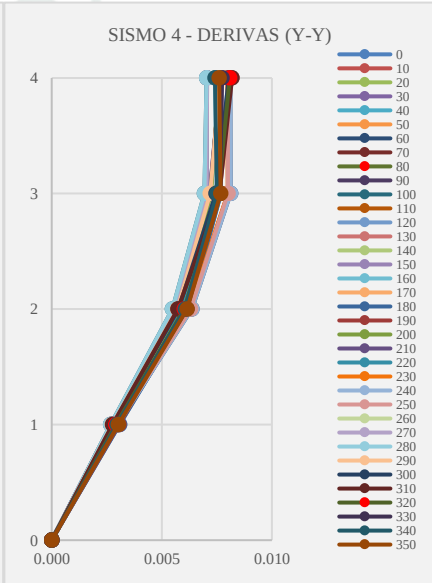

SISMO 2 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006 0.008
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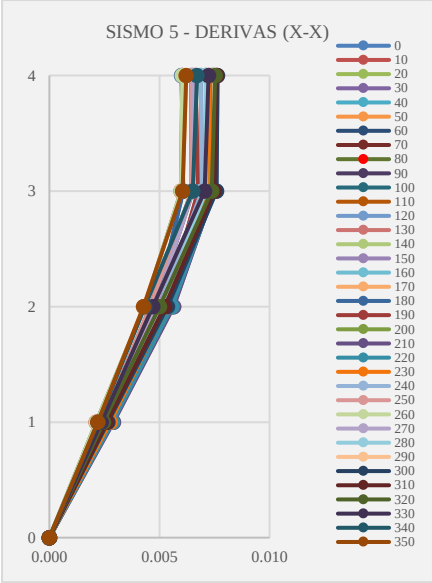

SISMO 2 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006 0.008
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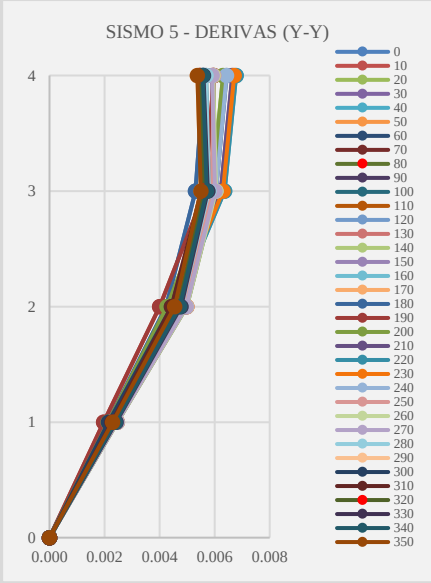

SISMO 3 - DERIVAS (X-X)
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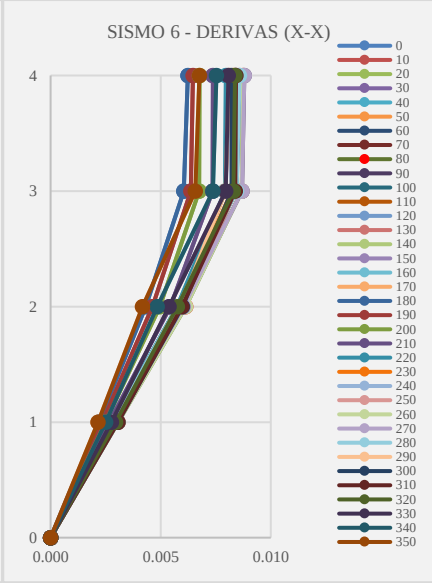

SISMO 3 - DERIVAS (Y-Y)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

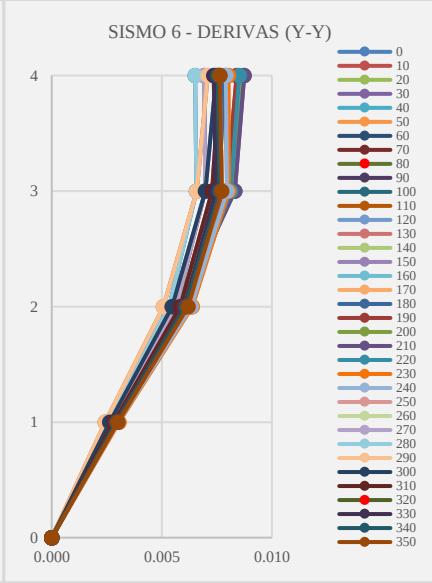

SISMO 4 - DERIVAS (X-X)
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0.000 0.005 0.010
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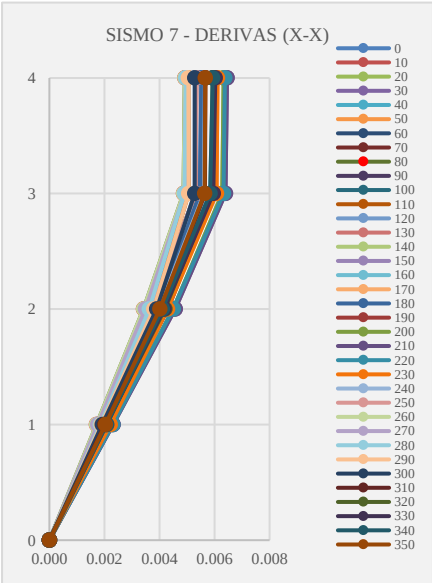

SISMO 4 - DERIVAS (Y-Y)
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0.000 0.005 0.010
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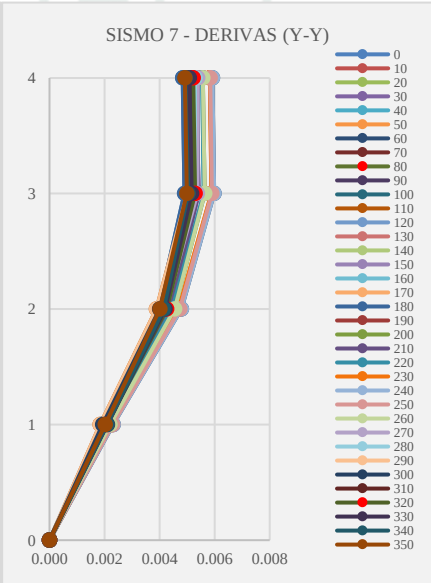

SISMO 5 - DERIVAS (X-X)
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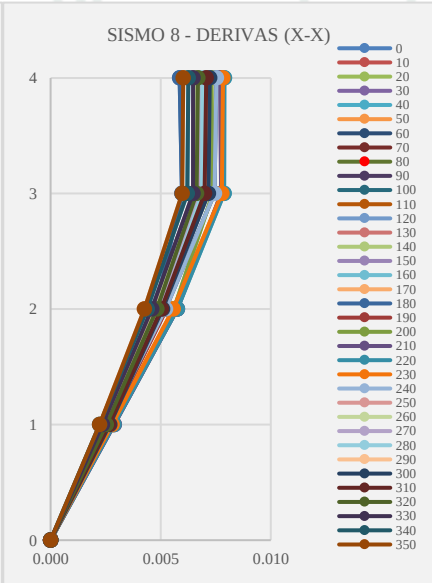

SISMO 5 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

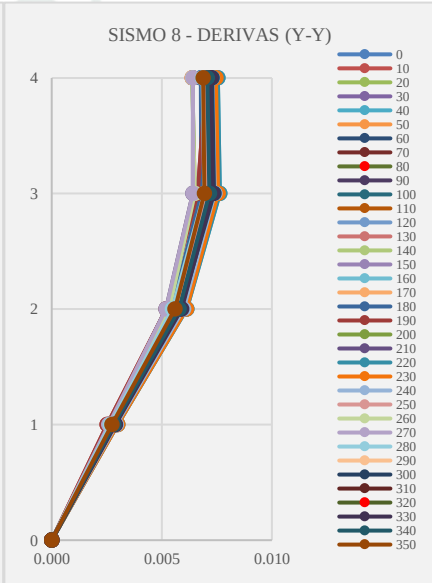

SISMO 6 - DERIVAS (X-X)
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0.000 0.005 0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.005 0.010
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

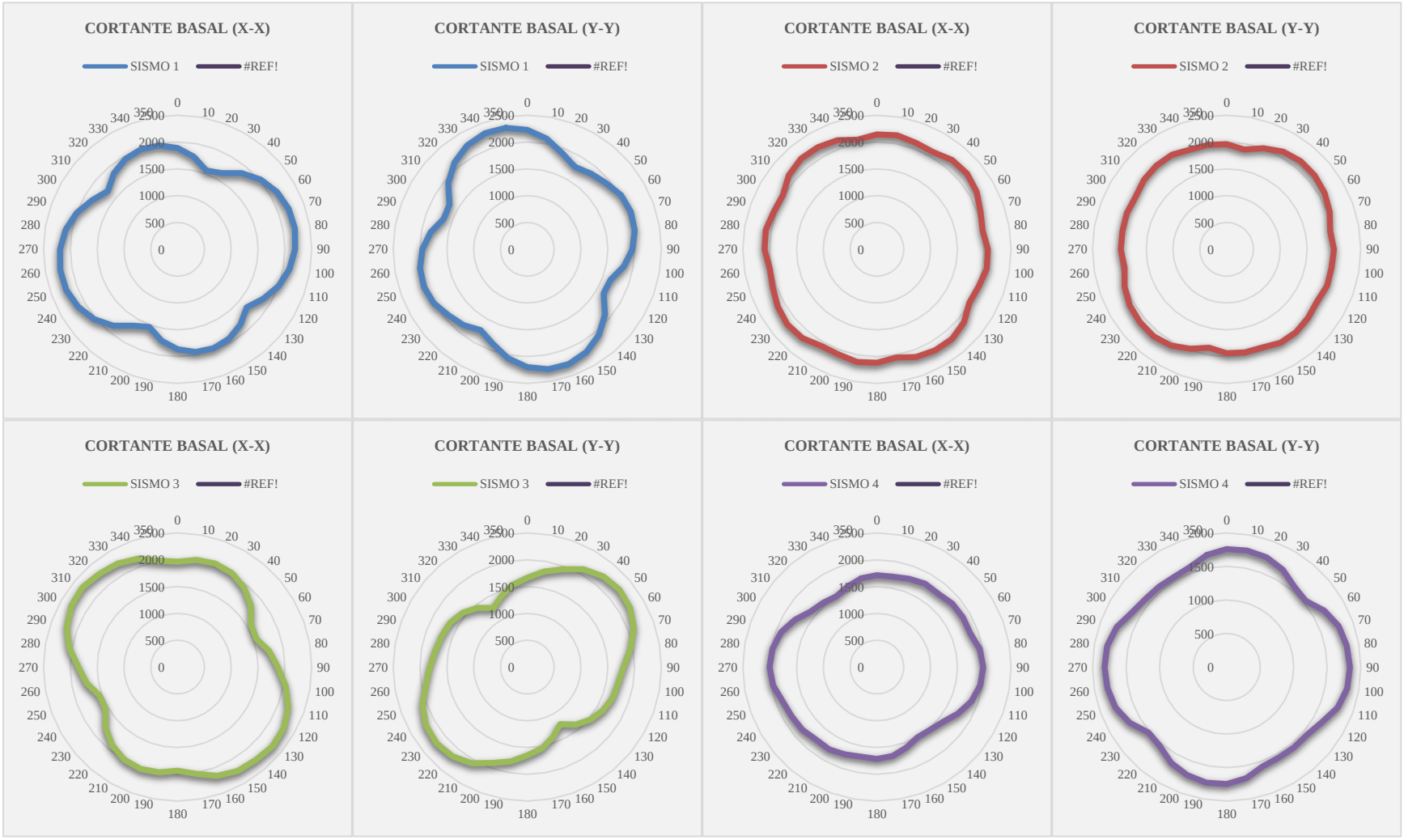

SISMO 7 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

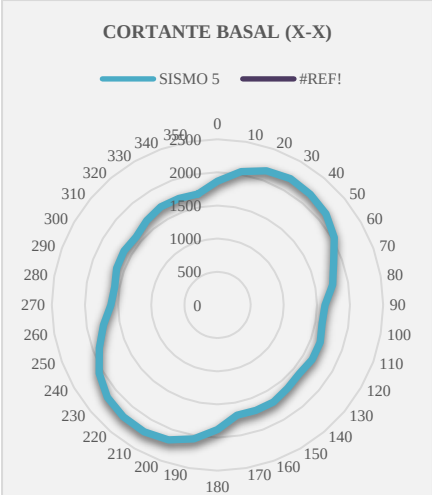

SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

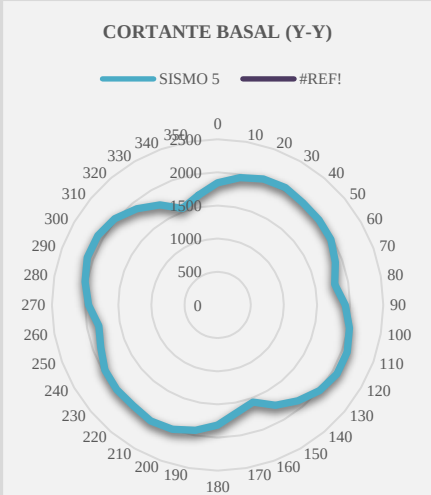

SISMO 8 - DERIVAS (X-X)
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0.000 0.005 0.010
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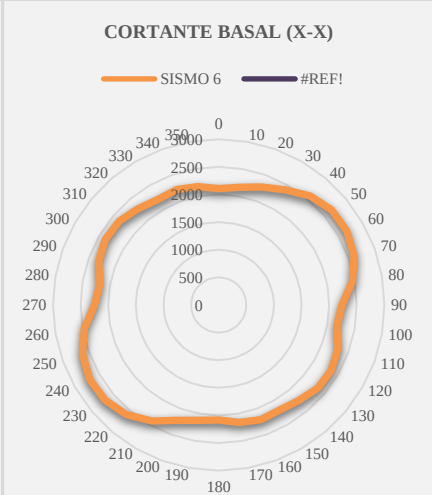

SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.005 0.010
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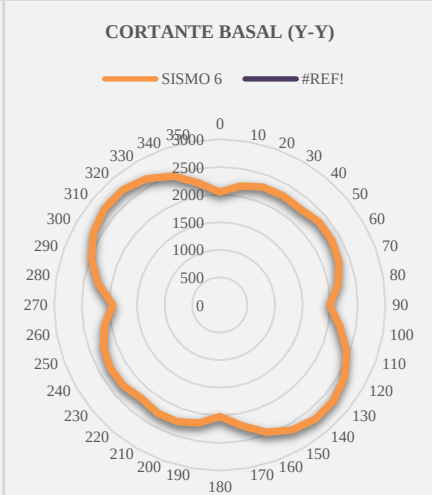
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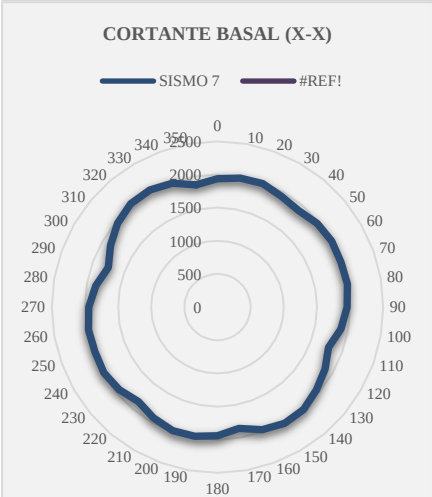

CORTANTE BASAL (X-X)
SISMO 1
#REF!
CORTANTE BASAL (Y-Y)
SISMO 1
#REF!
CORTANTE BASAL (X-X)
SISMO 2
#REF!
CORTANTE BASAL (Y-Y)
SISMO 2
#REF!
CORTANTE BASAL (X-X)
SISMO 3
#REF!
CORTANTE BASAL (Y-Y)
SISMO 3
#REF!
CORTANTE BASAL (X-X)
SISMO 4
#REF!
CORTANTE BASAL (Y-Y)
SISMO 4
#REF!

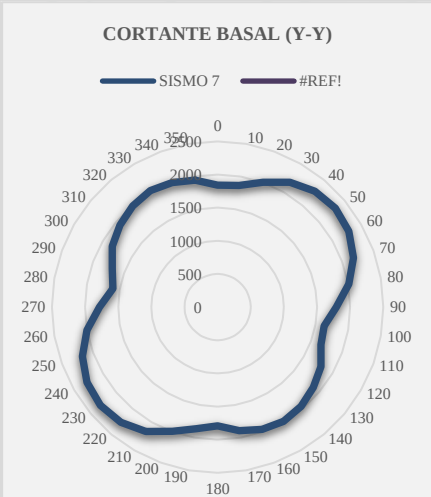

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SISMO 5
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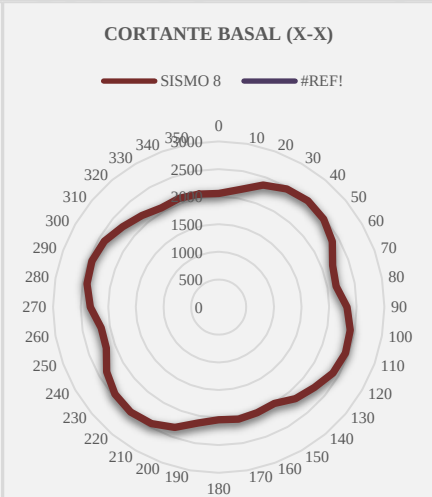

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SISMO 5
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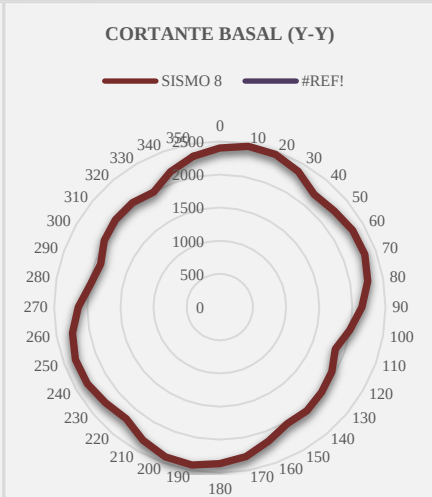

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SISMO 6
#REF!

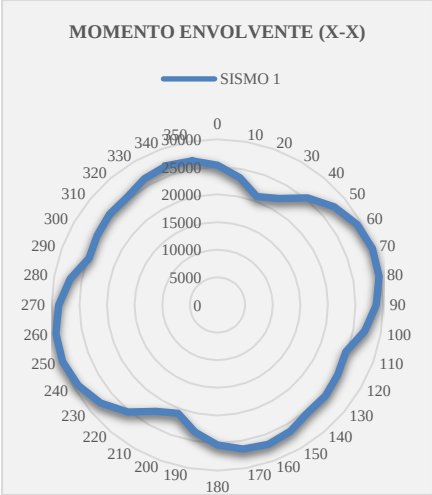

CORTANTE BASAL (Y-Y)
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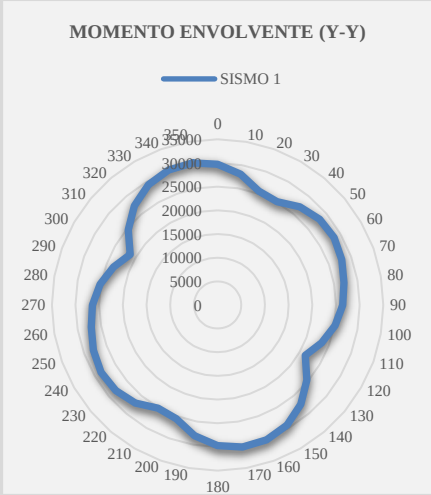

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SISMO 7
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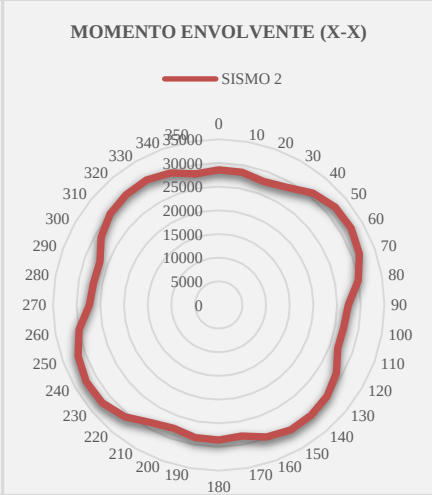

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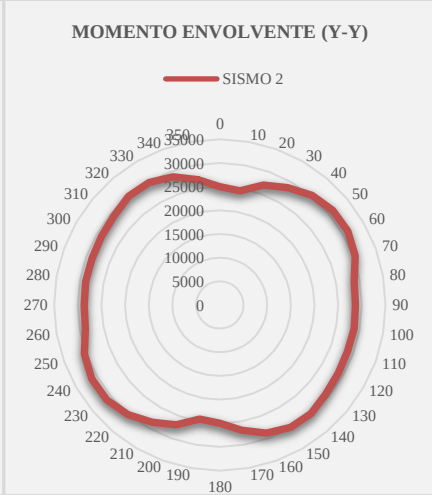

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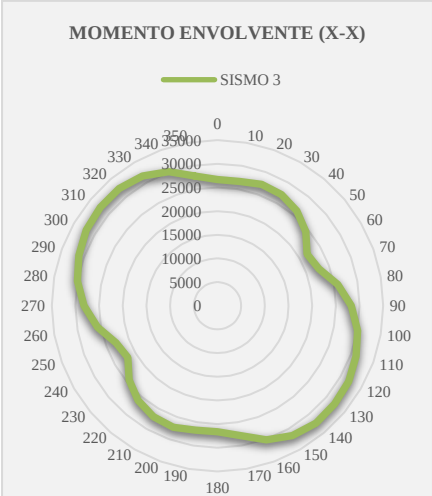

CORTANTE BASAL (Y-Y)
SISMO 8
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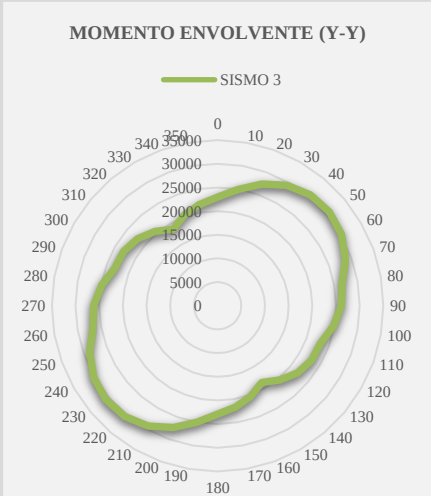

MOMENTO ENVOLVENTE (X-X)
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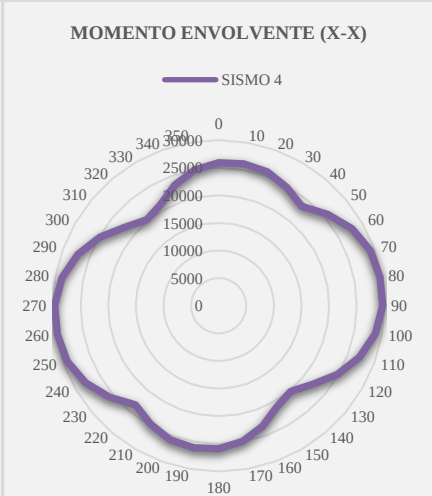

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

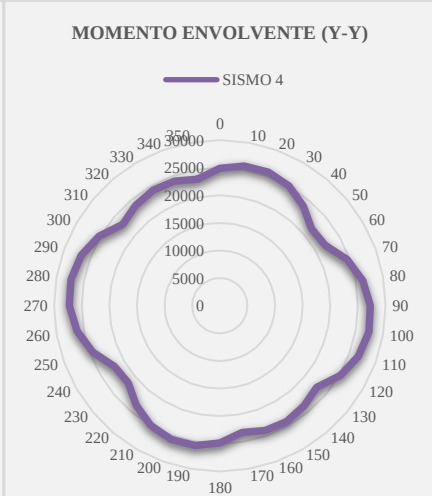

MOMENTO ENVOLVENTE (X-X)
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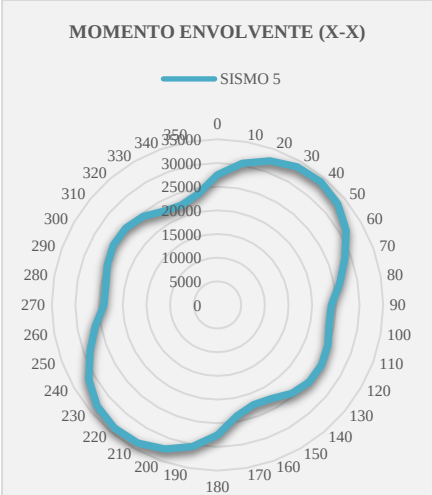

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

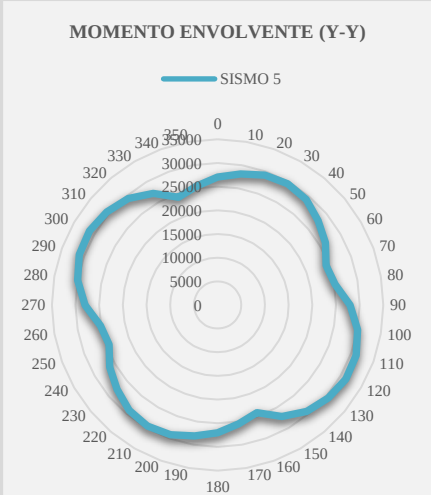

MOMENTO ENVOLVENTE (X-X)
SISMO 3

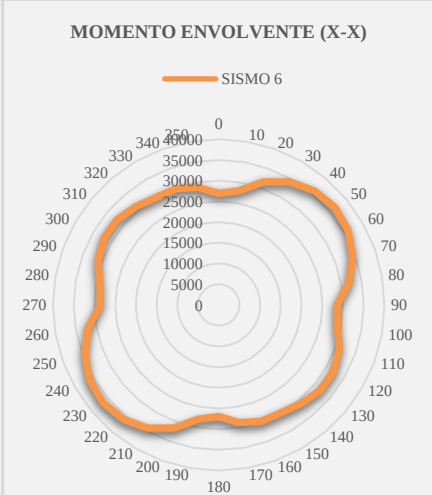

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

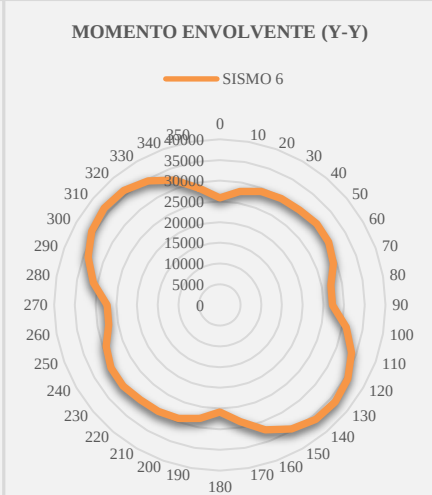

MOMENTO ENVOLVENTE (X-X)
SISMO 4

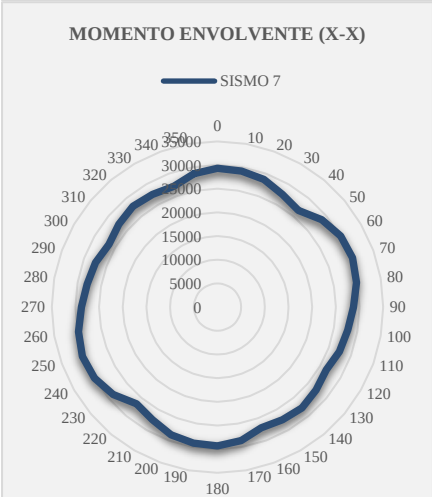

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

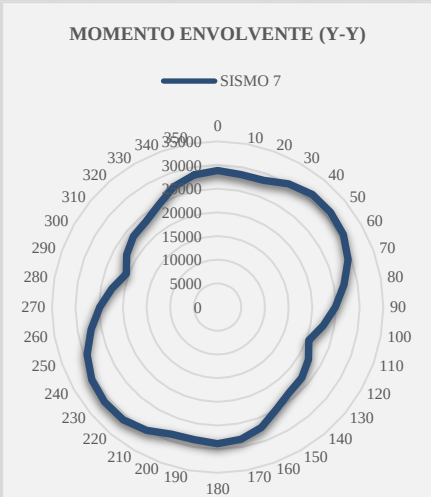

MOMENTO ENVOLVENTE (X-X)
SISMO 5

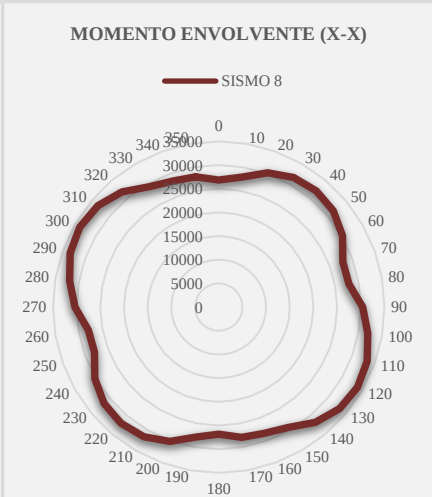

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

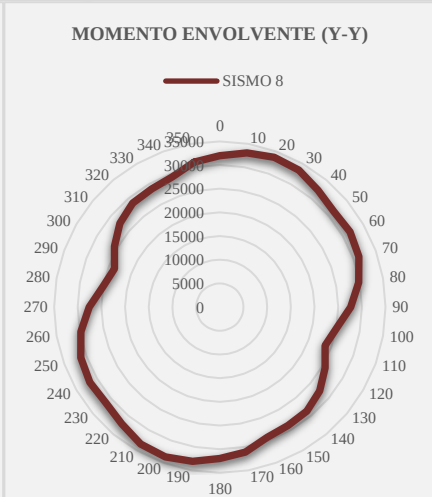

MOMENTO ENVOLVENTE (X-X)
SISMO 6

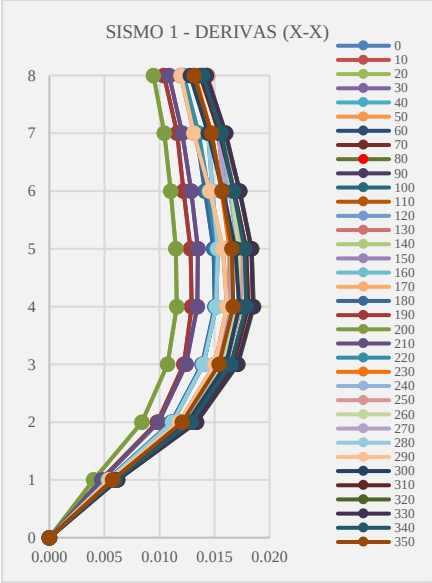

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

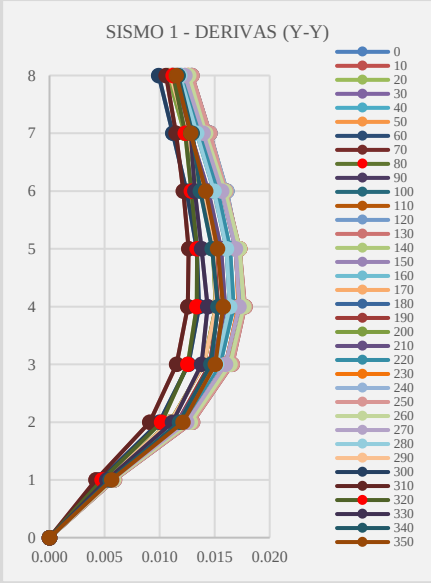

MOMENTO ENVOLVENTE (X-X)
SISMO 7

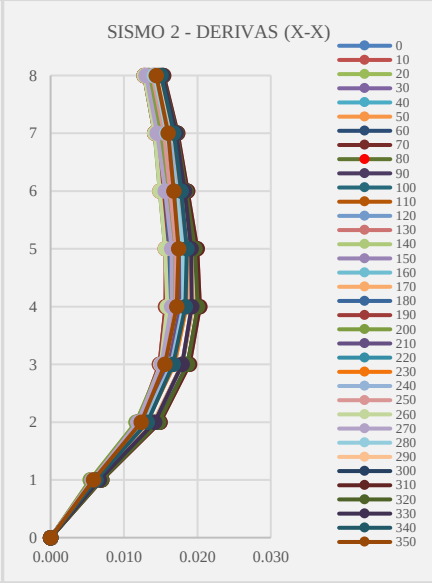

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

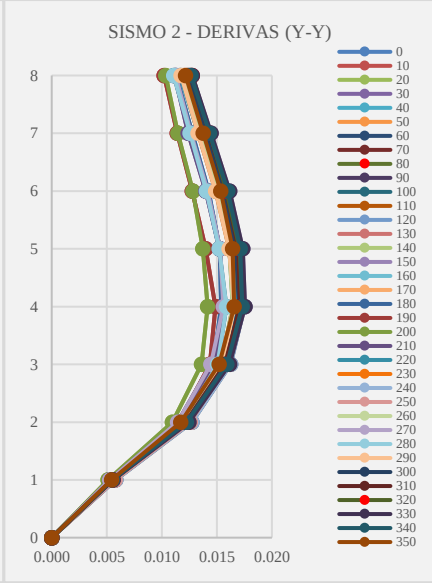

MOMENTO ENVOLVENTE (X-X)
SISMO 8

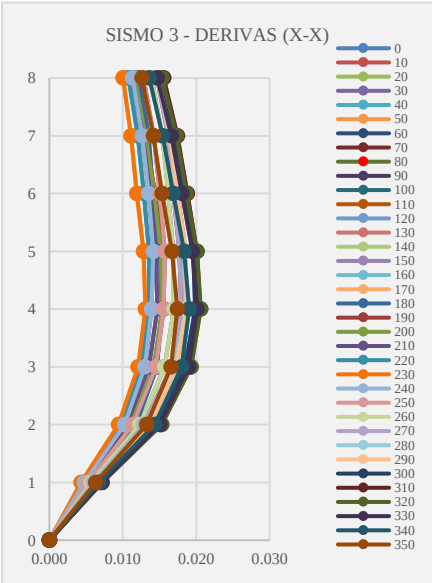

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

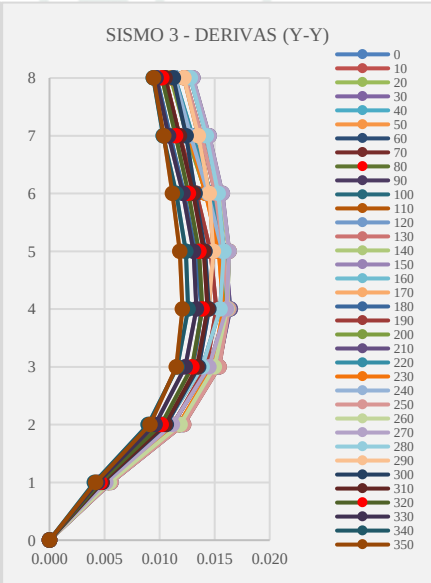

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

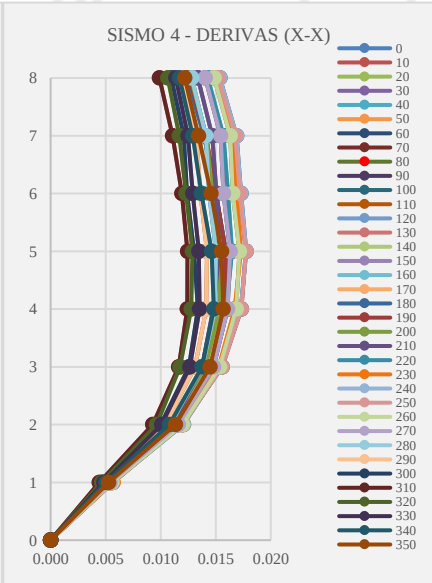

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

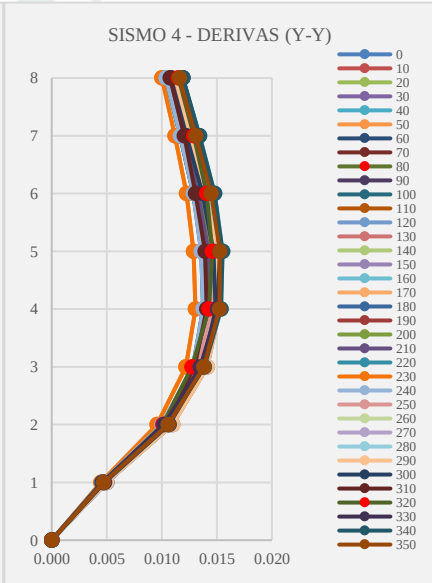

SISMO 2 - DERIVAS (X-X)
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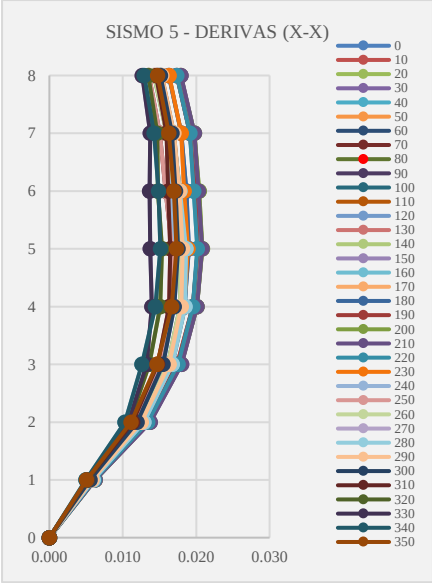

SISMO 2 - DERIVAS (Y-Y)
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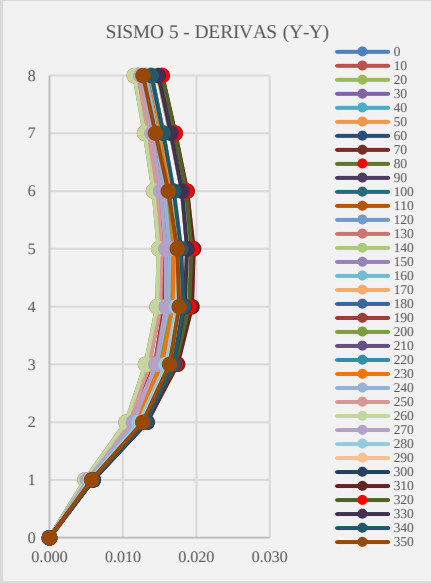

SISMO 3 - DERIVAS (X-X)
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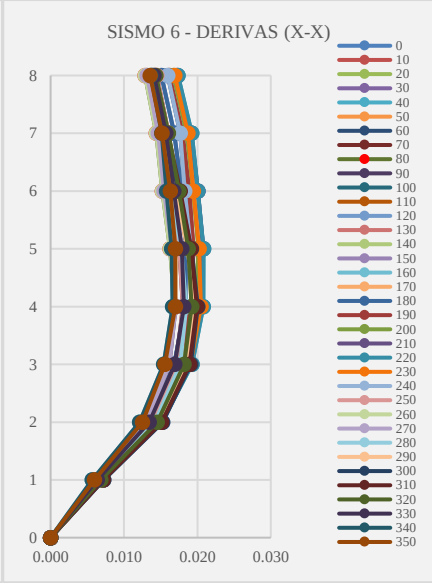

SISMO 3 - DERIVAS (Y-Y)
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0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

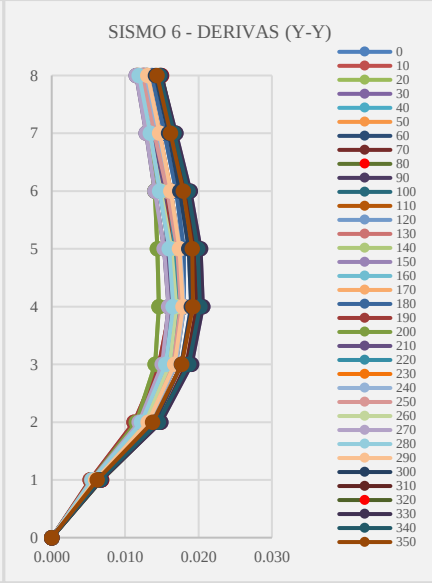

SISMO 4 - DERIVAS (X-X)
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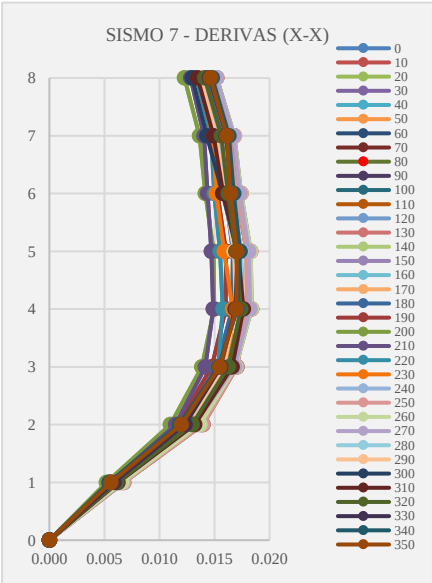

SISMO 4 - DERIVAS (Y-Y)
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0.000 0.005 0.010 0.015 0.020
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

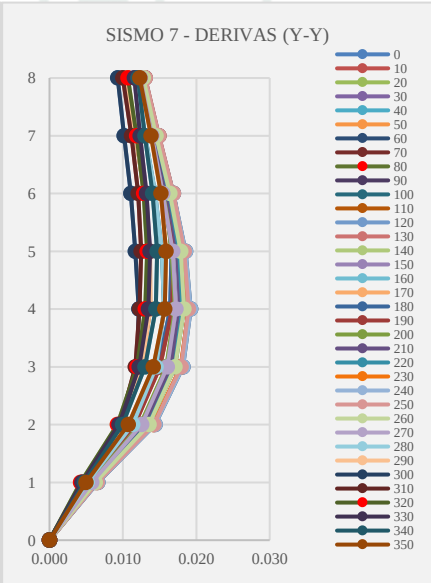

SISMO 5 - DERIVAS (X-X)
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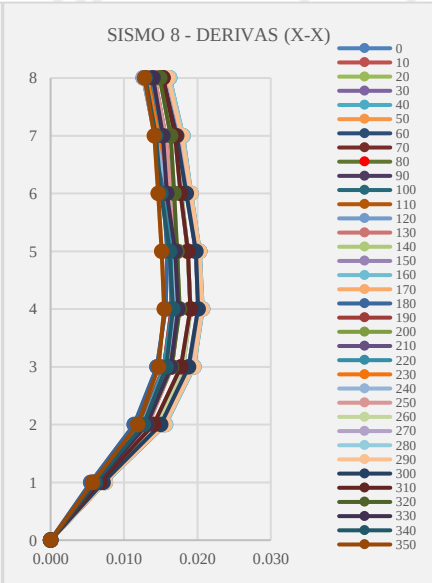

SISMO 5 - DERIVAS (Y-Y)
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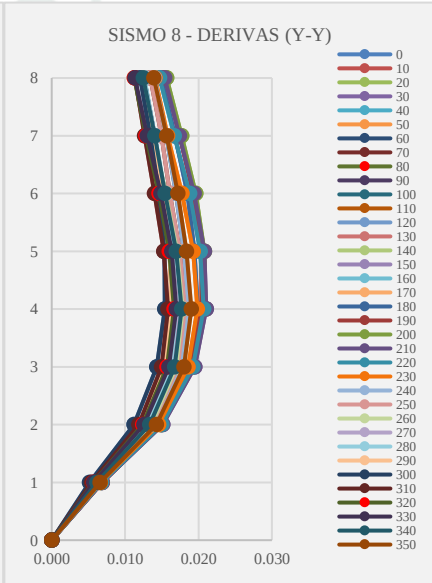

SISMO 6 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
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SISMO 6 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

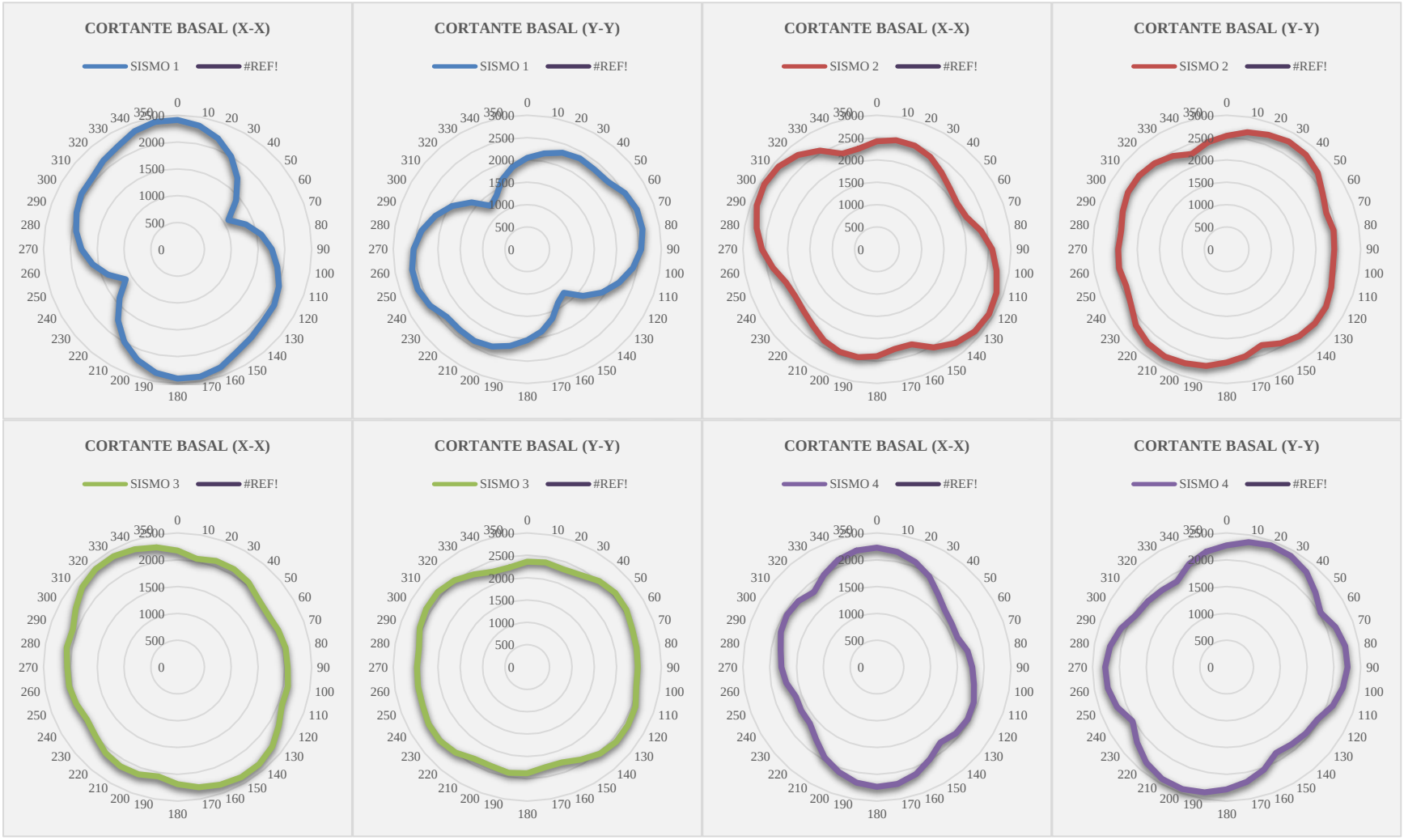

SISMO 7 - DERIVAS (X-X)
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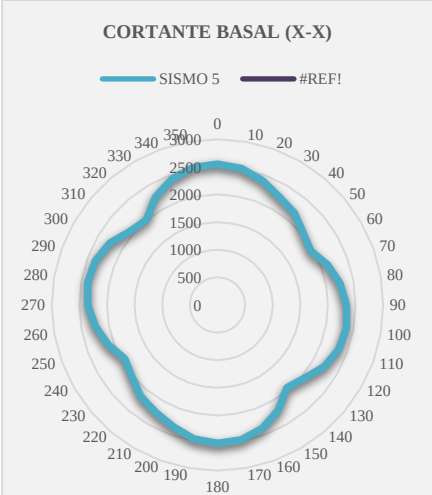

SISMO 7 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030
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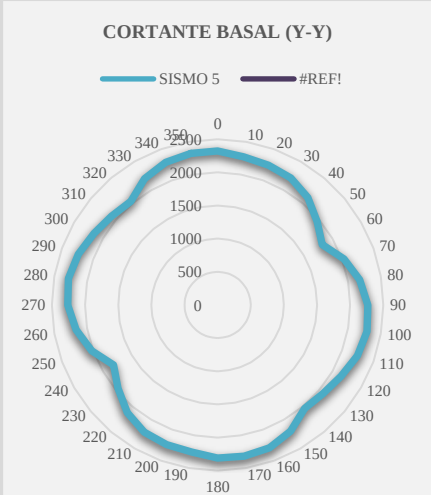

SISMO 8 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

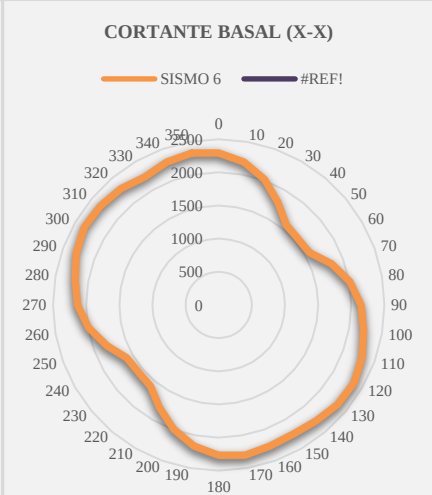

SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

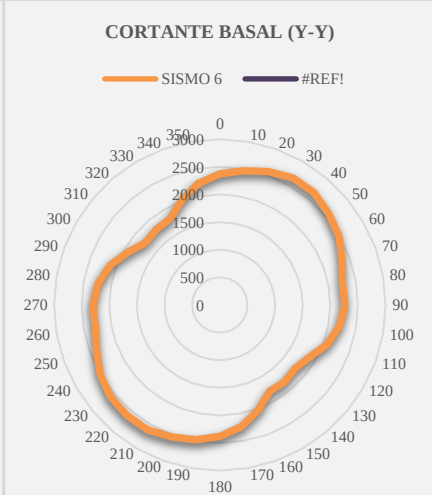
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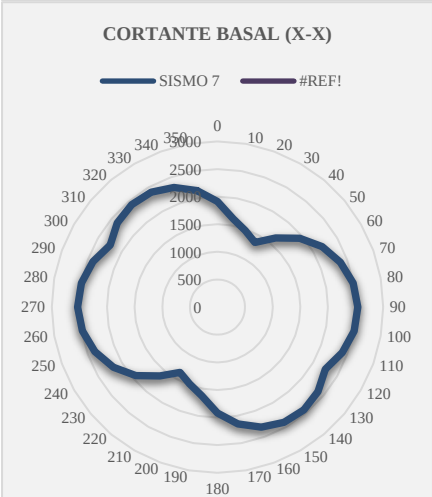


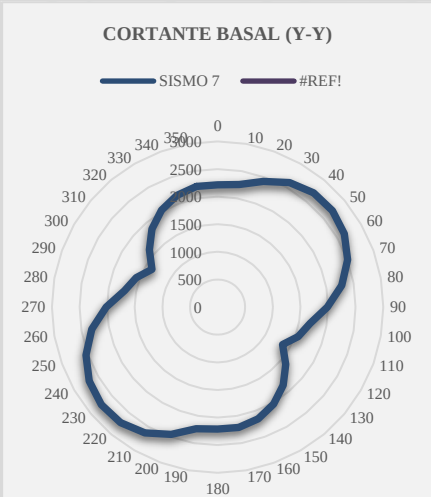

CORTANTE BASAL (X-X)
SISMO 5
#REF!

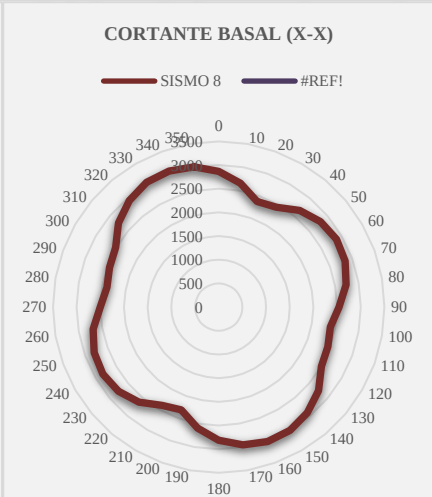

CORTANTE BASAL (Y-Y)
SISMO 5
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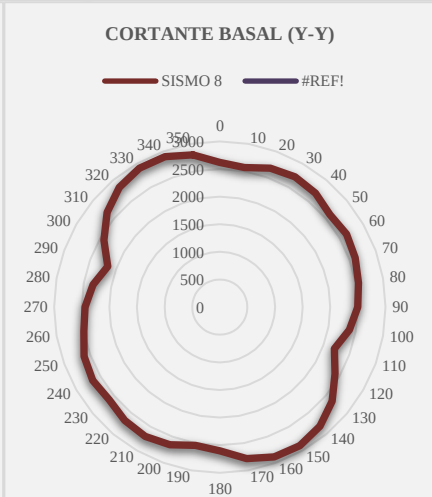

CORTANTE BASAL (X-X)
SISMO 6
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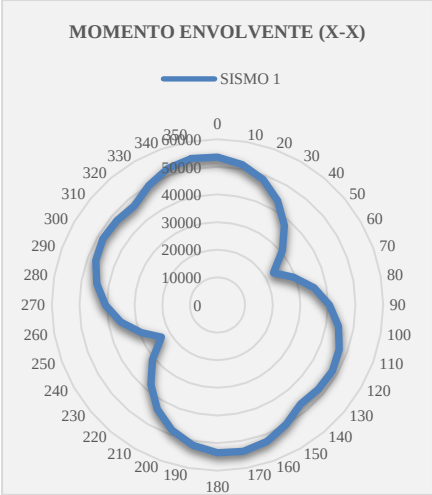

CORTANTE BASAL (Y-Y)
SISMO 6
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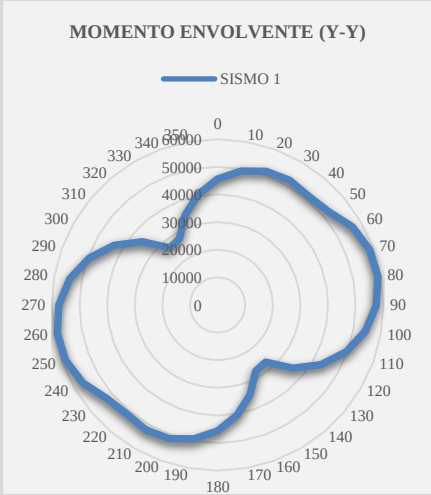

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SISMO 7
#REF!

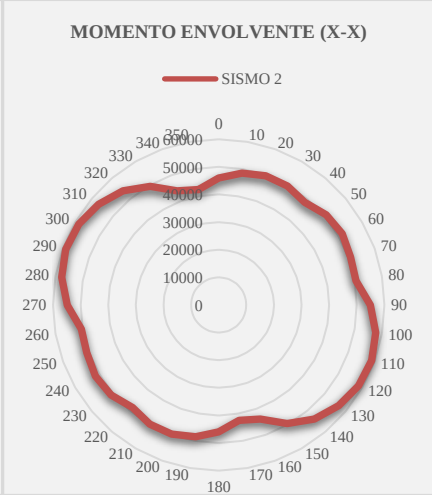

CORTANTE BASAL (Y-Y)
SISMO 7
#REF!

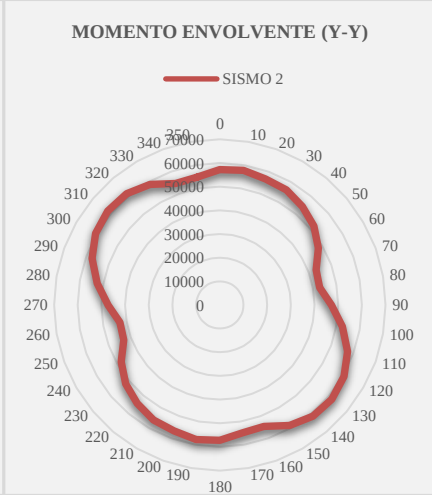

CORTANTE BASAL (X-X)
SISMO 8
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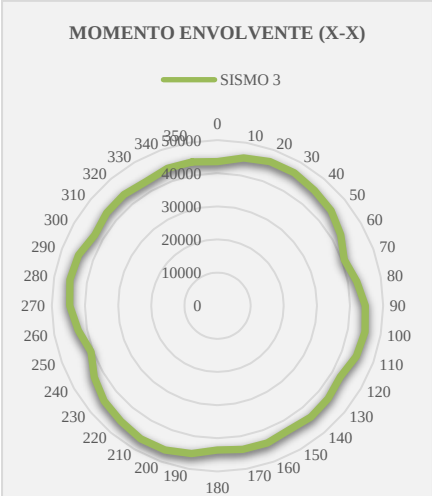

CORTANTE BASAL (Y-Y)
SISMO 8
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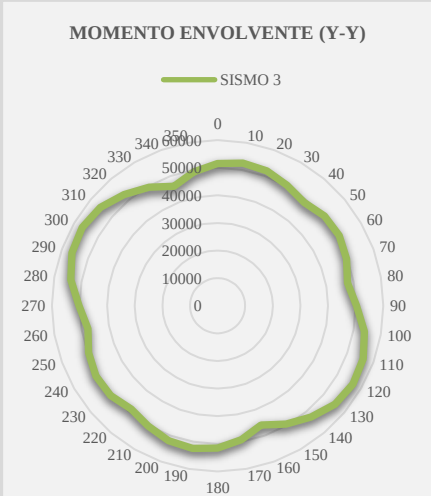

MOMENTO ENVOLVENTE (X-X)
SISMO 1

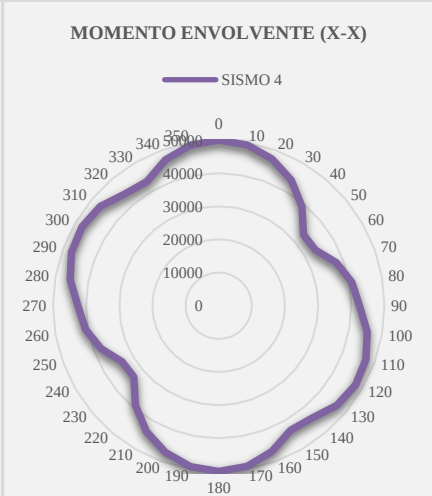

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

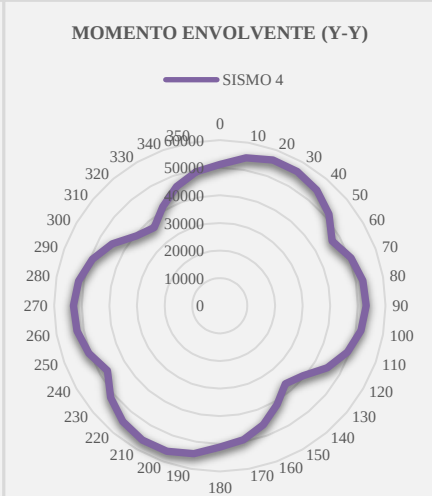

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

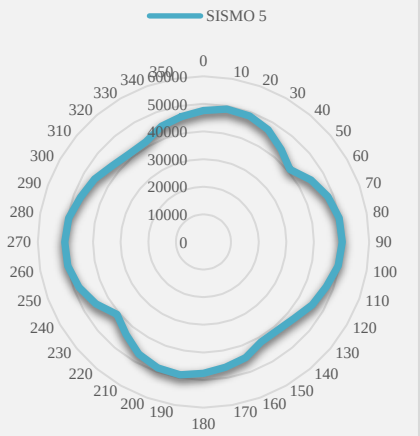

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

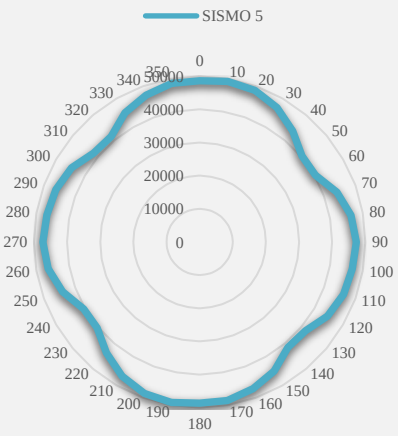

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

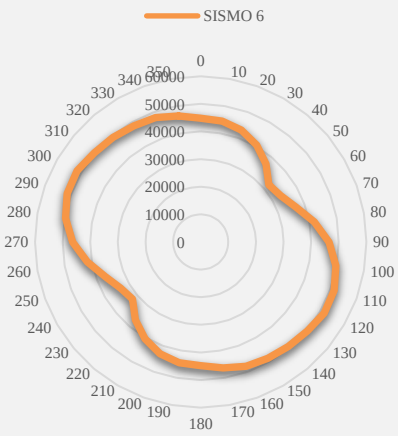
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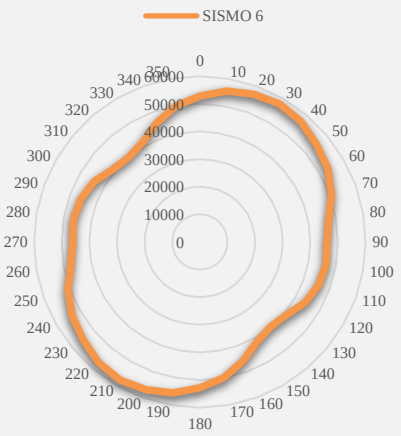
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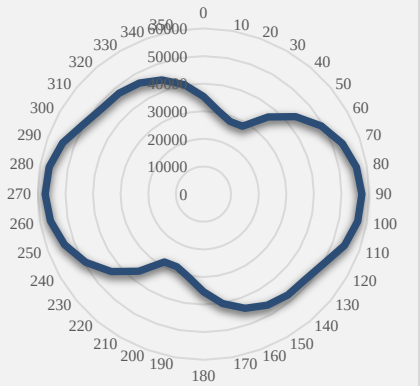
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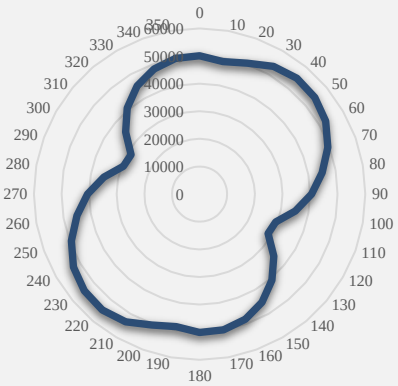
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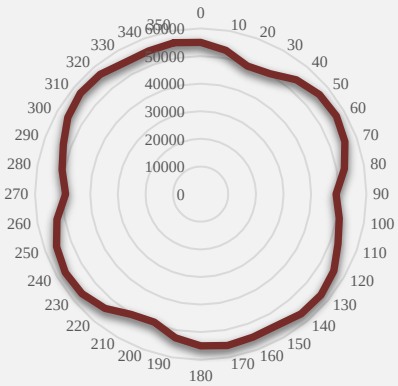
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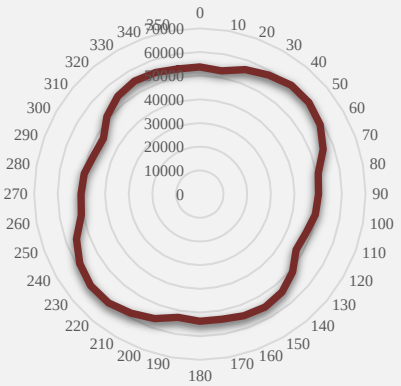
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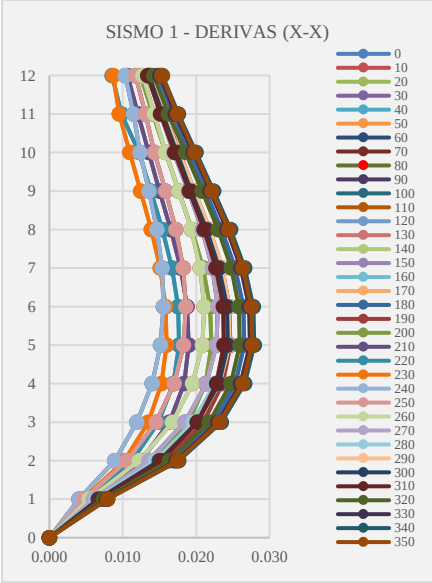


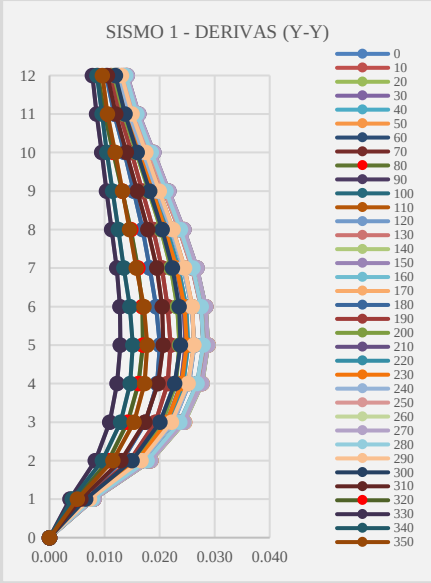
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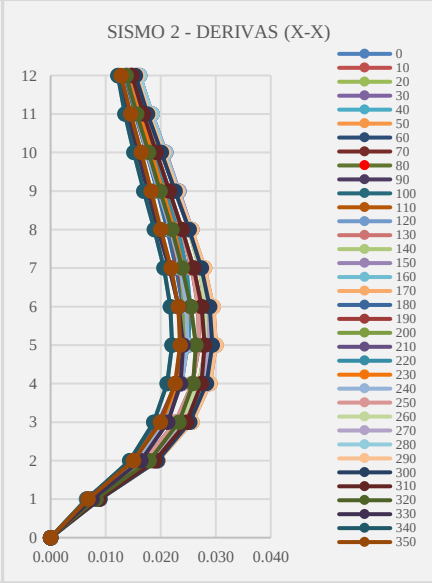


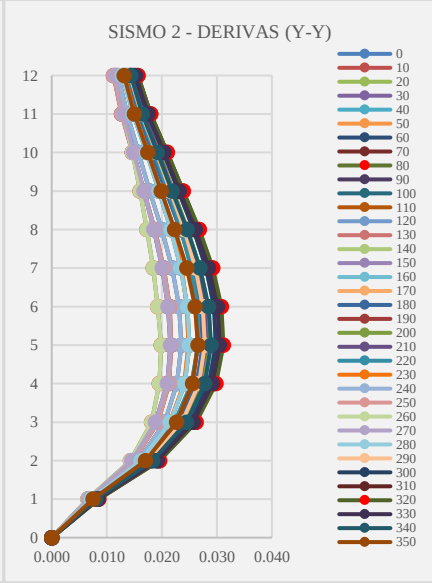
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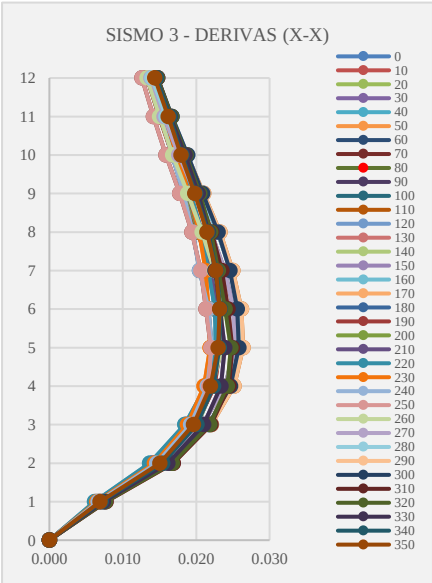


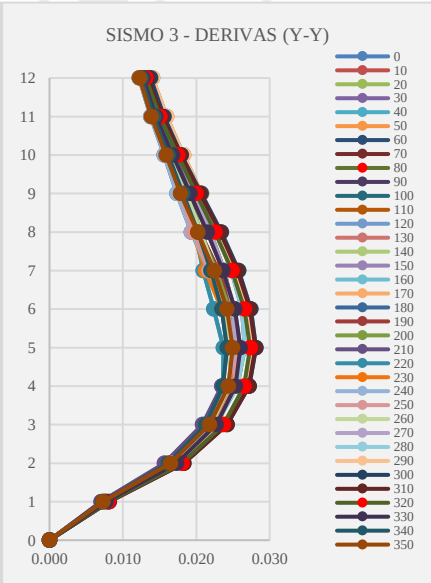

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

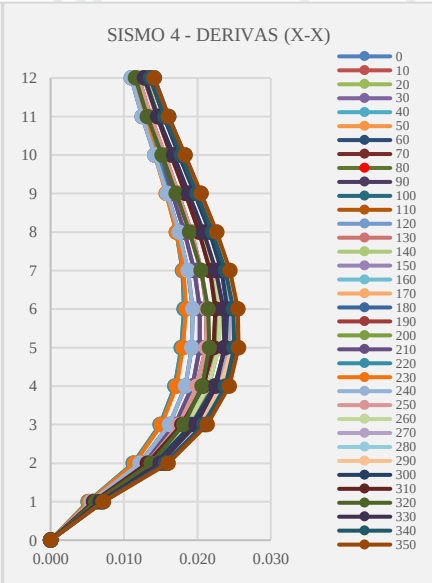

SISMO 1 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

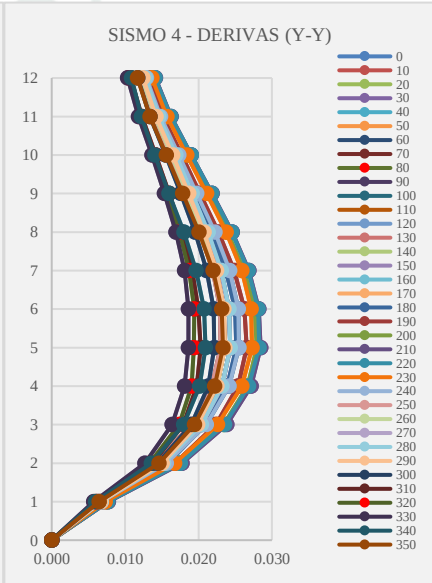

SISMO 2 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

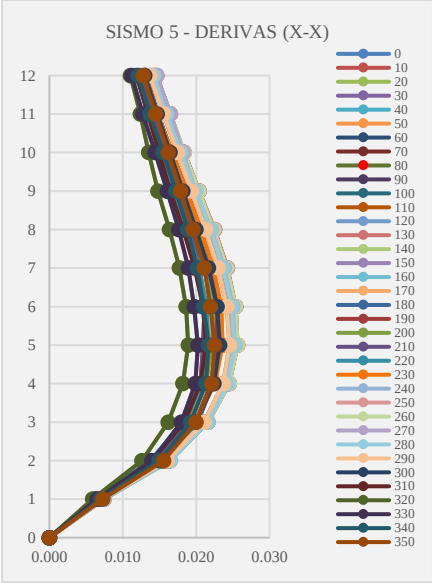

SISMO 2 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

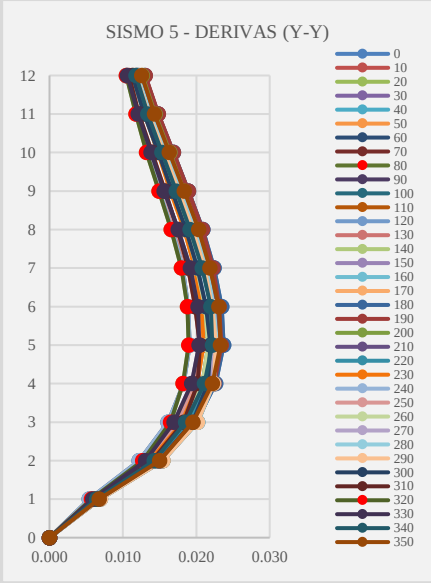

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0.000 0.010 0.020 0.030

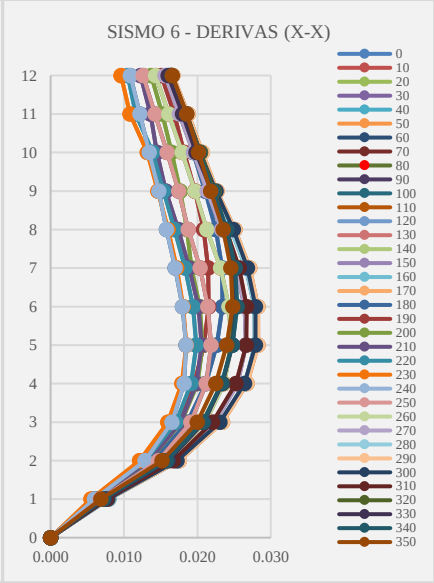

SISMO 3 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

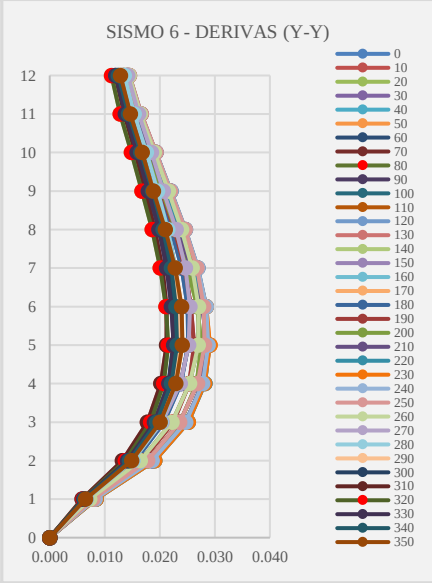

SISMO 4 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030

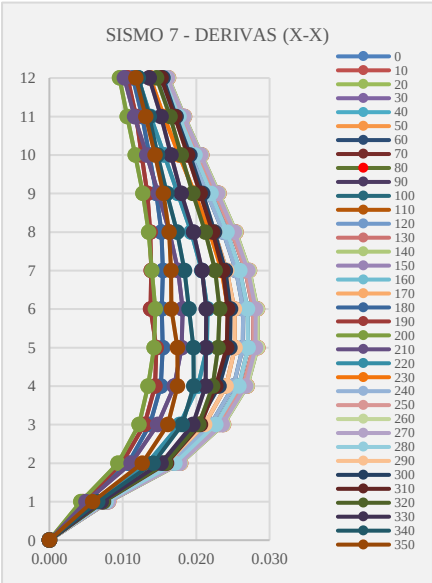

SISMO 4 - DERIVAS (Y-Y)
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0.000 0.010 0.020 0.030

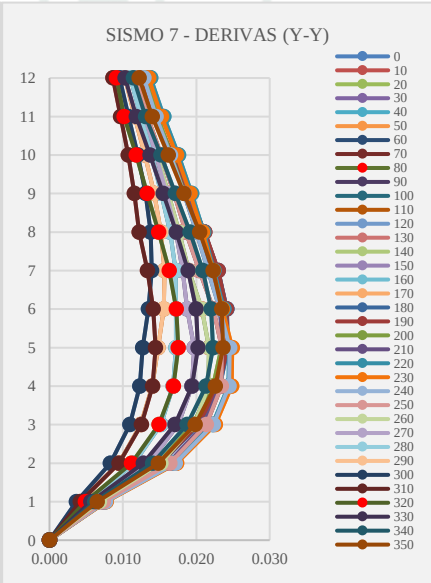

SISMO 5 - DERIVAS (X-X)
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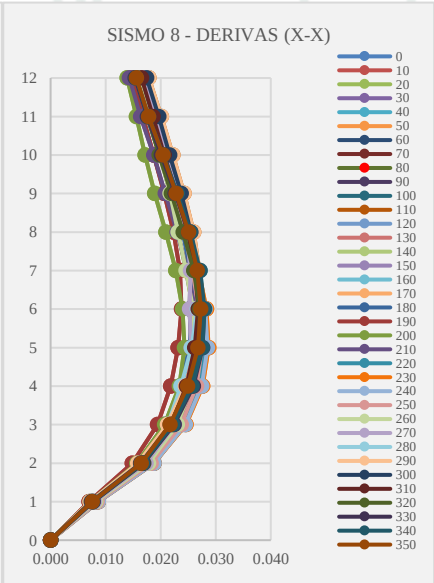

SISMO 5 - DERIVAS (Y-Y)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

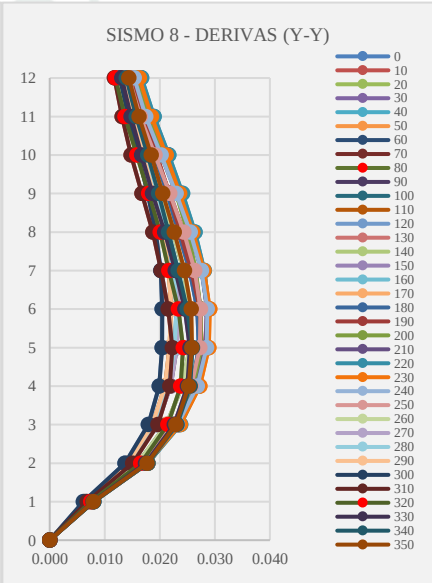

SISMO 6 - DERIVAS (X-X)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0.000 0.010 0.020 0.030 0.040
0 1 2 3 4 5 6 7 8 9 10 11 12
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0.000 0.010 0.020 0.030
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

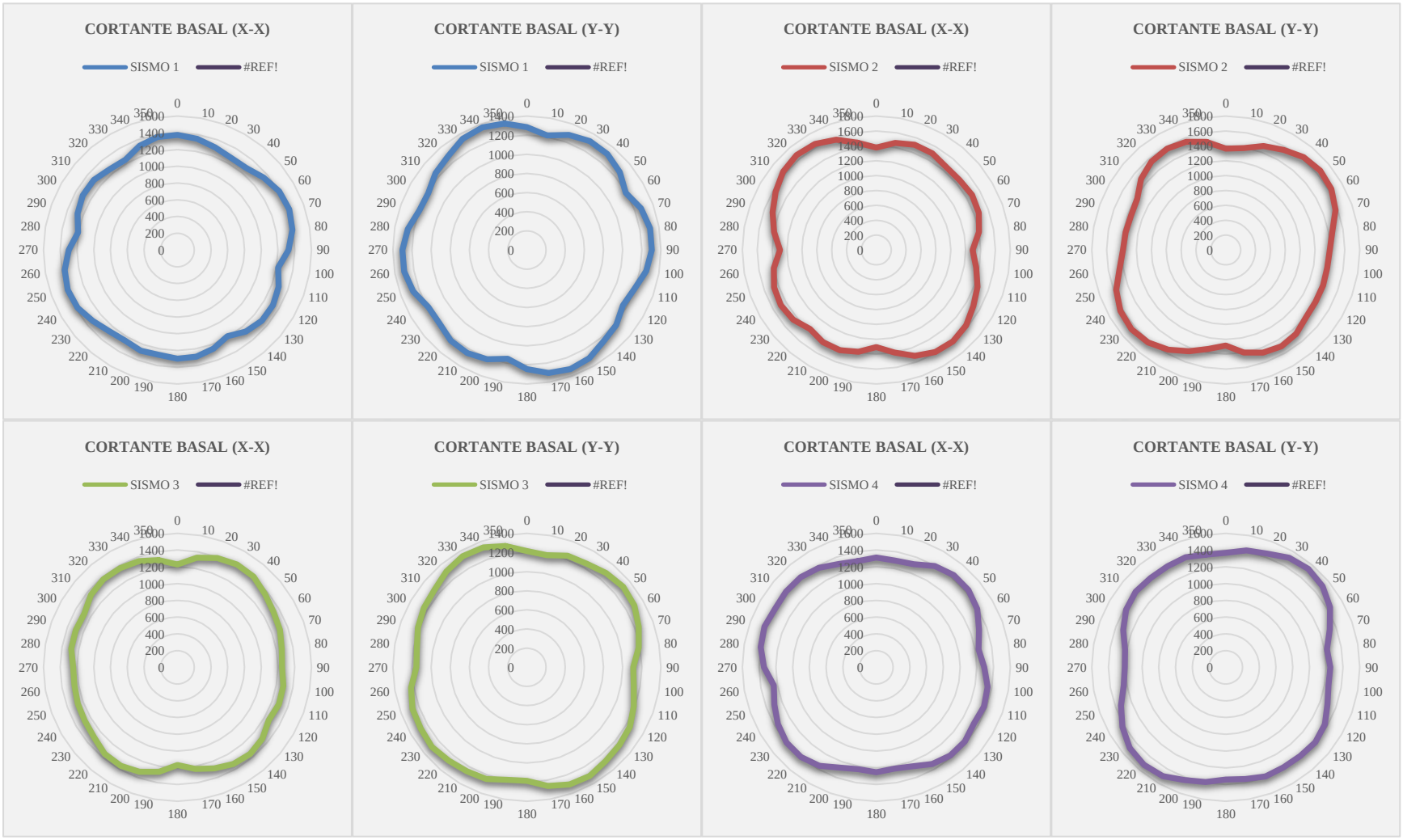

SISMO 7 - DERIVAS (Y-Y)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

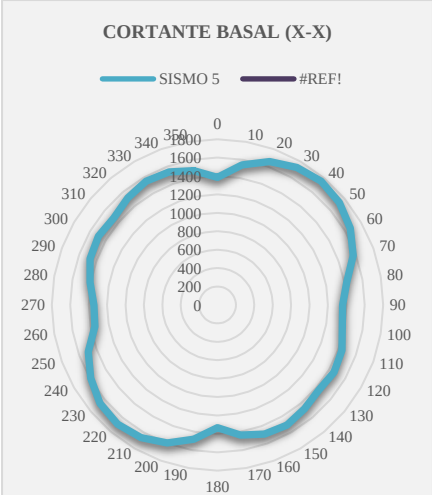

SISMO 8 - DERIVAS (X-X)
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0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

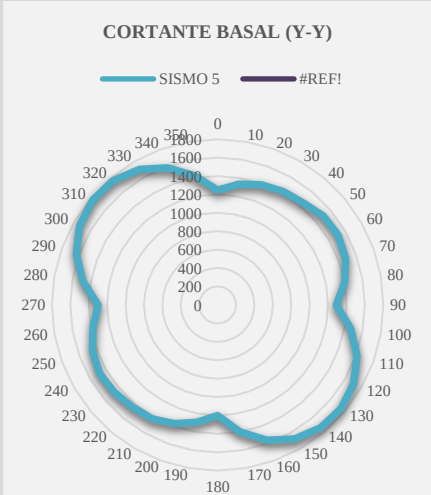

SISMO 8 - DERIVAS (Y-Y)
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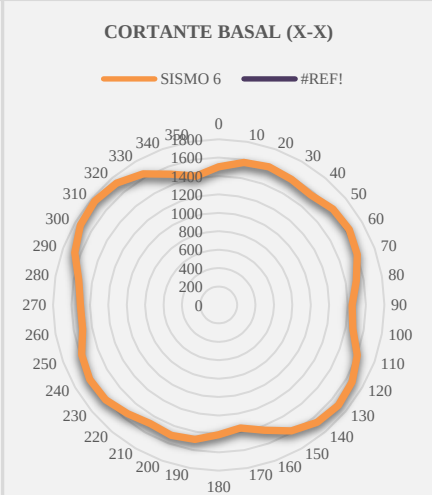
MODELO 12

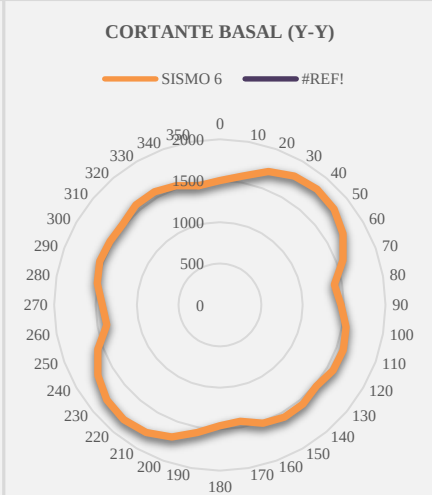
Para 4 pisos:

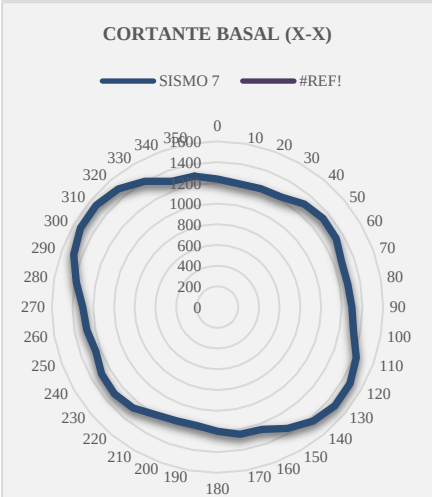


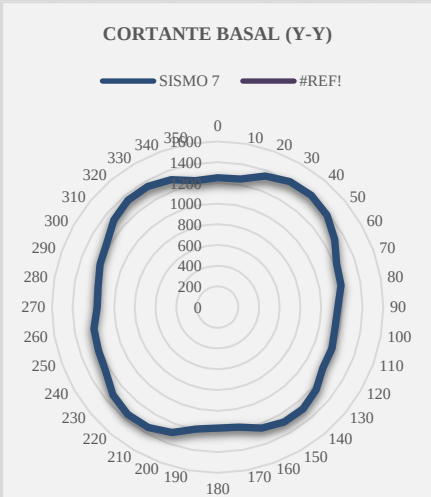

CORTANTE BASAL (X-X)
SISMO 5
#REF!

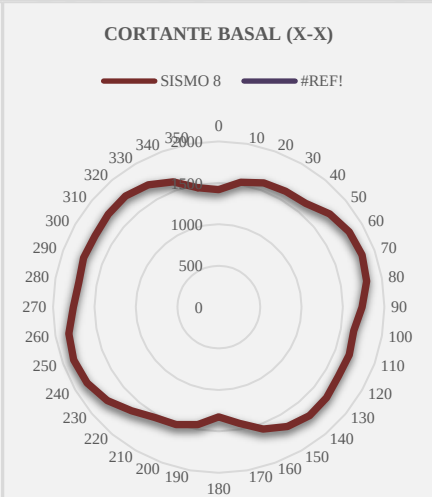

CORTANTE BASAL (Y-Y)
SISMO 5
#REF!

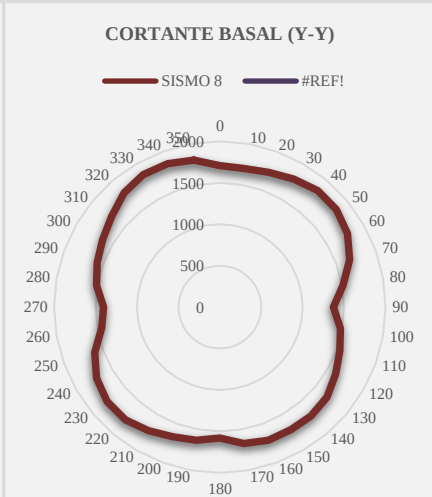

CORTANTE BASAL (X-X)
SISMO 6
#REF!


CORTANTE BASAL (Y-Y)
SISMO 6
#REF!

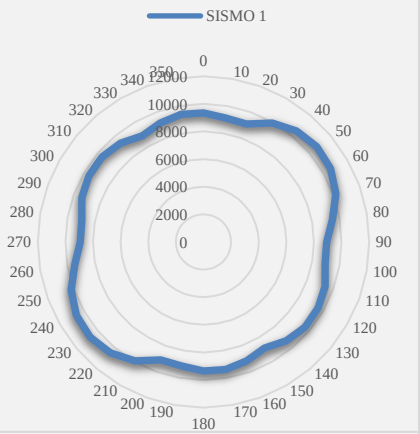

CORTANTE BASAL (X-X)
SISMO 7
#REF!


CORTANTE BASAL (Y-Y)
SISMO 7
#REF!

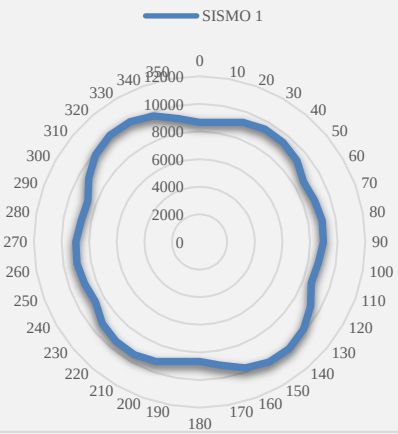

CORTANTE BASAL (X-X)
SISMO 8
#REF!


CORTANTE BASAL (Y-Y)
SISMO 8
#REF!

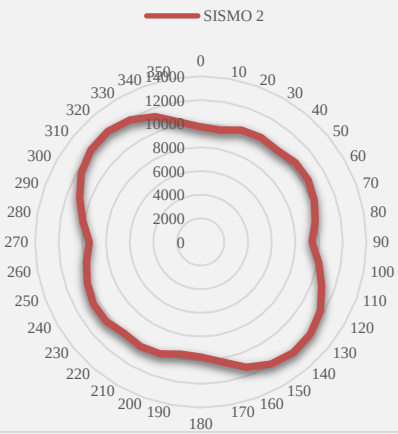
MOMENTO ENVOLVENTE (X-X)



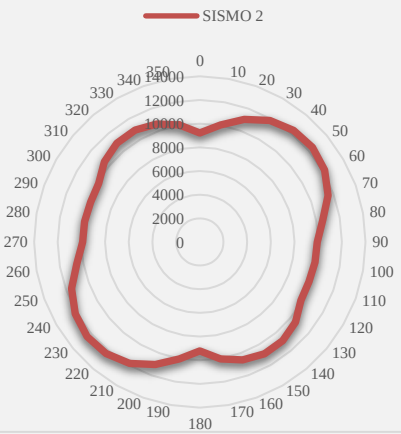
MOMENTO ENVOLVENTE (Y-Y)



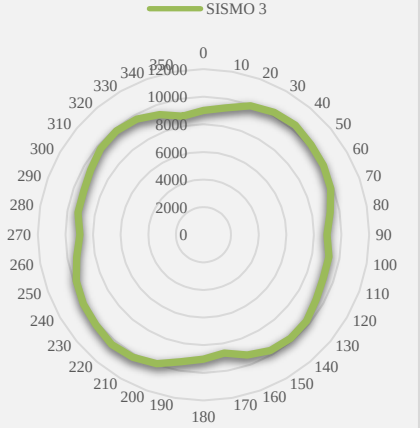
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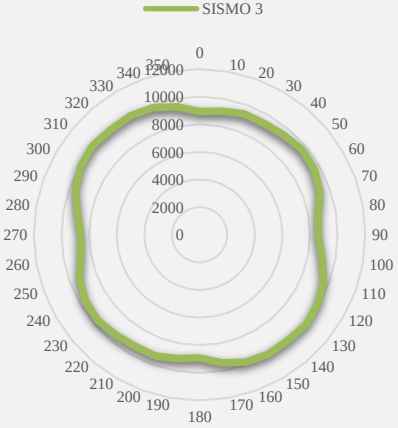
MOMENTO ENVOLVENTE (Y-Y)



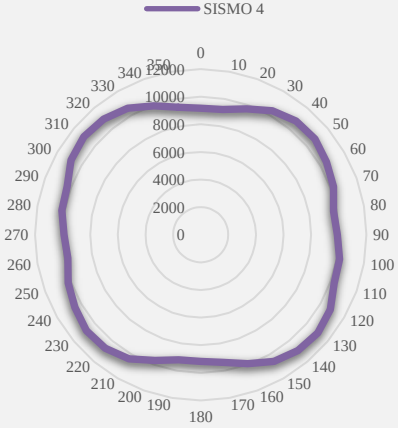
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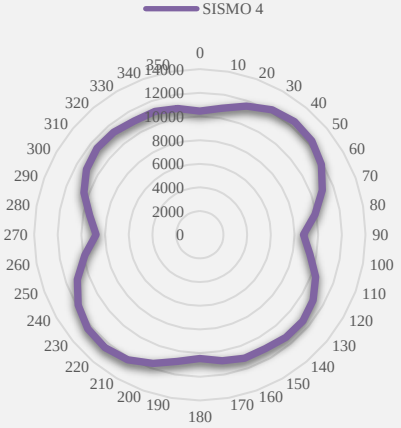
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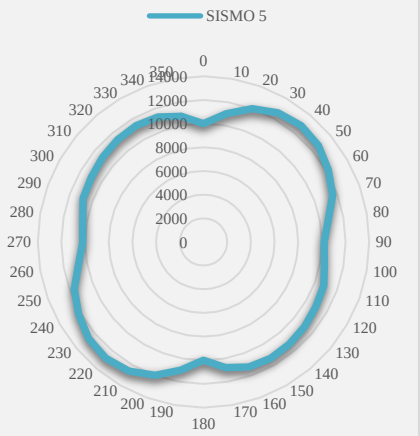
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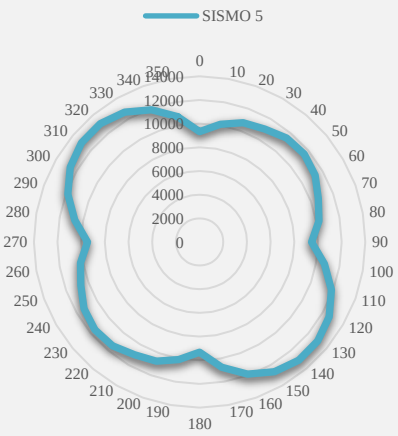
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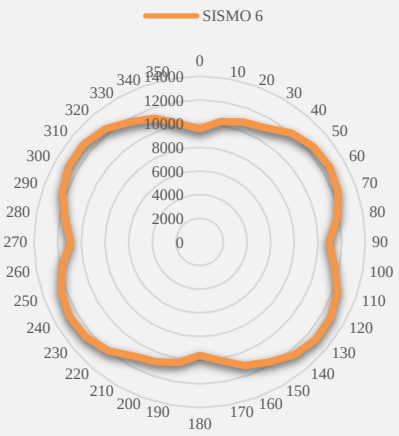
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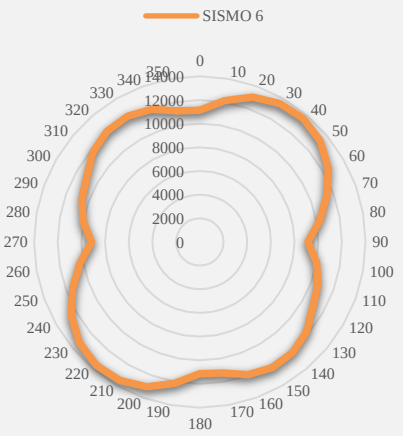
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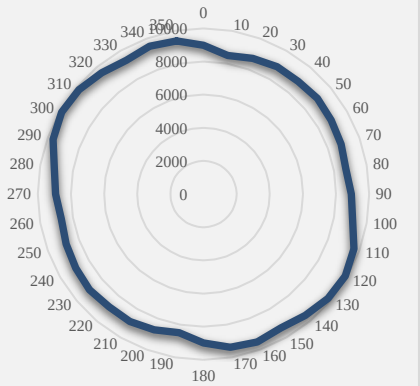
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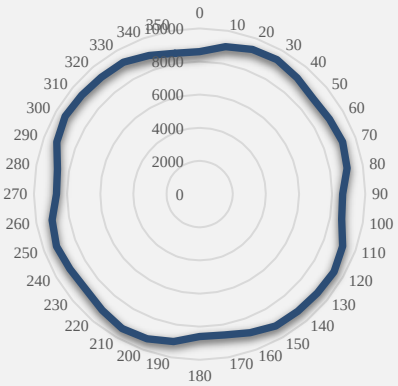
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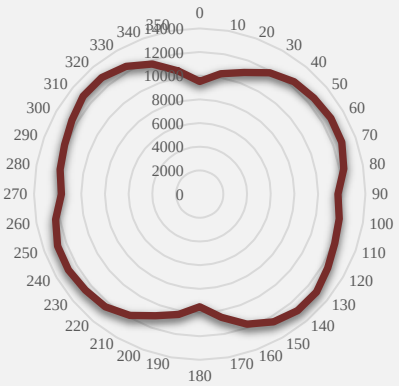
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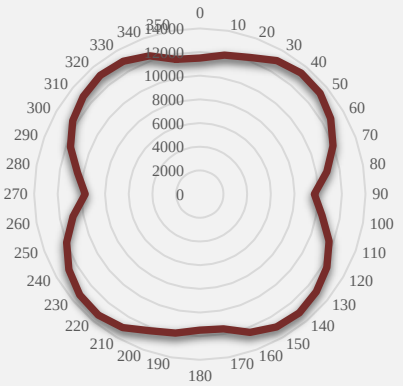
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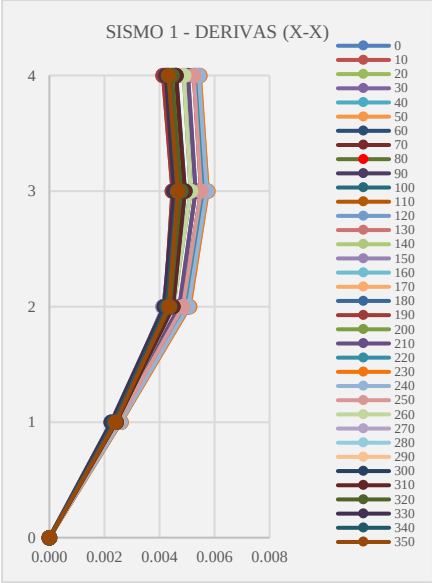


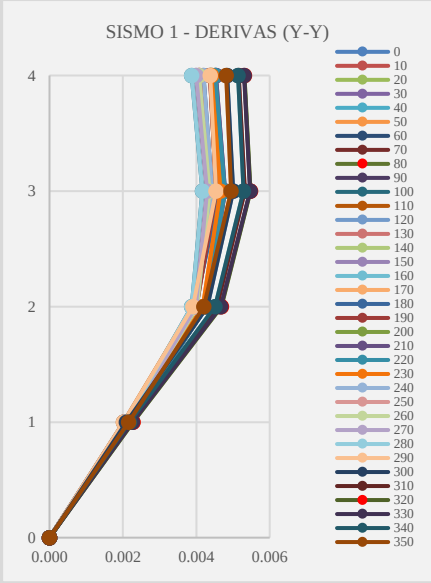
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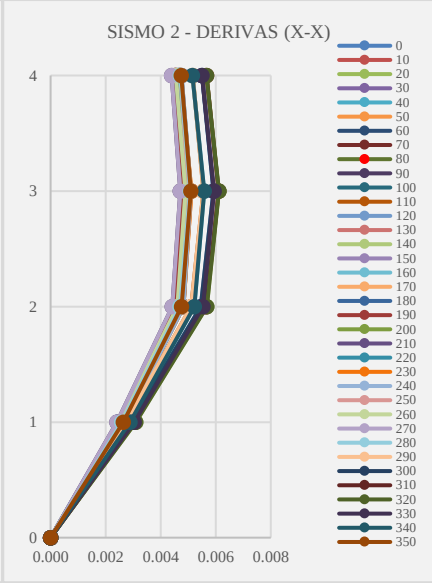


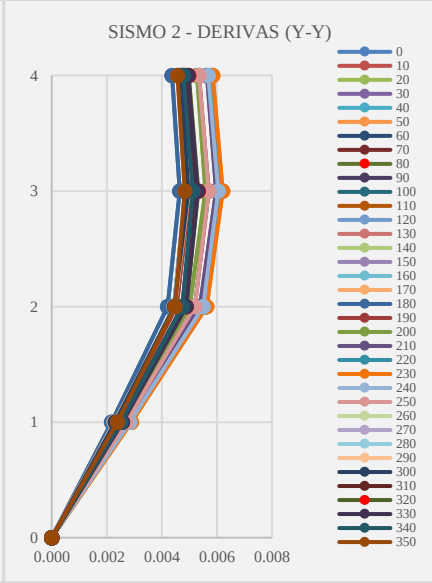
MOMENTO ENVOLVENTE (Y-Y)

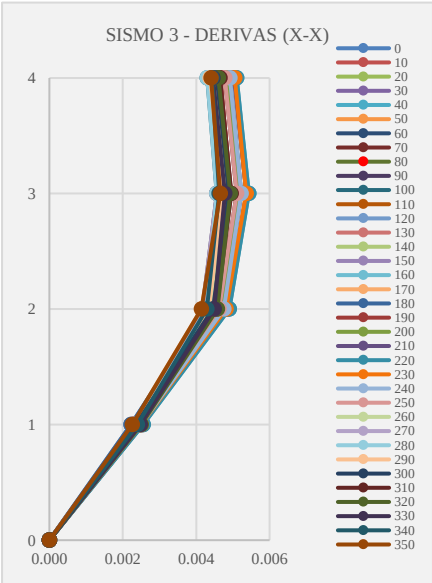


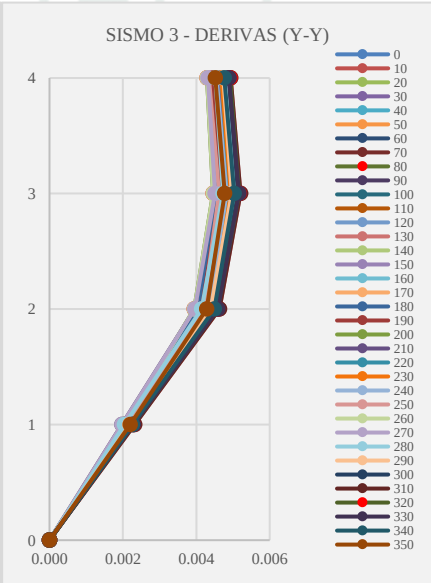

SISMO 1 - DERIVAS (X-X)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
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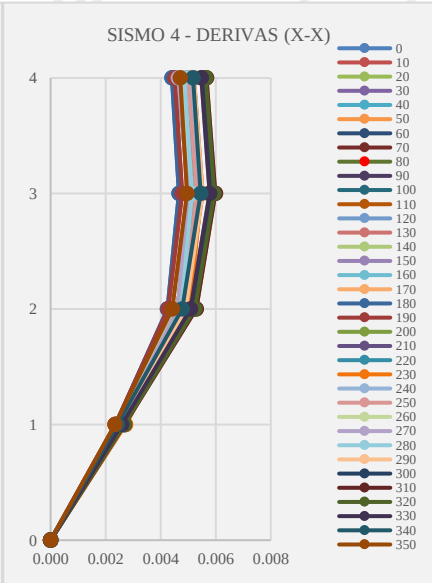

SISMO 1 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006
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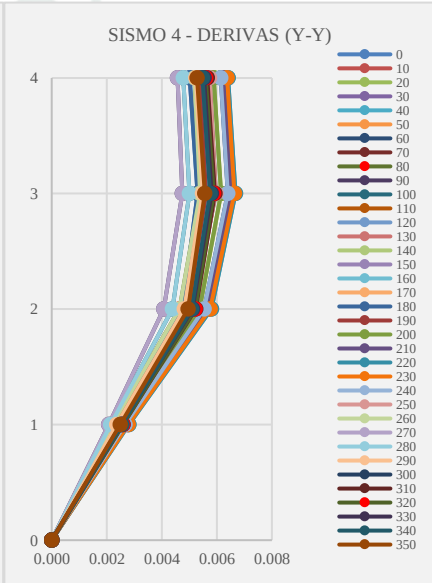

SISMO 2 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006 0.008
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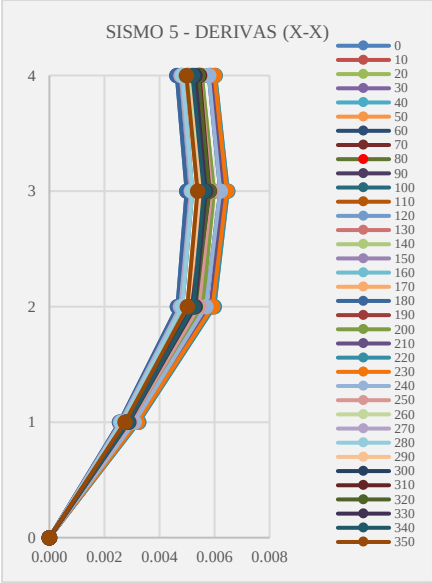

SISMO 2 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006 0.008
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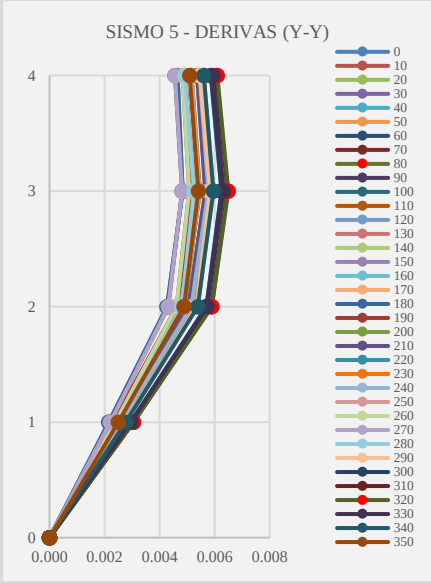

SISMO 3 - DERIVAS (X-X)
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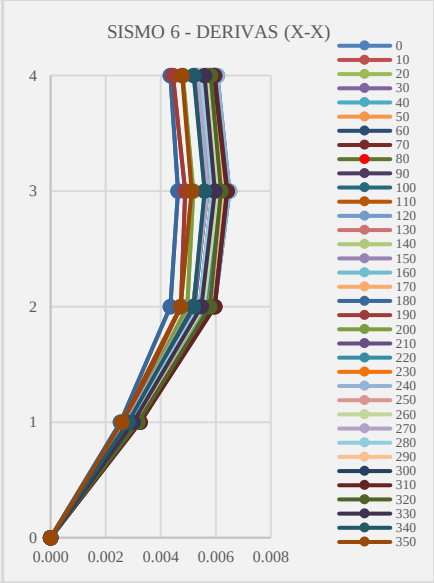

SISMO 3 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006
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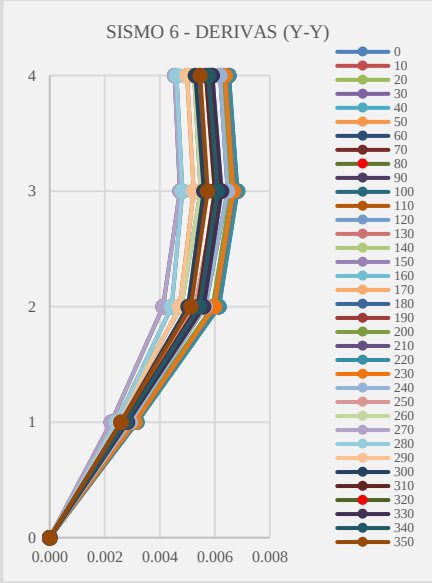

SISMO 4 - DERIVAS (X-X)
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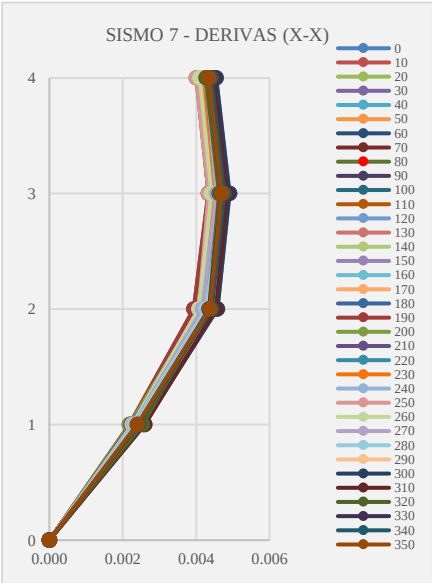

SISMO 4 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006 0.008
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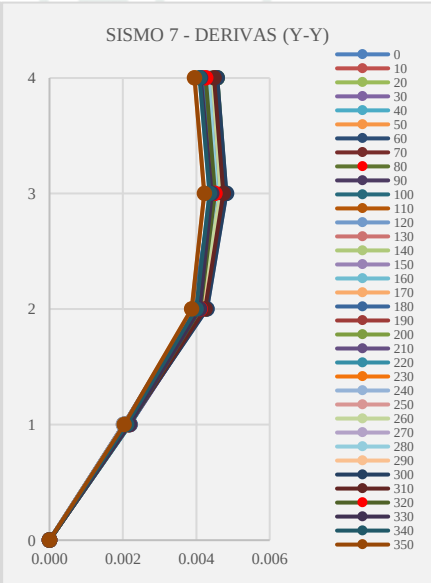

SISMO 5 - DERIVAS (X-X)
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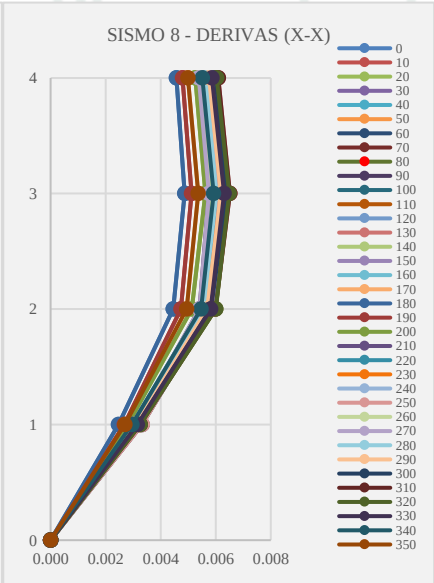

SISMO 5 - DERIVAS (Y-Y)
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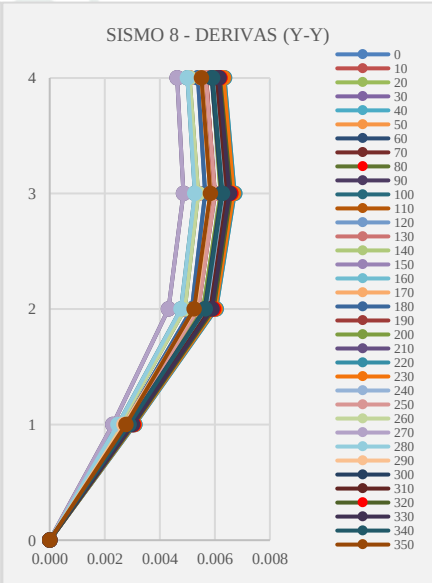

SISMO 6 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4
0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

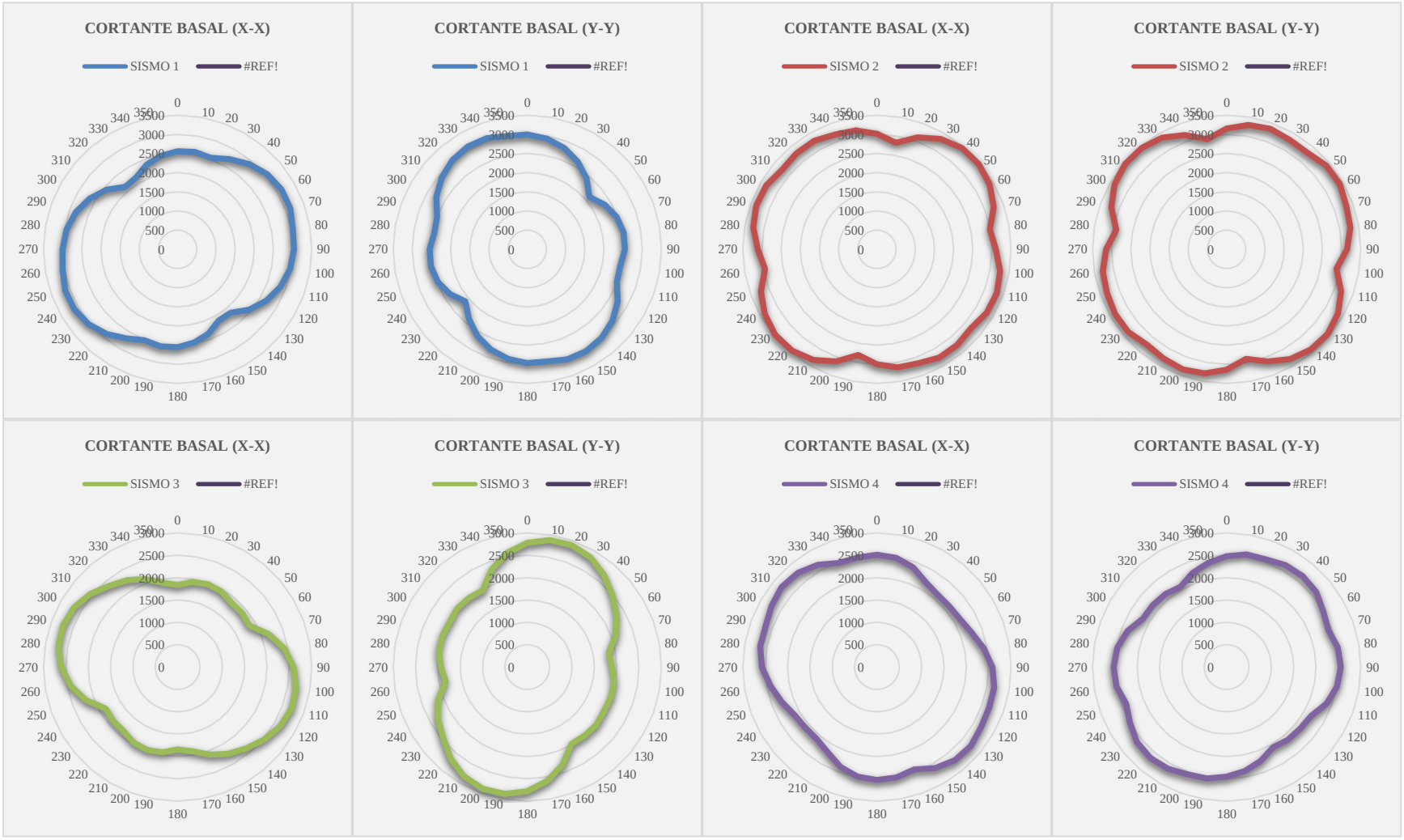

SISMO 7 - DERIVAS (X-X)
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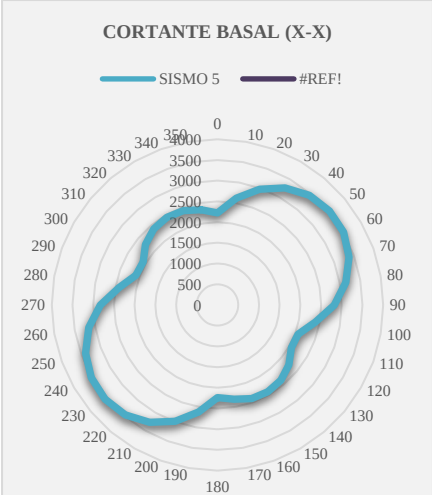

SISMO 7 - DERIVAS (Y-Y)
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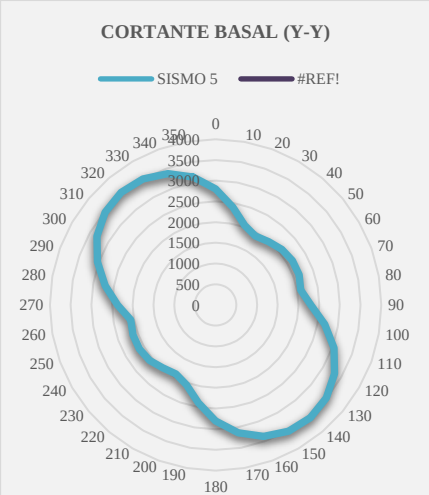

SISMO 8 - DERIVAS (X-X)
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0.000 0.002 0.004 0.006 0.008
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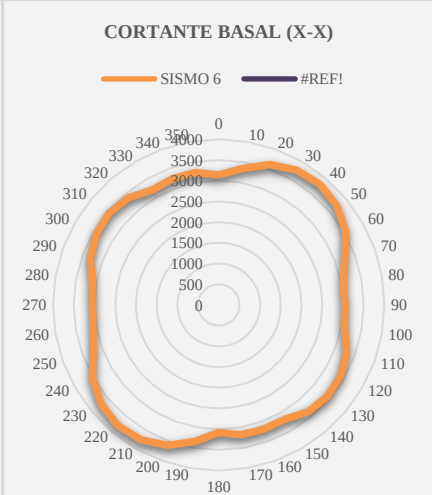

SISMO 8 - DERIVAS (Y-Y)
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0.000 0.002 0.004 0.006 0.008
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

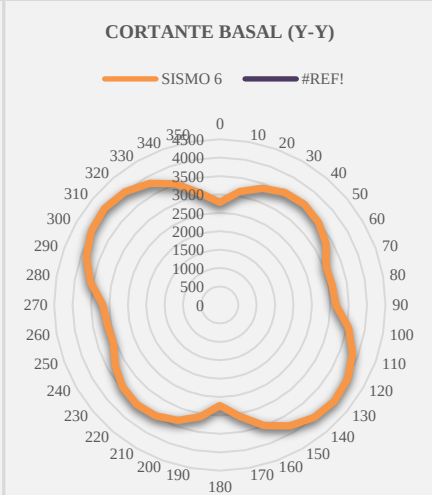
Para 8 pisos:

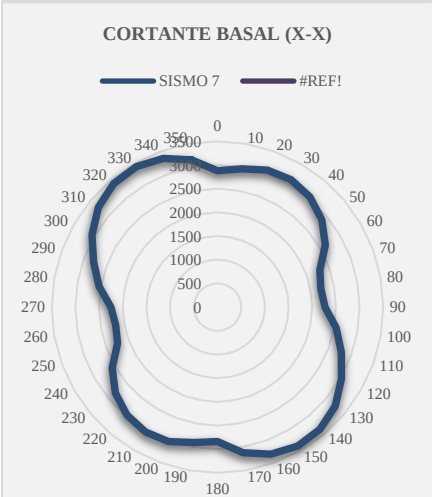

CORTANTE BASAL (X-X)
SISMO 1
#REF!
CORTANTE BASAL (Y-Y)
SISMO 1
#REF!
CORTANTE BASAL (X-X)
SISMO 2
#REF!
CORTANTE BASAL (Y-Y)
SISMO 2
#REF!
CORTANTE BASAL (X-X)
SISMO 3
#REF!
CORTANTE BASAL (Y-Y)
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SISMO 4
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SISMO 4
#REF!

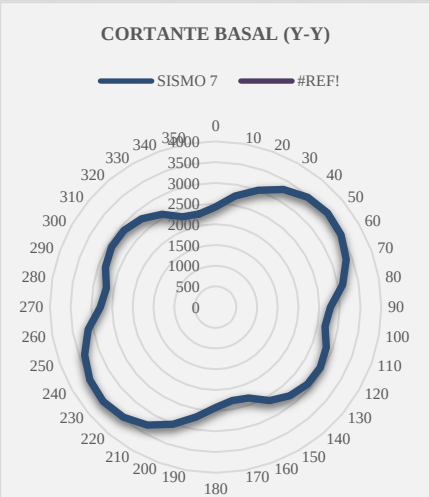

CORTANTE BASAL (X-X)
SISMO 5
#REF!

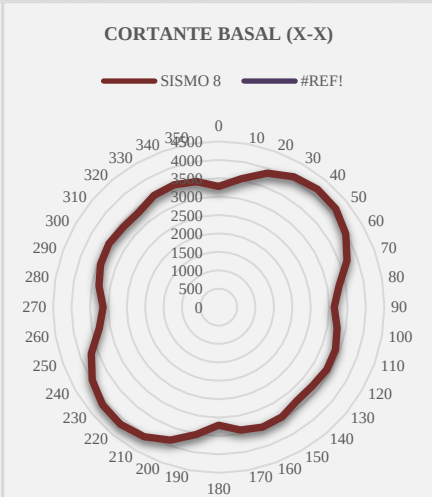

CORTANTE BASAL (Y-Y)
SISMO 5
#REF!

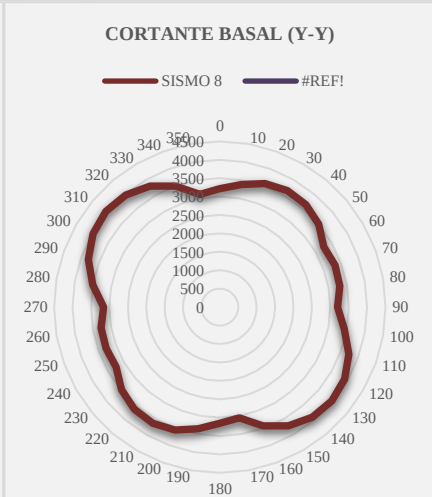

CORTANTE BASAL (X-X)
SISMO 6
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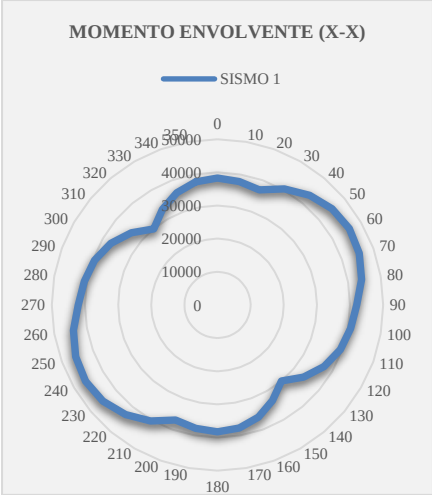

CORTANTE BASAL (Y-Y)
SISMO 6
#REF!

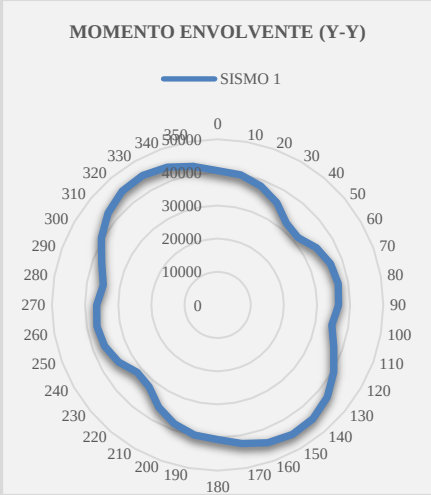

CORTANTE BASAL (X-X)
SISMO 7
#REF!

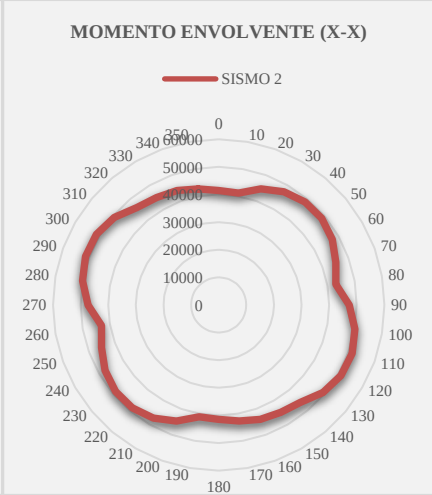

CORTANTE BASAL (Y-Y)
SISMO 7
#REF!

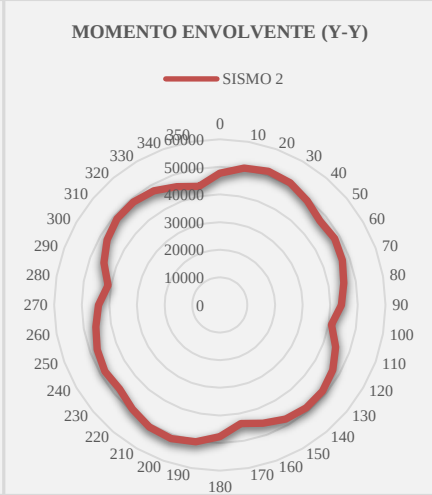

CORTANTE BASAL (X-X)
SISMO 8
#REF!

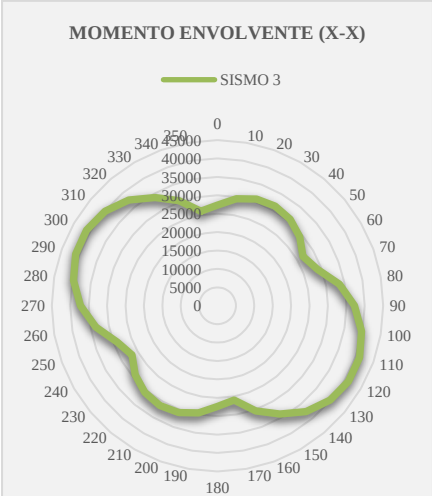

CORTANTE BASAL (Y-Y)
SISMO 8
#REF!

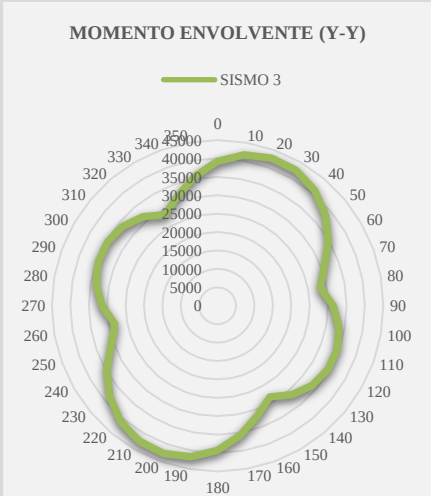

MOMENTO ENVOLVENTE (X-X)
SISMO 1

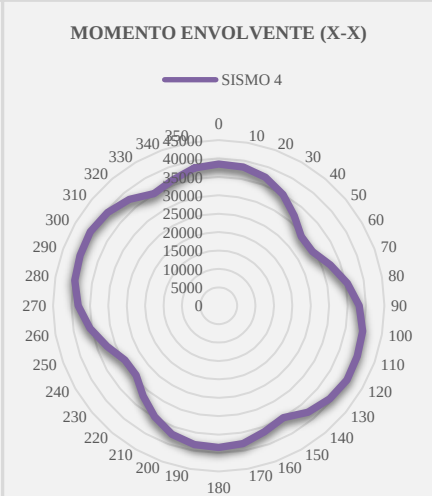

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

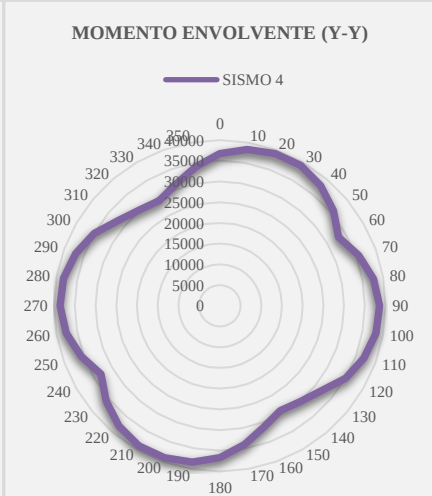

MOMENTO ENVOLVENTE (X-X)
SISMO 2


MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

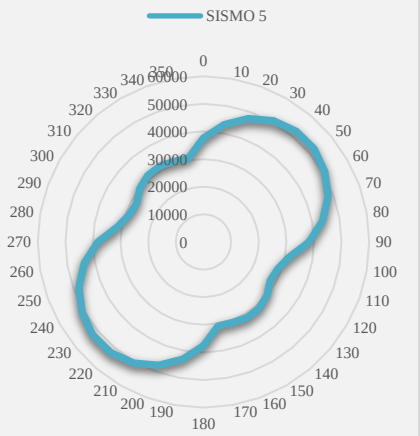

MOMENTO ENVOLVENTE (X-X)
SISMO 3


MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

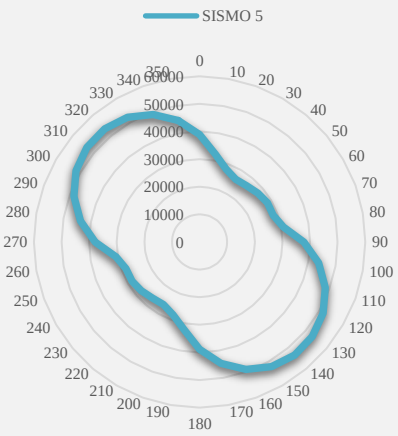

MOMENTO ENVOLVENTE (X-X)
SISMO 4


MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

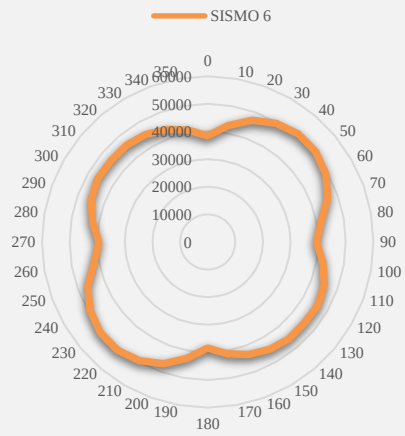
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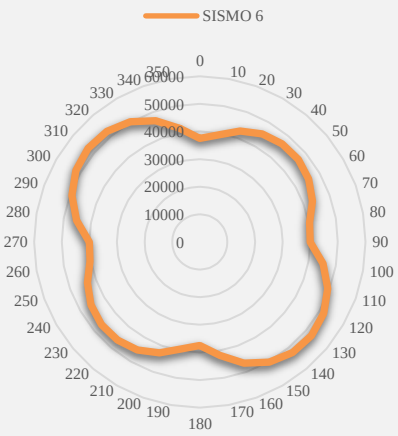
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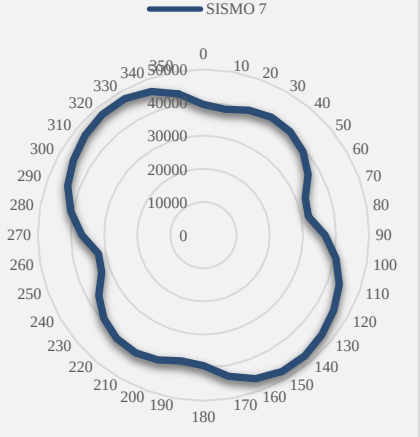
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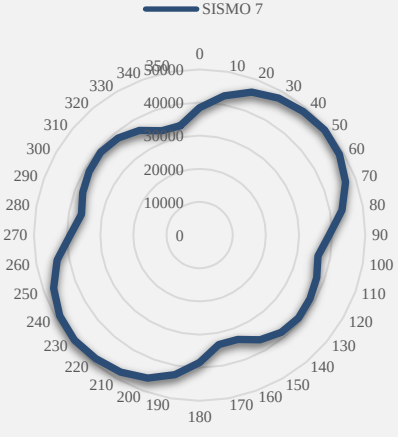
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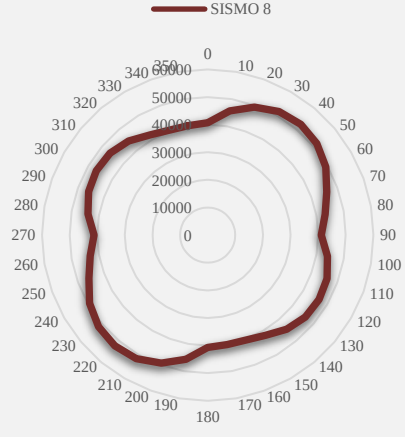
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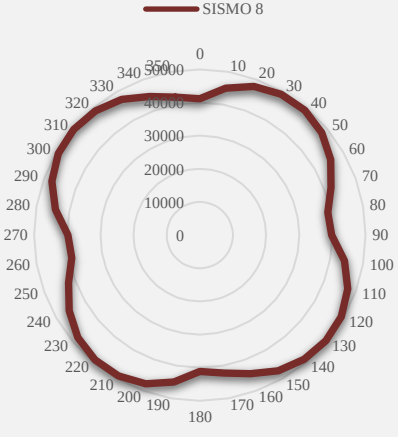
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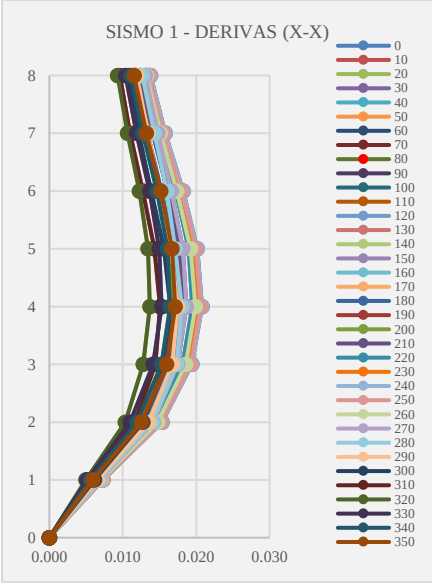


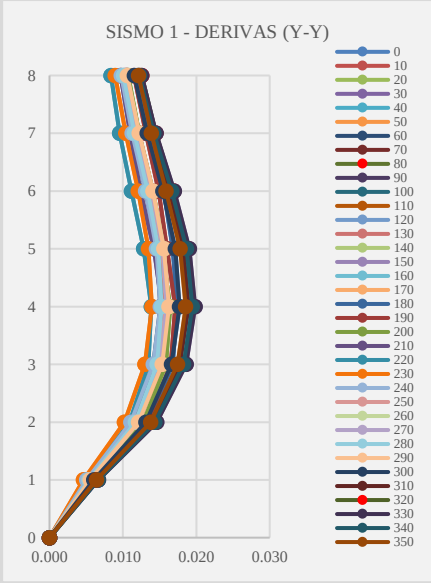
MOMENTO ENVOLVENTE (X-X)

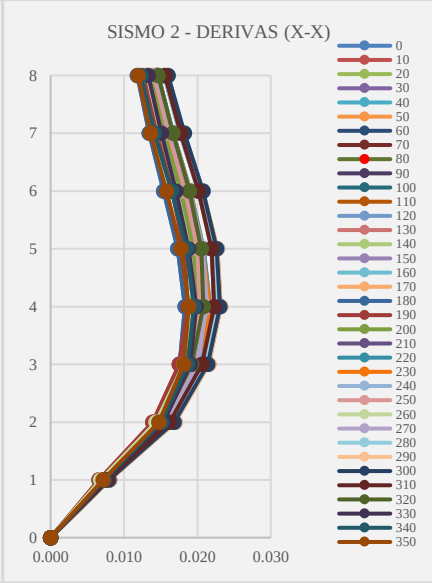


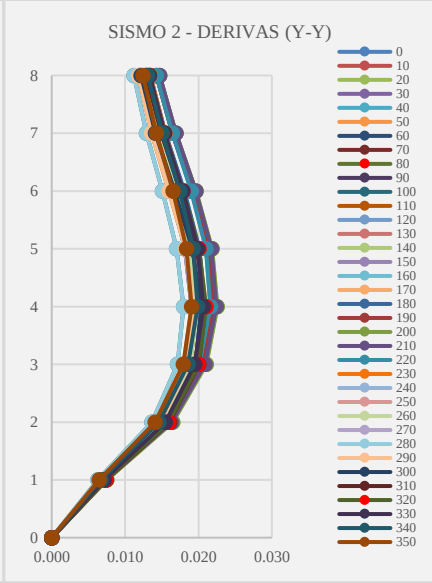
MOMENTO ENVOLVENTE (Y-Y)

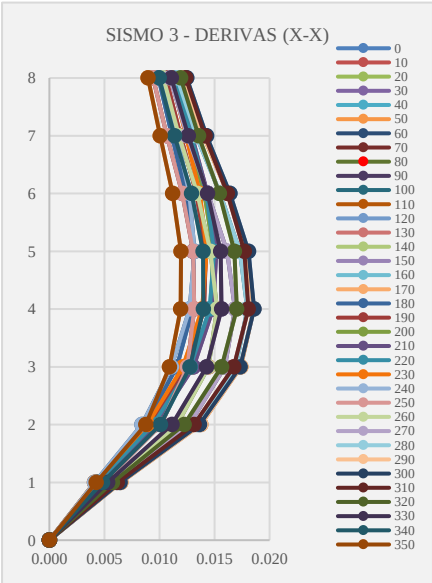


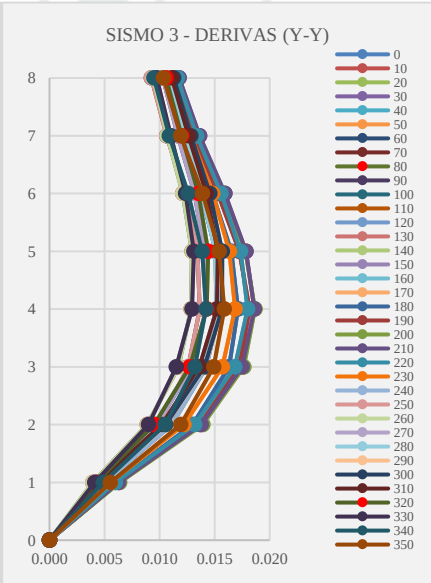

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030

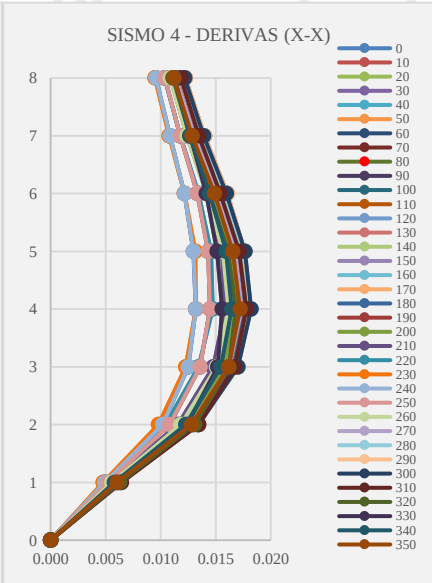

SISMO 1 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030

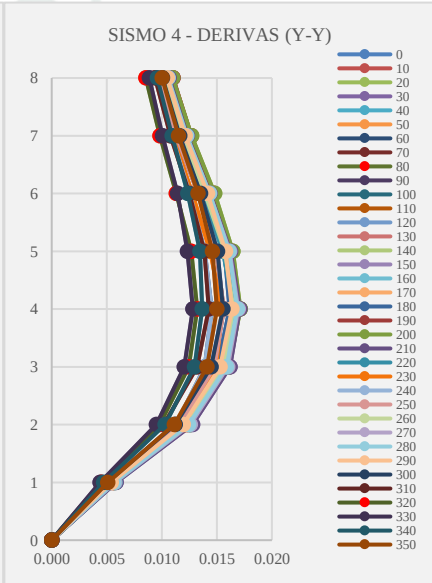

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0.000 0.010 0.020 0.030

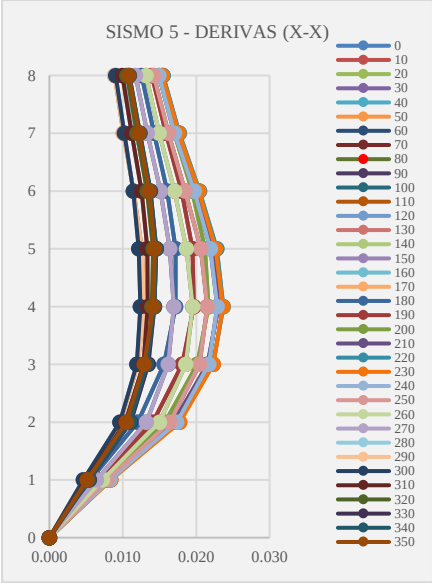

SISMO 2 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030

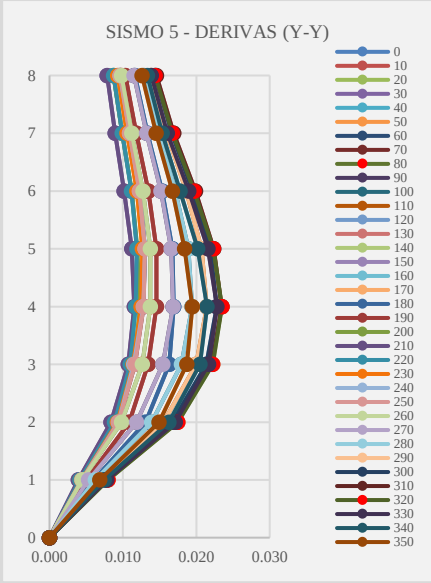

SISMO 3 - DERIVAS (X-X)
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0.000 0.005 0.010 0.015 0.020

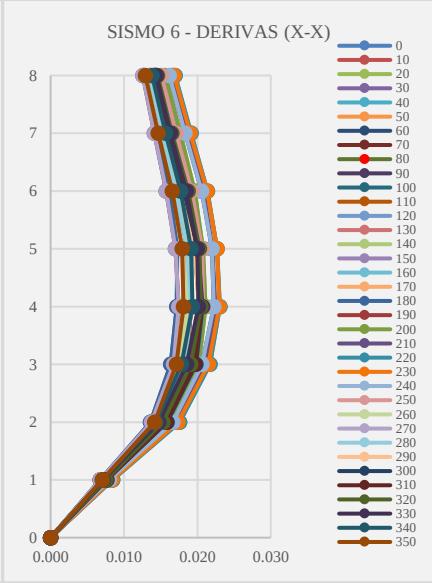

SISMO 3 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020

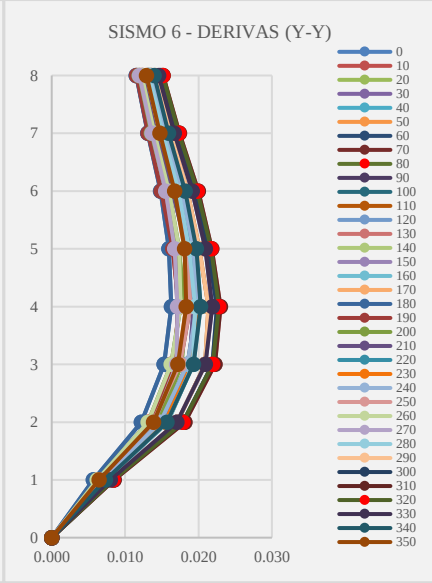

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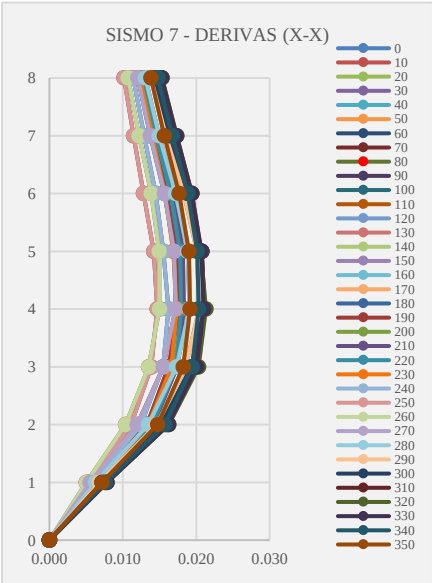

SISMO 4 - DERIVAS (Y-Y)
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0 1 2 3 4 5 6 7 8
0.000 0.005 0.010 0.015 0.020

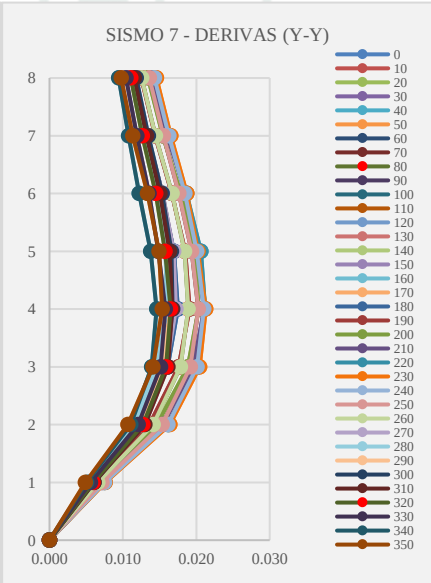

SISMO 5 - DERIVAS (X-X)
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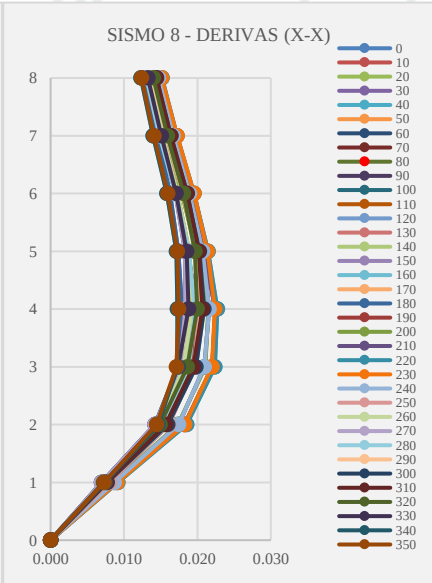

SISMO 5 - DERIVAS (Y-Y)
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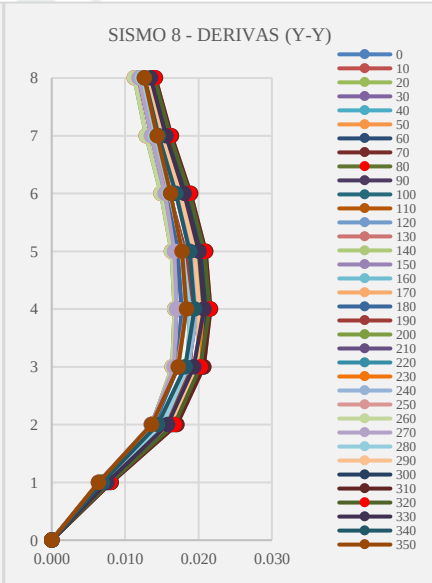

SISMO 6 - DERIVAS (X-X)
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0.000 0.010 0.020 0.030
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SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

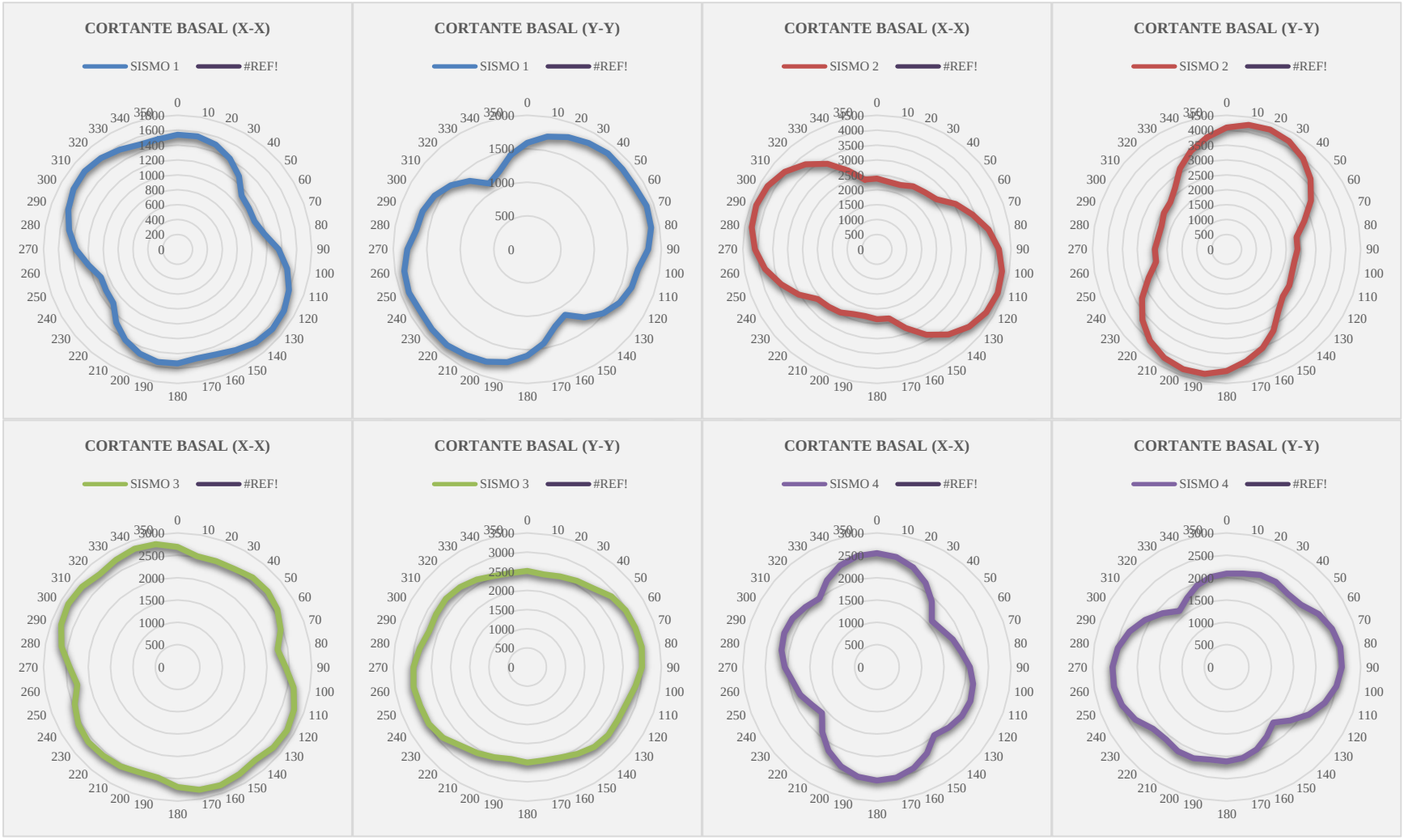

SISMO 7 - DERIVAS (X-X)
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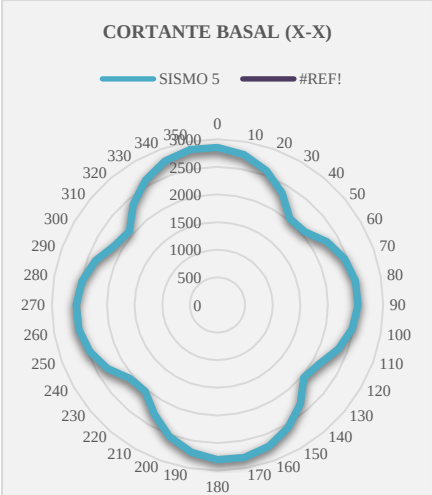

SISMO 7 - DERIVAS (Y-Y)
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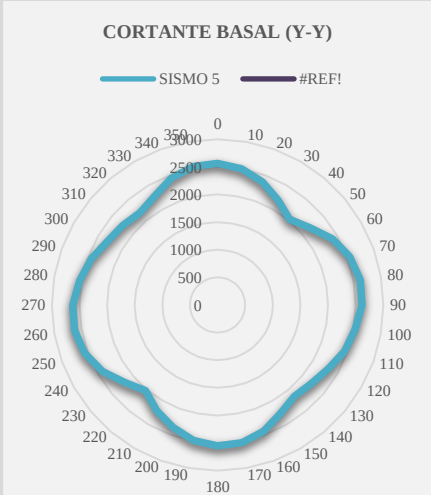

SISMO 8 - DERIVAS (X-X)
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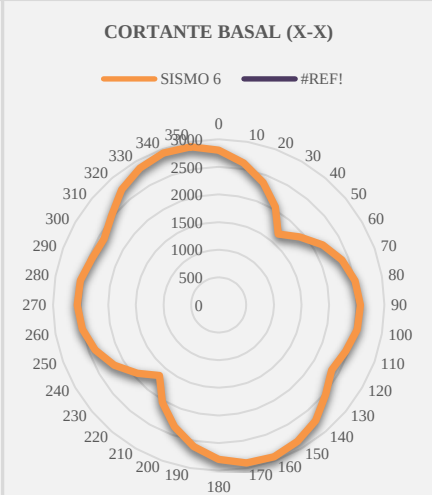

SISMO 8 - DERIVAS (Y-Y)
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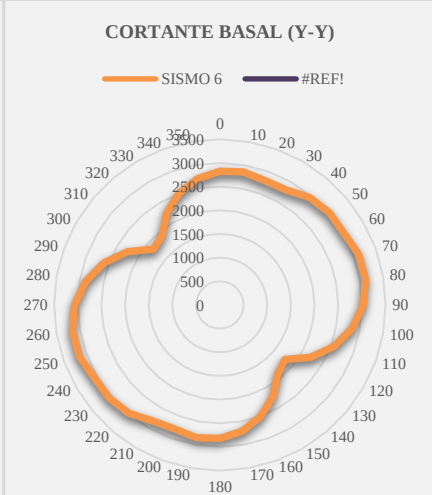
Para 12 pisos:

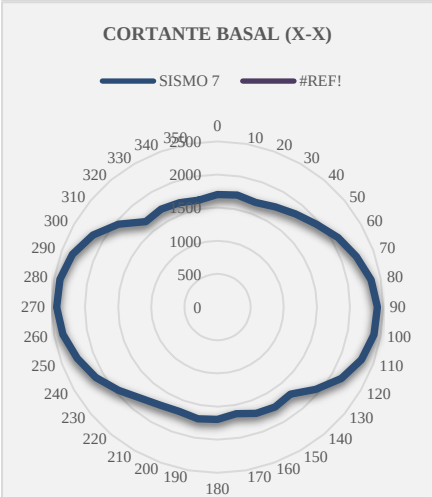


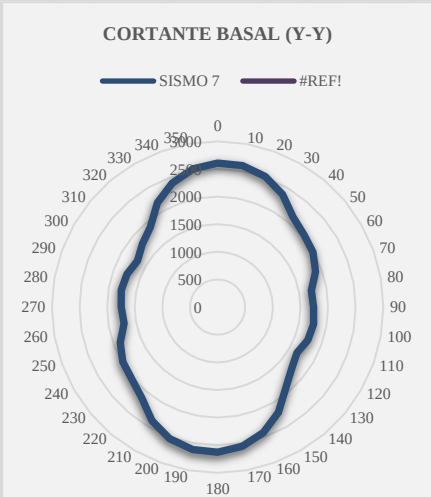

CORTANTE BASAL (X-X)
SISMO 5
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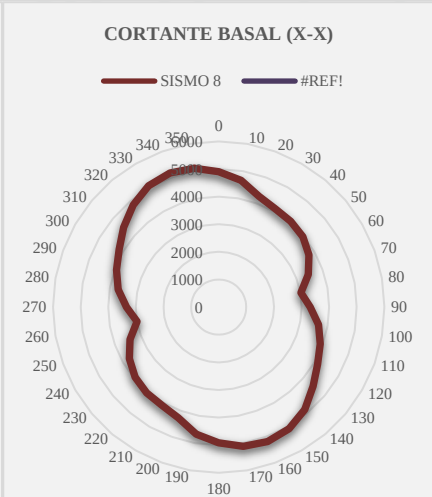

CORTANTE BASAL (Y-Y)
SISMO 5
#REF!

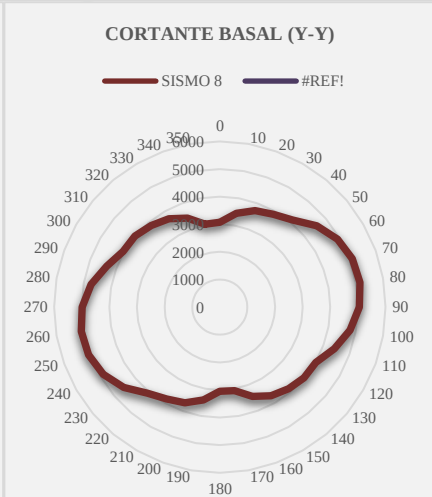

CORTANTE BASAL (X-X)
SISMO 6
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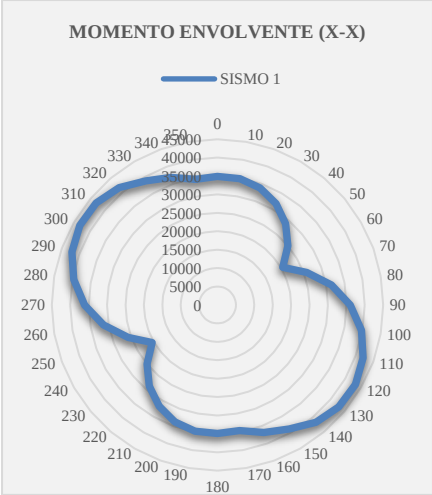

CORTANTE BASAL (Y-Y)
SISMO 6
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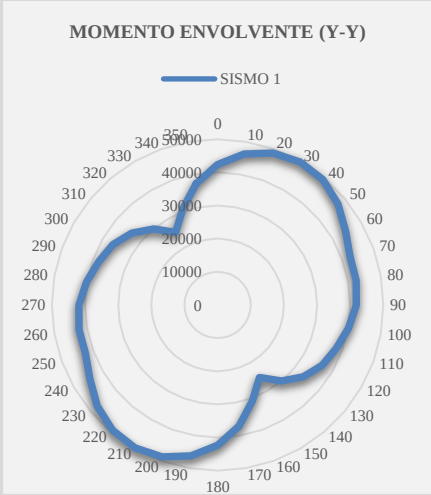

CORTANTE BASAL (X-X)
SISMO 7
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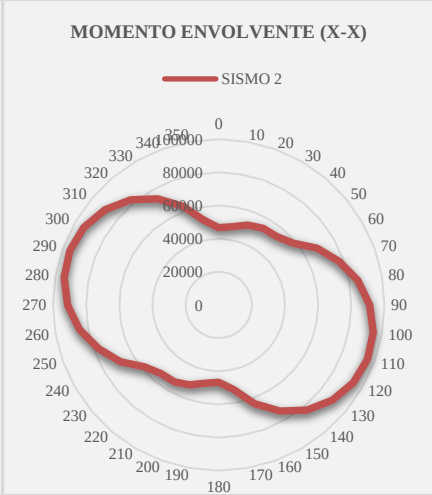

CORTANTE BASAL (Y-Y)
SISMO 7
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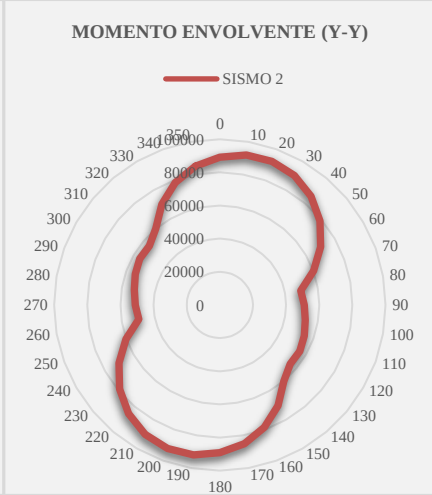

CORTANTE BASAL (X-X)
SISMO 8
#REF!

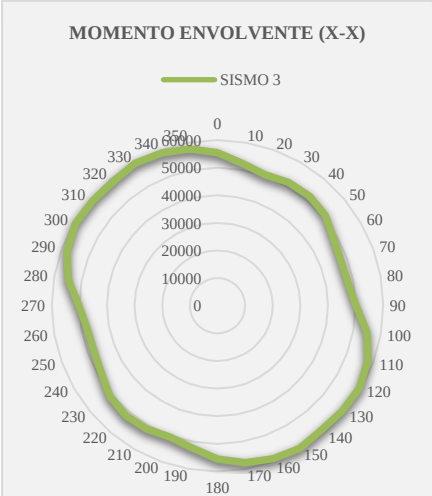

CORTANTE BASAL (Y-Y)
SISMO 8
#REF!

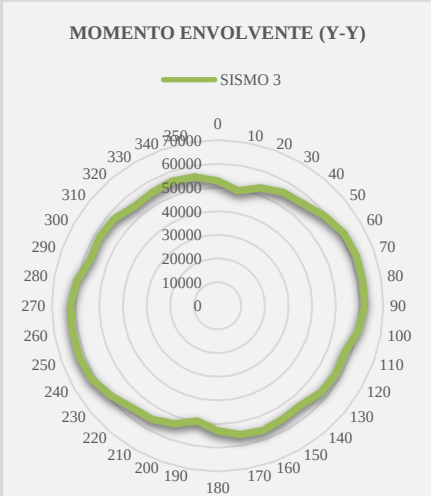

MOMENTO ENVOLVENTE (X-X)
SISMO 1

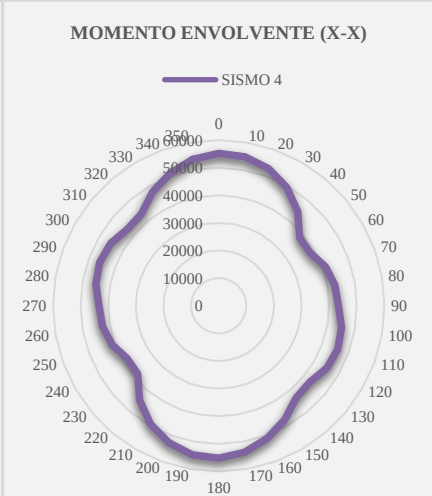

MOMENTO ENVOLVENTE (Y-Y)
SISMO 1

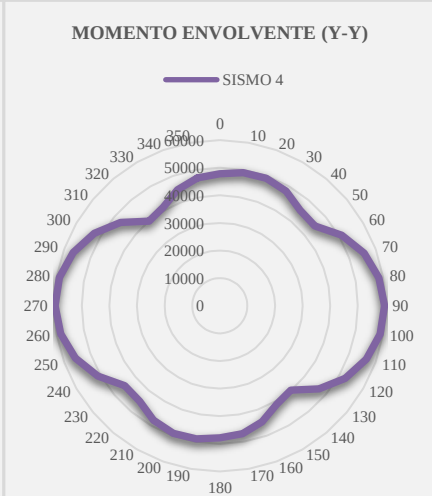

MOMENTO ENVOLVENTE (X-X)
SISMO 2

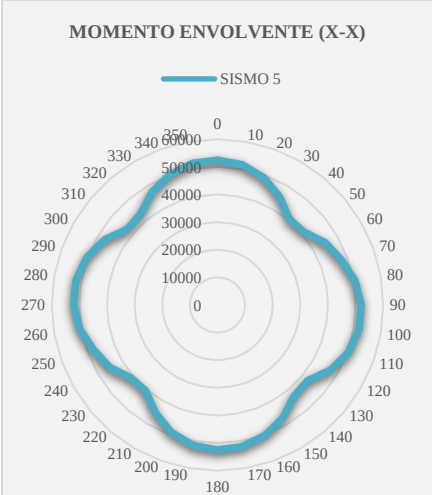

MOMENTO ENVOLVENTE (Y-Y)
SISMO 2

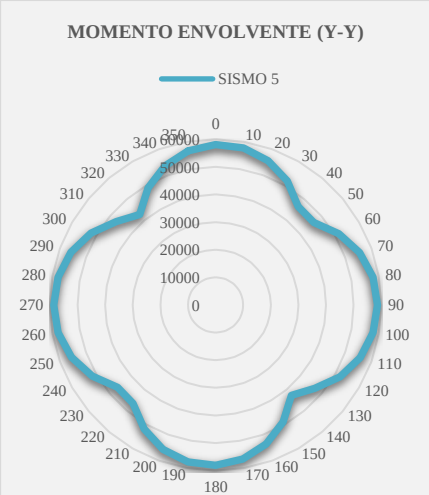

MOMENTO ENVOLVENTE (X-X)
SISMO 3

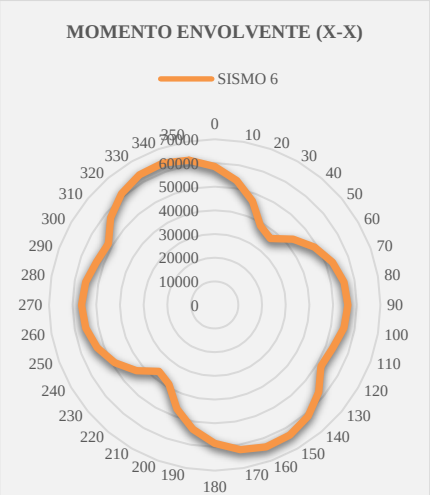

MOMENTO ENVOLVENTE (Y-Y)
SISMO 3

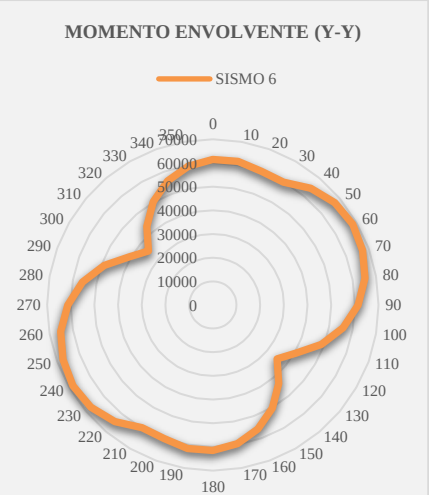

MOMENTO ENVOLVENTE (X-X)
SISMO 4

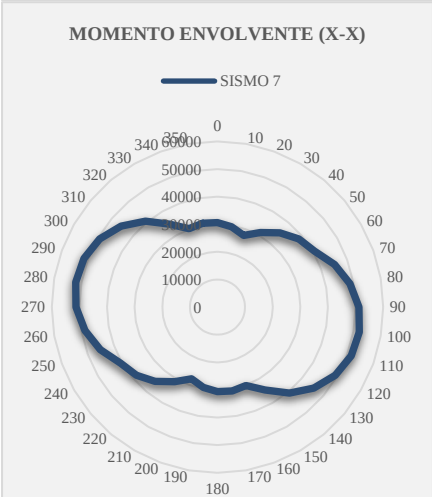

MOMENTO ENVOLVENTE (Y-Y)
SISMO 4

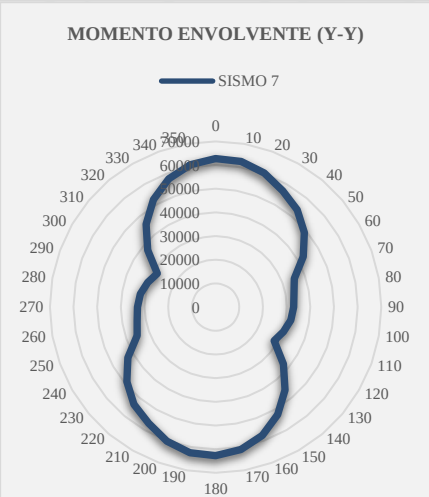

MOMENTO ENVOLVENTE (X-X)
SISMO 5

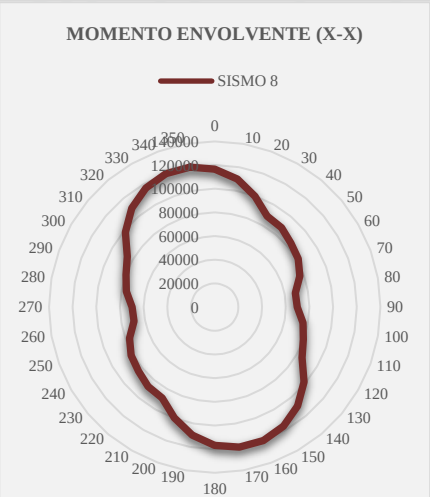

MOMENTO ENVOLVENTE (Y-Y)
SISMO 5

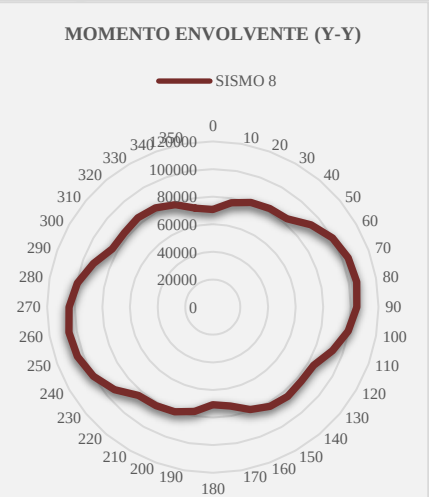

MOMENTO ENVOLVENTE (X-X)
SISMO 6

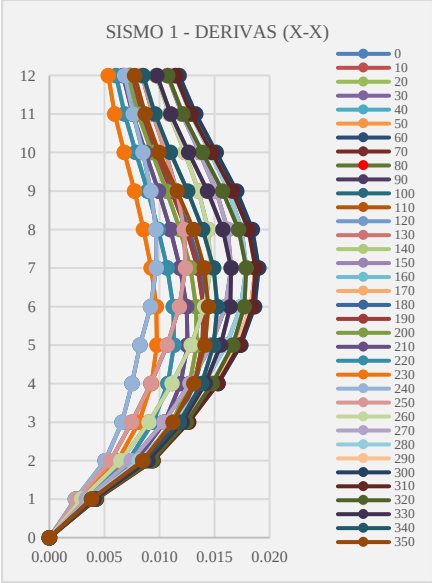

MOMENTO ENVOLVENTE (Y-Y)
SISMO 6

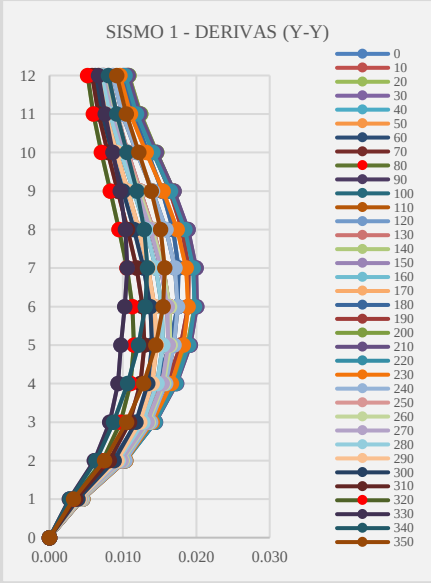

MOMENTO ENVOLVENTE (X-X)
SISMO 7

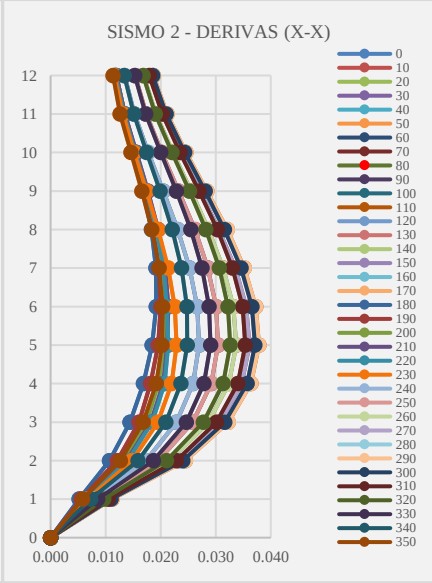

MOMENTO ENVOLVENTE (Y-Y)
SISMO 7

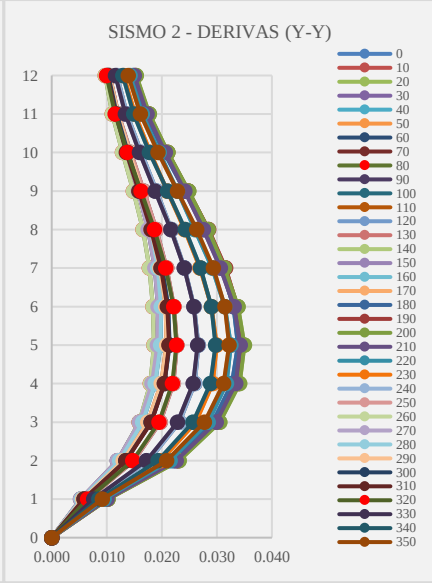

MOMENTO ENVOLVENTE (X-X)
SISMO 8

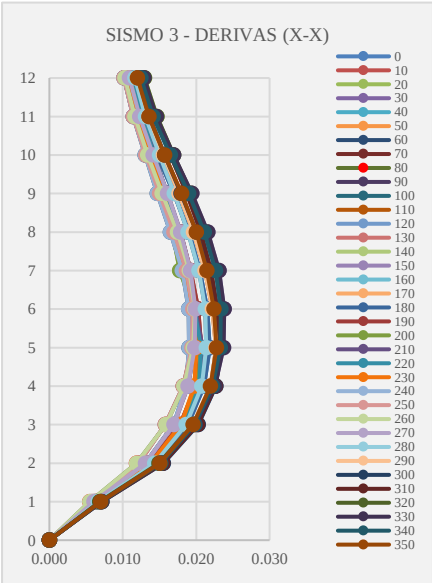

MOMENTO ENVOLVENTE (Y-Y)
SISMO 8

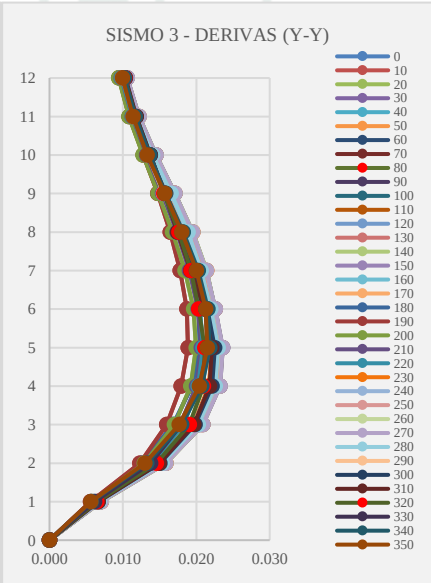

SISMO 1 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.005 0.010 0.015 0.020

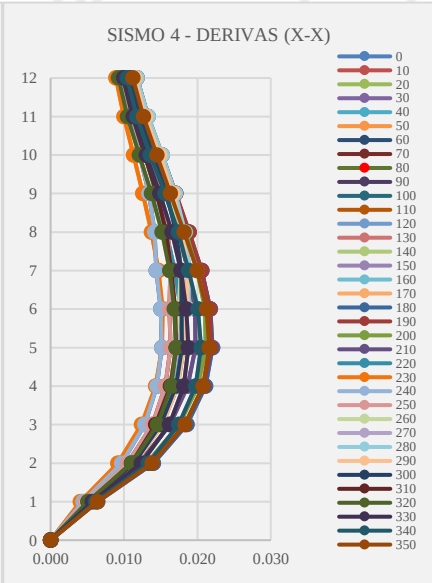

SISMO 1 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

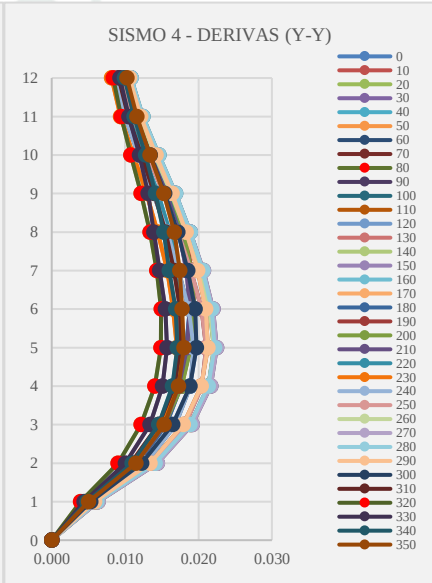

SISMO 2 - DERIVAS (X-X)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

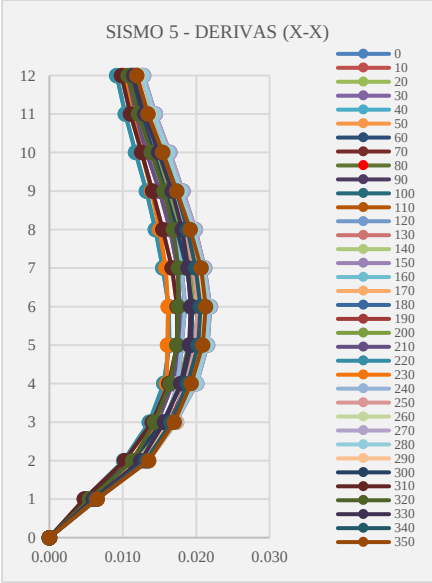

SISMO 2 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030 0.040

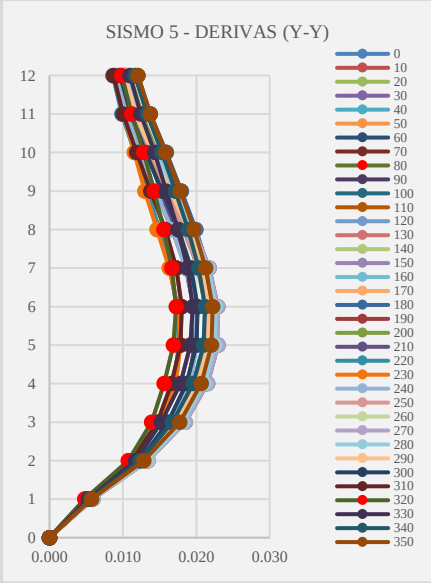

SISMO 3 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

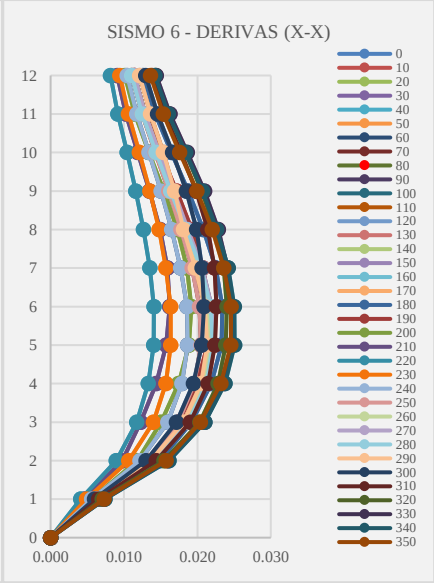

SISMO 3 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

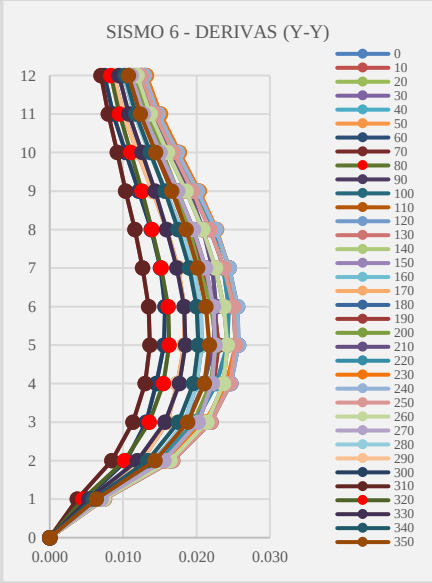

SISMO 4 - DERIVAS (X-X)
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0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

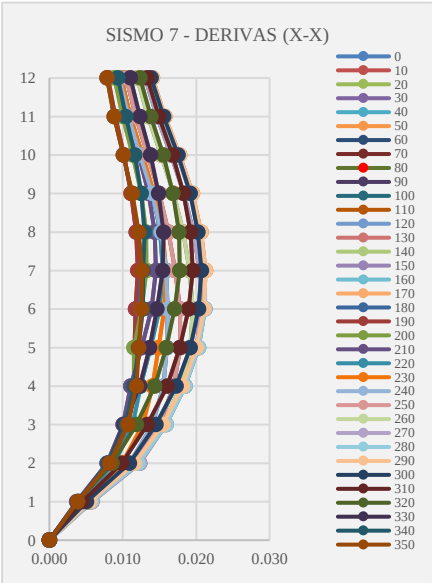

SISMO 4 - DERIVAS (Y-Y)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030

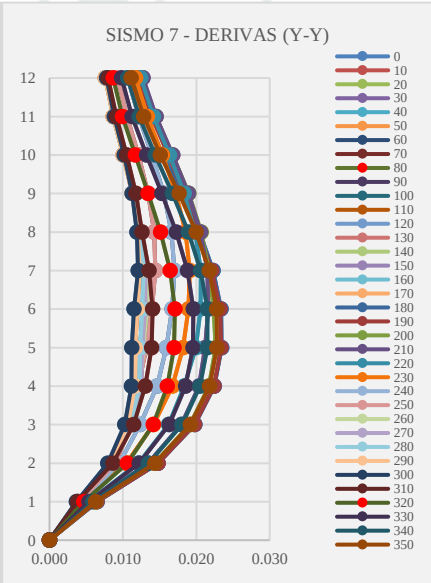

SISMO 5 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

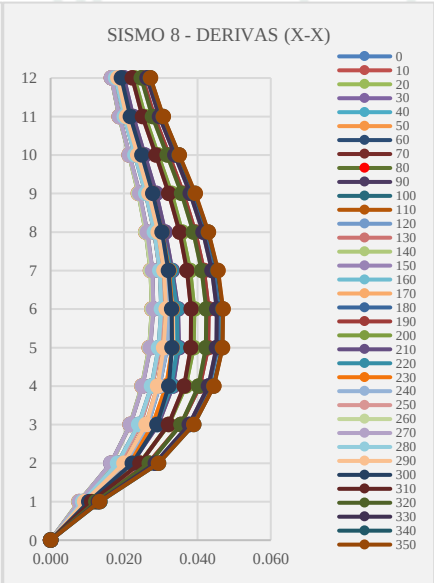

SISMO 5 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

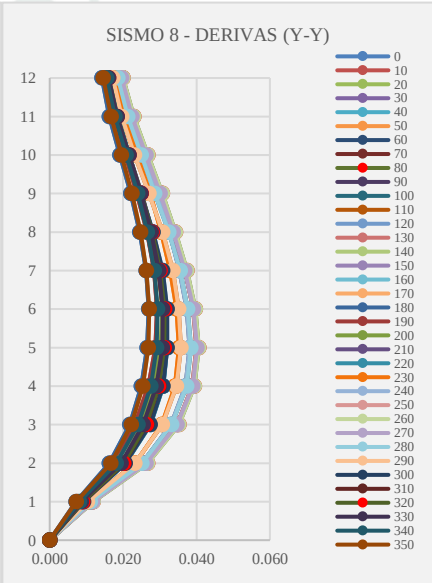

SISMO 6 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 6 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 7 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.010 0.020 0.030
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

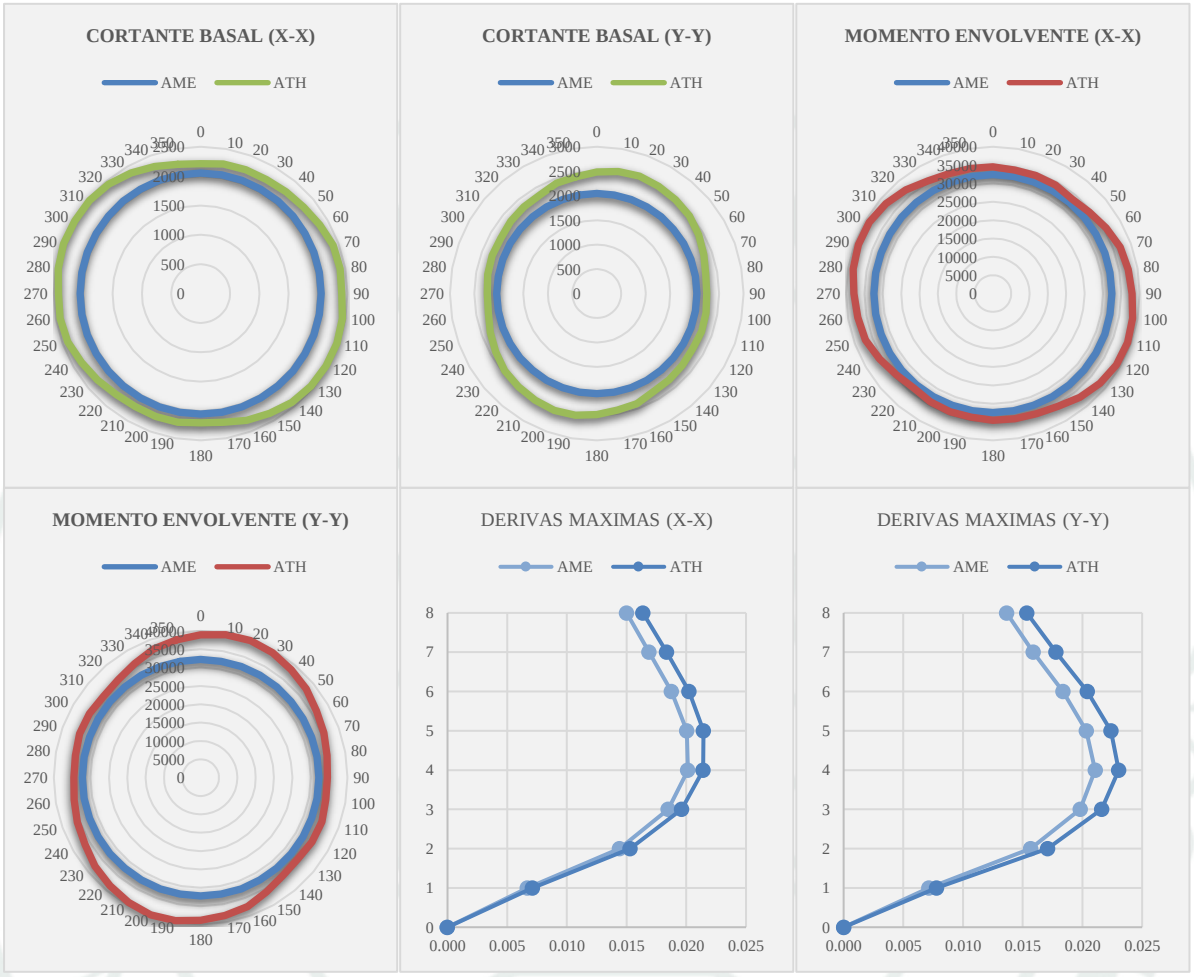

SISMO 8 - DERIVAS (X-X)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350


SISMO 8 - DERIVAS (Y-Y)
0 1 2 3 4 5 6 7 8 9 10 11 12
0.000 0.020 0.040 0.060
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350

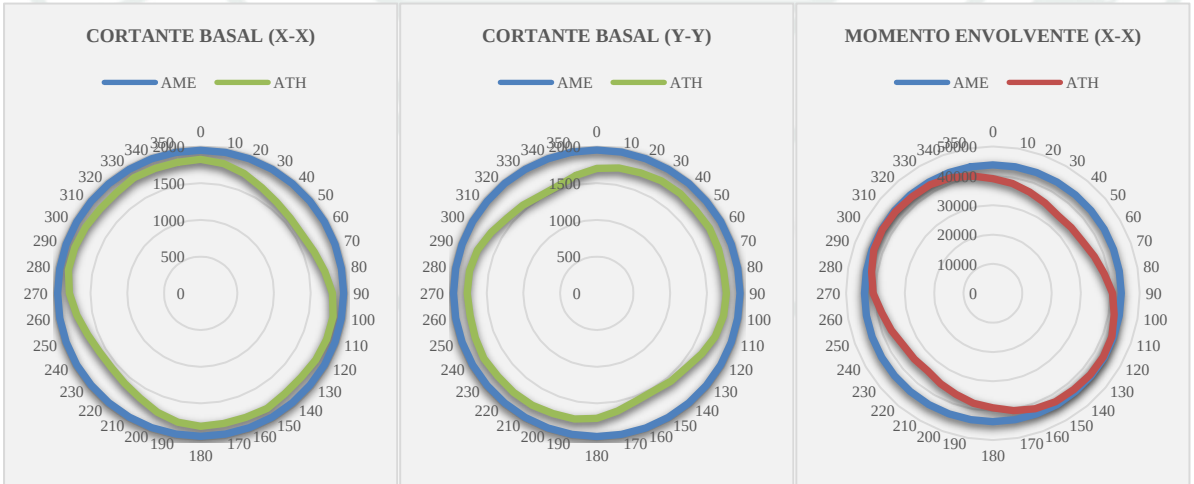
ANEXO D: COMPARACION DE LOS ANALISIS

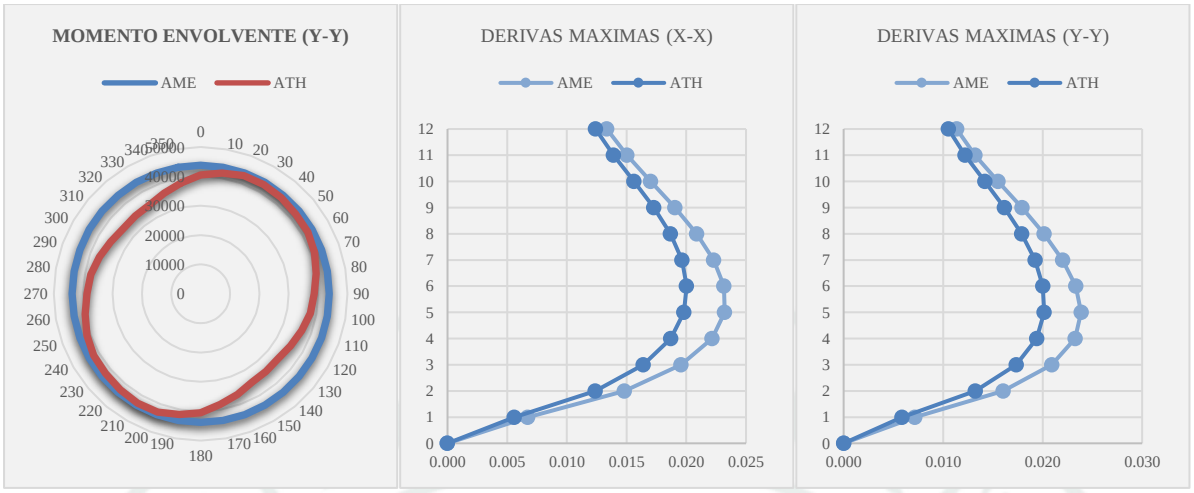
MODELO 1

Para 8 pisos:



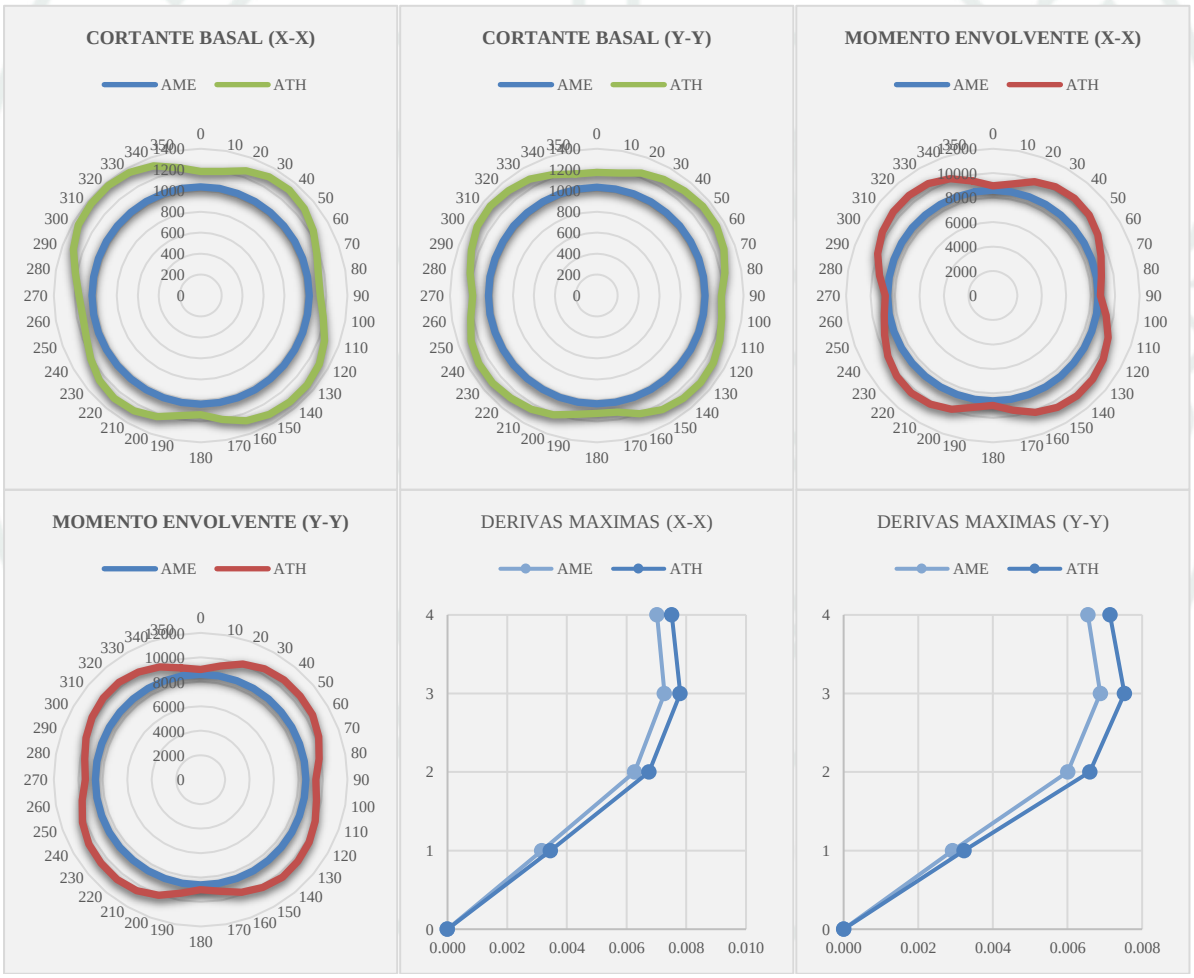
Para 12 pisos:



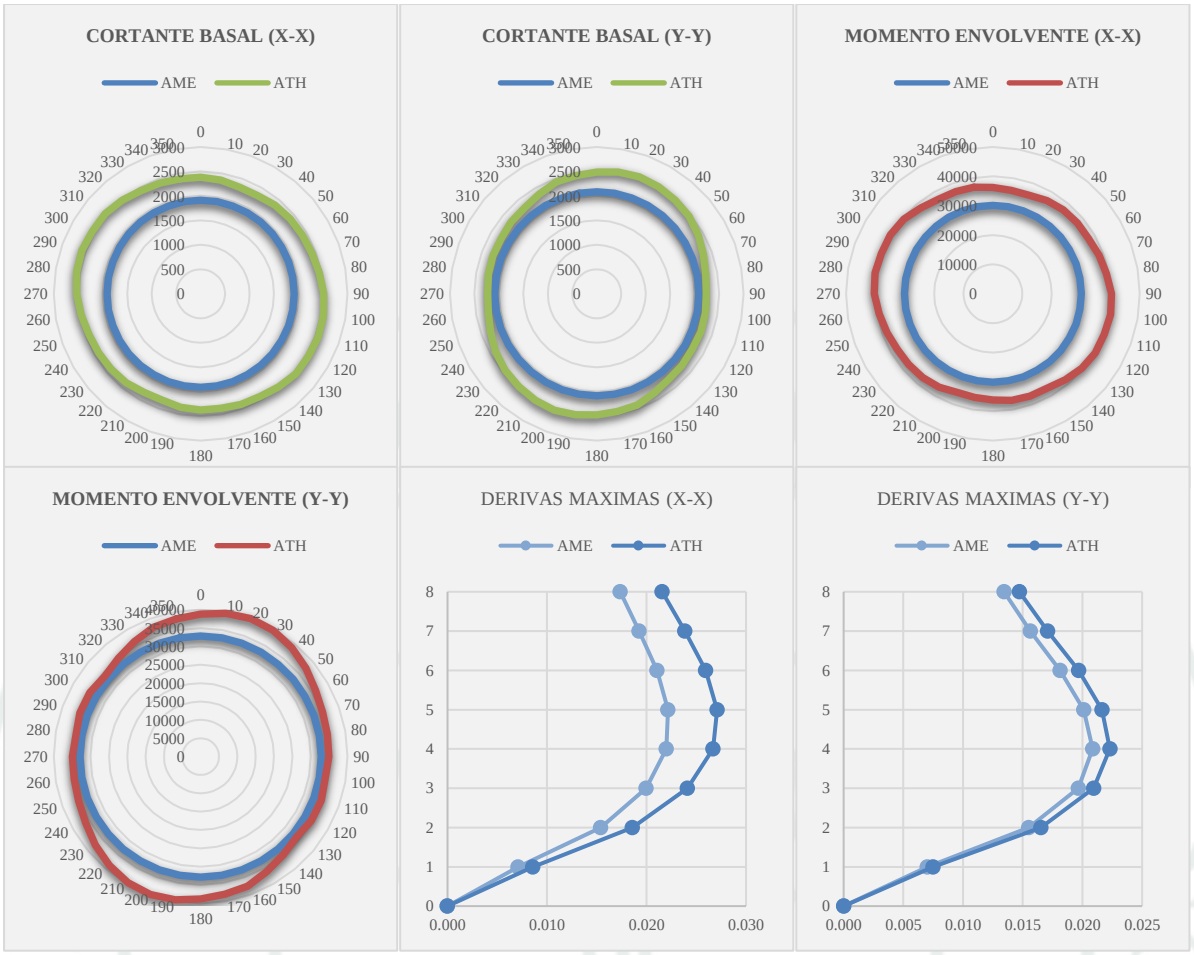


MODELO 2

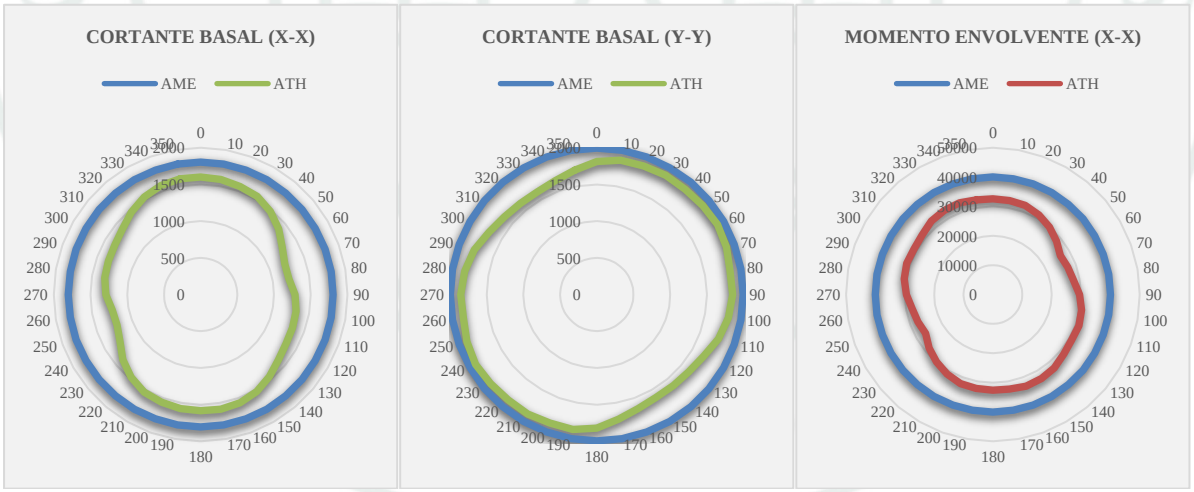
Para 4 pisos:

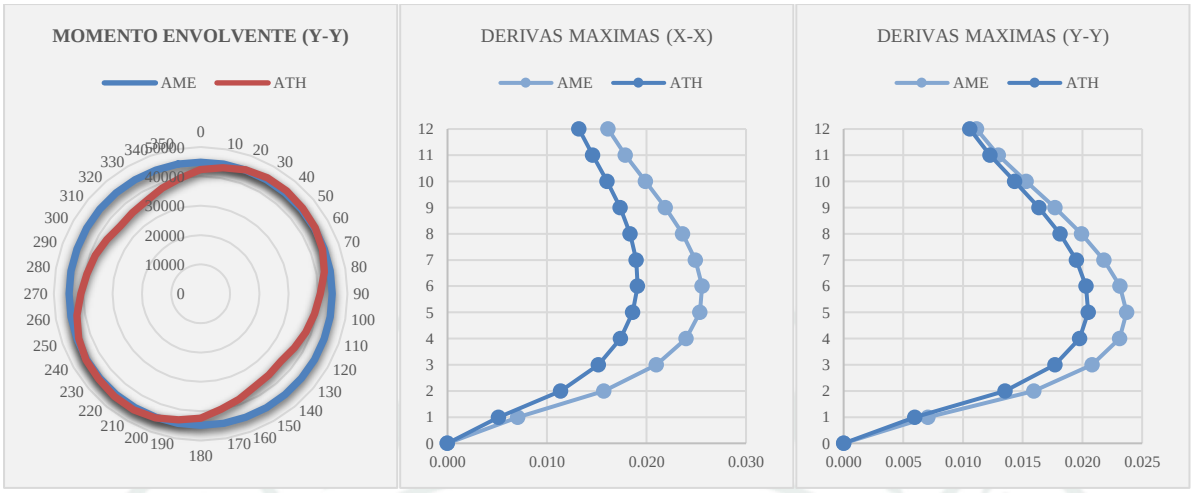


Para 8 pisos:



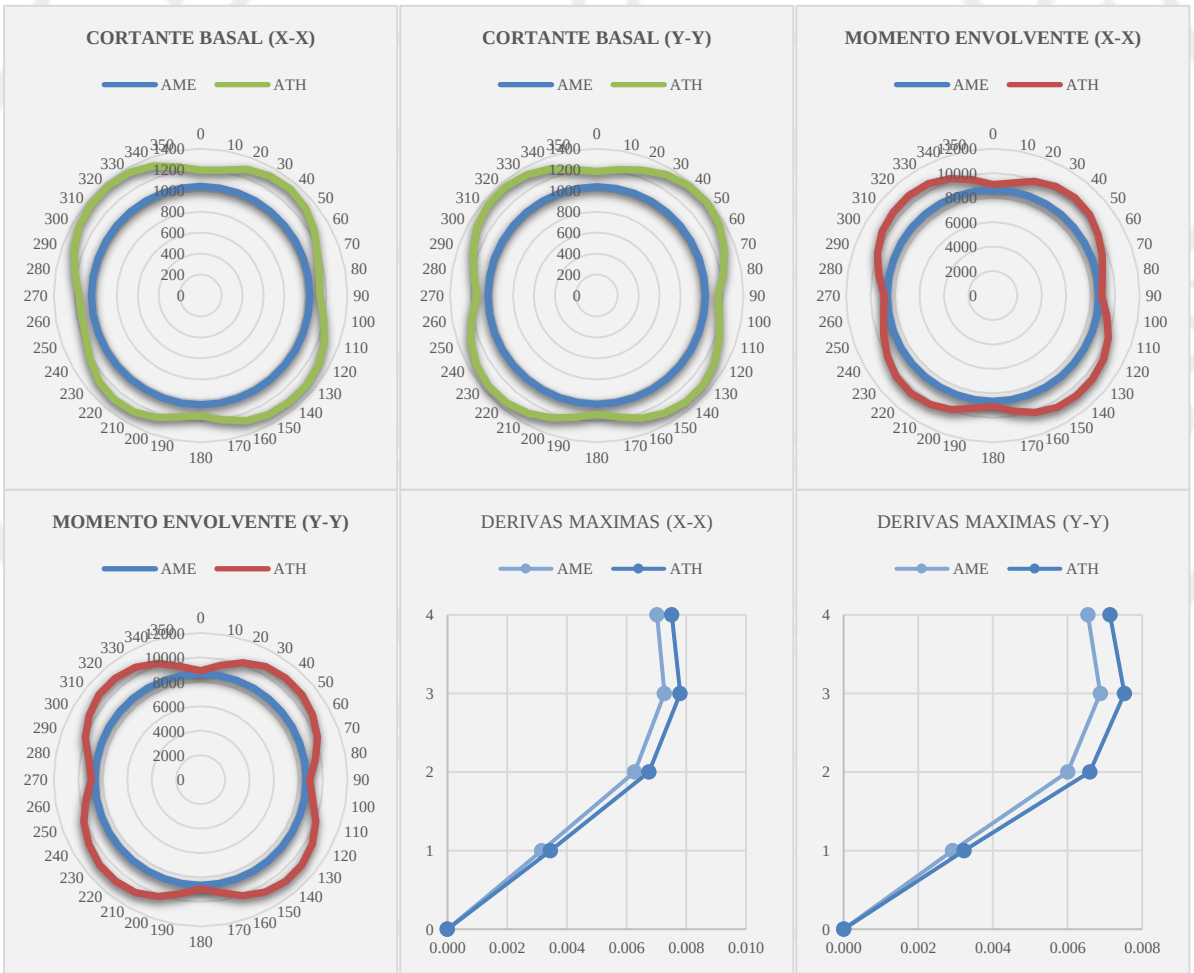
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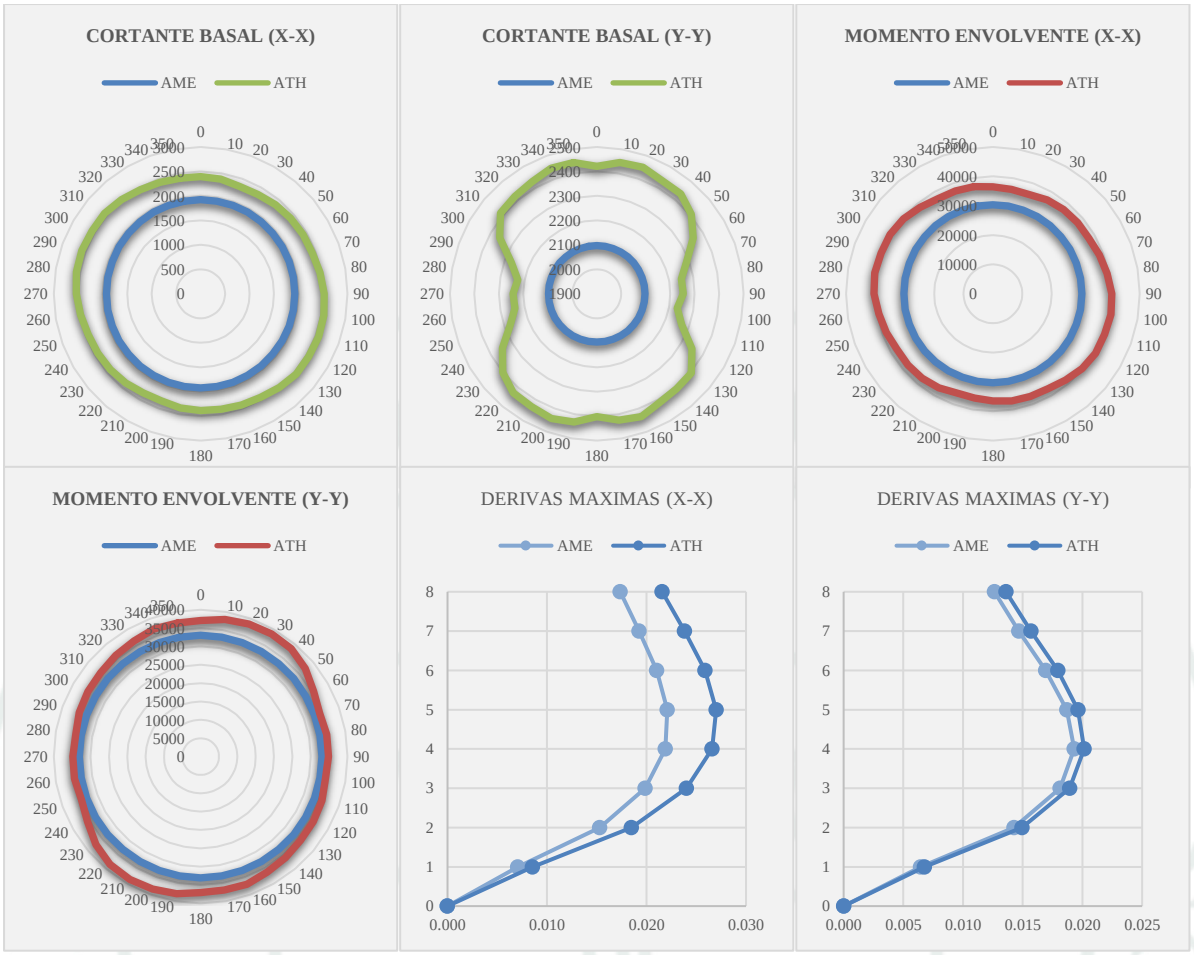


MODELO 3

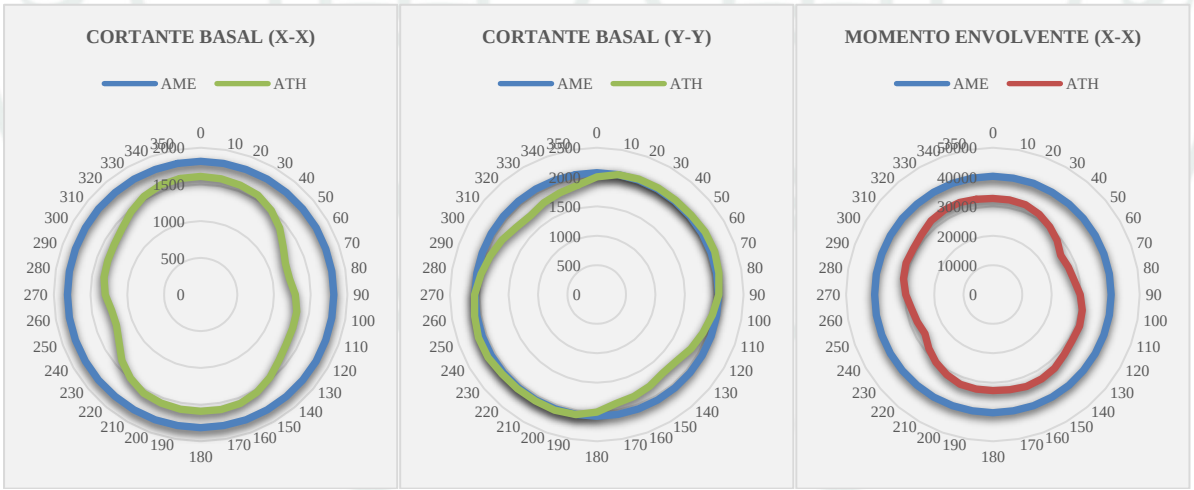
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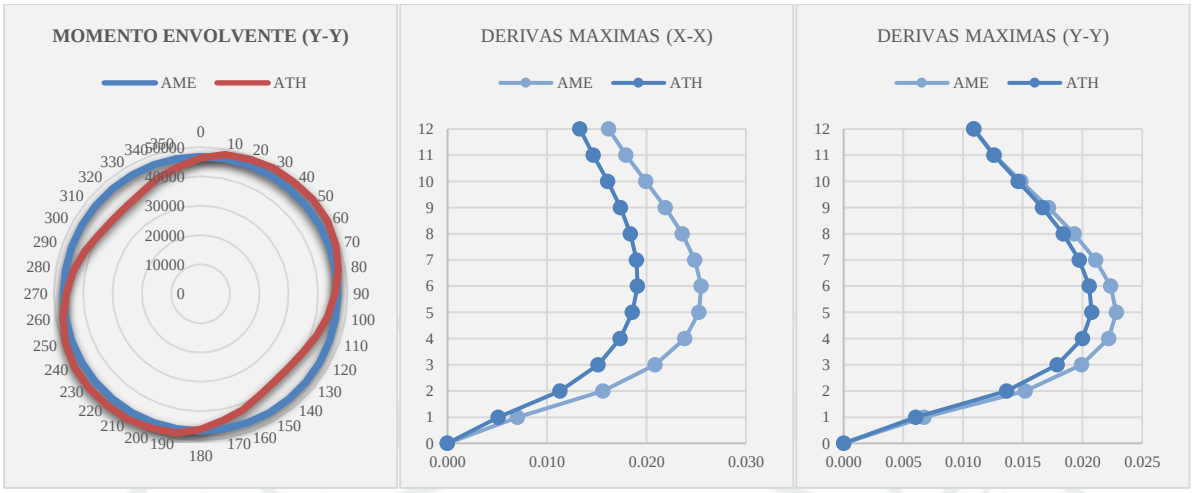


Para 8 pisos:



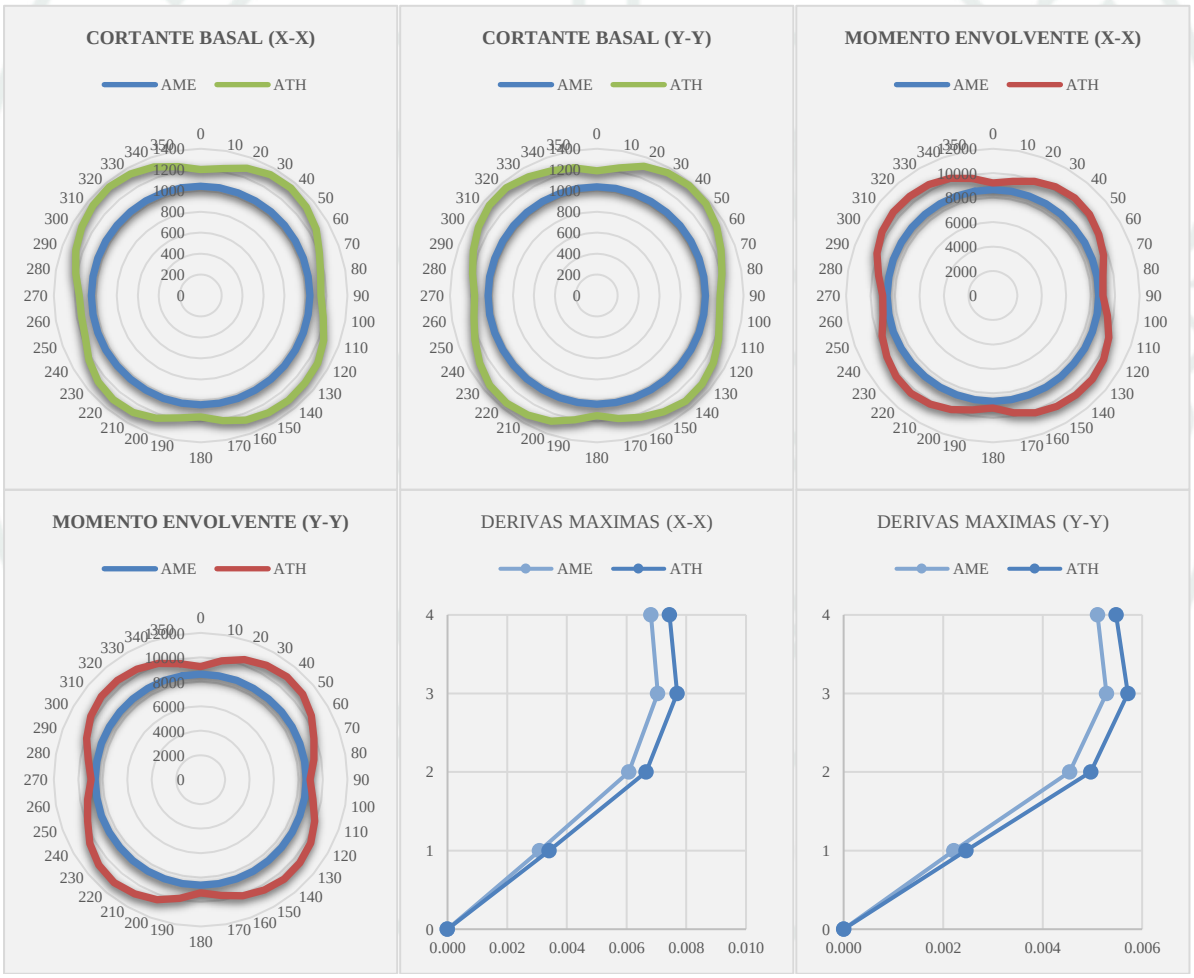
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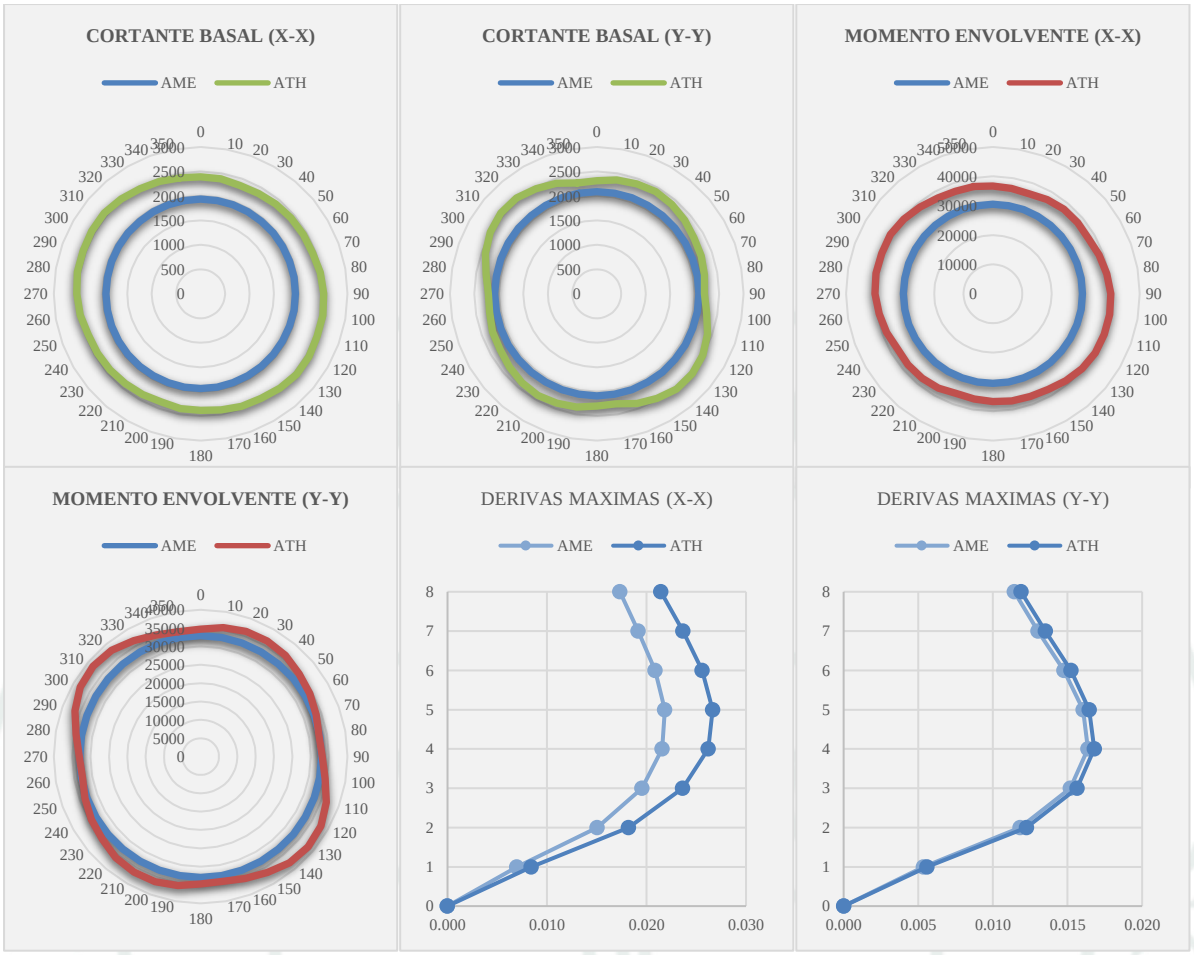


MODELO 4

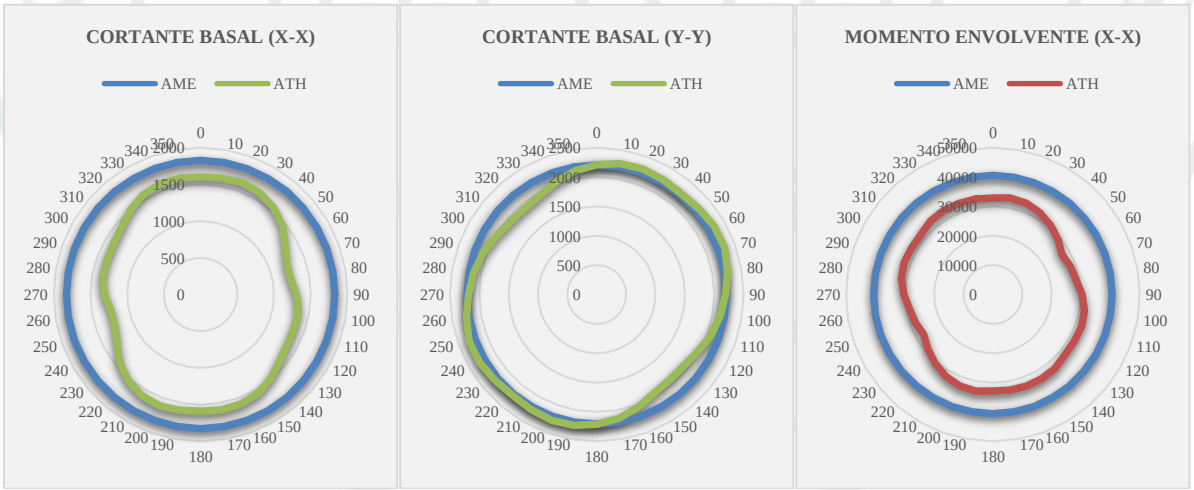
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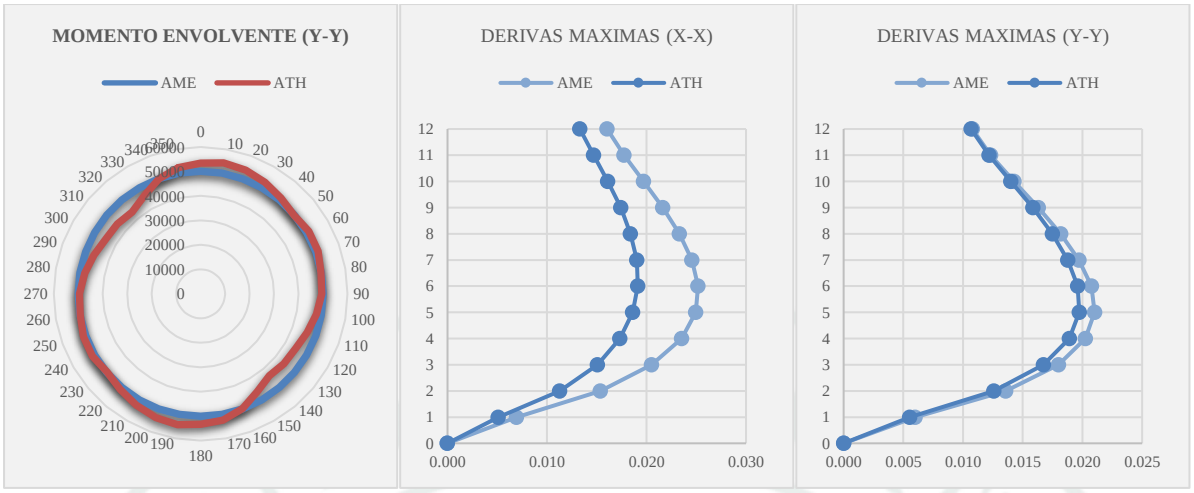


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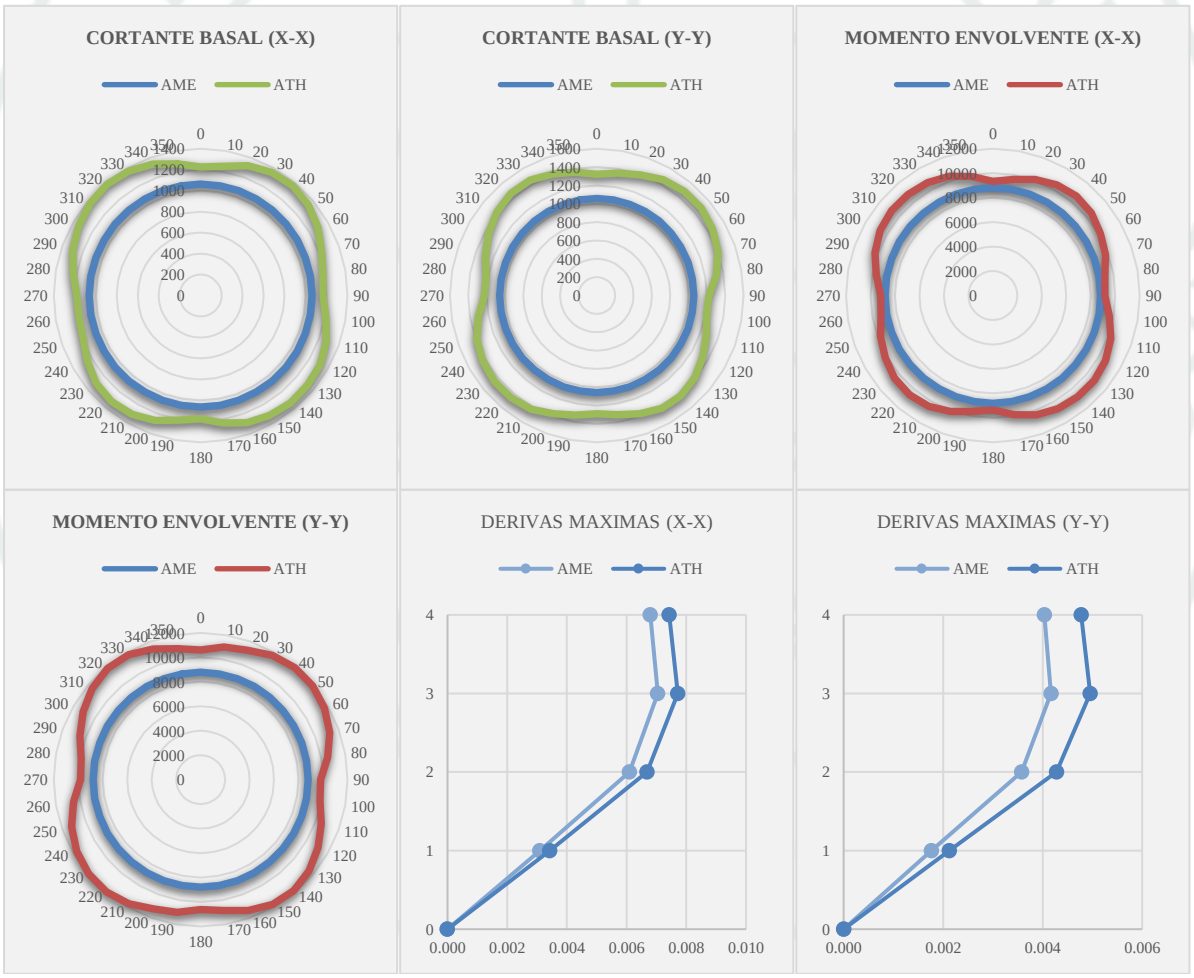
Para 12 pisos:



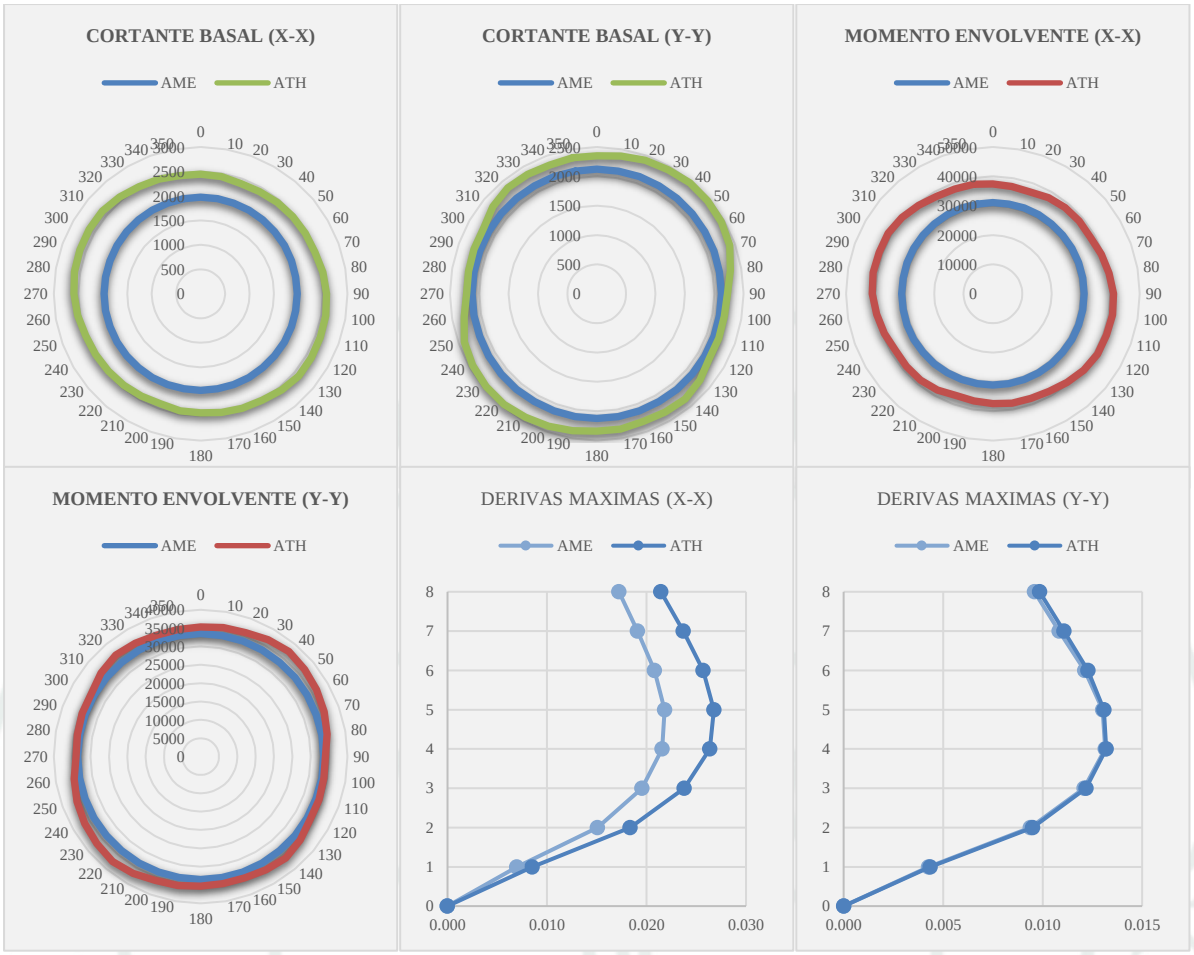


MODELO 5

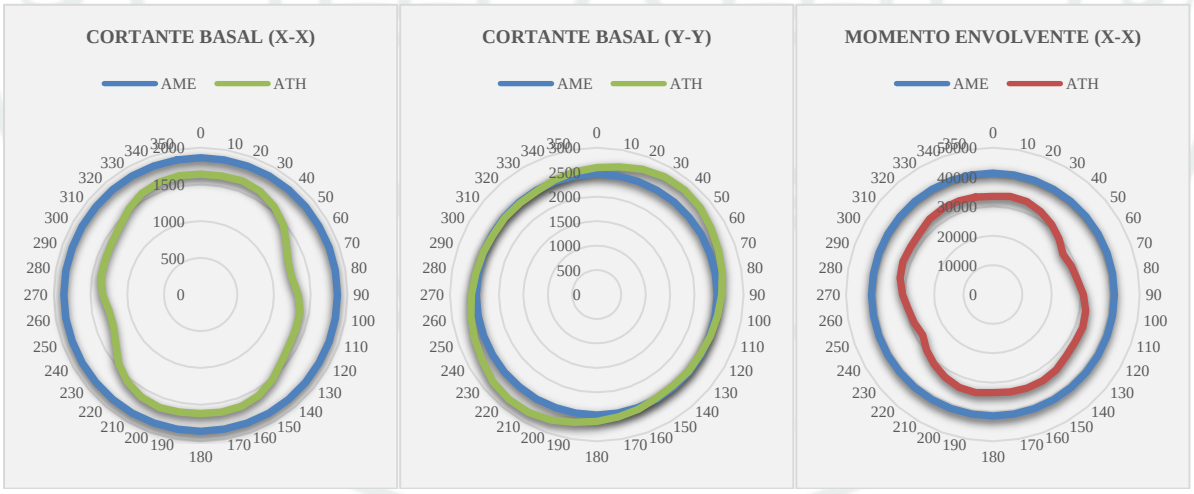
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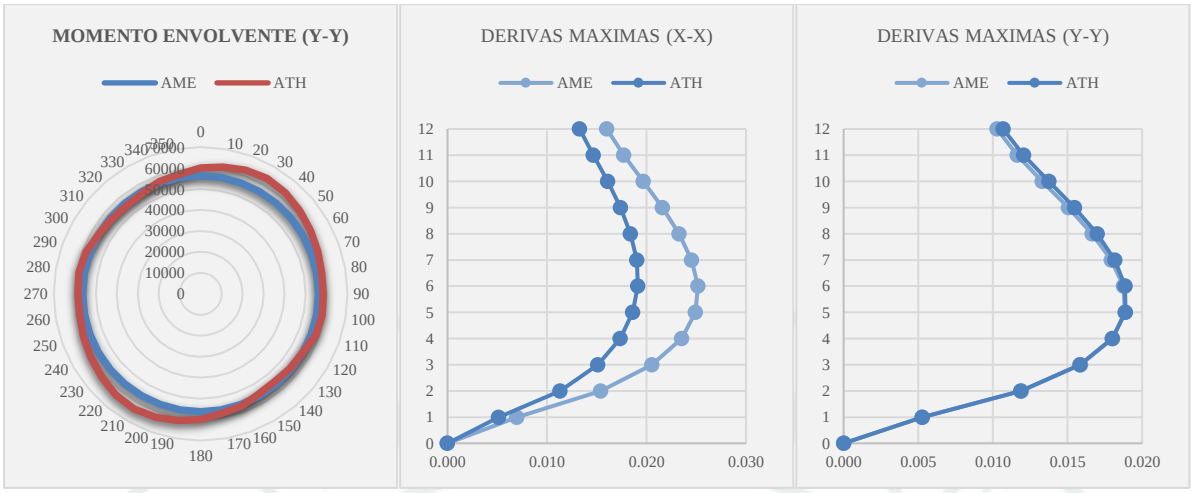


Para 8 pisos:



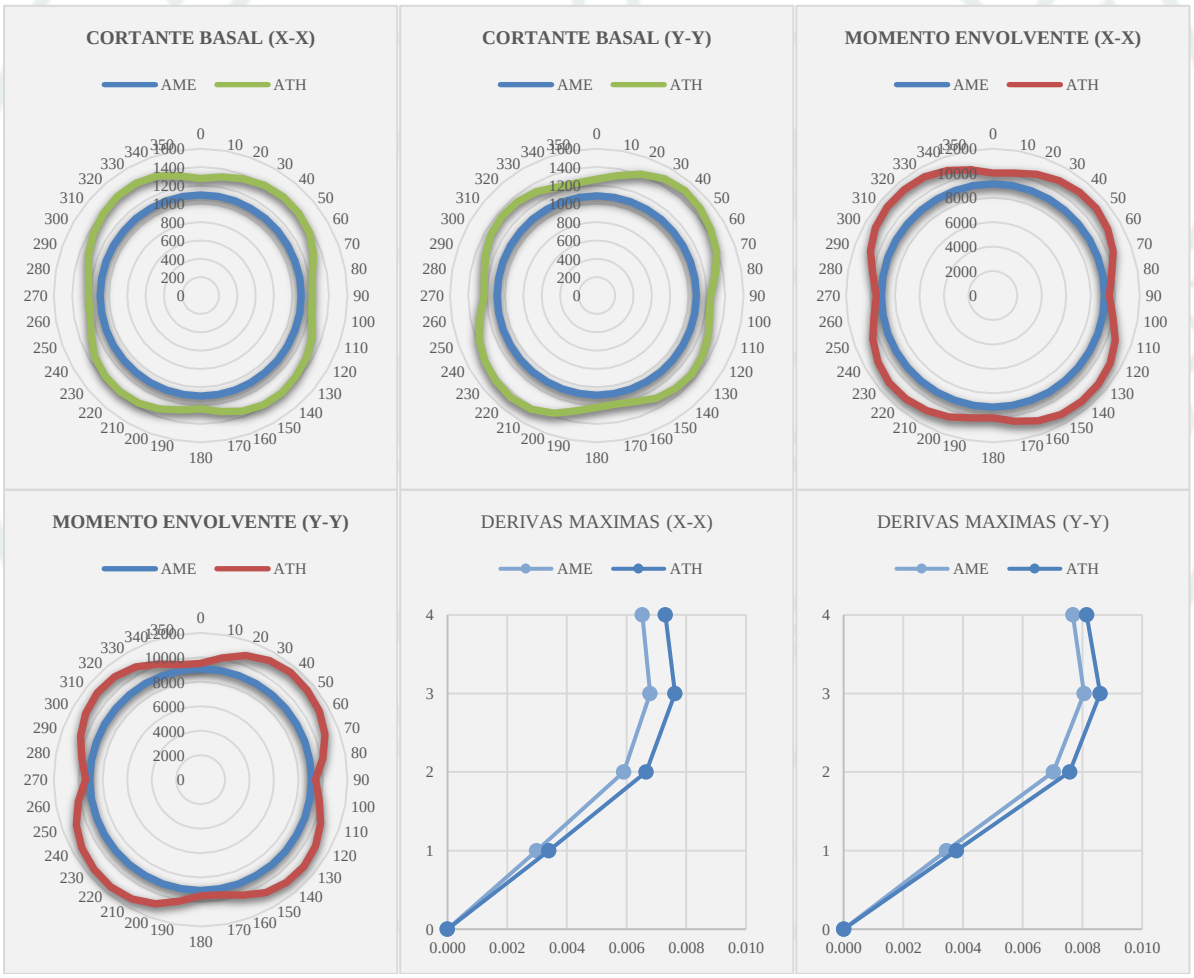
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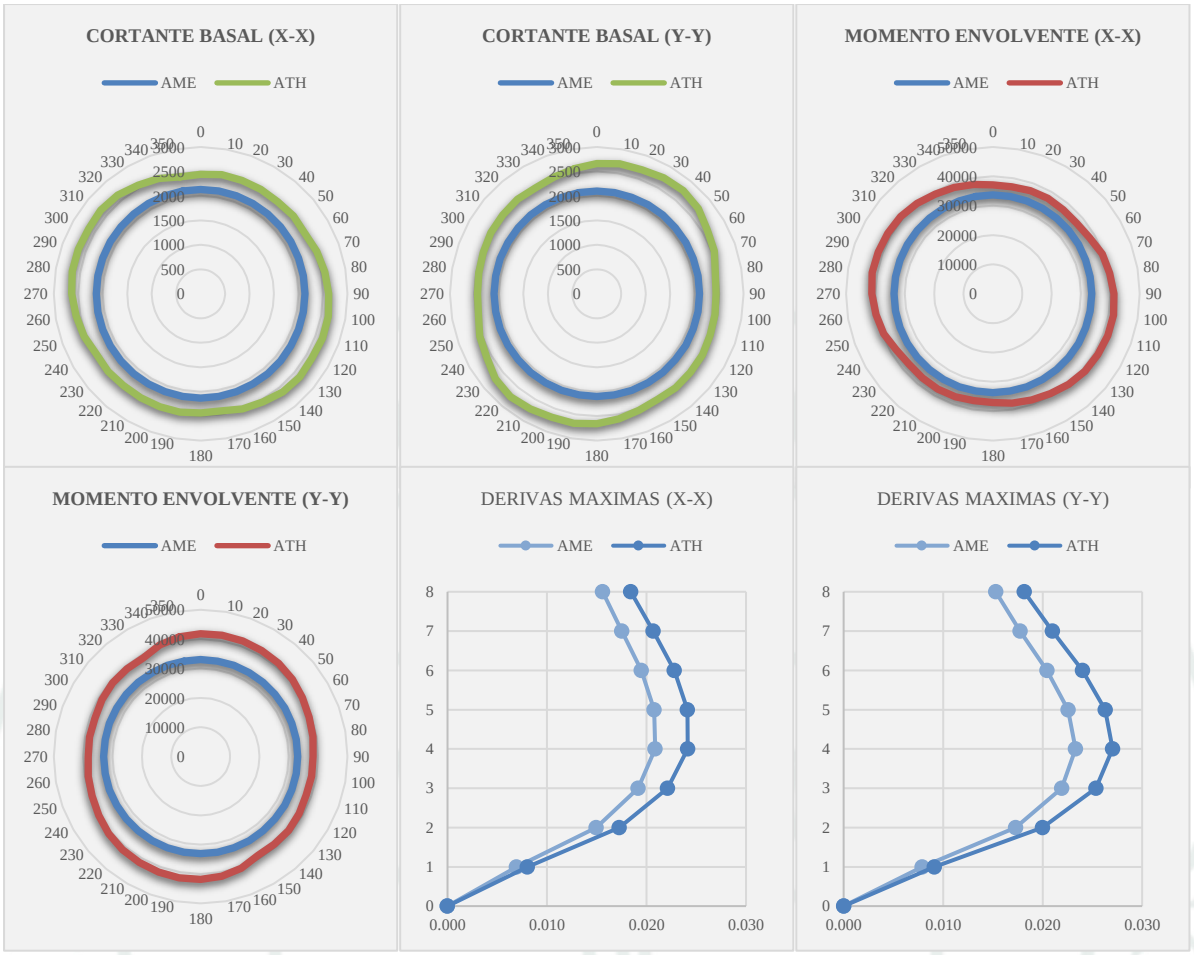


MODELO 6

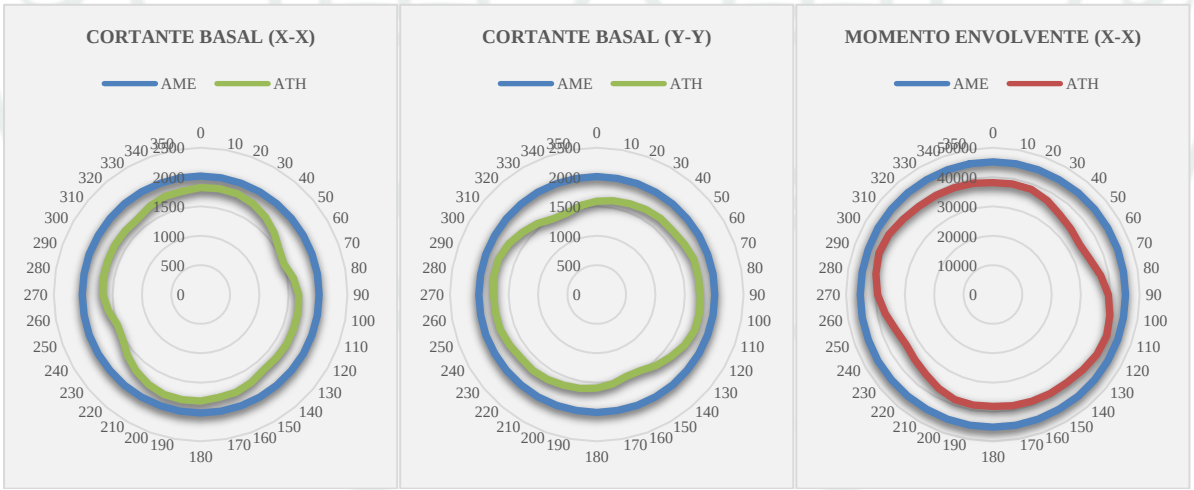
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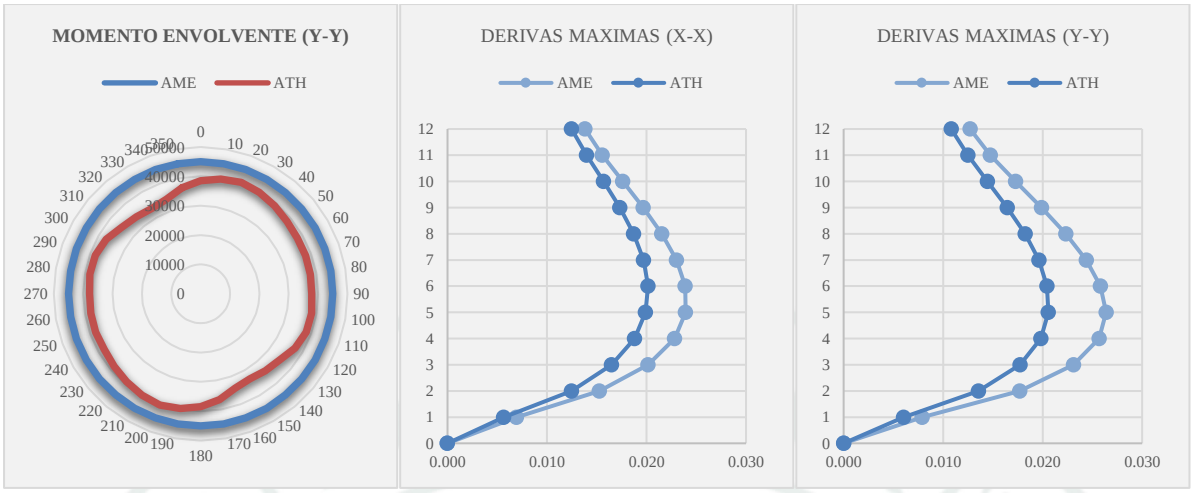


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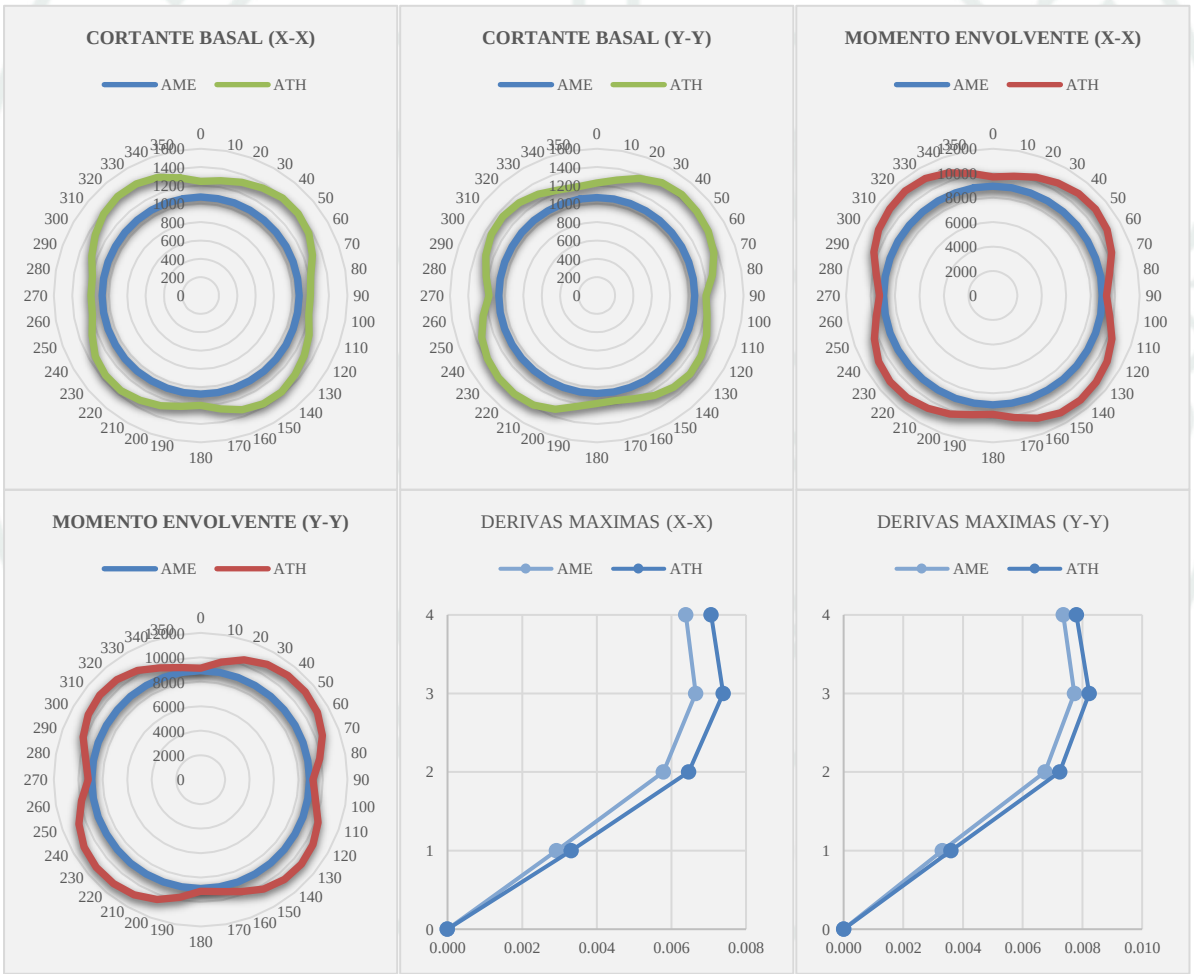
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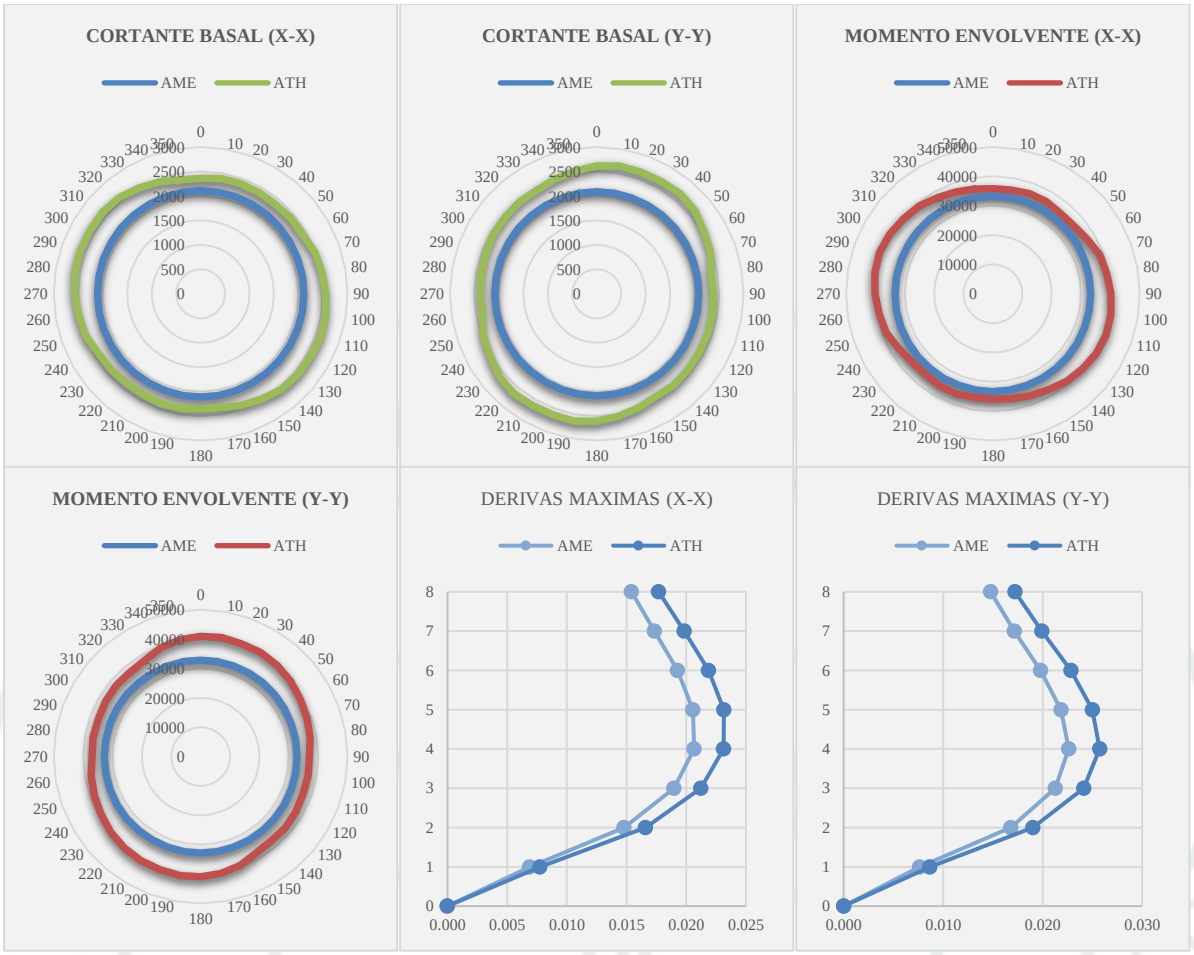


MODELO 7

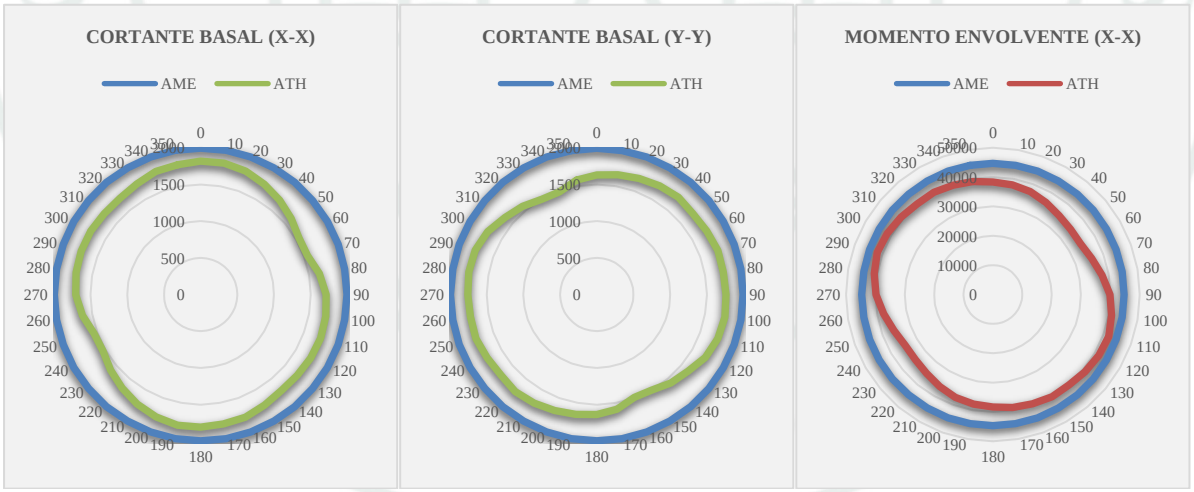
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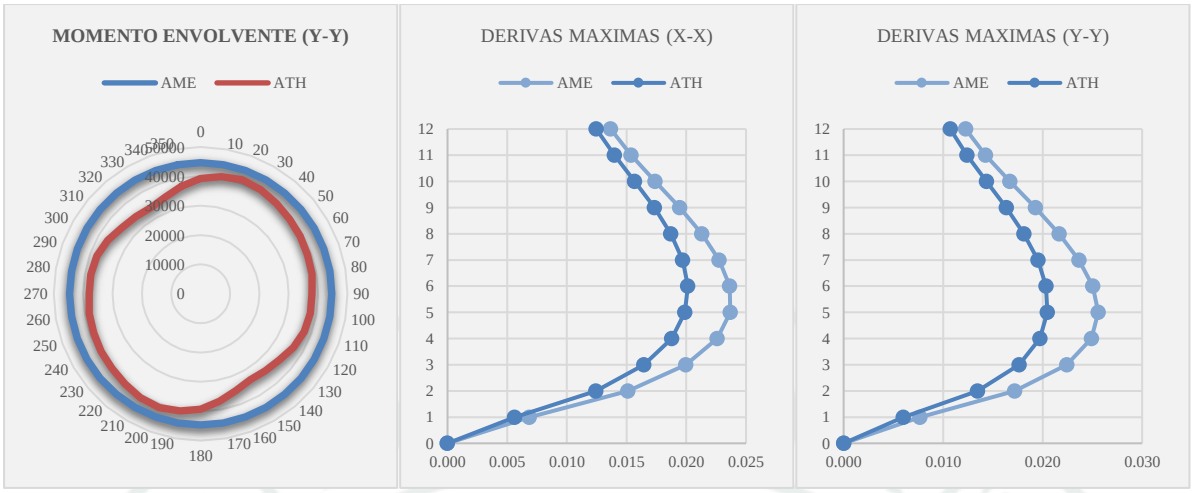


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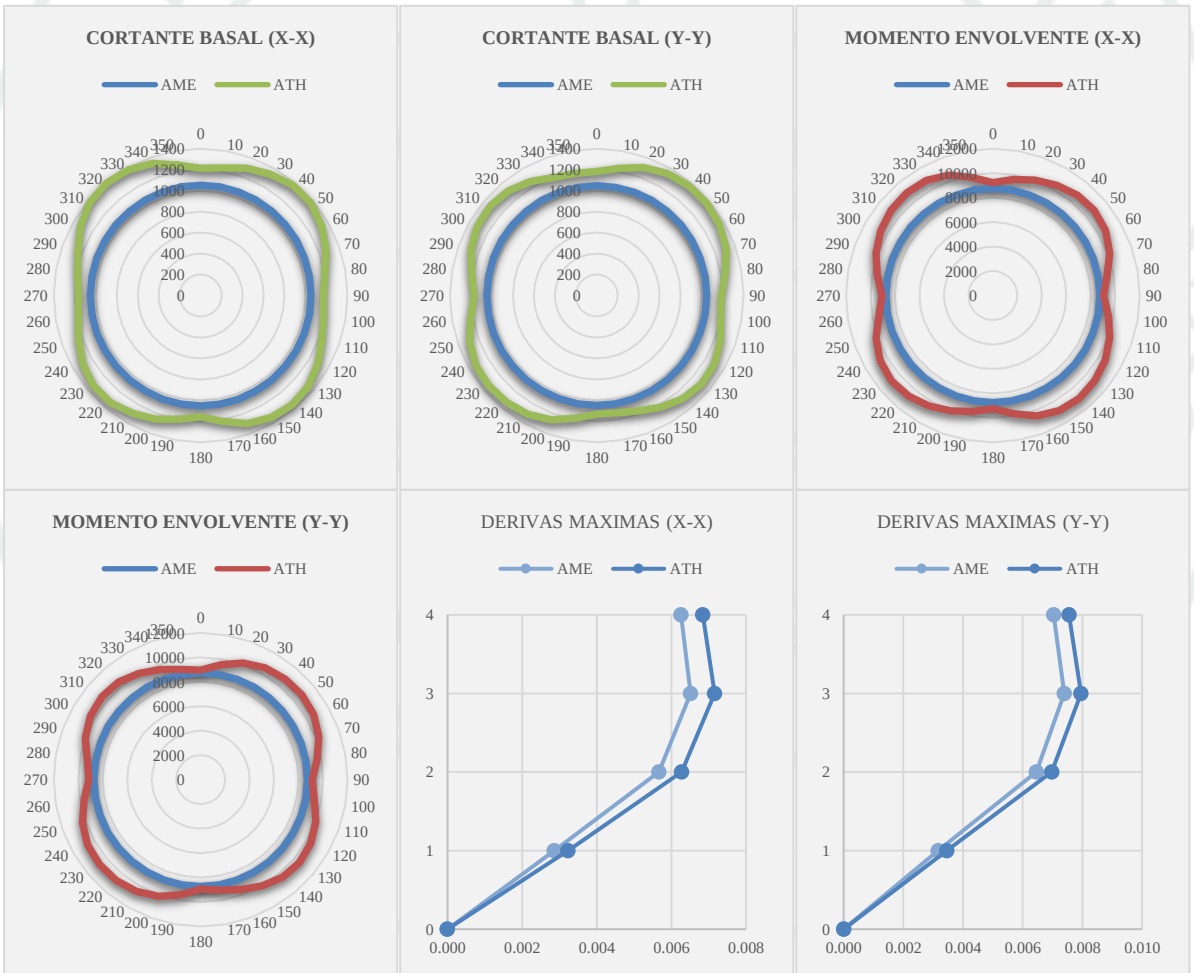
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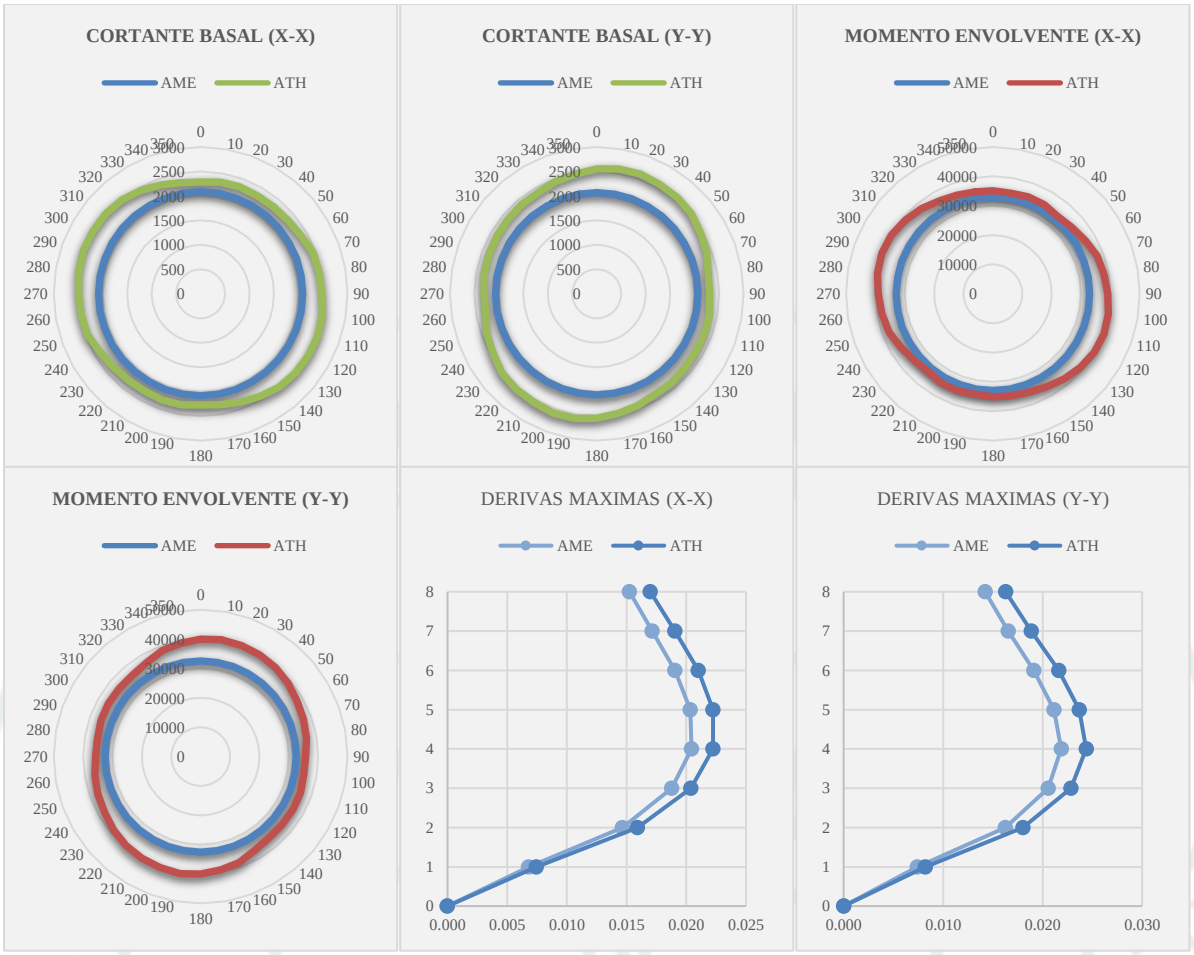


MODELO 8

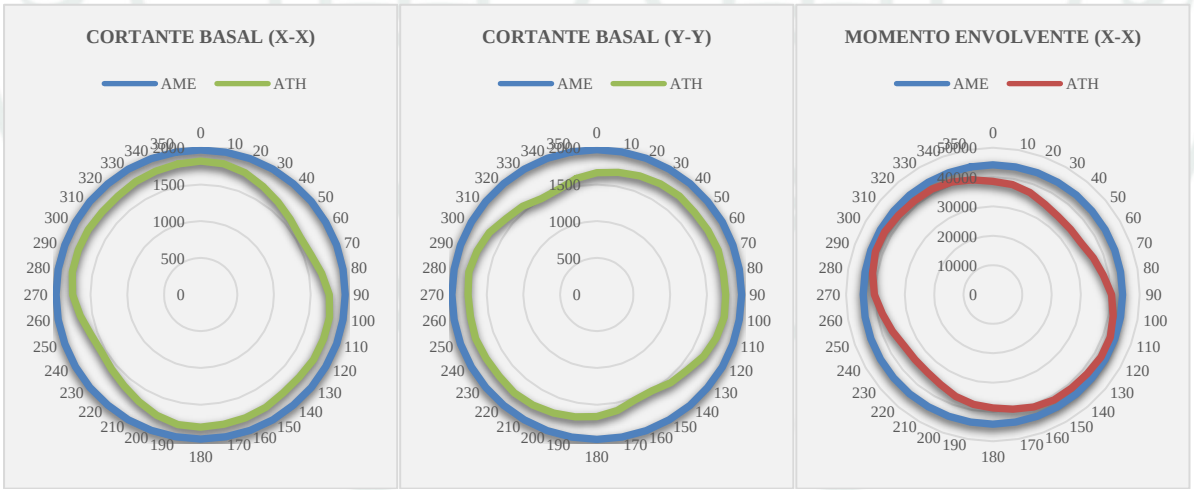
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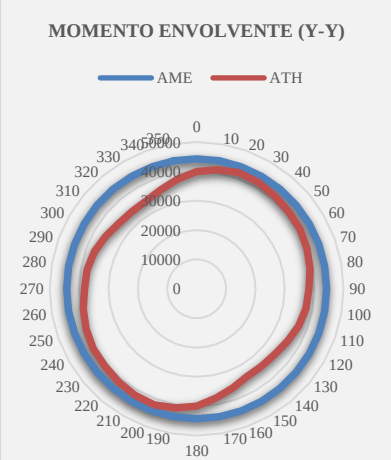


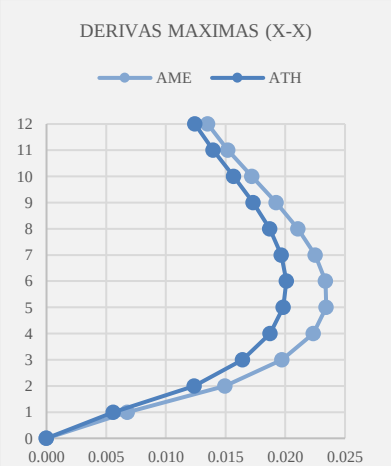
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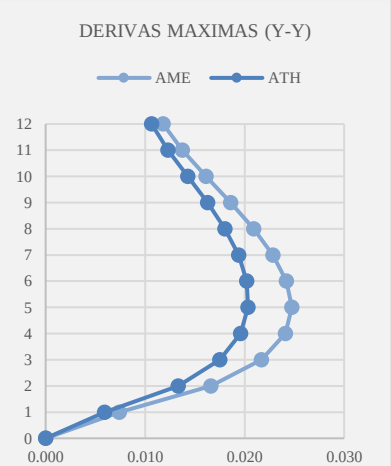


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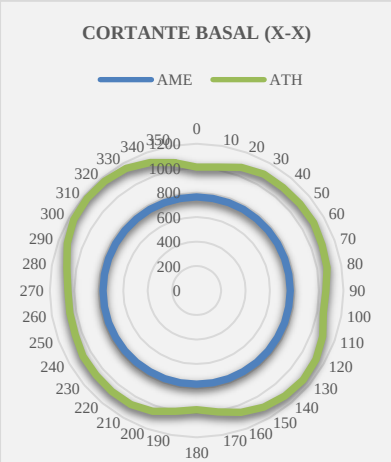


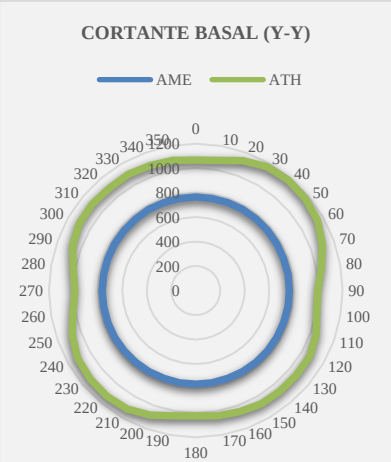


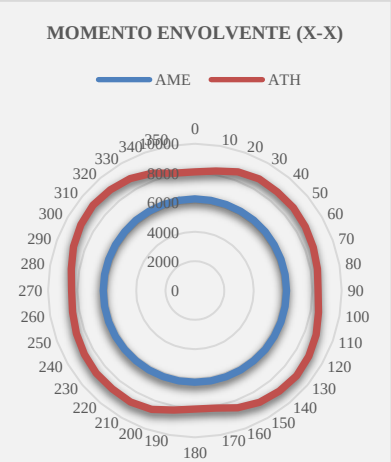


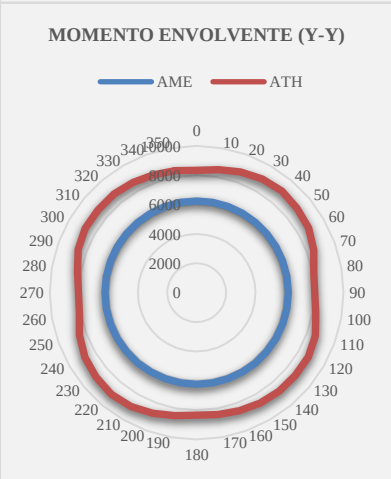
MODELO 9

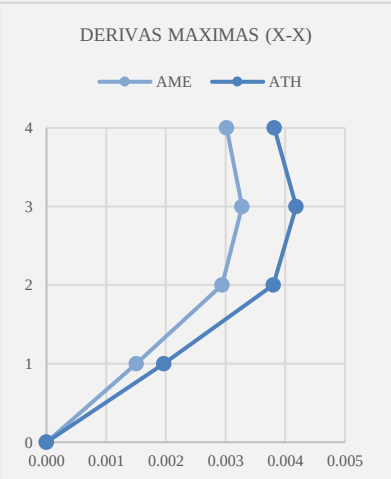
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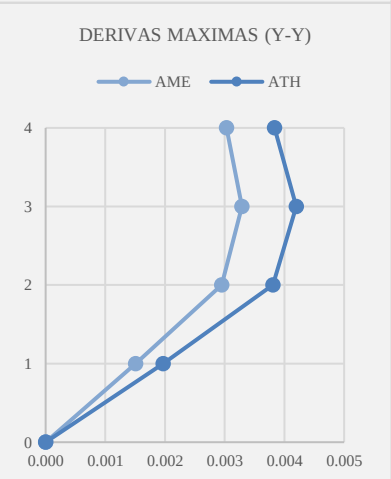




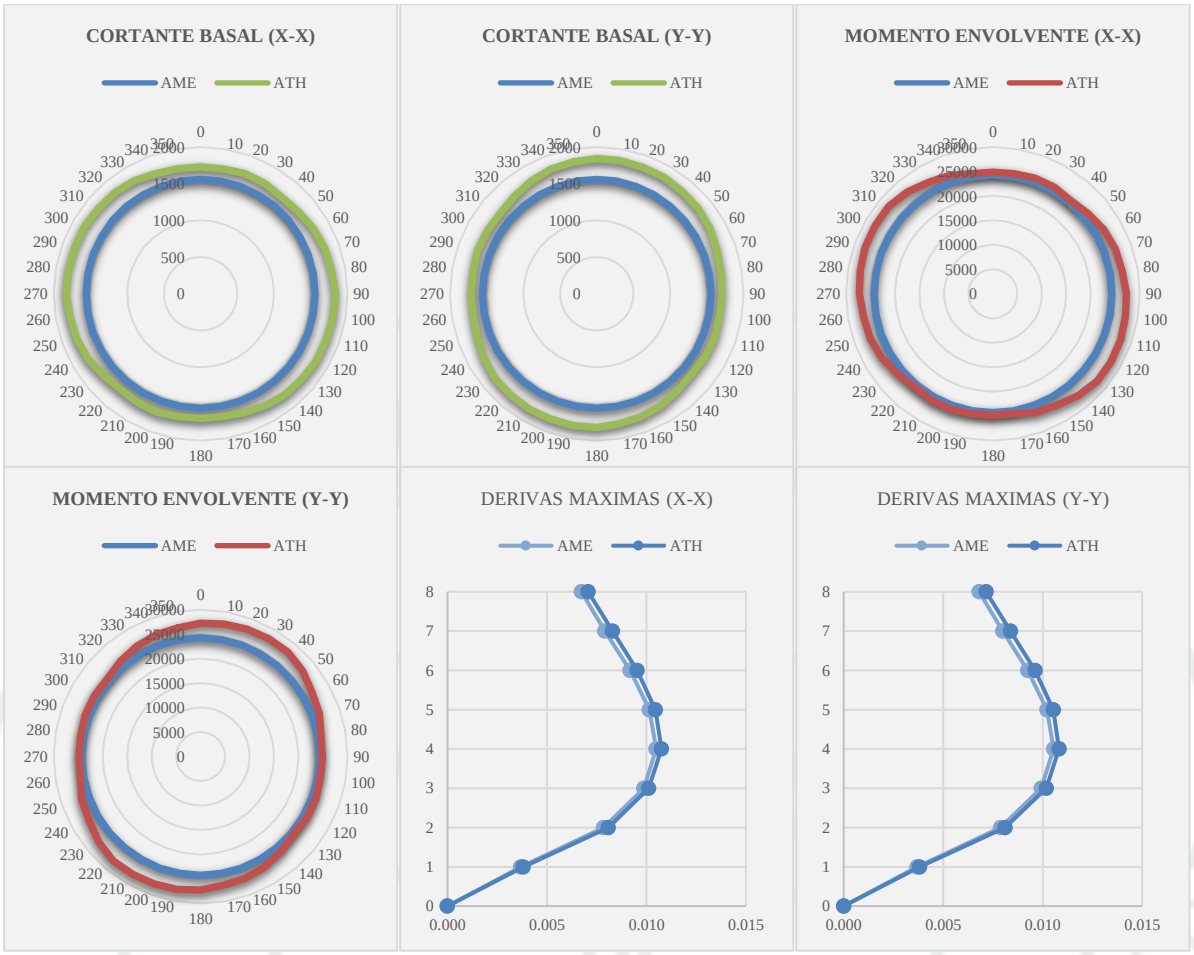




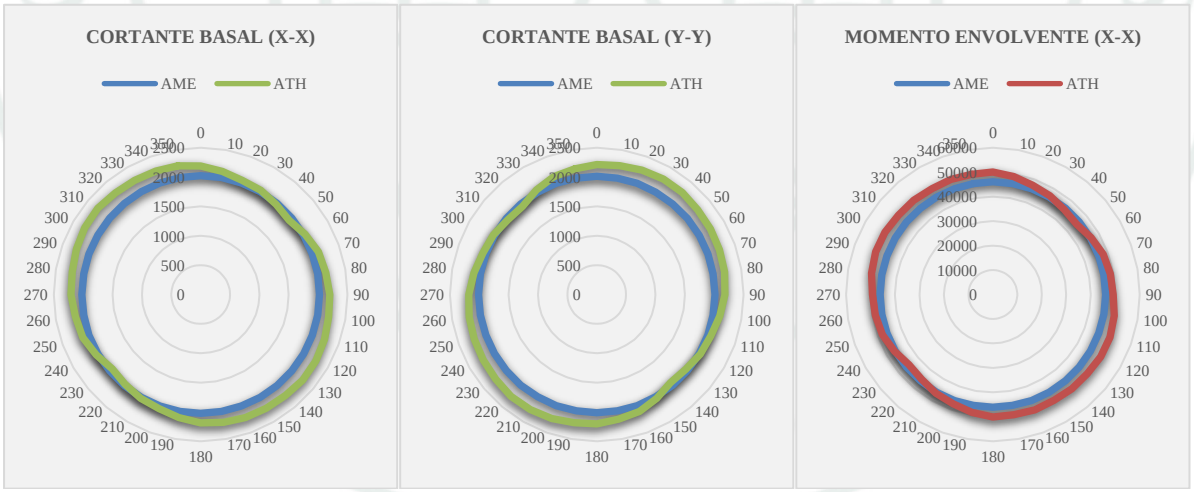


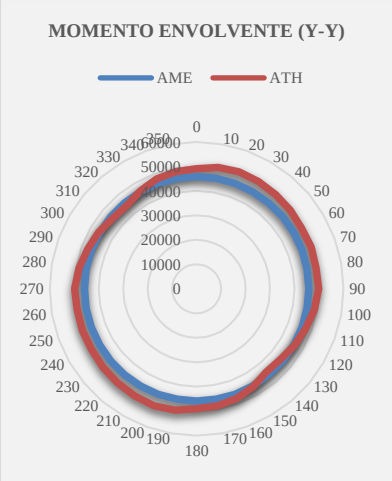


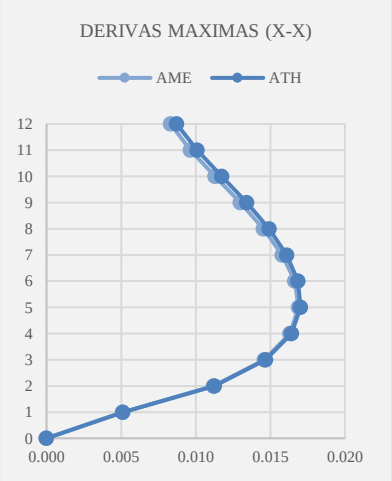
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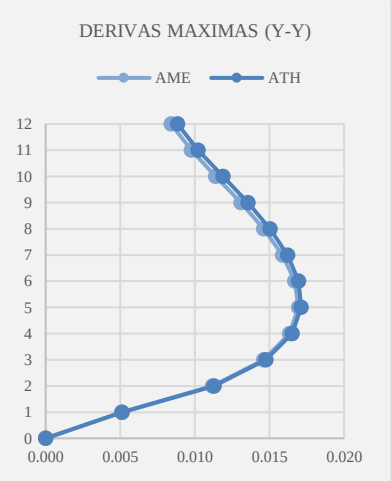


Para 12 pisos:



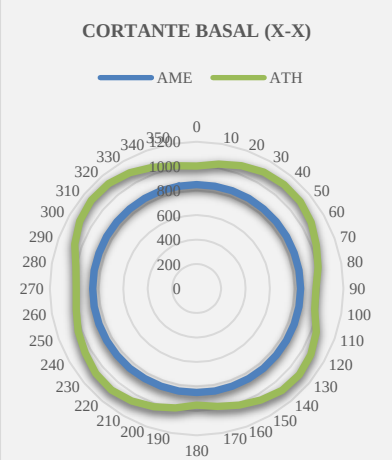


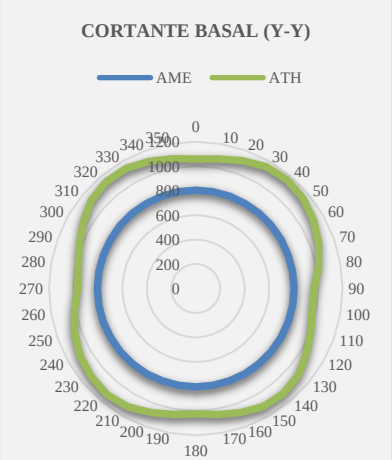


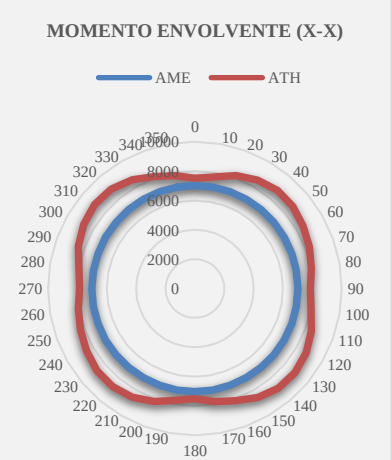


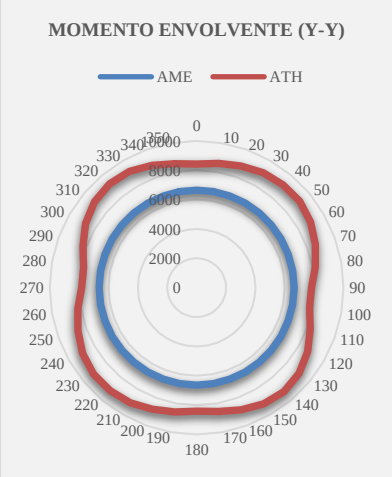
MODELO 10

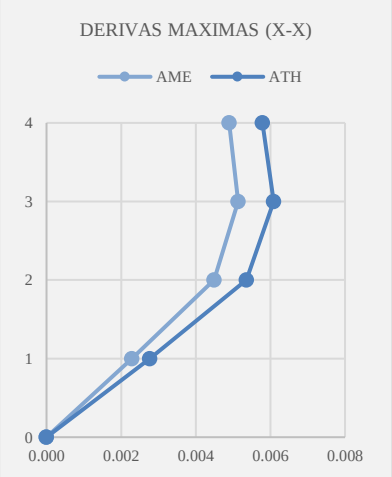
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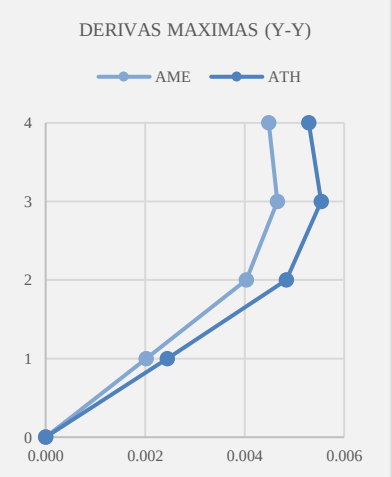








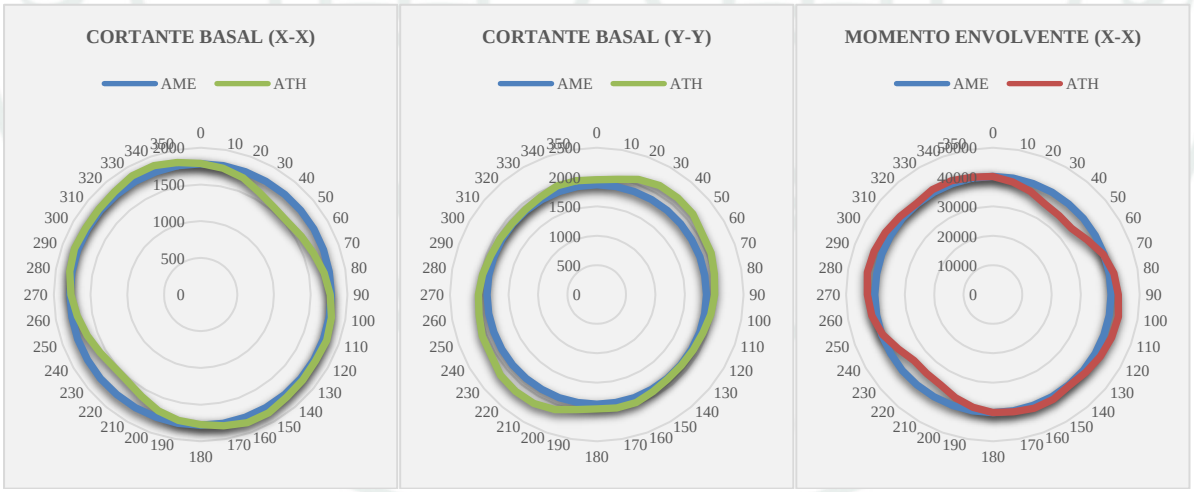


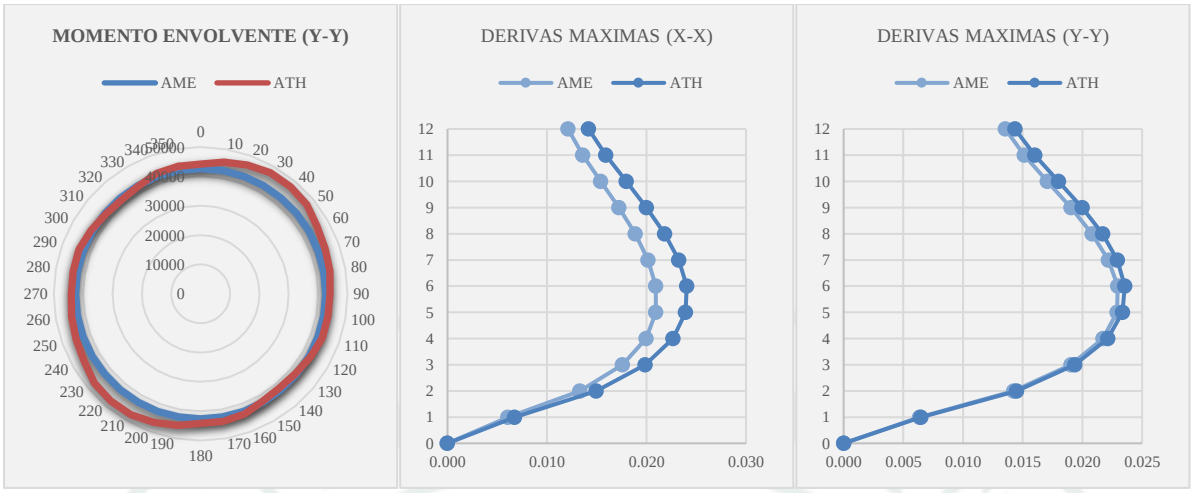


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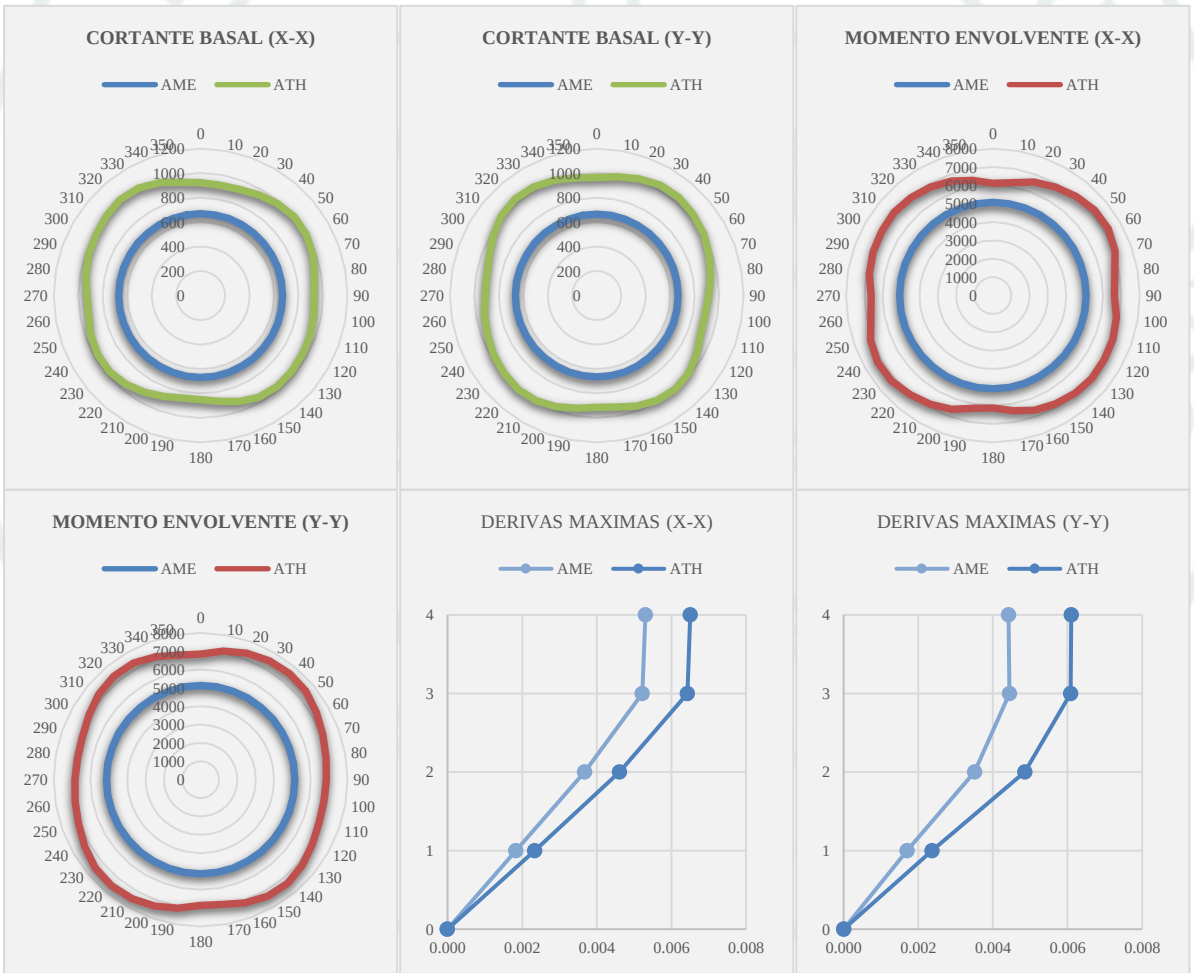
Para 12 pisos:





MODELO 11

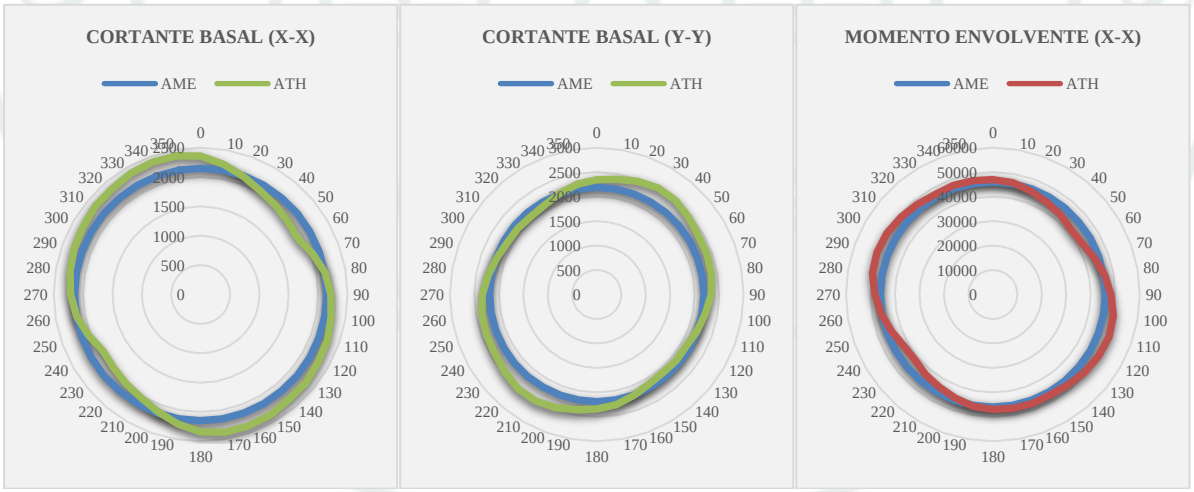
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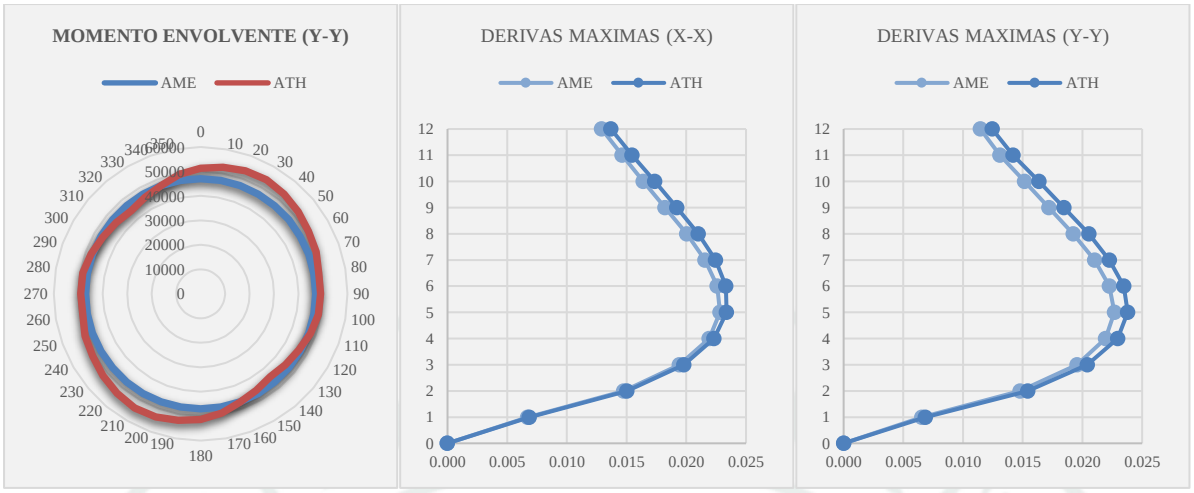


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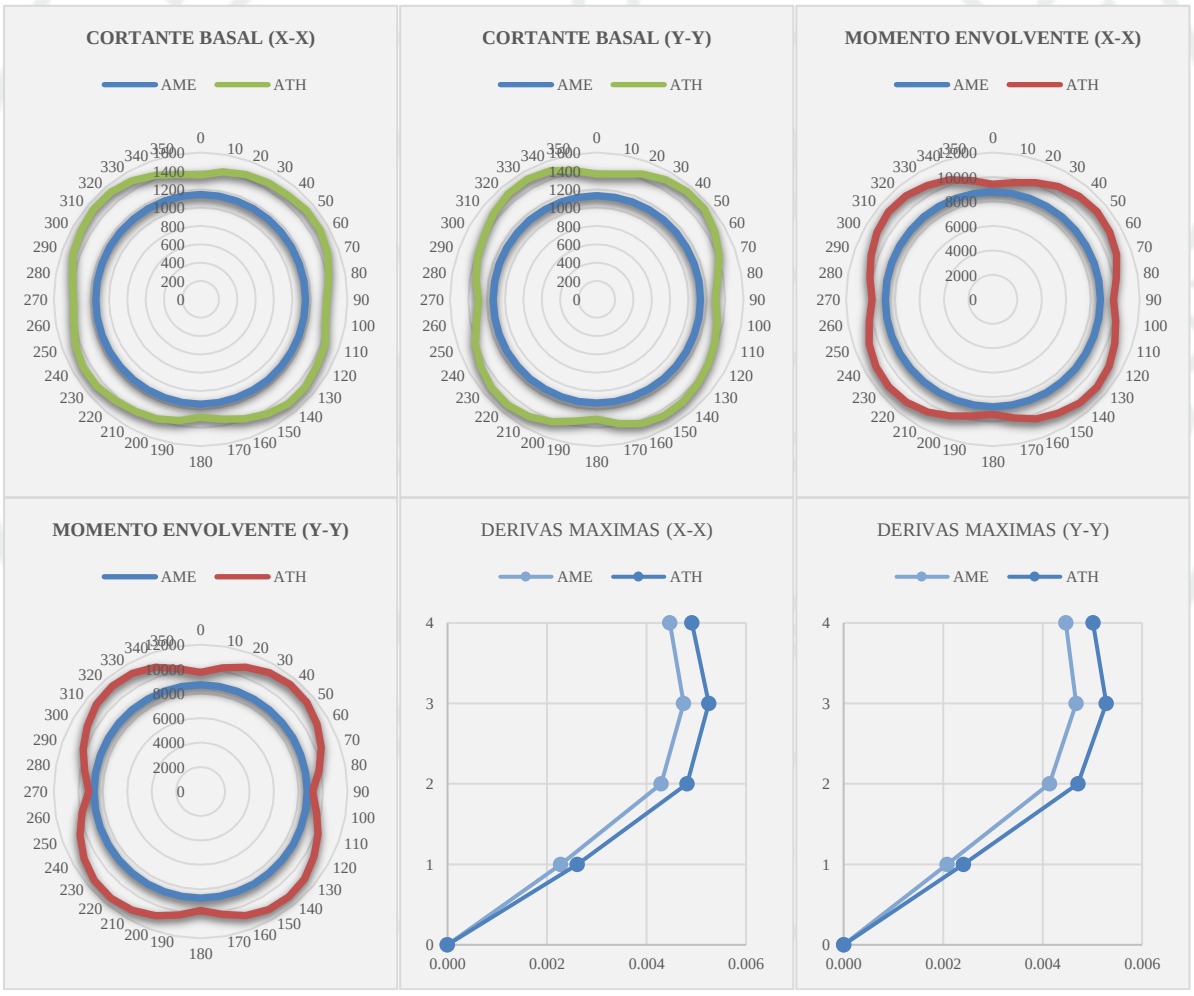
Para 12 pisos:





MODELO 12

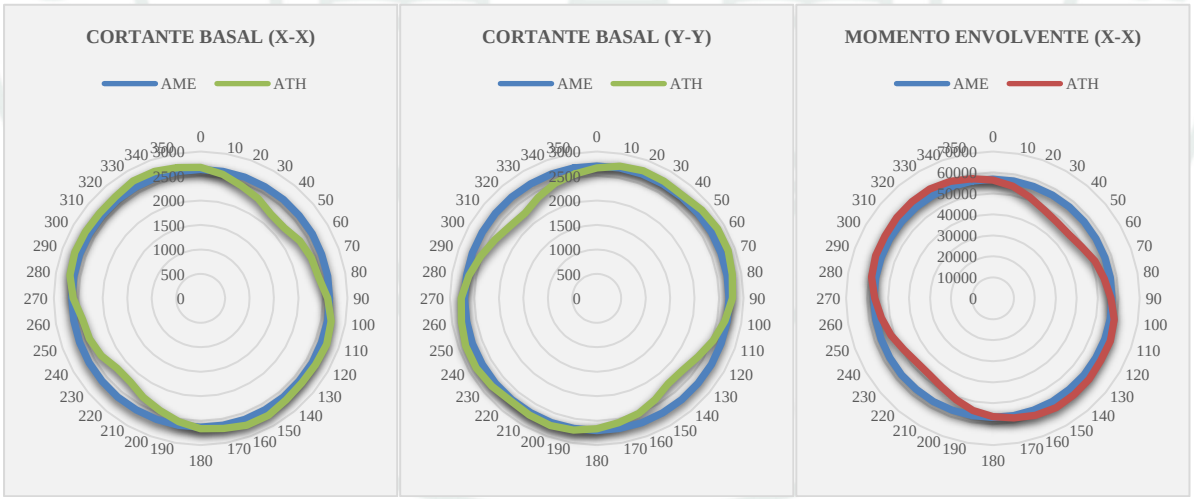
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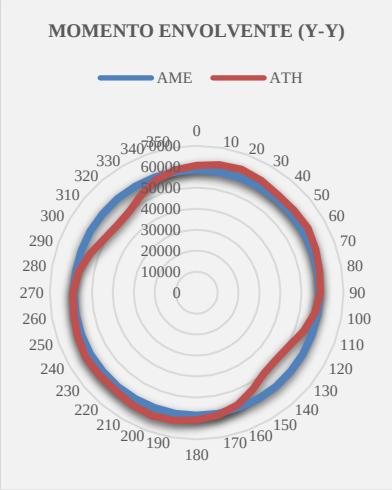


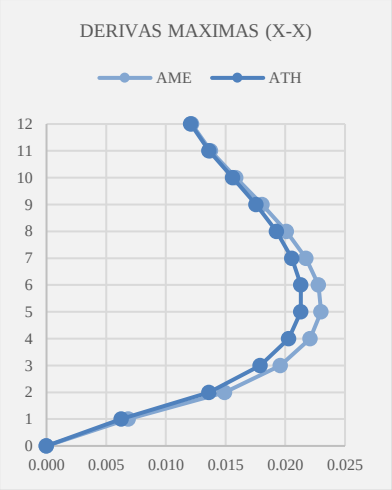
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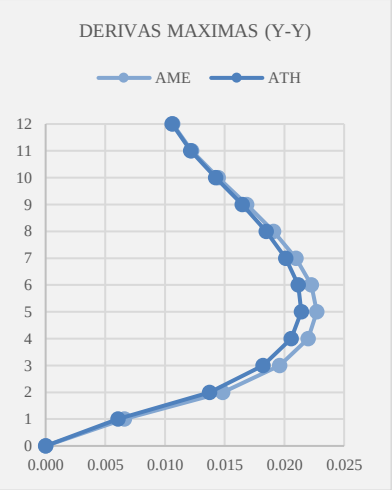


Para 12 pisos:




MOMENTO ENVOLVENTE (Y-Y)
AME
ATH
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320
330
340
350
70000
60000
50000
40000
30000
20000
10000
0


DERIVAS MAXIMAS (X-X)
AME
ATH
12
11
10
9
8
7
6
5
4
3
2
1
0
0.000
0.005
0.010
0.015
0.020
0.025

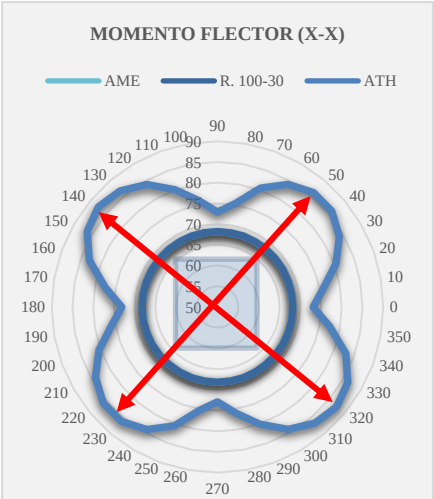

DERIVAS MAXIMAS (Y-Y)
AME
ATH
12
11
10
9
8
7
6
5
4
3
2
1
0
0.000
0.005
0.010
0.015
0.020
0.025

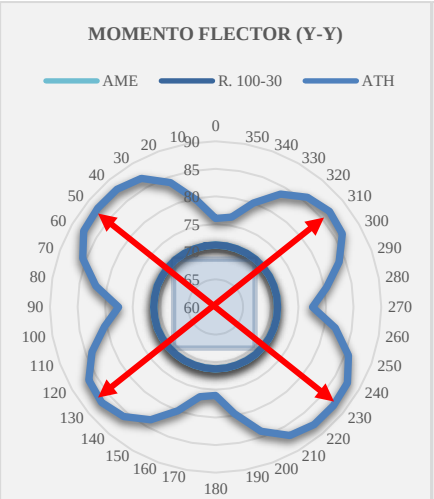
ANEXO E: ANGULOS DE INCIDENCIA EN COLUMNAS Y PLACAS

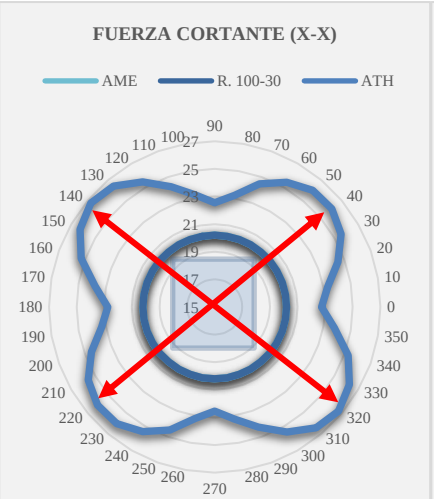
MODELO 1

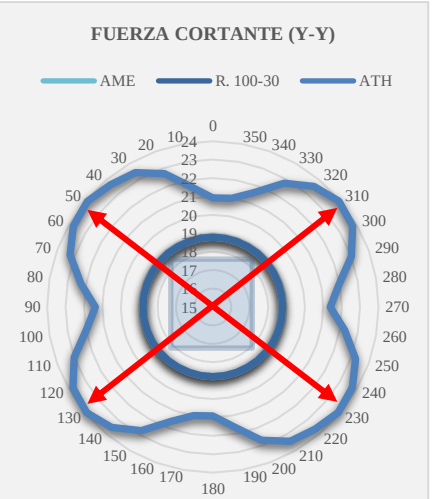
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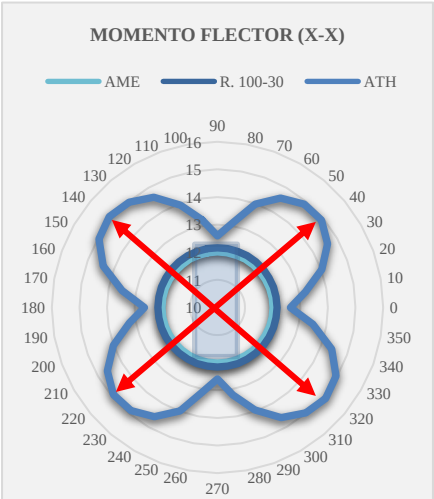


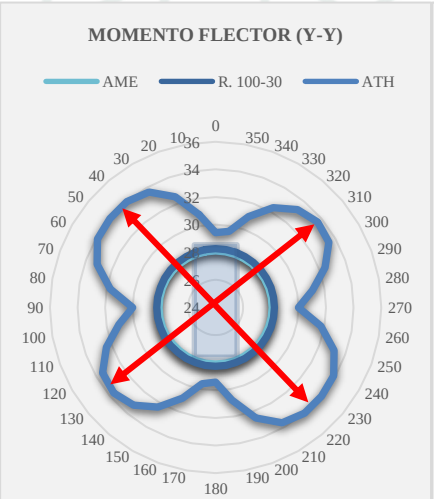

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

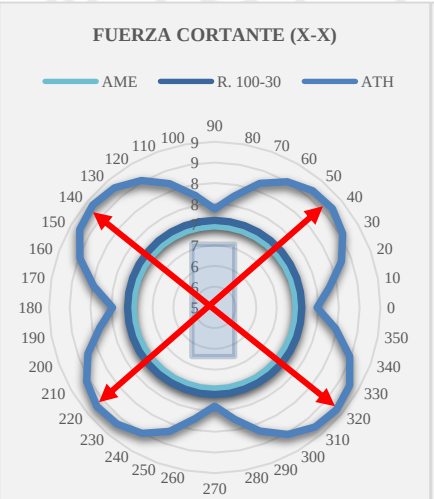

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

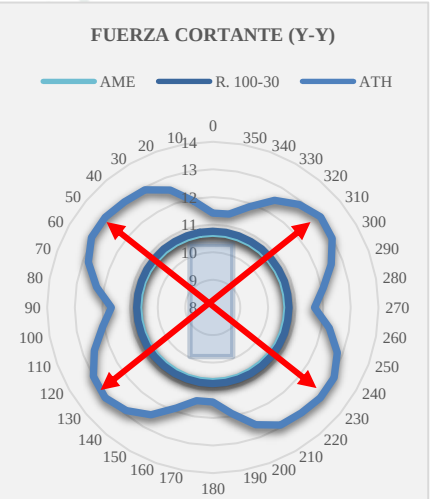

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

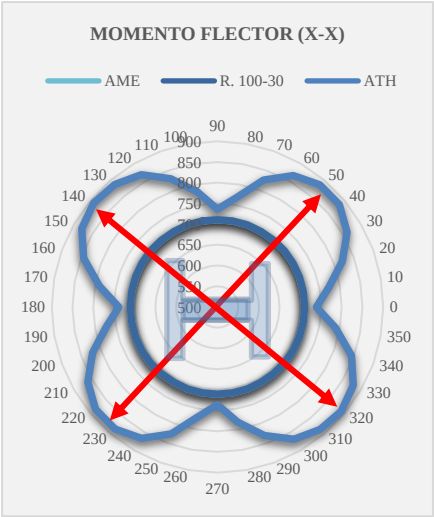

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

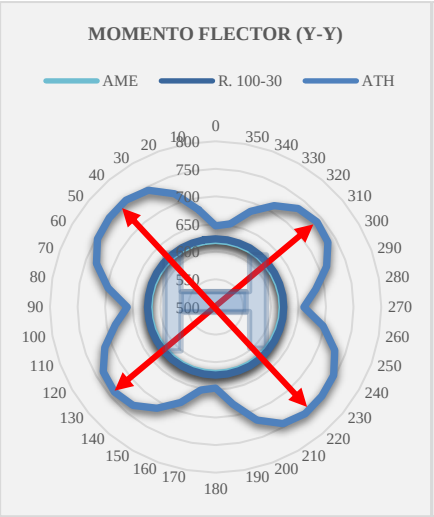

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

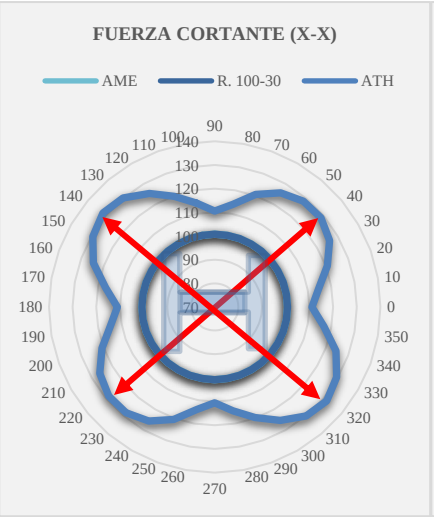

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

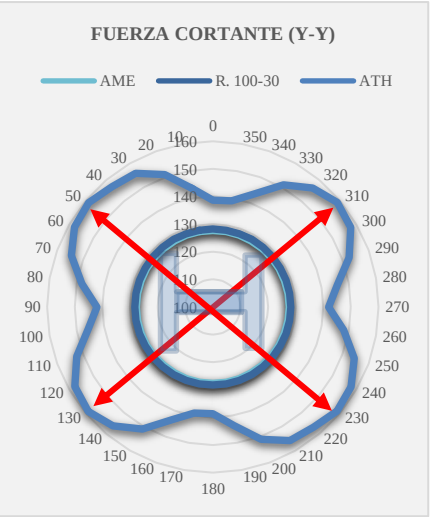

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

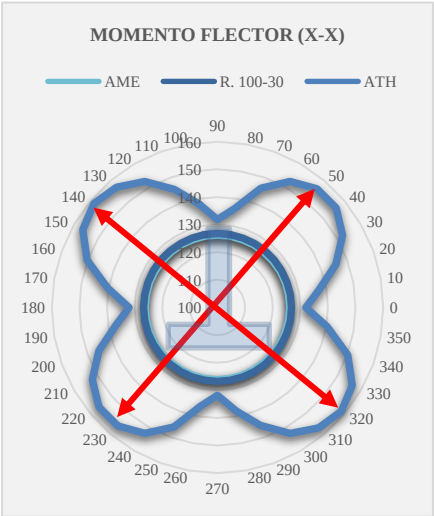

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

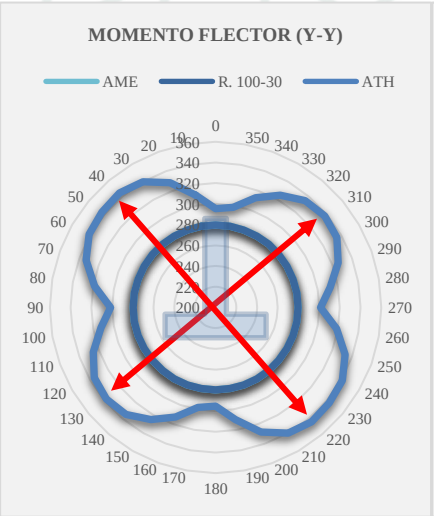

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

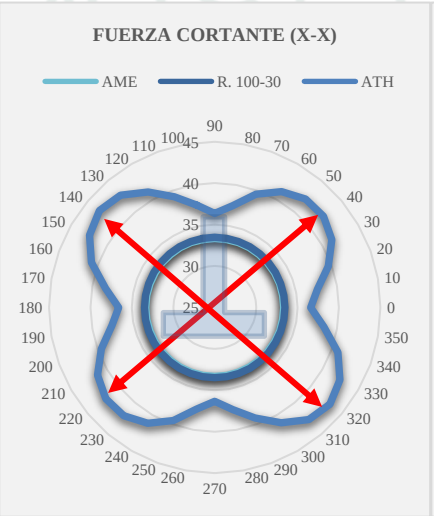

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

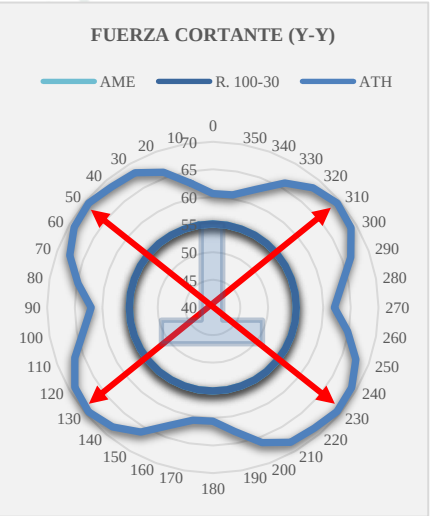

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AME
R. 100-30
ATH

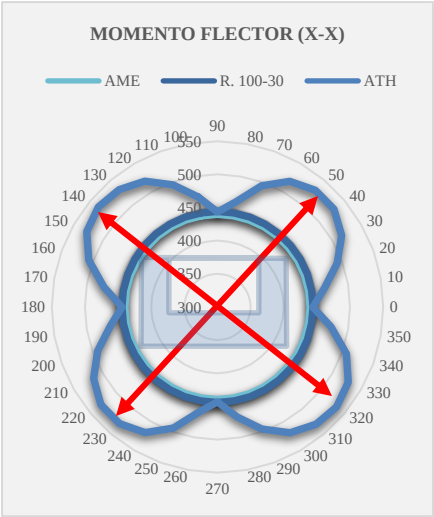

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

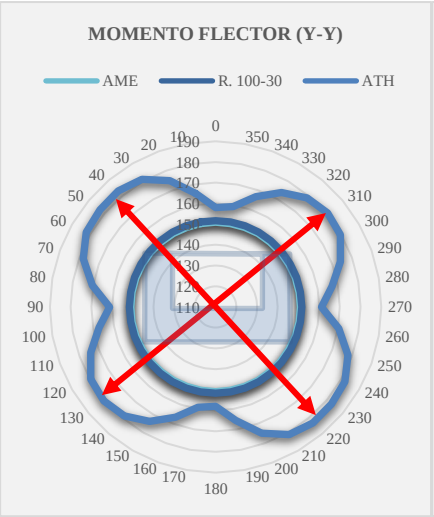

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

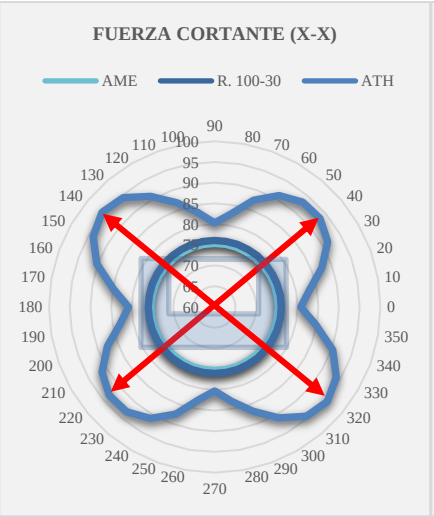

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

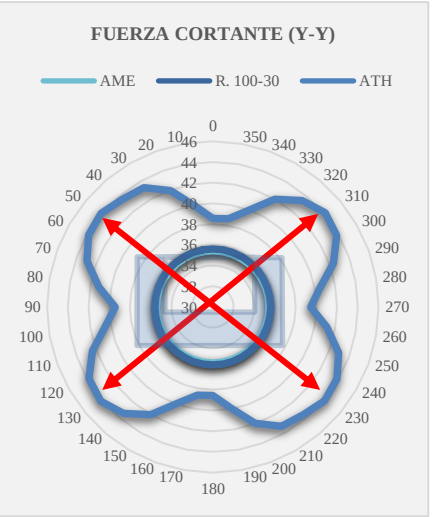

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

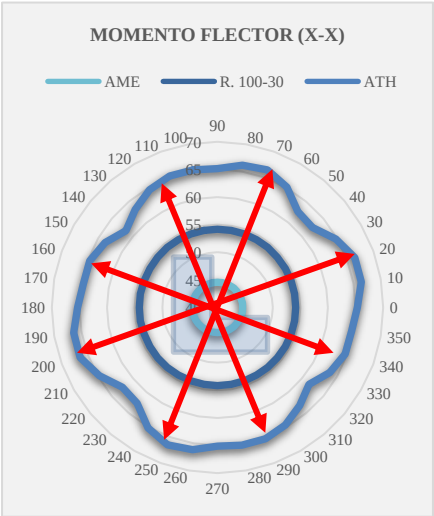

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

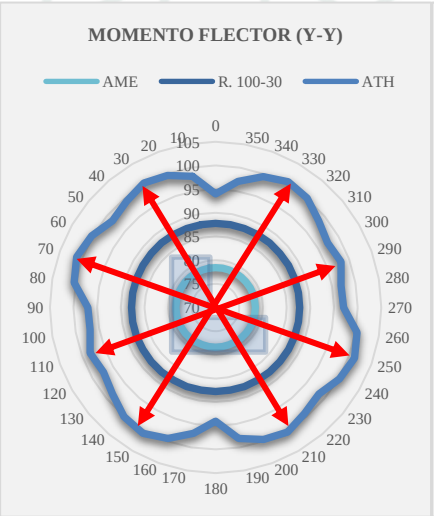

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

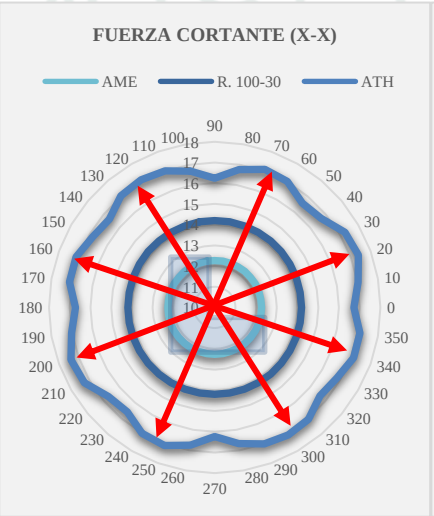

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

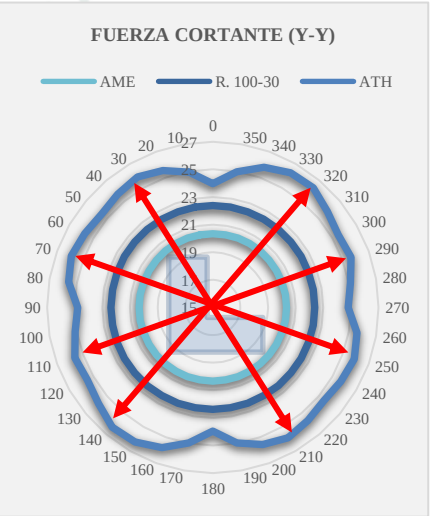

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

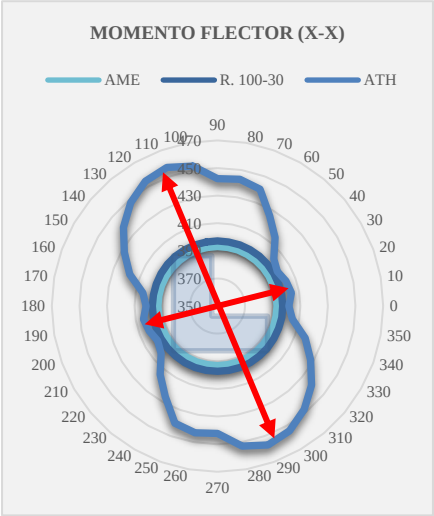

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

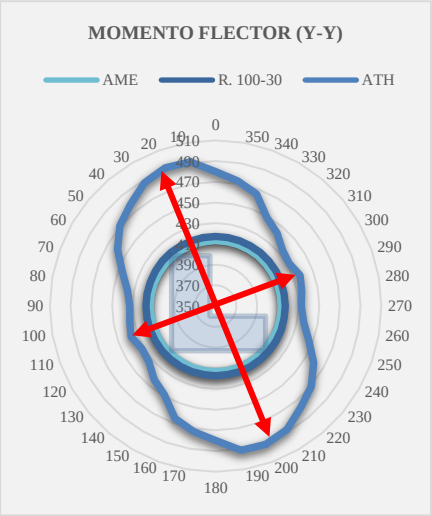

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

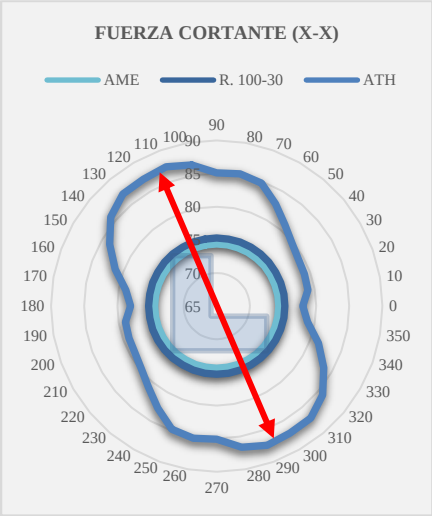

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

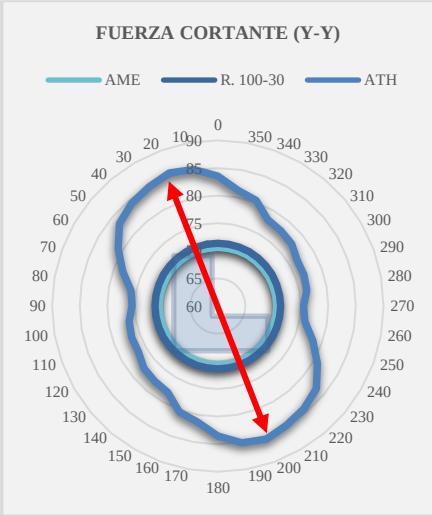

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

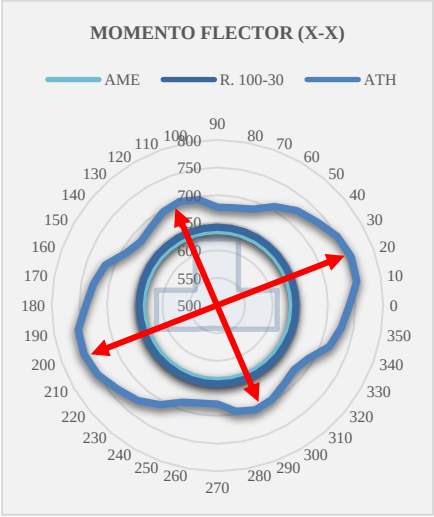
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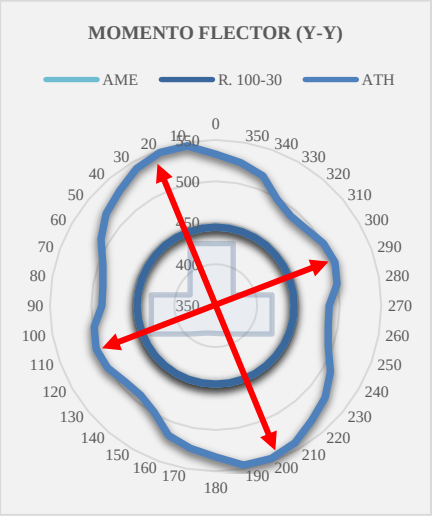

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

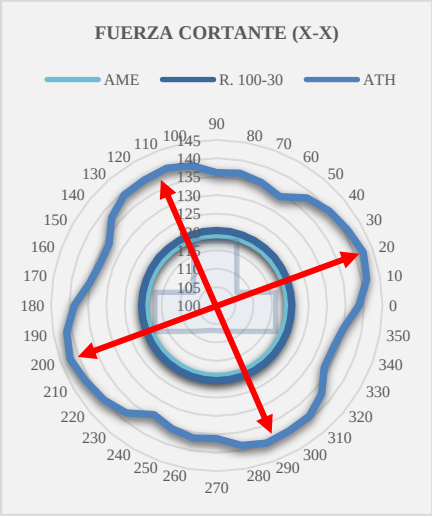

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

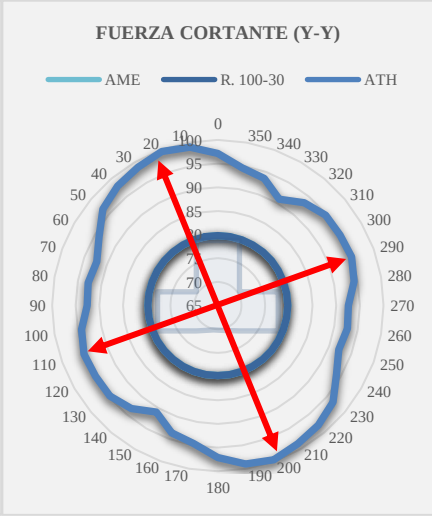

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

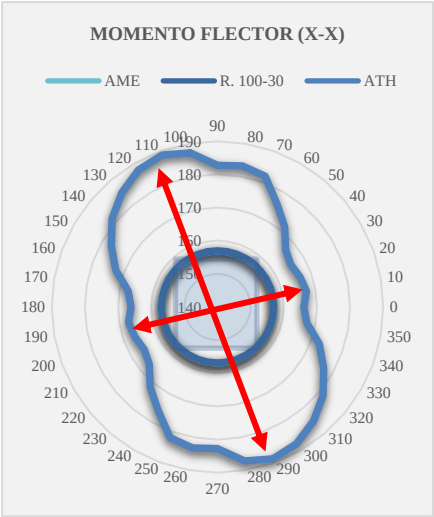

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

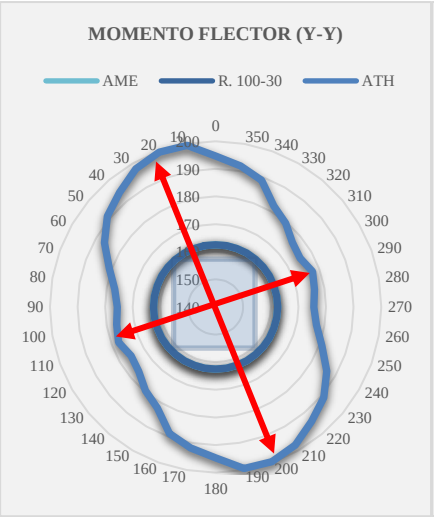

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

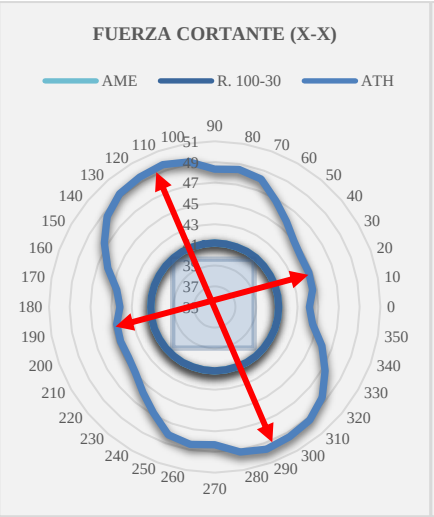

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

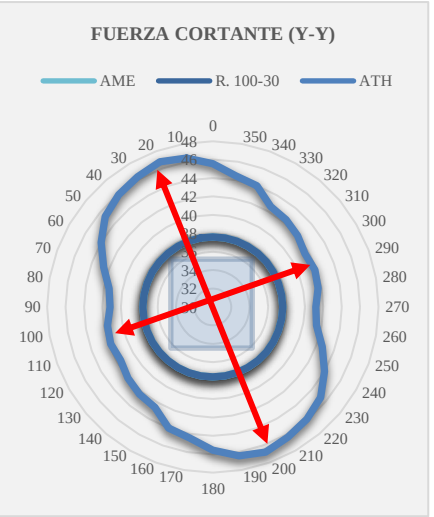

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

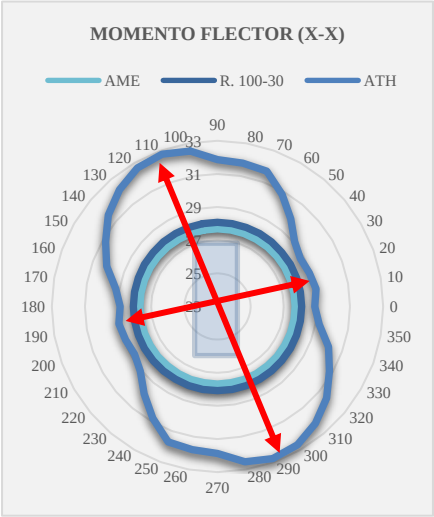

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

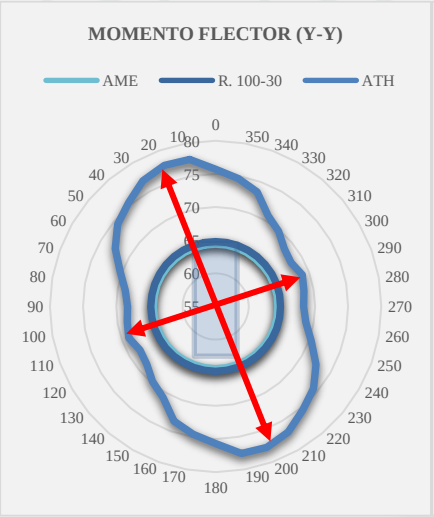

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

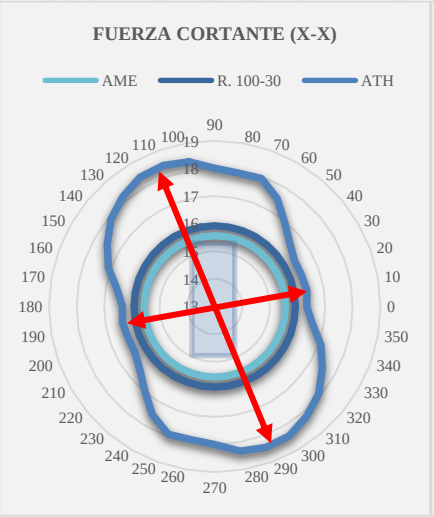

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

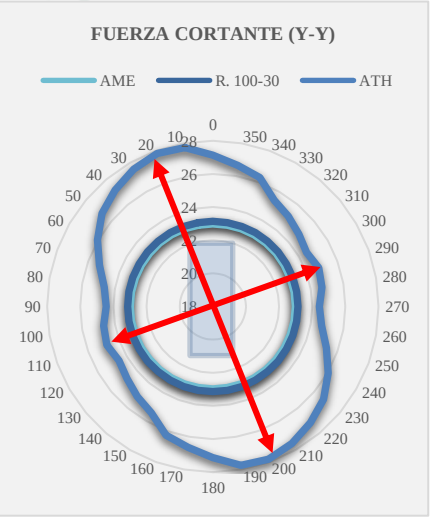

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

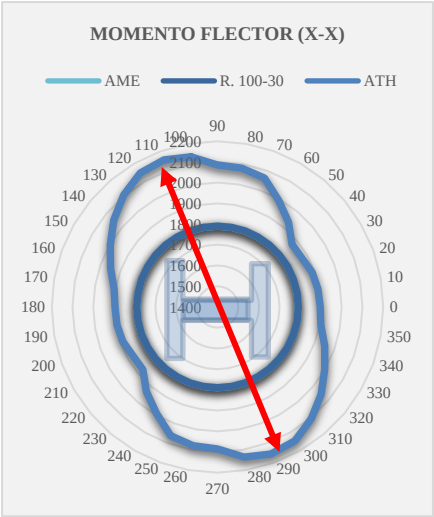

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

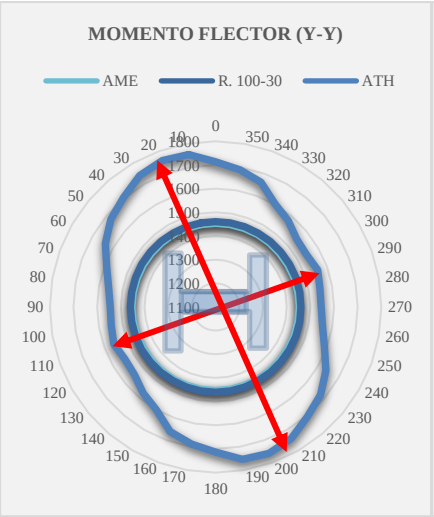

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

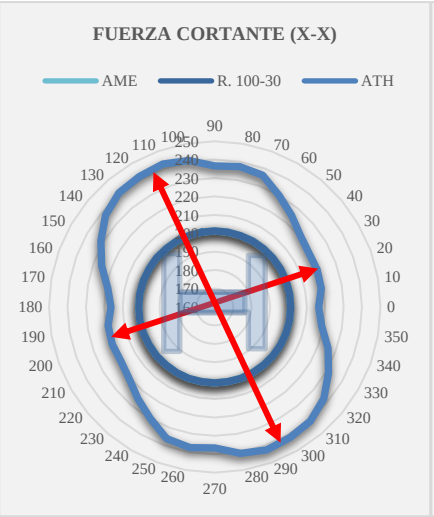

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

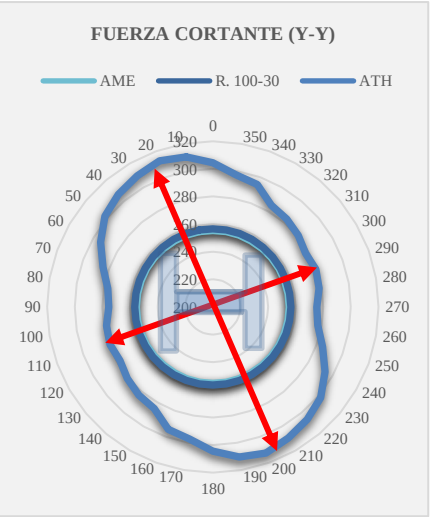

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

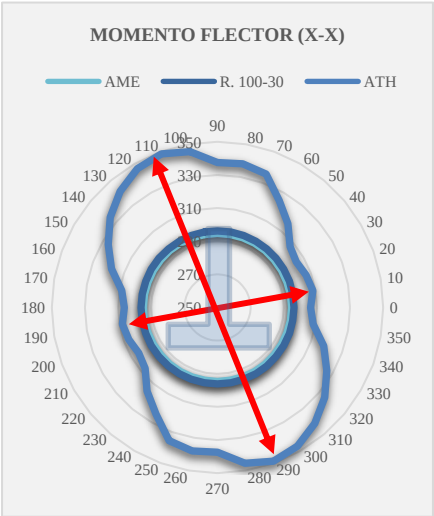

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

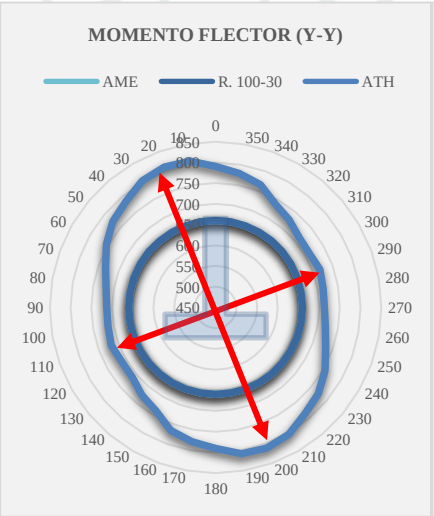

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

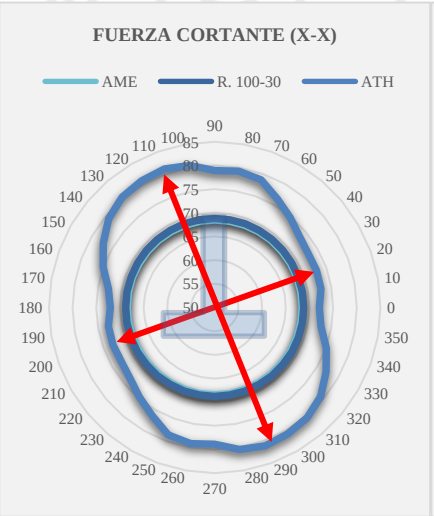

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

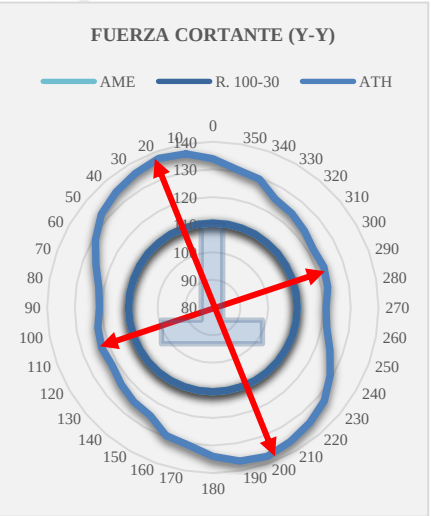

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

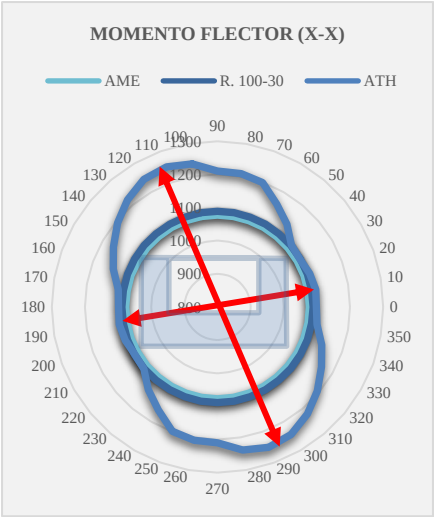

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

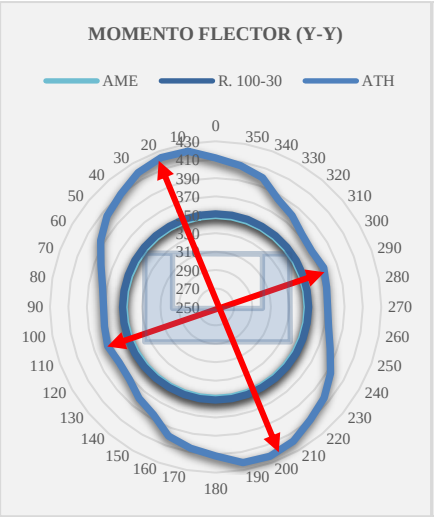

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

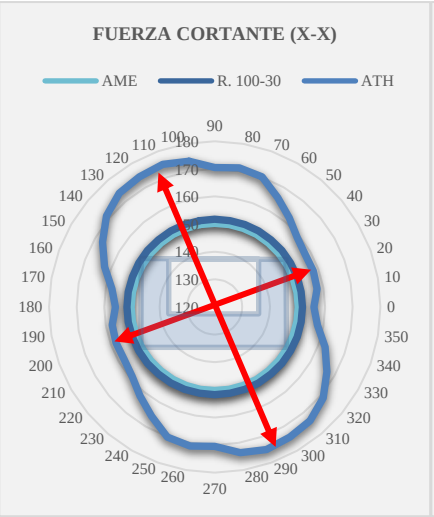

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

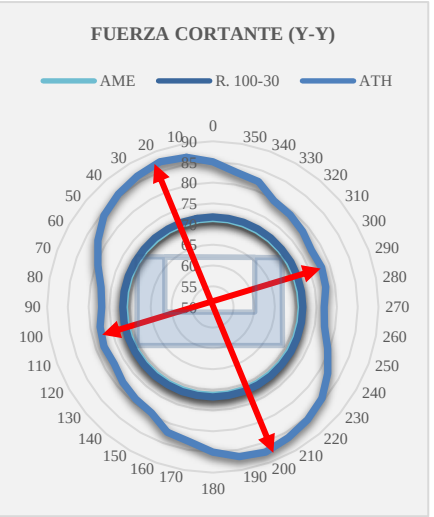

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

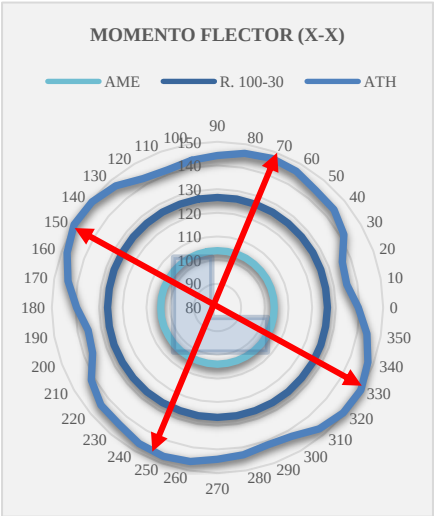

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

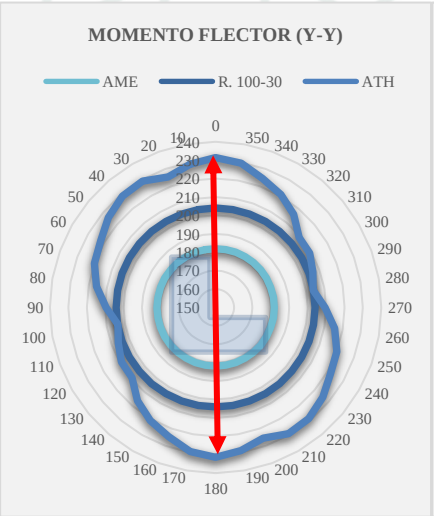

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

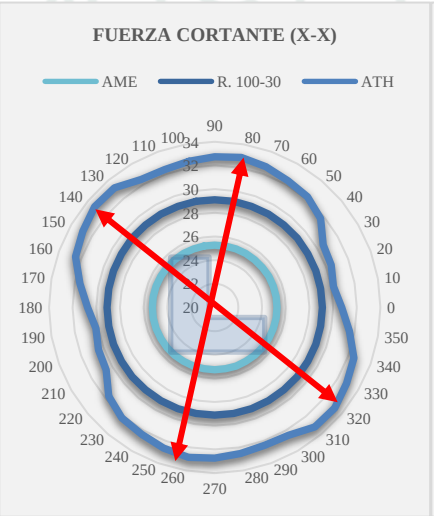

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

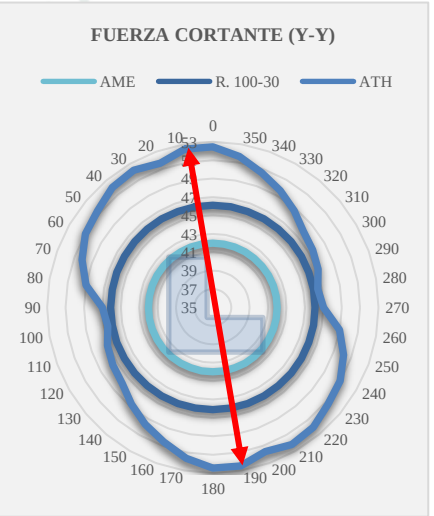

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

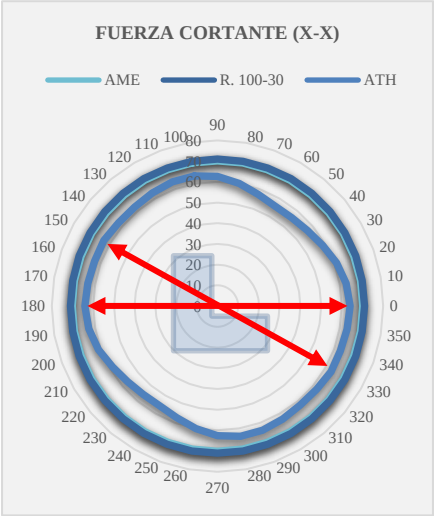

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

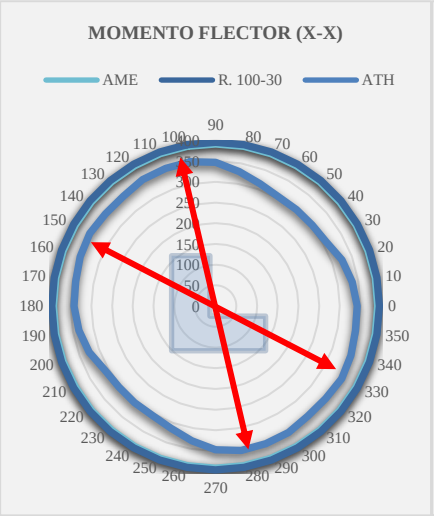

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

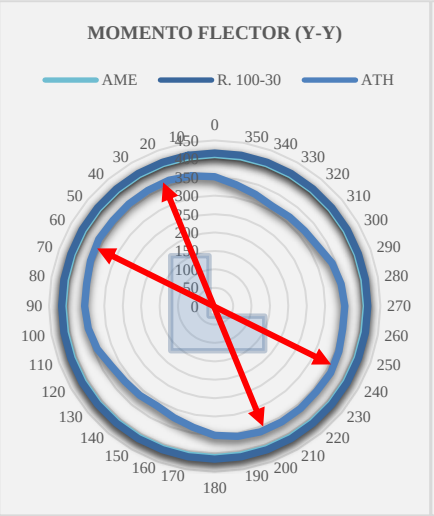

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

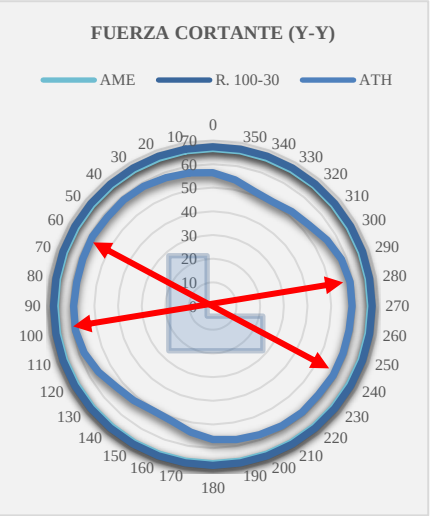

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

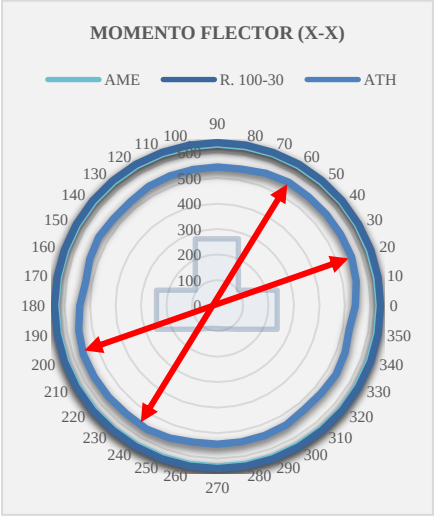
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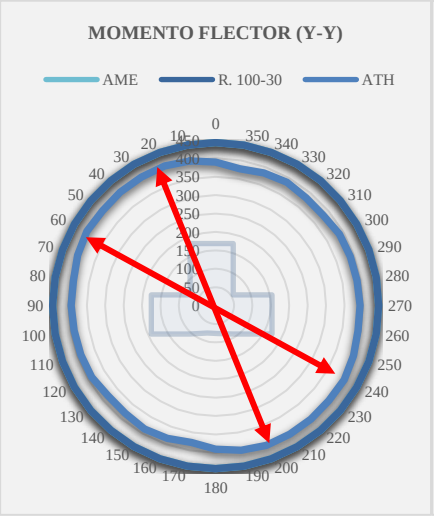


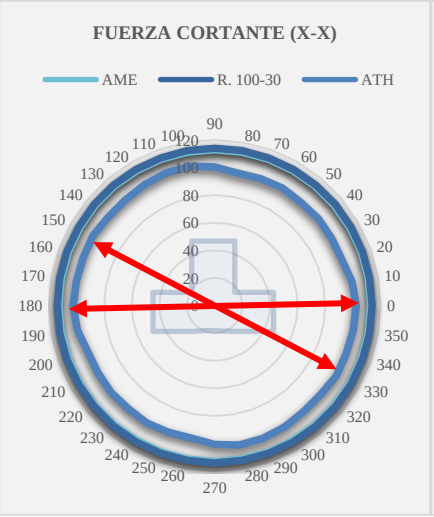


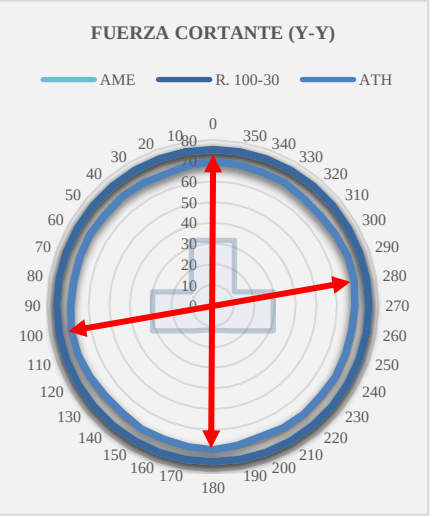


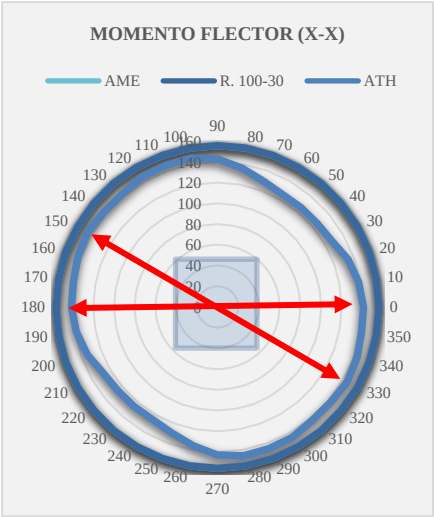


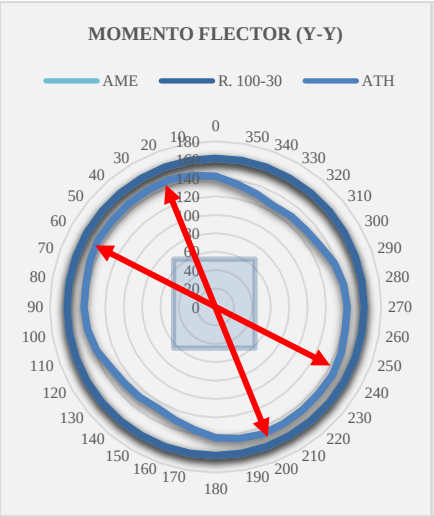


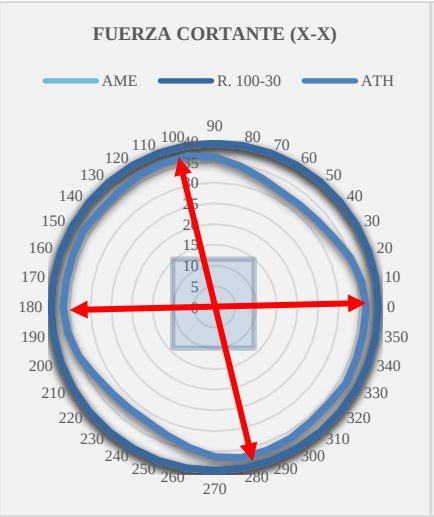


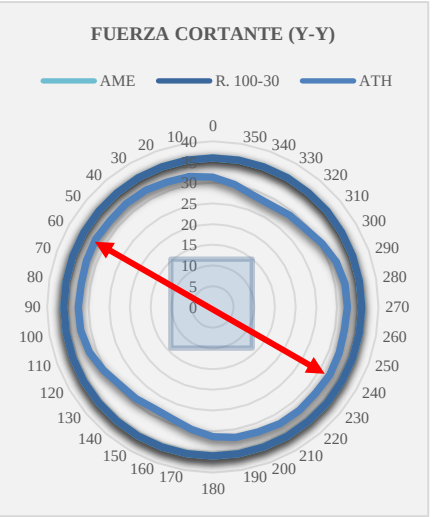


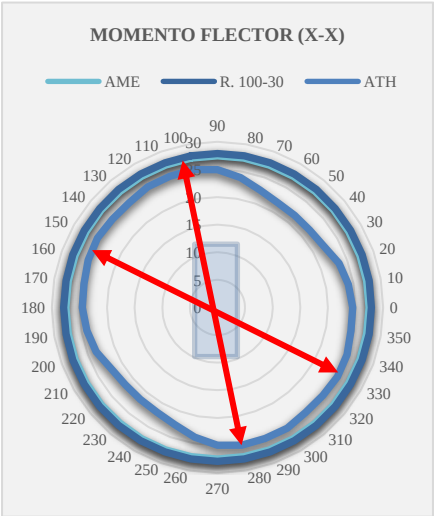


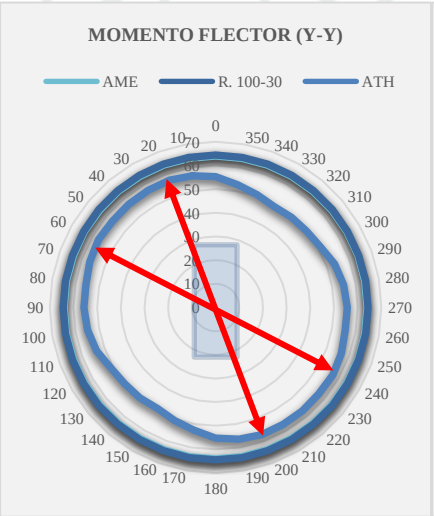

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

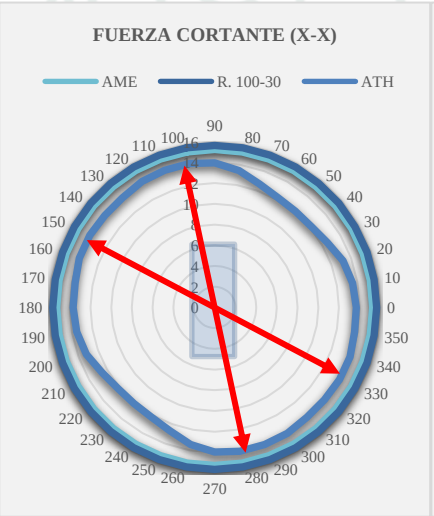

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ATH

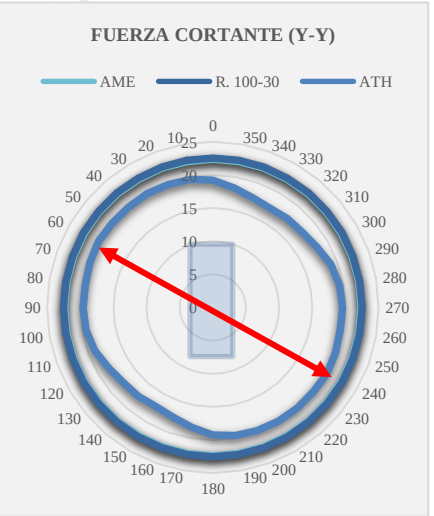

FUERZA CORTANTE (X-X)
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ATH

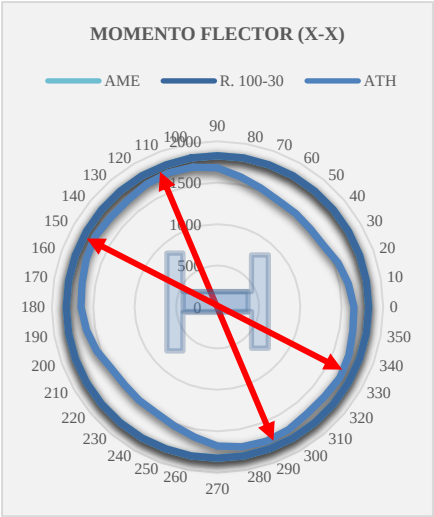

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R. 100-30
ATH

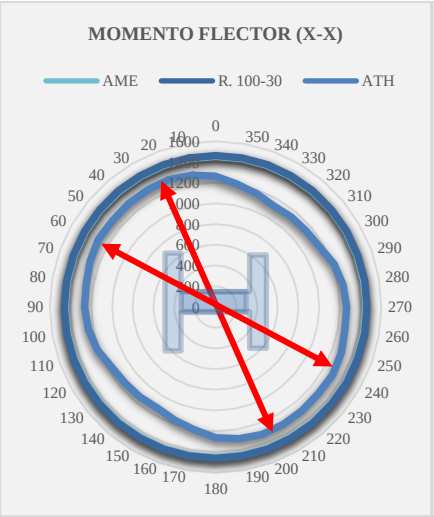

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ATH

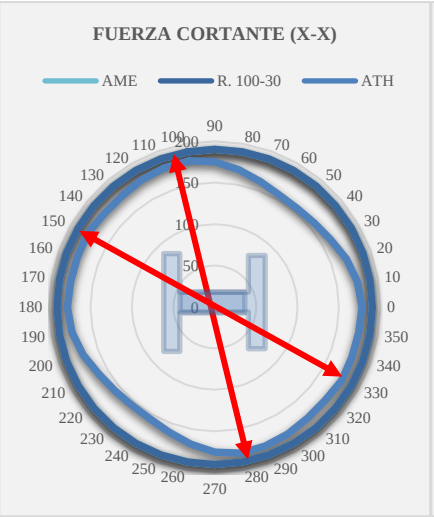

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R. 100-30
ATH

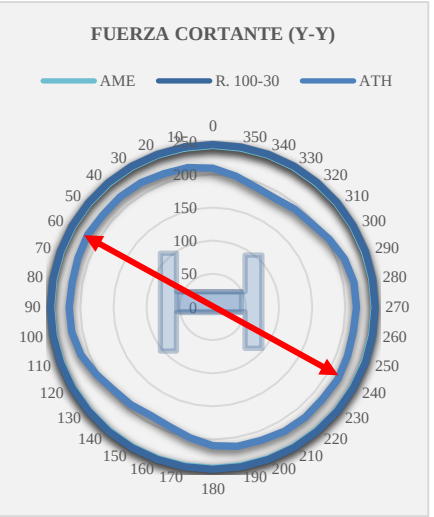

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ATH

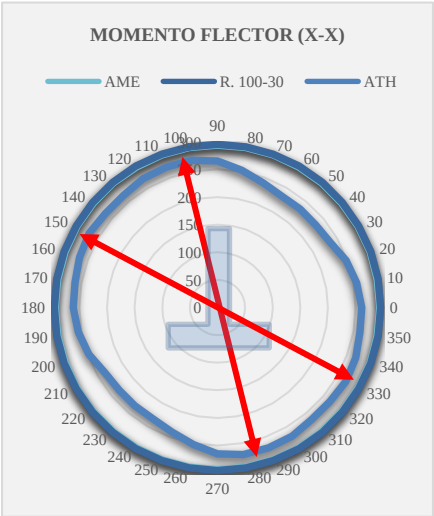

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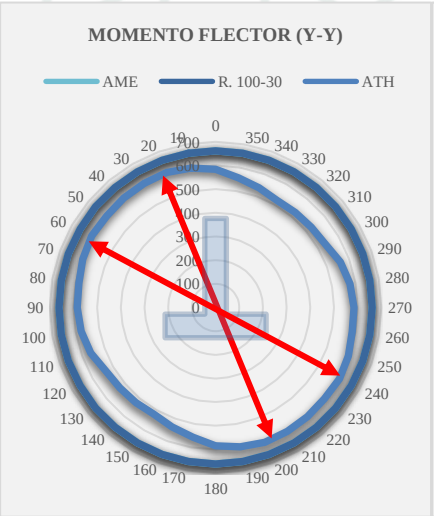

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ATH

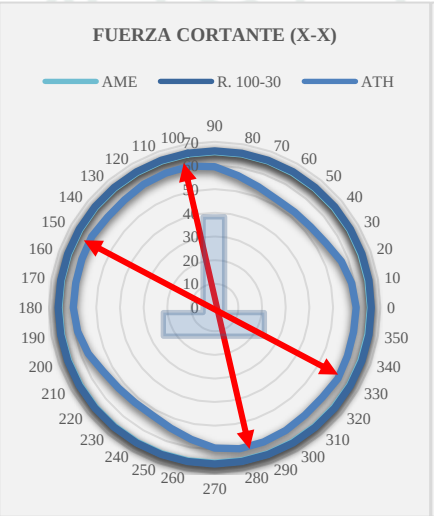

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ATH

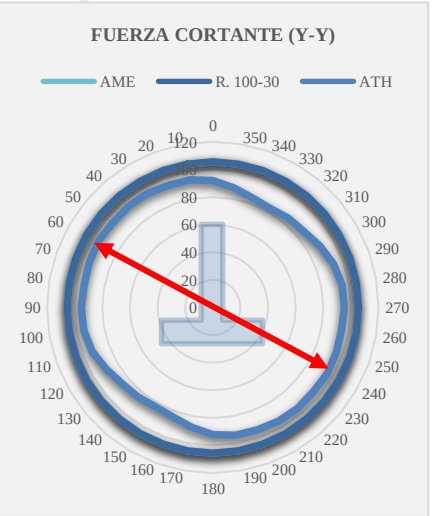

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R. 100-30
ATH

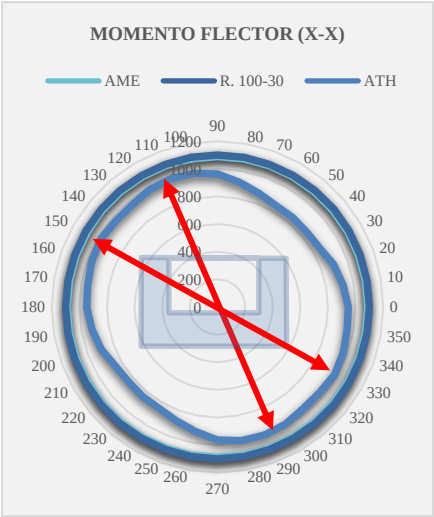

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

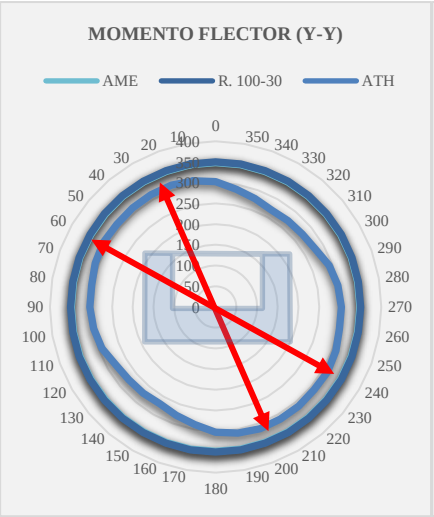

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ATH

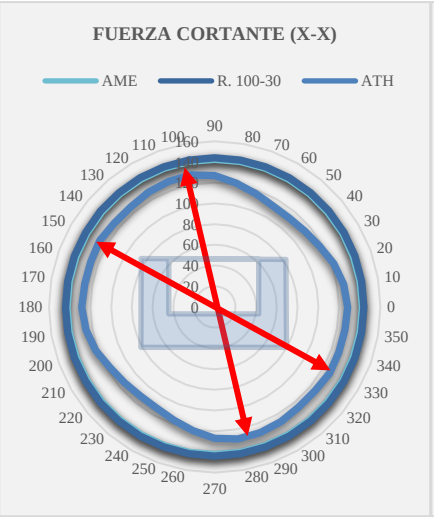

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ATH

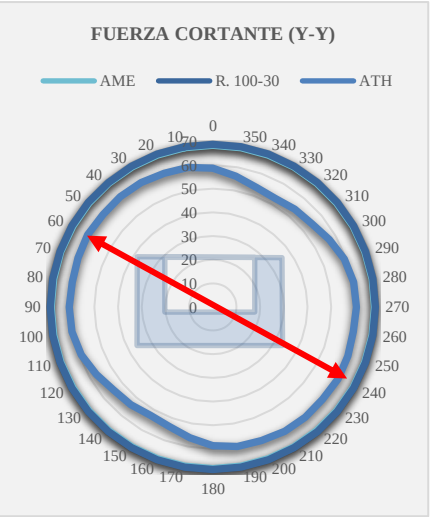

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ATH

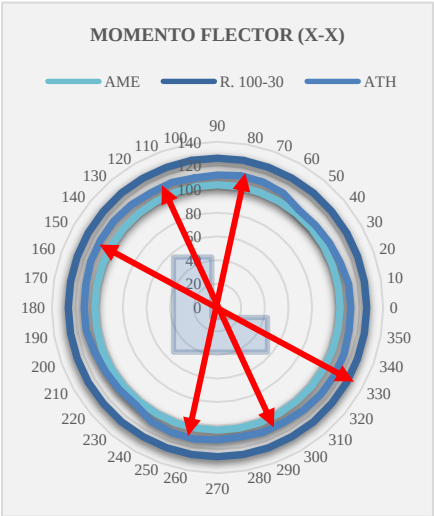

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R. 100-30
ATH

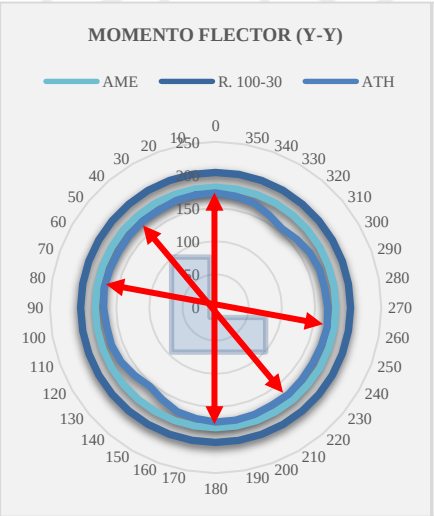

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ATH

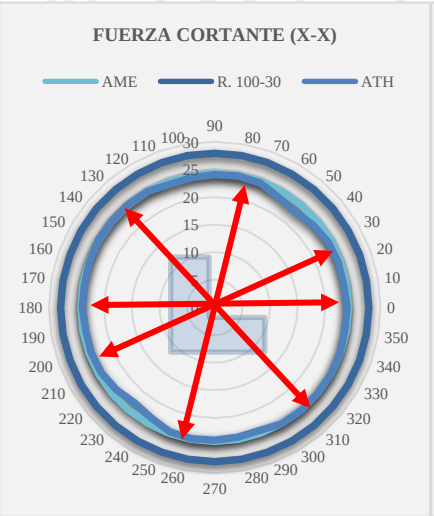

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R. 100-30
ATH

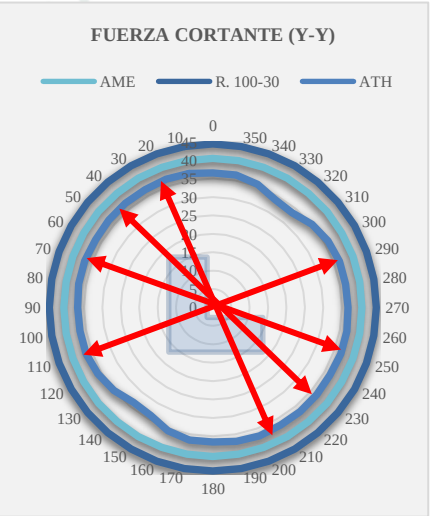

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

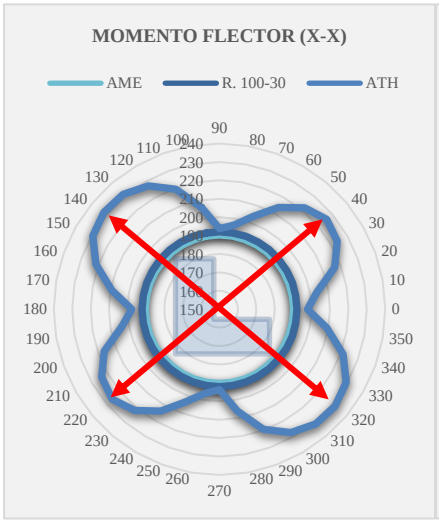

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R. 100-30
ATH

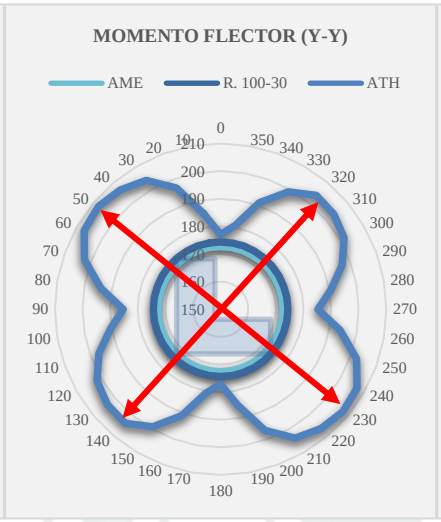

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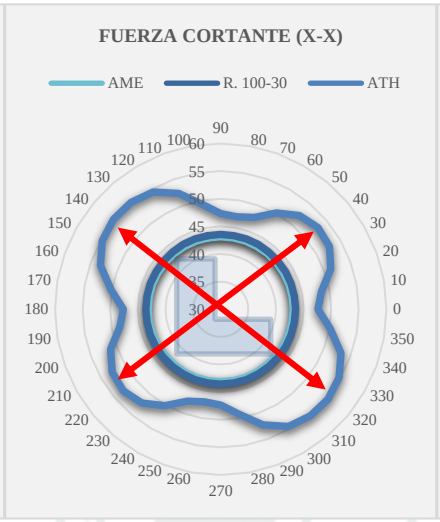

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ATH

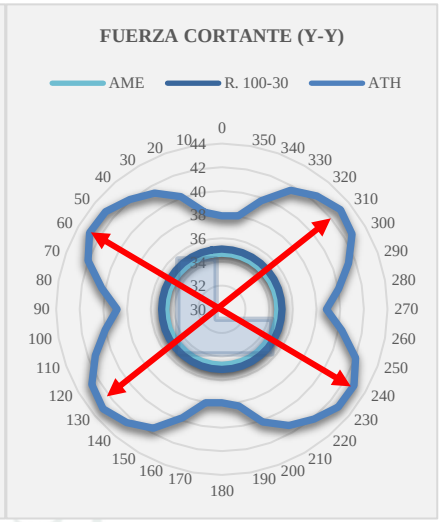
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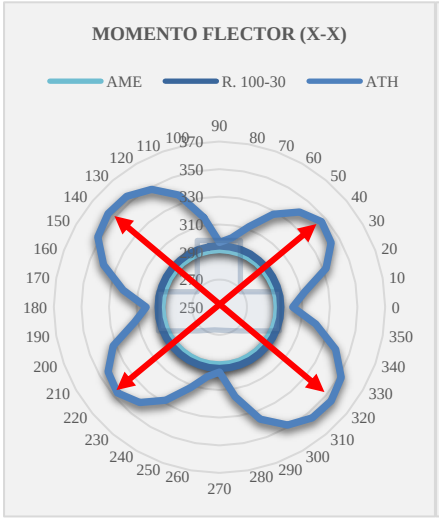
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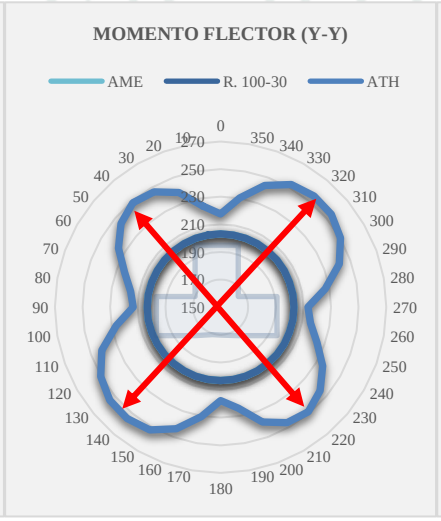


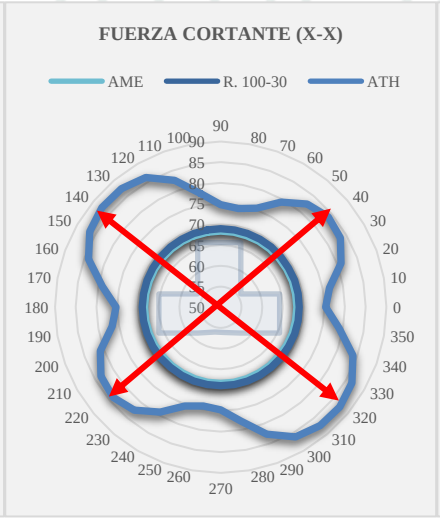


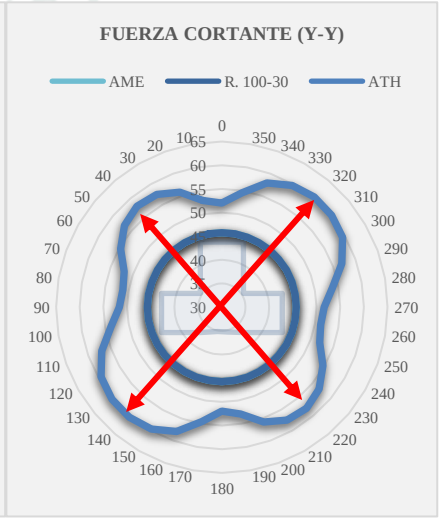


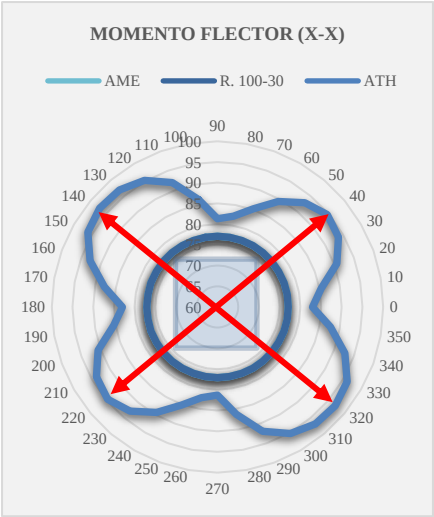


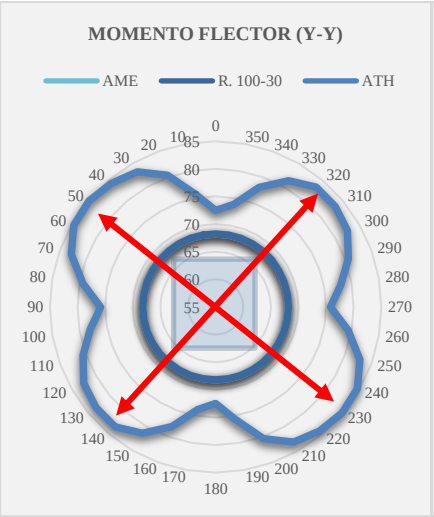


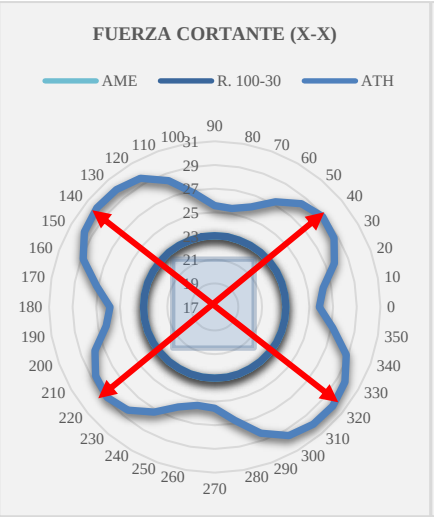


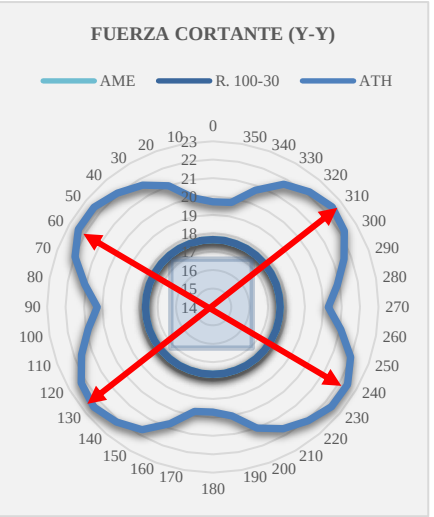


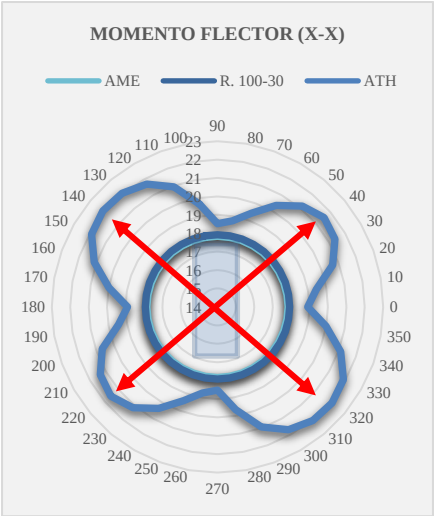


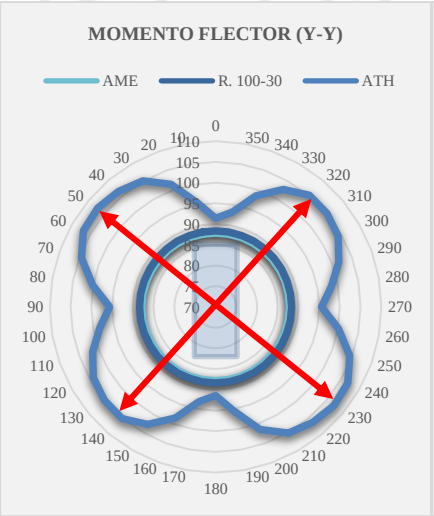

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

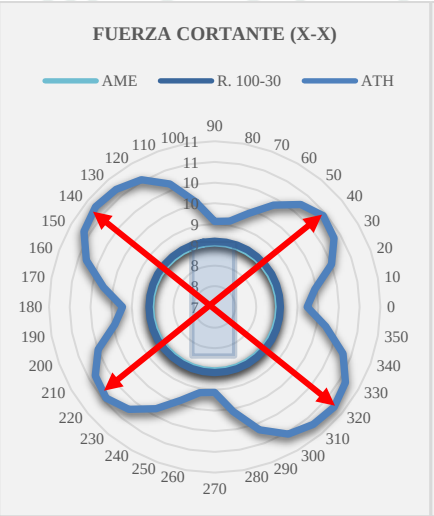

MOMENTO FLECTOR (Y-Y)
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ATH

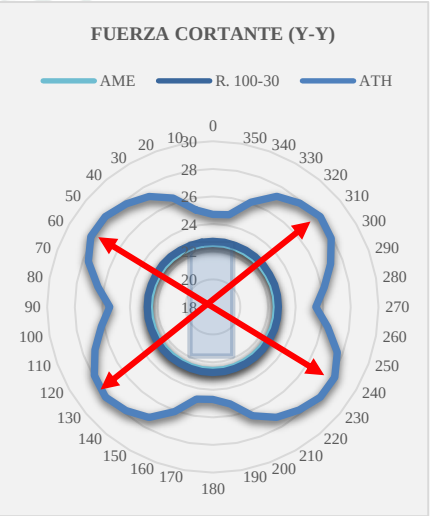

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

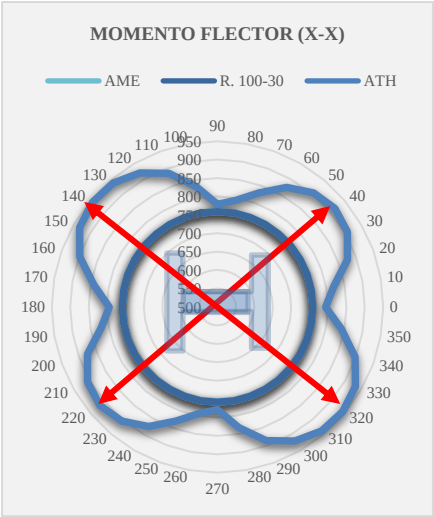

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

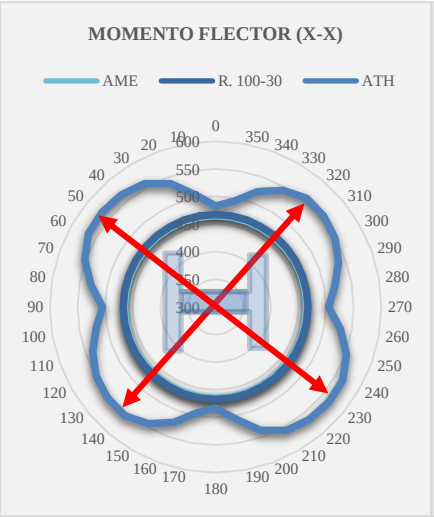

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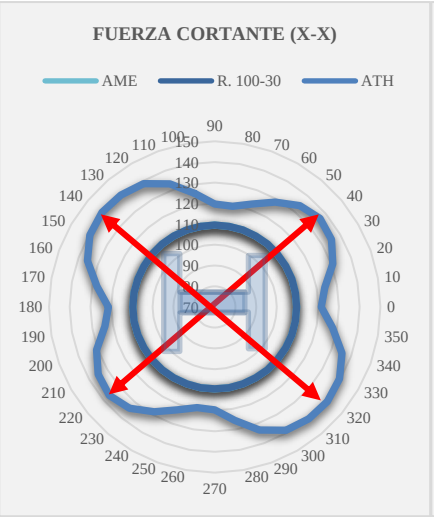

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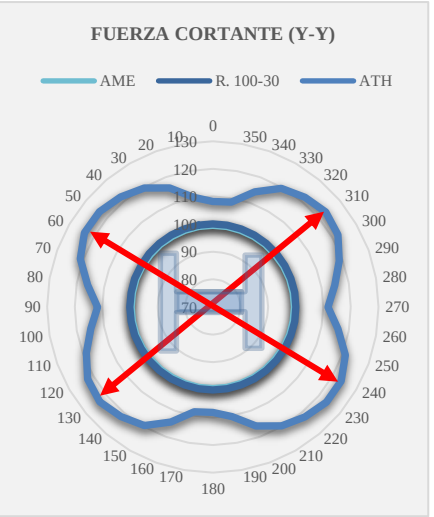

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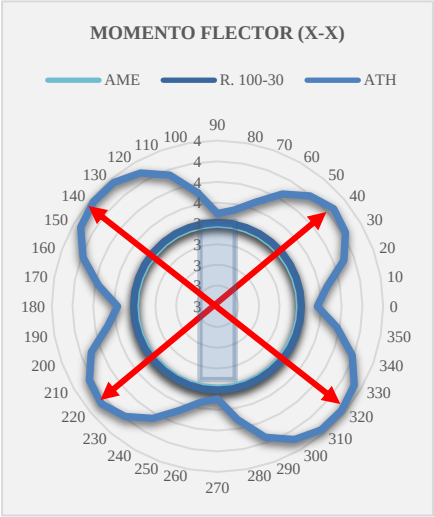

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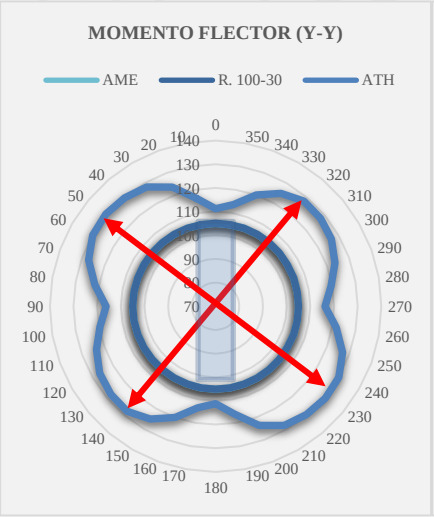

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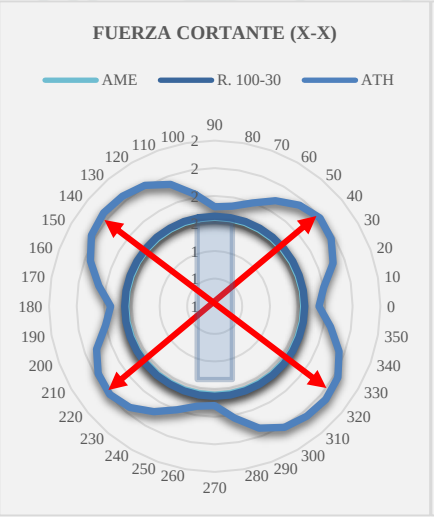

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R. 100-30
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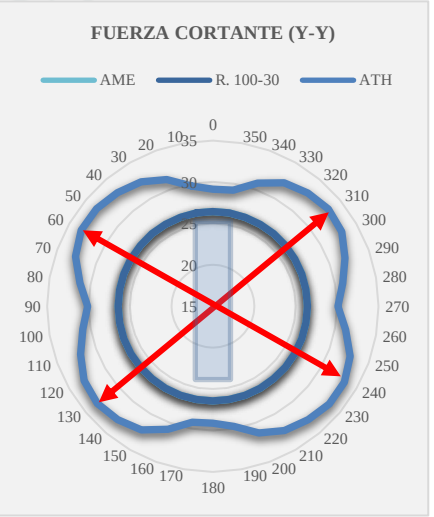

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R. 100-30
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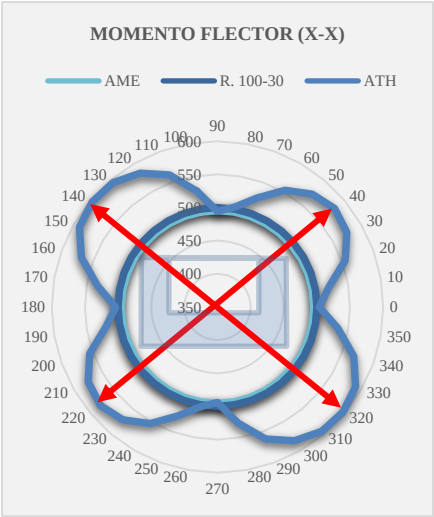

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

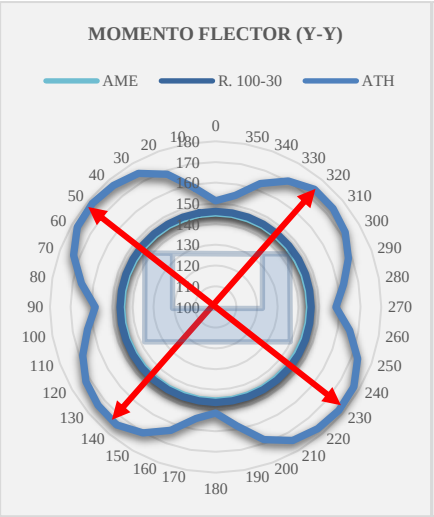

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R. 100-30
ATH

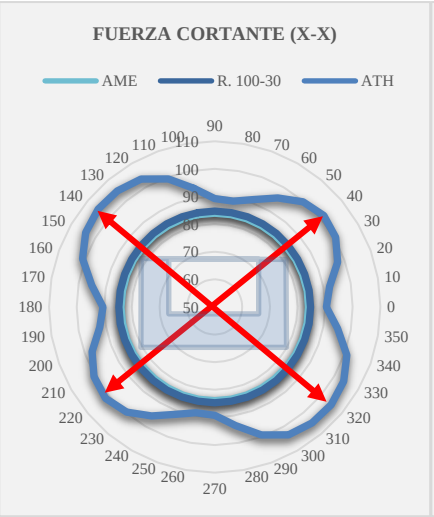

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

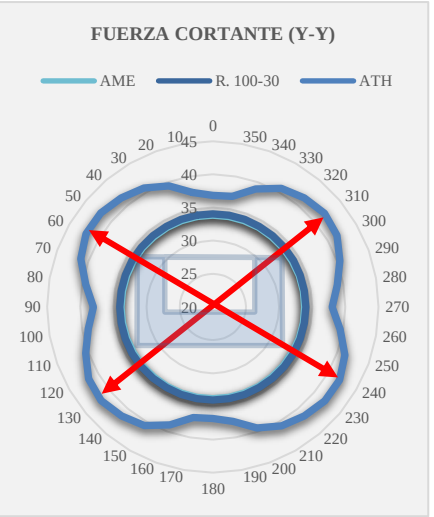

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

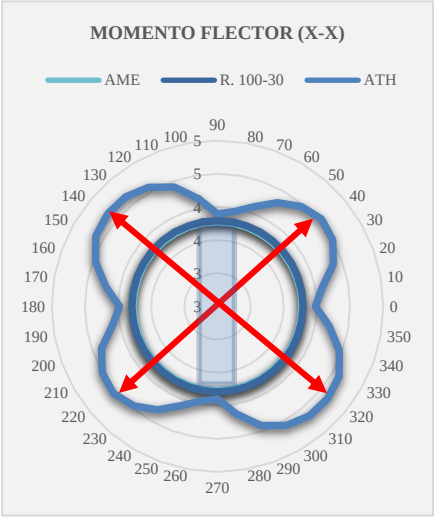

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

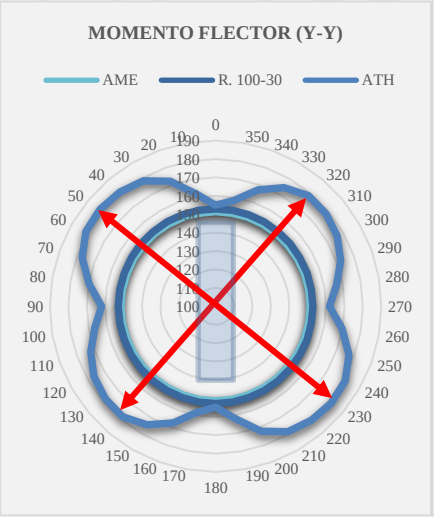

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

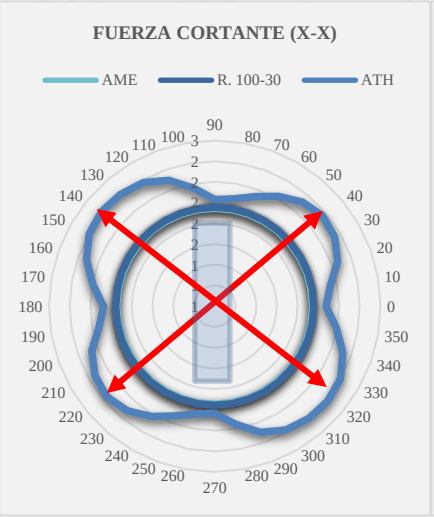

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

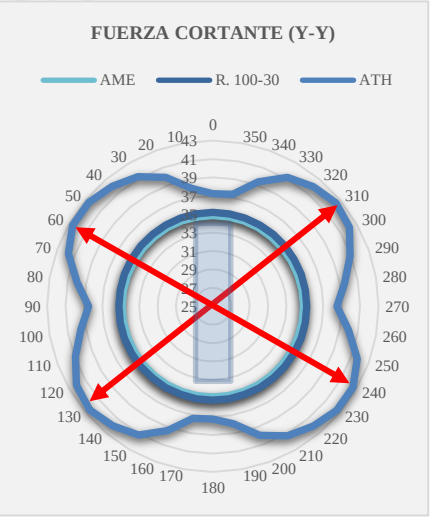

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

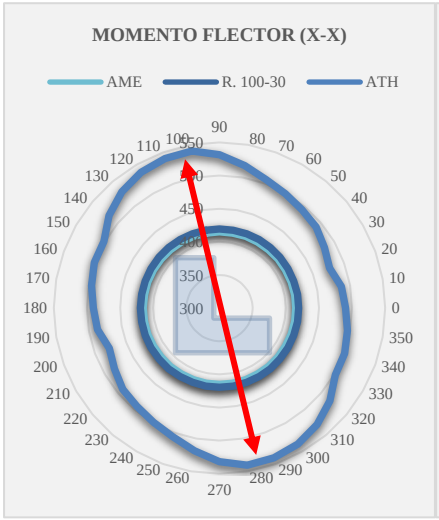

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

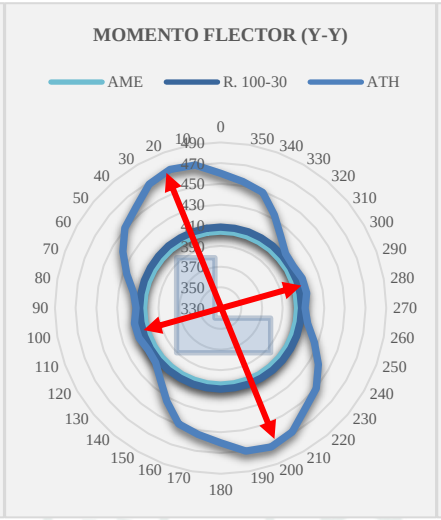

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

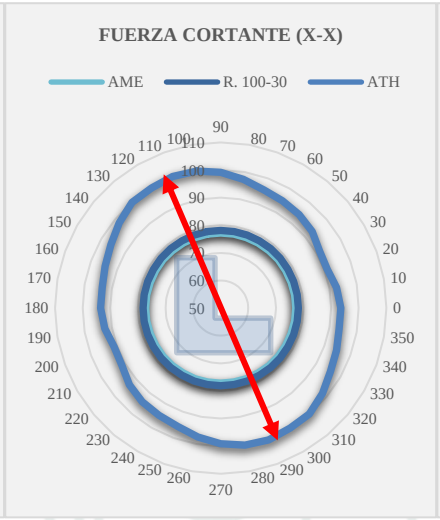

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

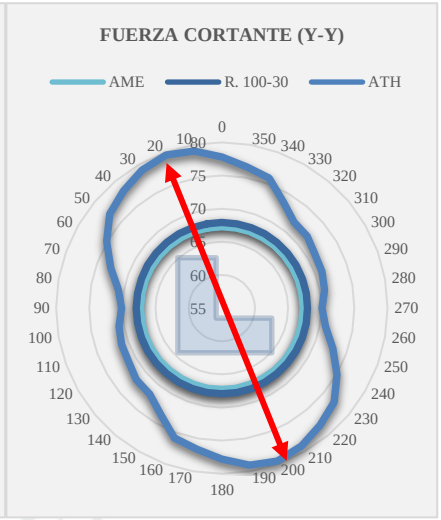
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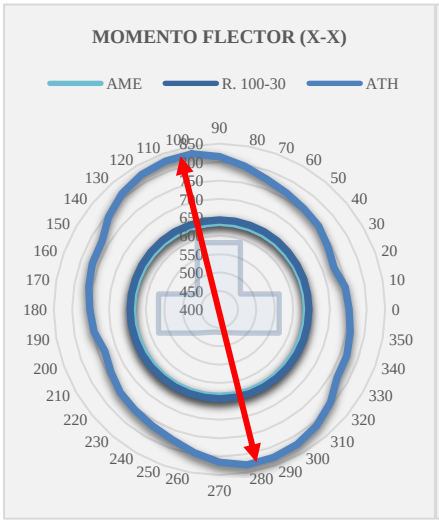
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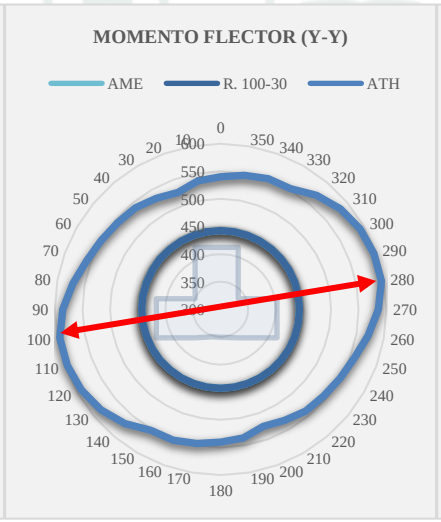

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

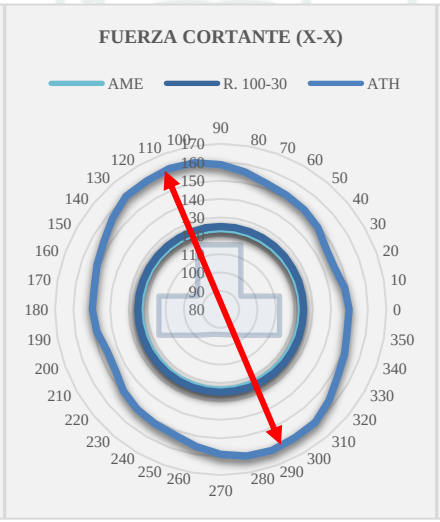

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

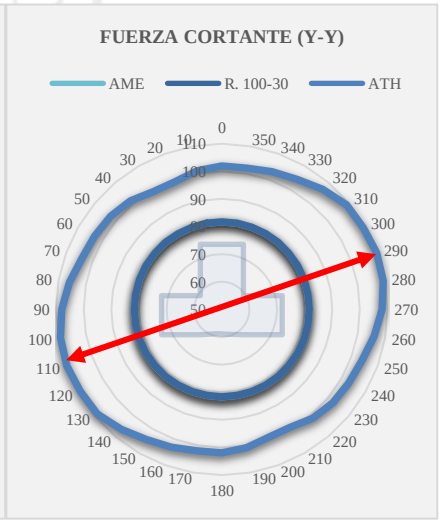

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

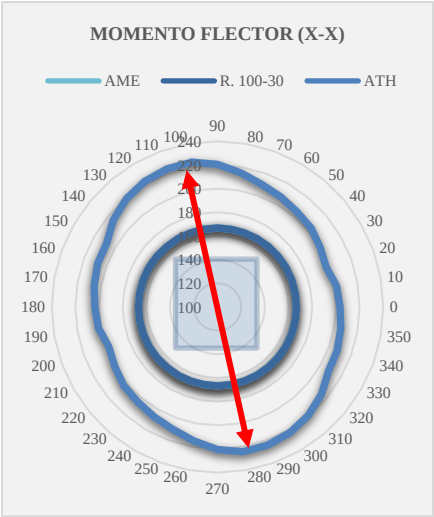

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

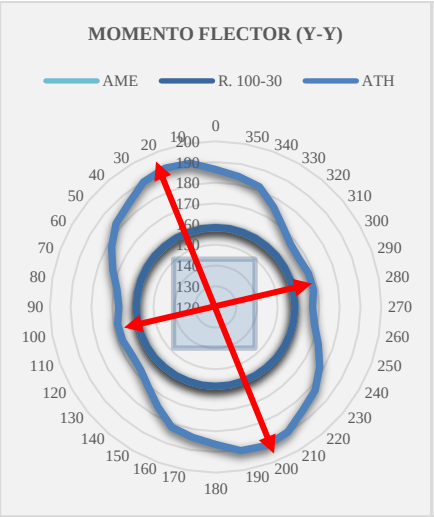

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

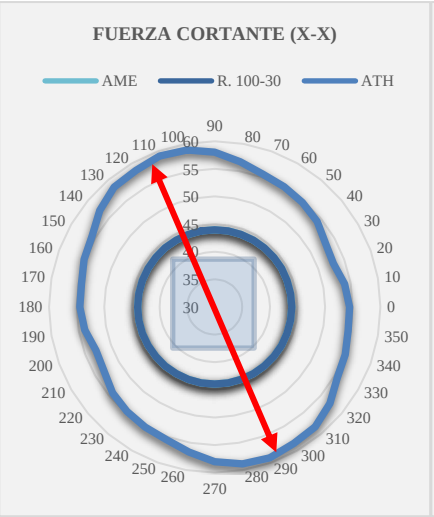

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

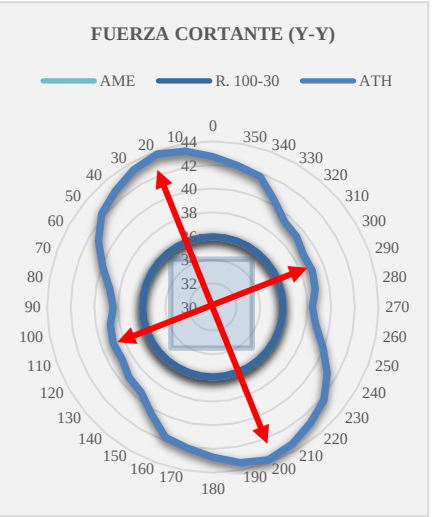

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

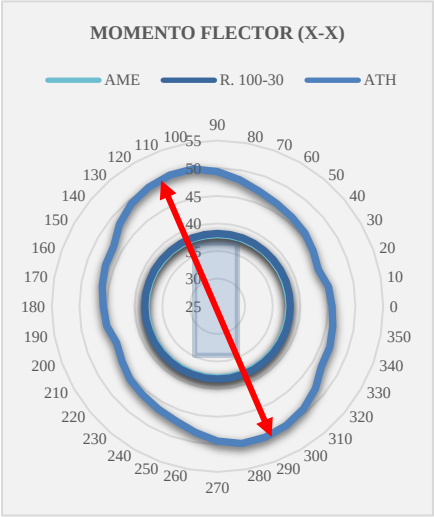

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

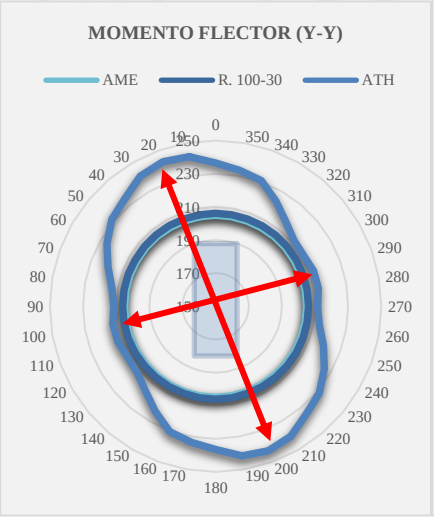

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

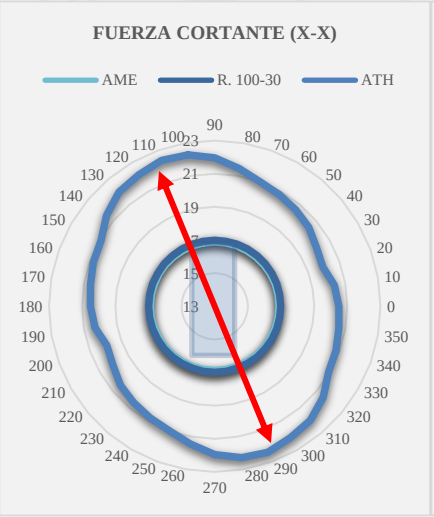

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

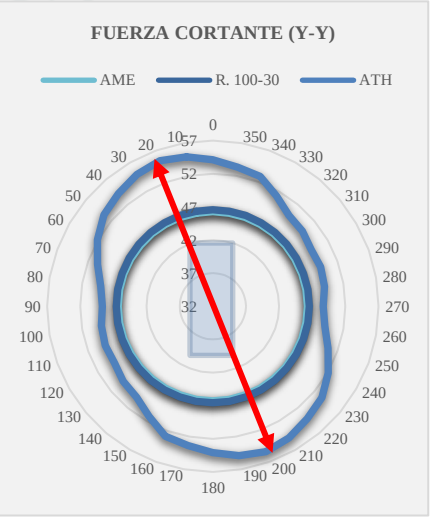

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

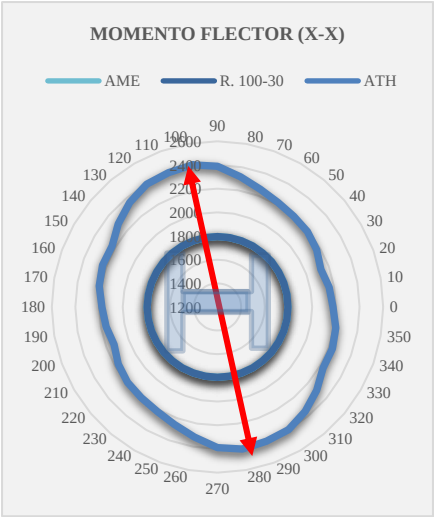

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

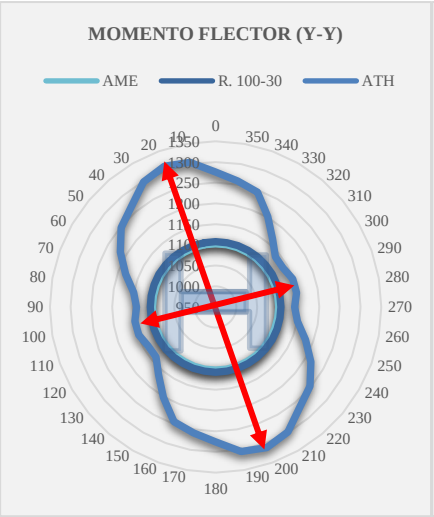

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

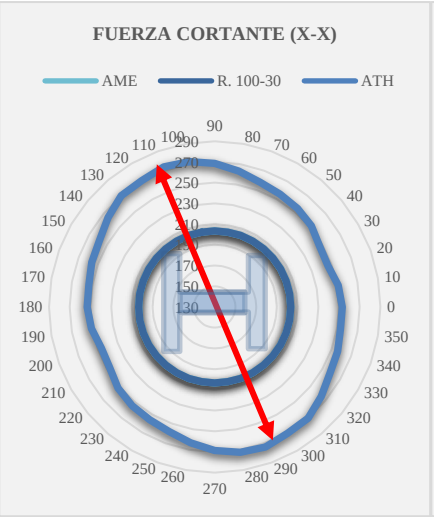

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

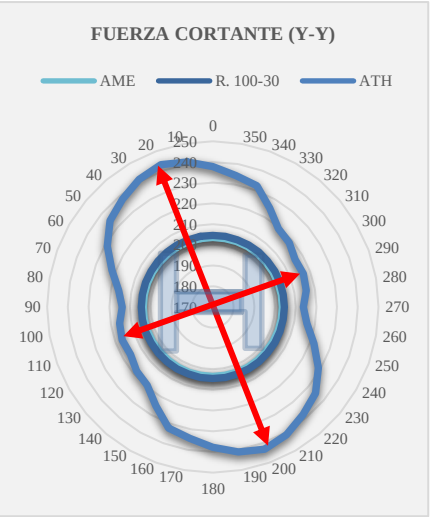

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

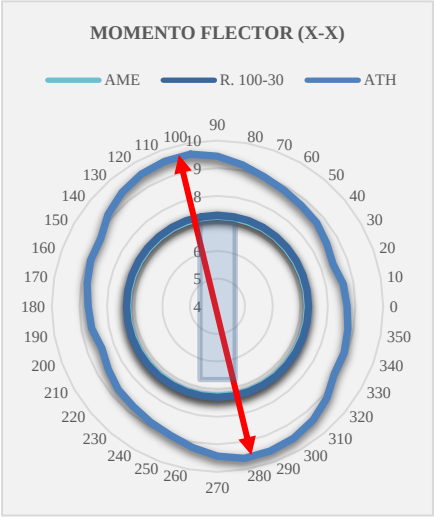

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

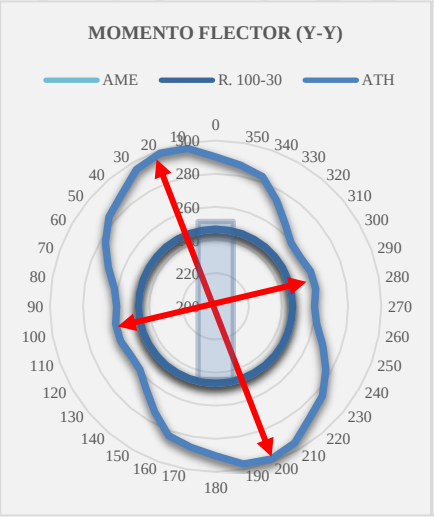

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

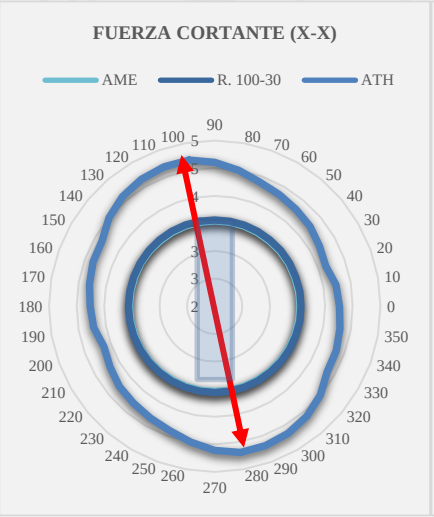

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

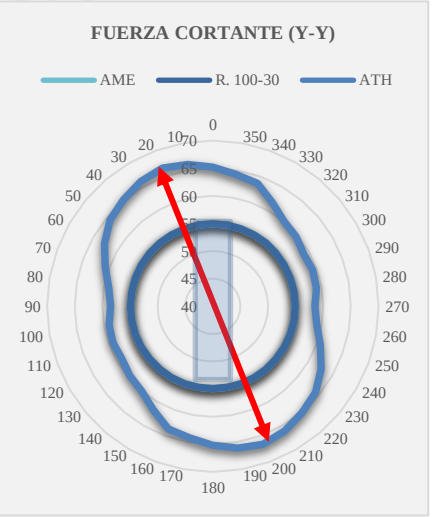

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

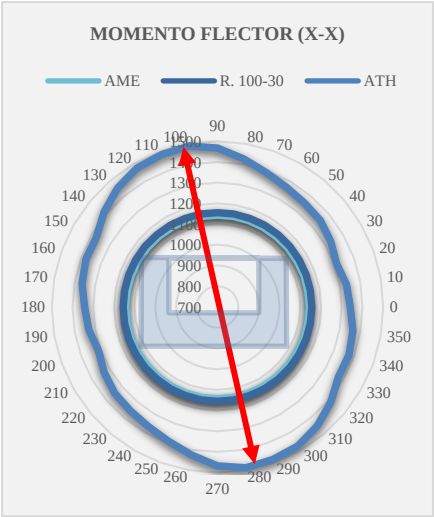

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

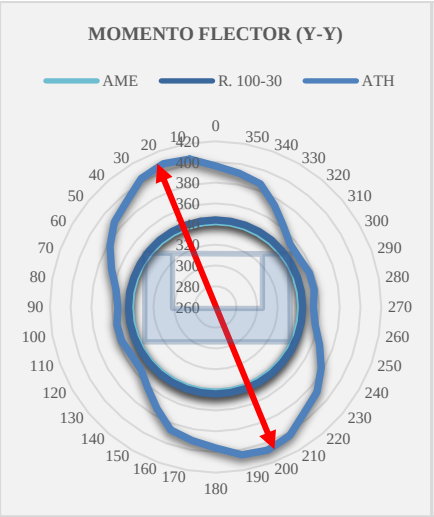

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

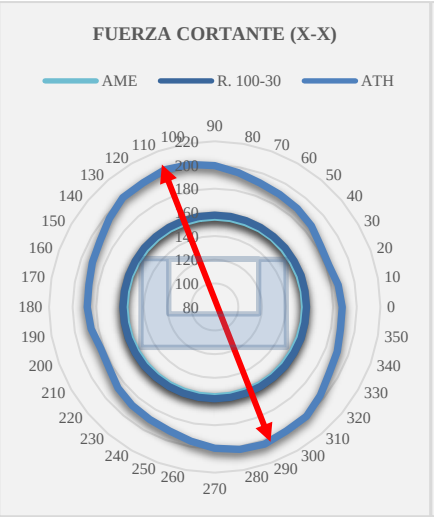

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

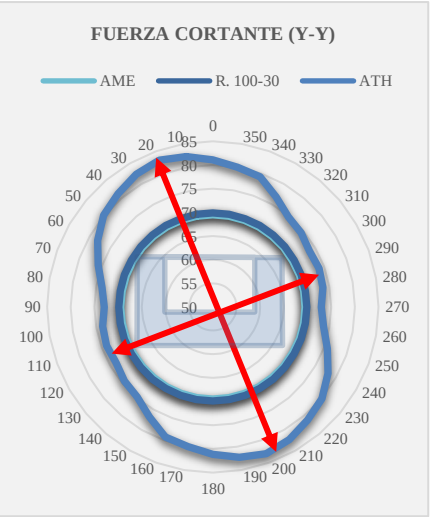

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

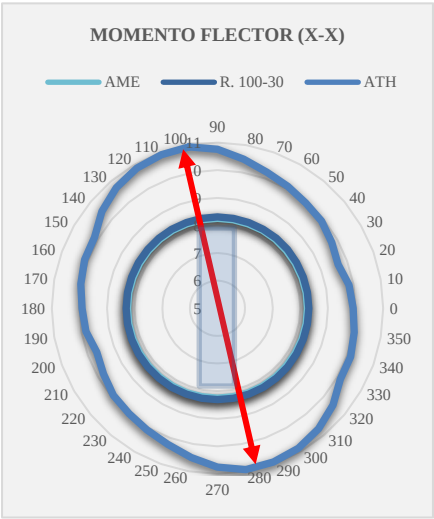

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

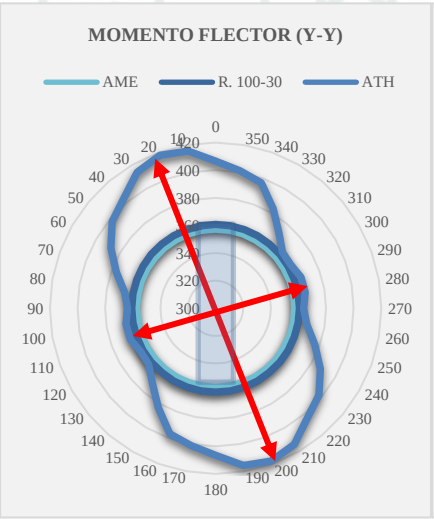

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AME
R. 100-30
ATH

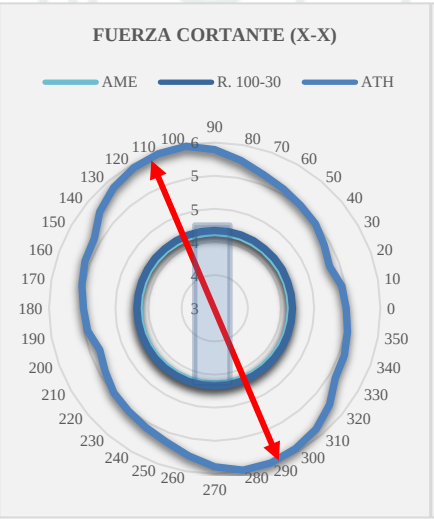

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

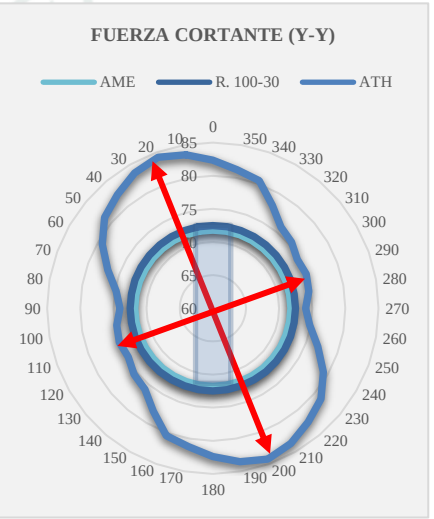

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

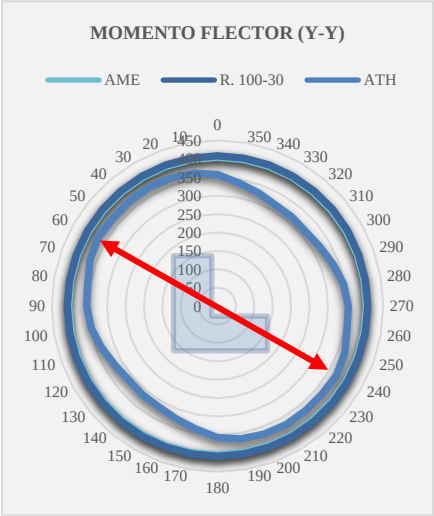

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

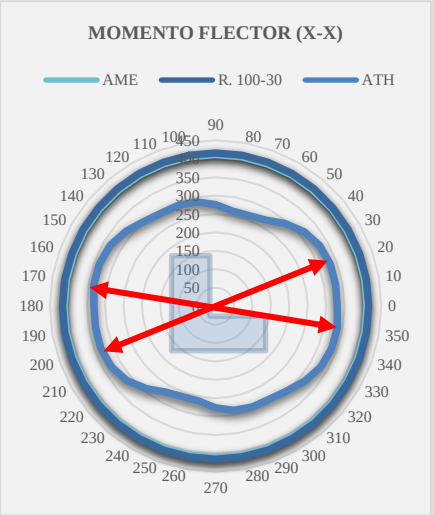

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

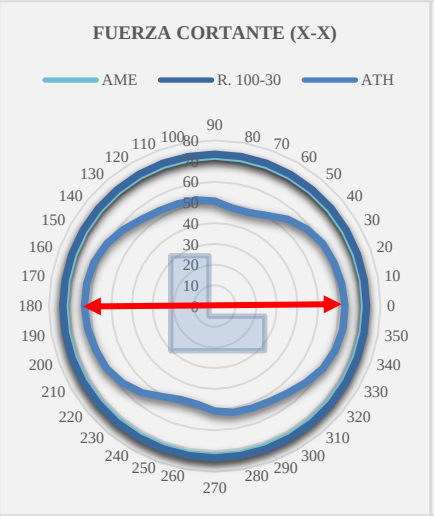

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

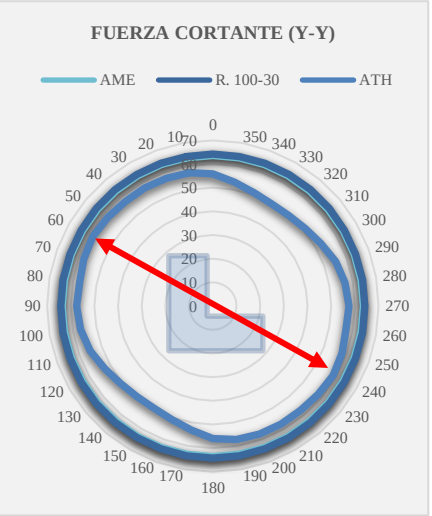

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

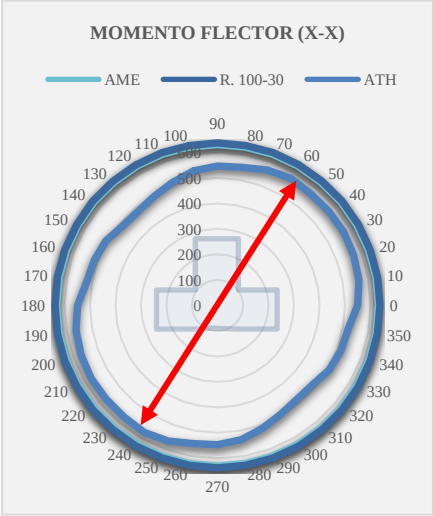
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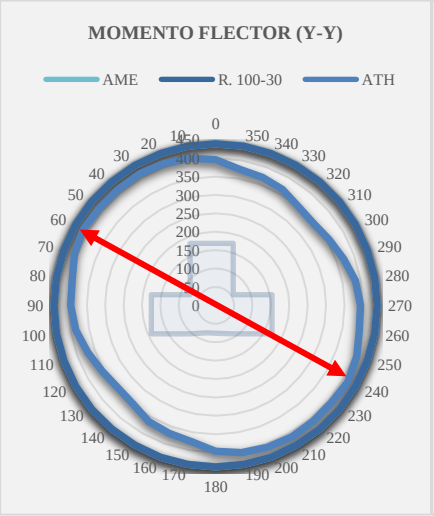


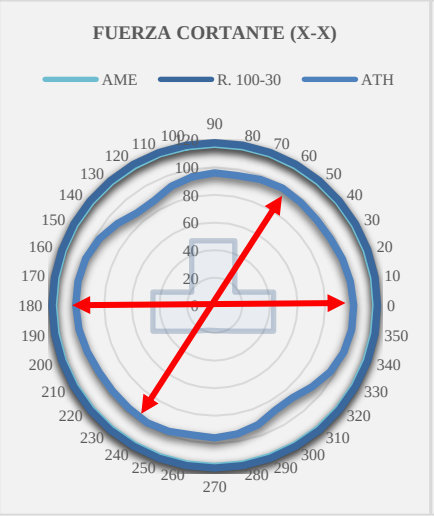


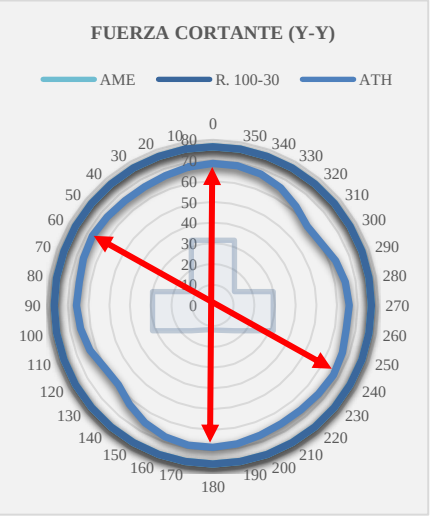


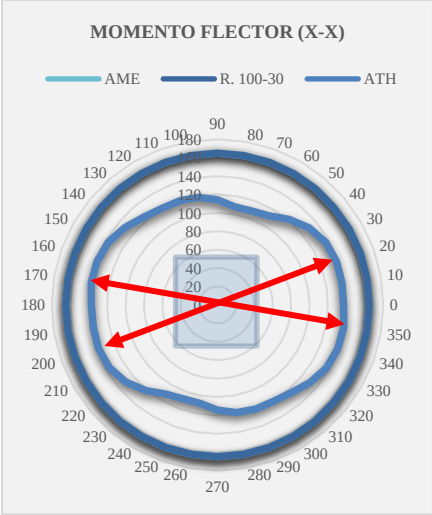


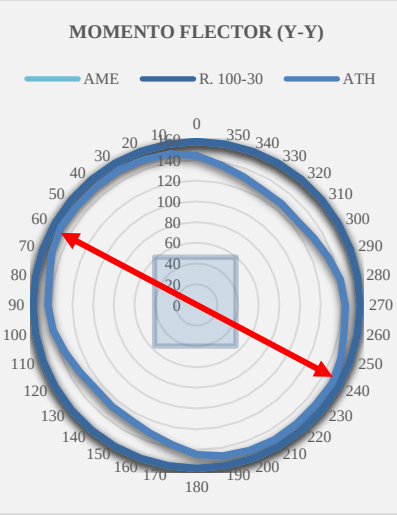


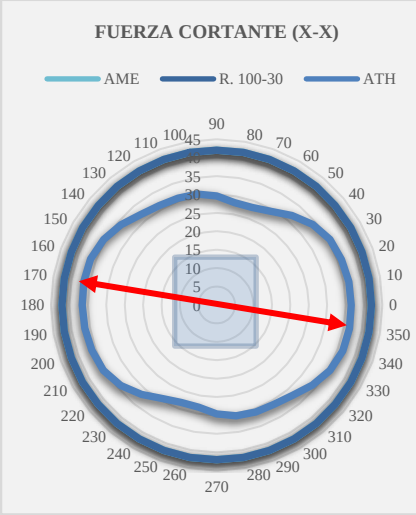


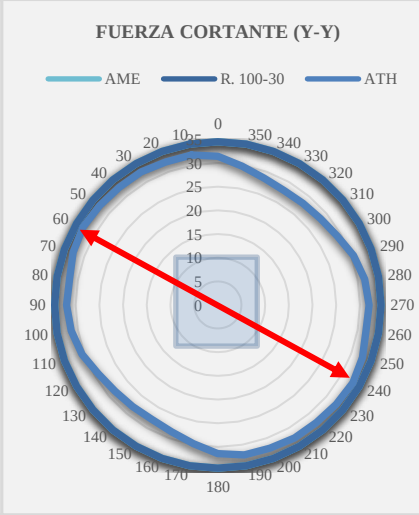


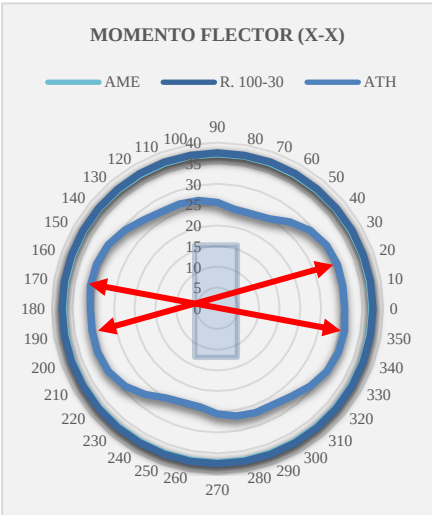


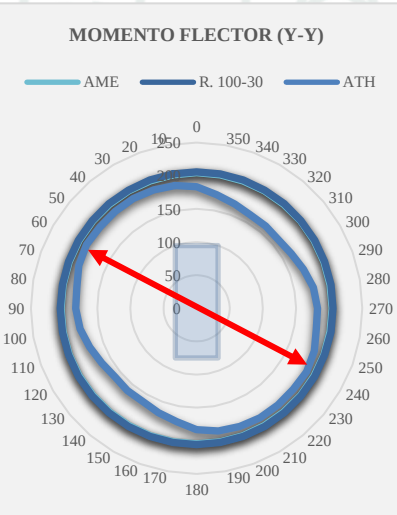

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

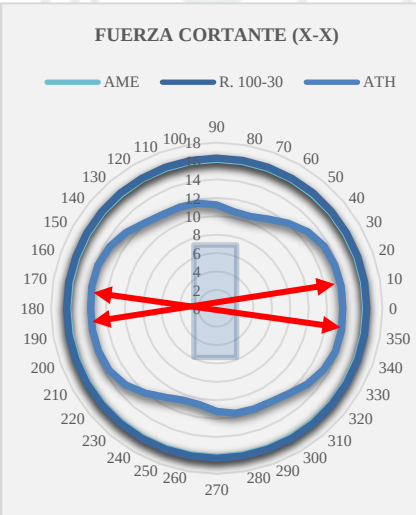

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

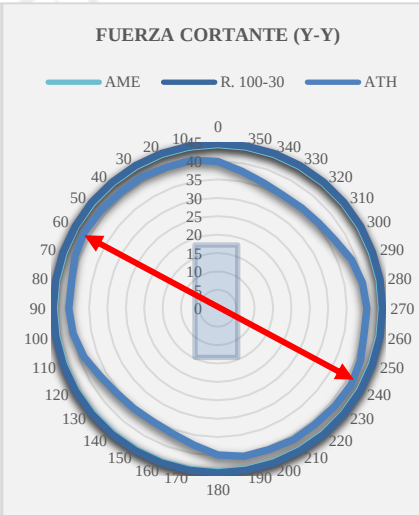

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

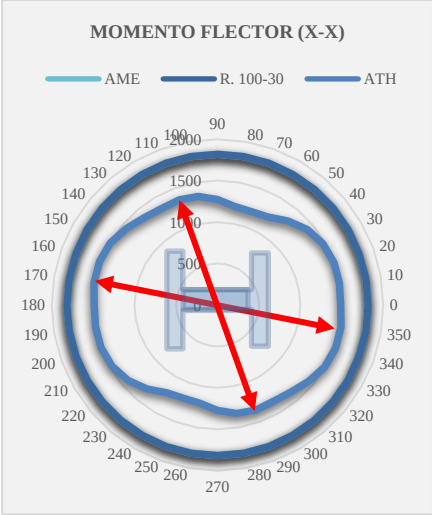

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

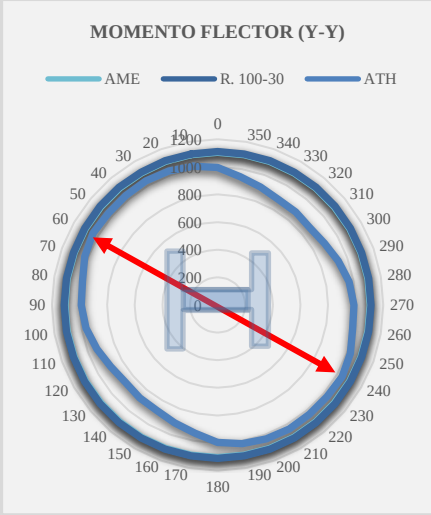

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

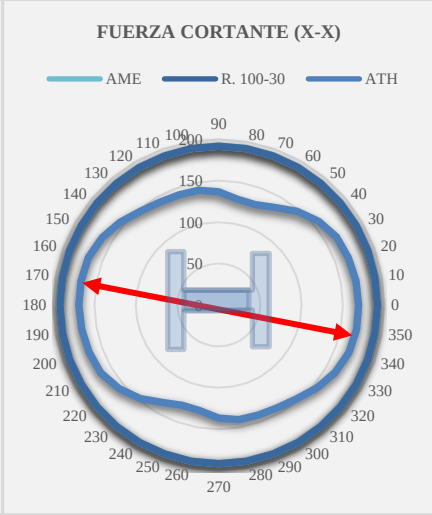

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R. 100-30
ATH

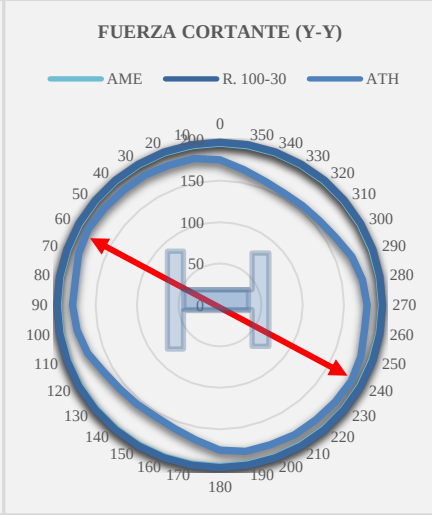

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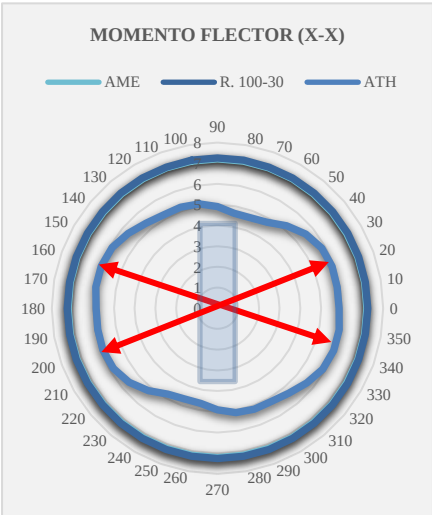

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ATH

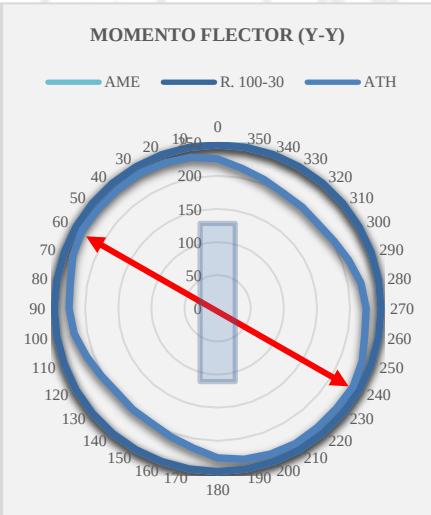

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ATH

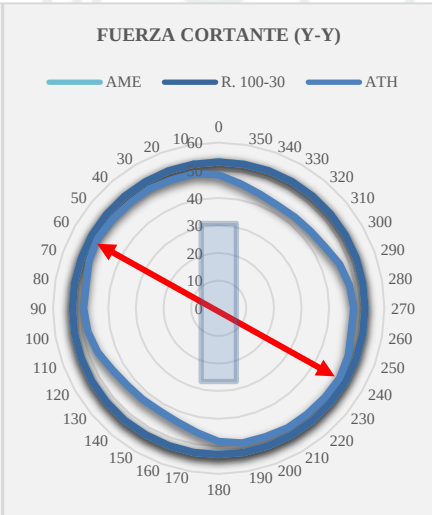

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ATH

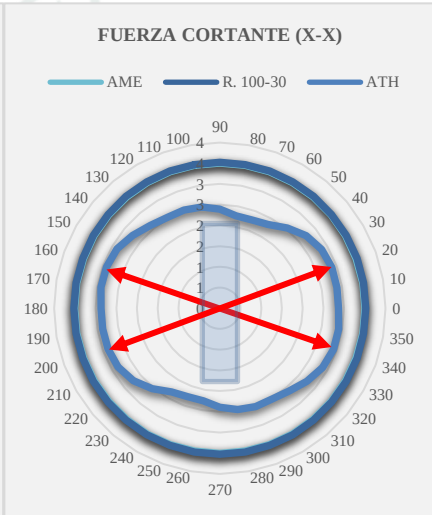

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ATH

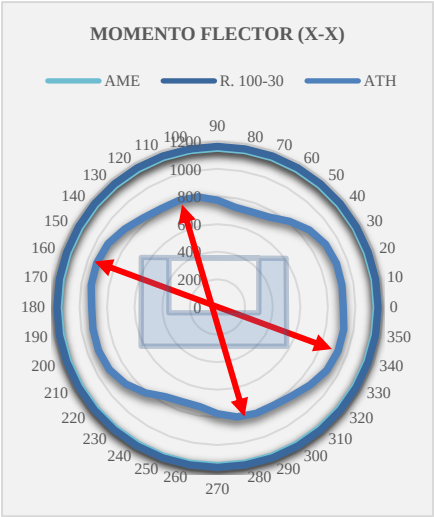

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

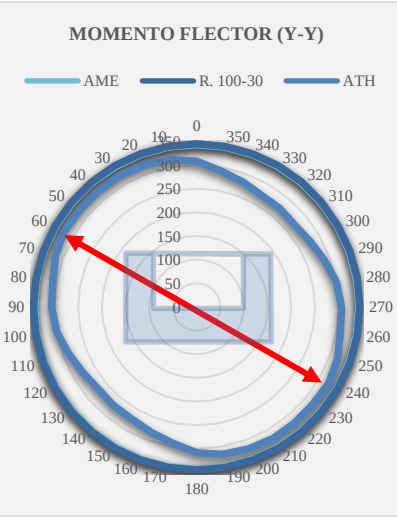

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

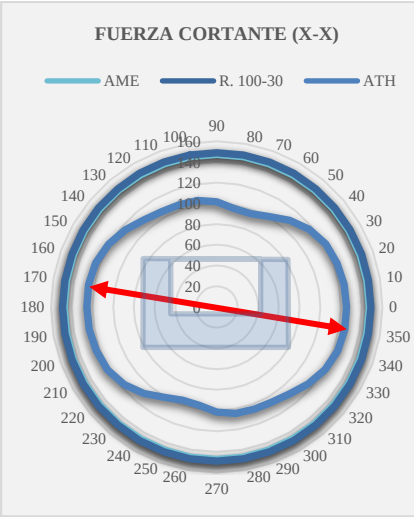

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ATH

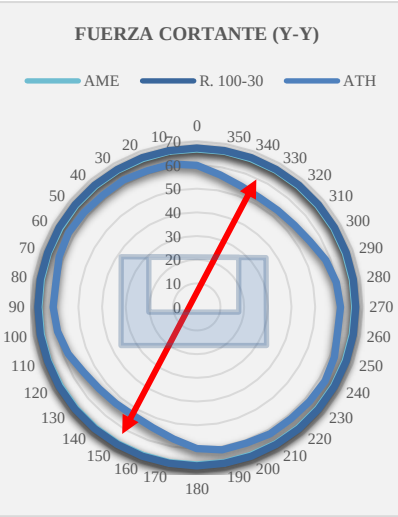

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R. 100-30
ATH

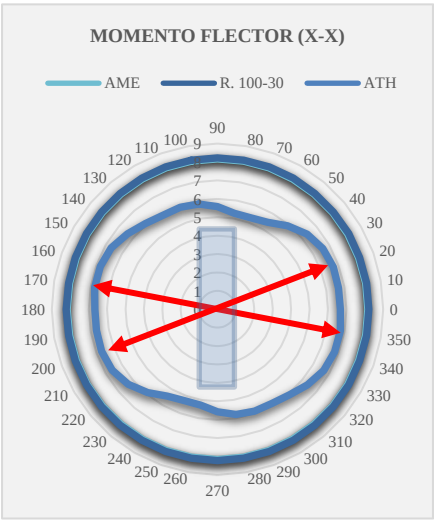

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AME
R. 100-30
ATH

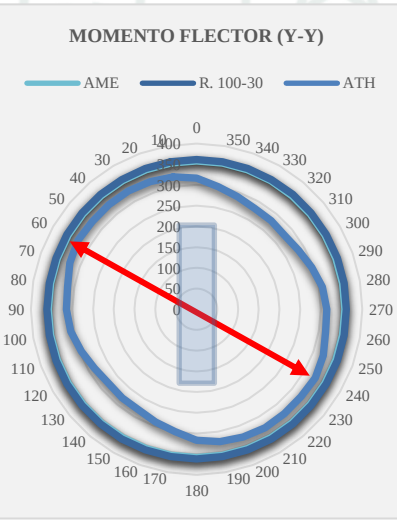

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

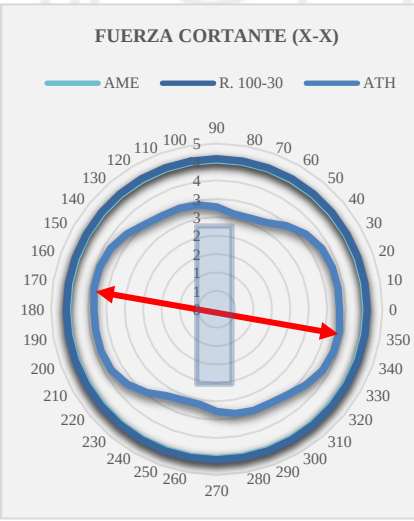

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

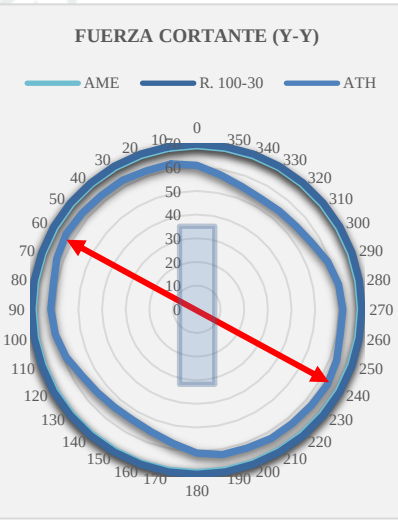

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

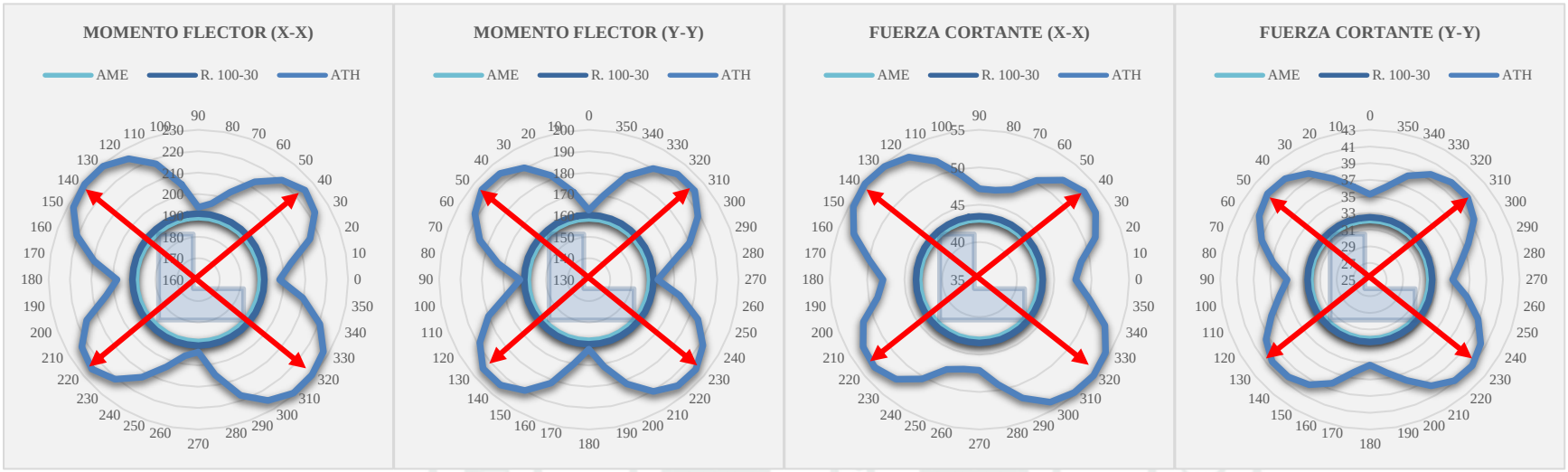

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

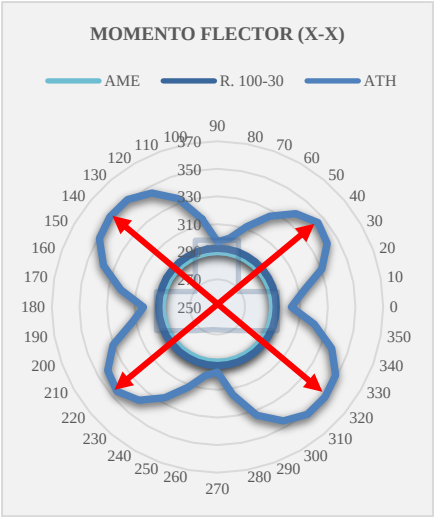

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

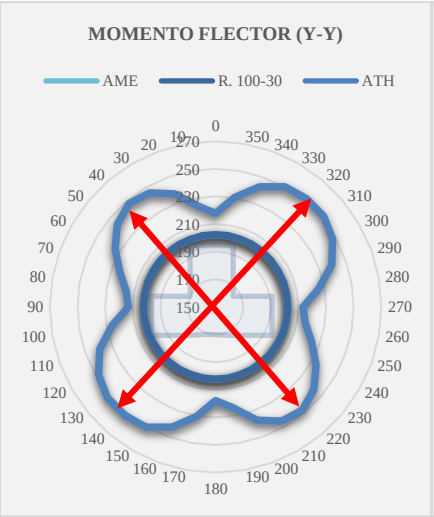

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AME
R. 100-30
ATH

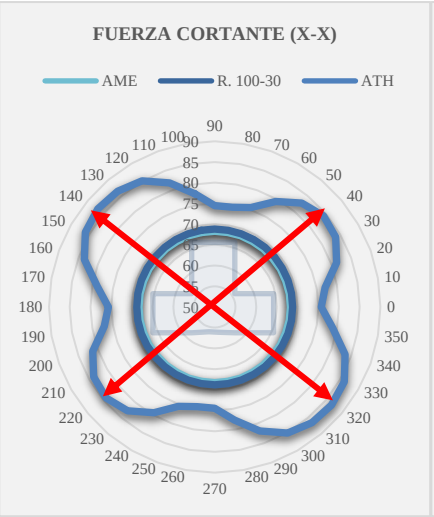
MODELO 3

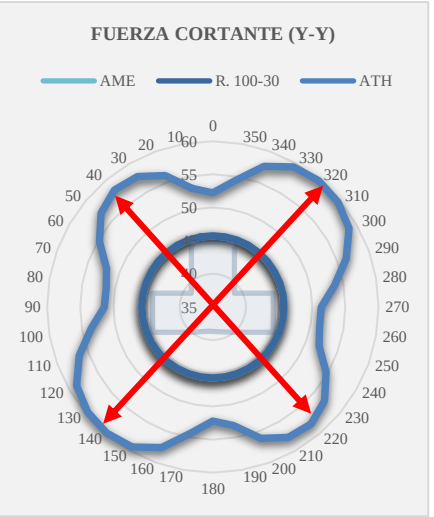
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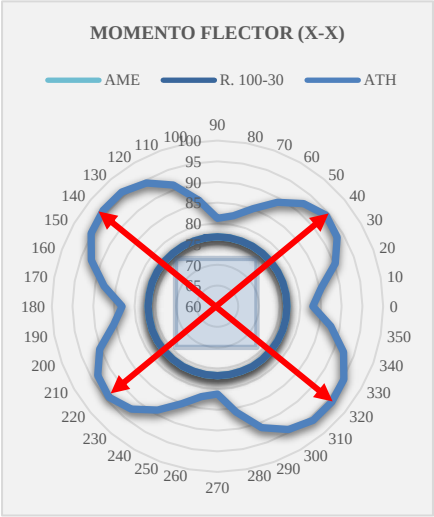


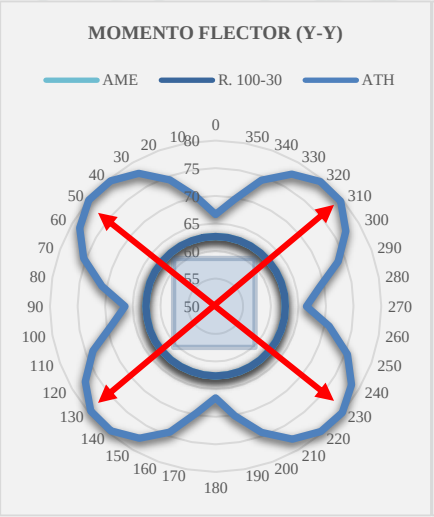

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

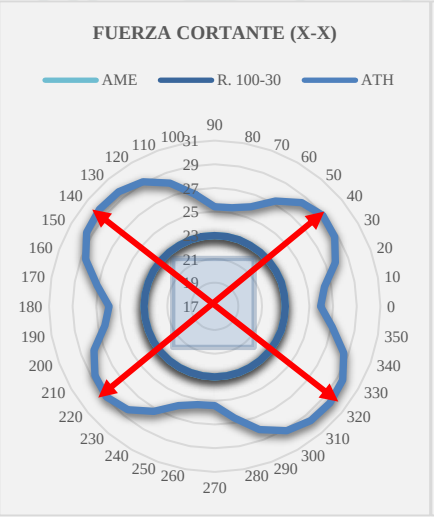

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

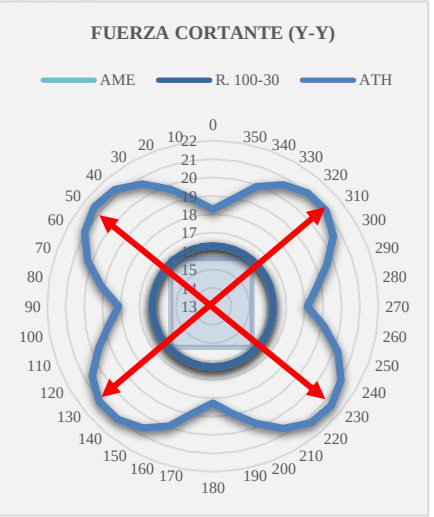

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

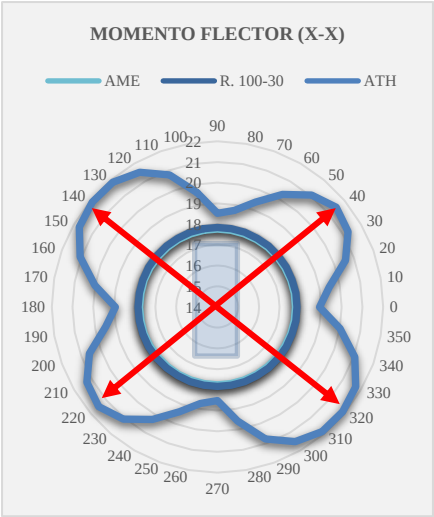

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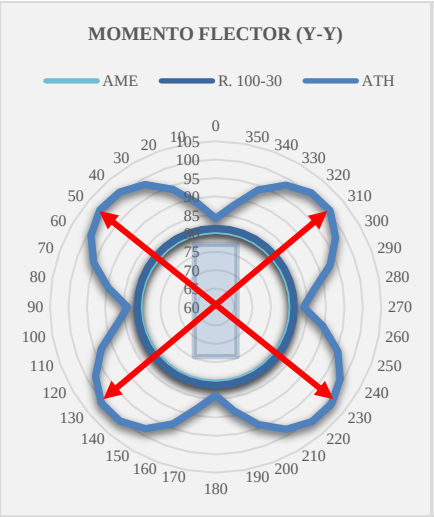

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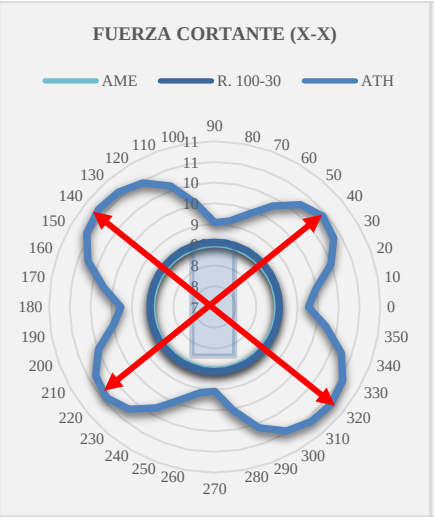

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ATH

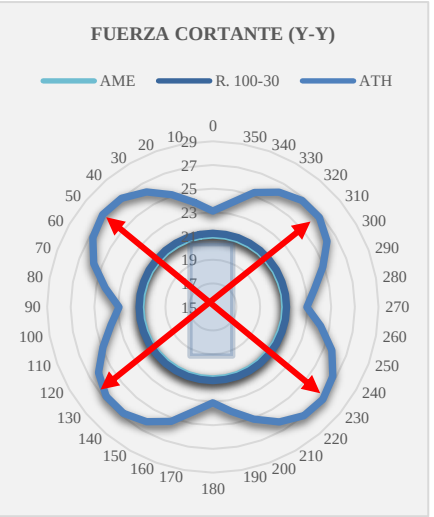

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R. 100-30
ATH

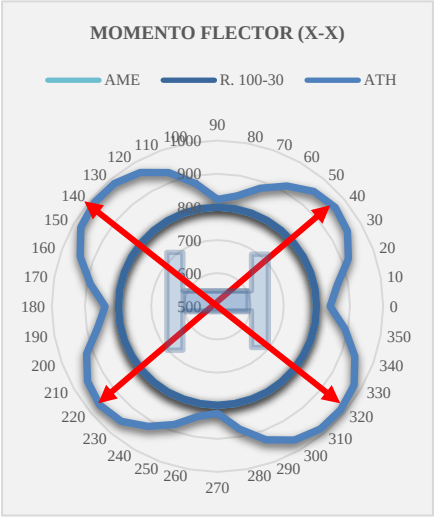

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R. 100-30
ATH

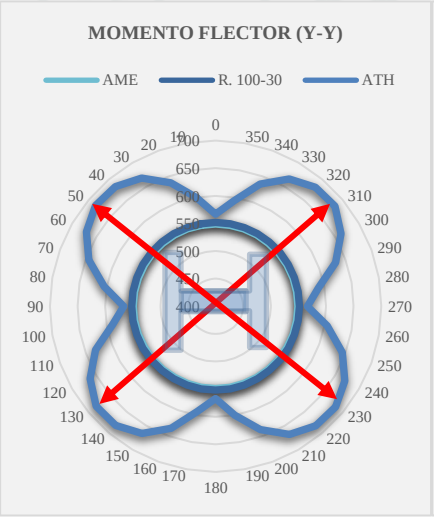

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ATH

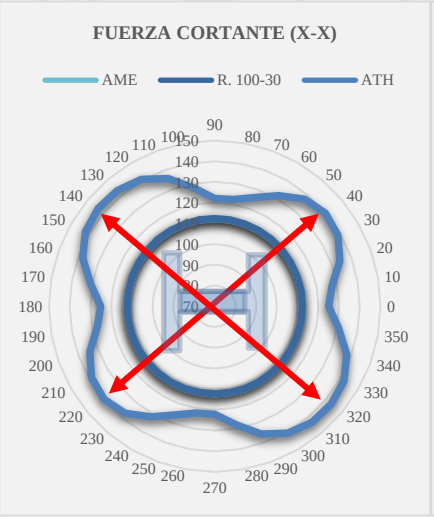

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ATH

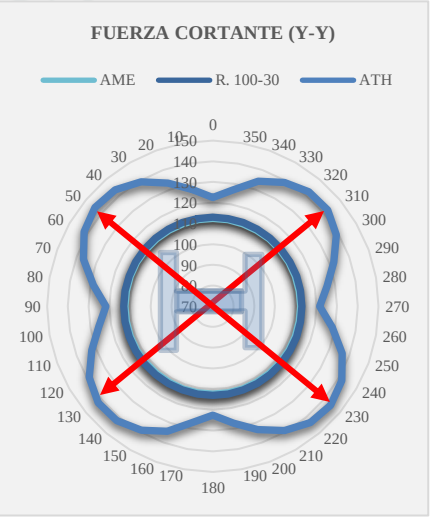

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ATH

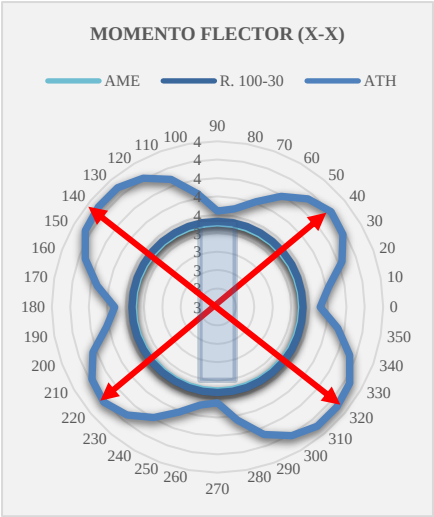

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R. 100-30
ATH

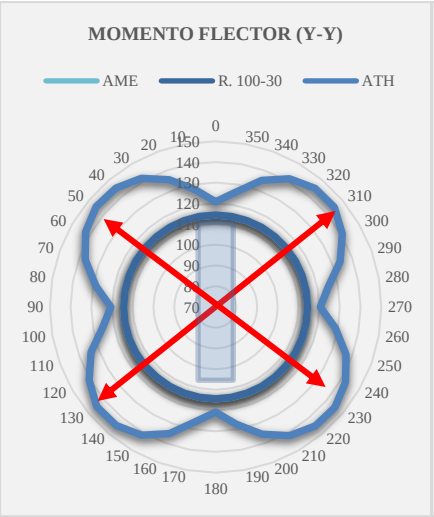

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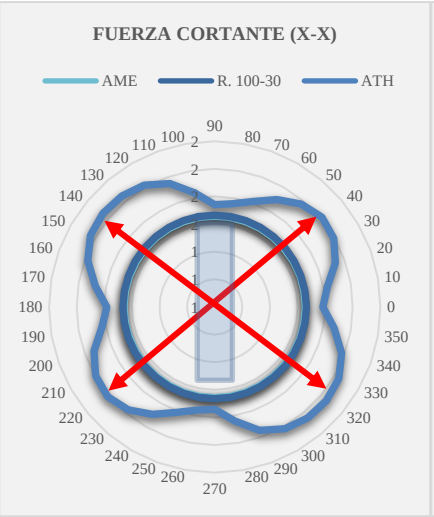

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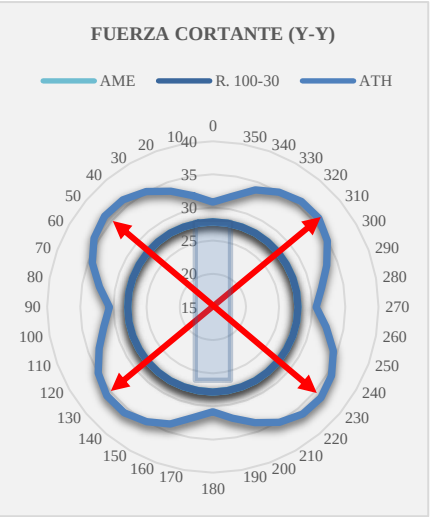

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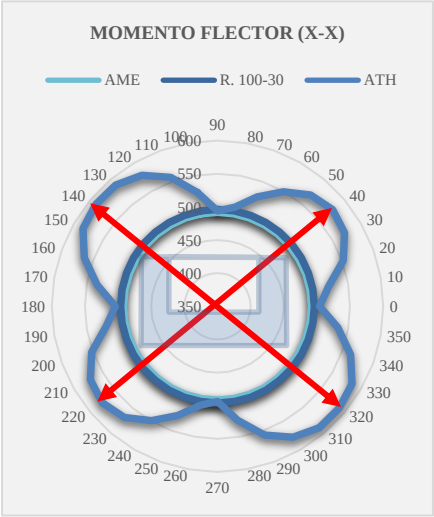

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R. 100-30
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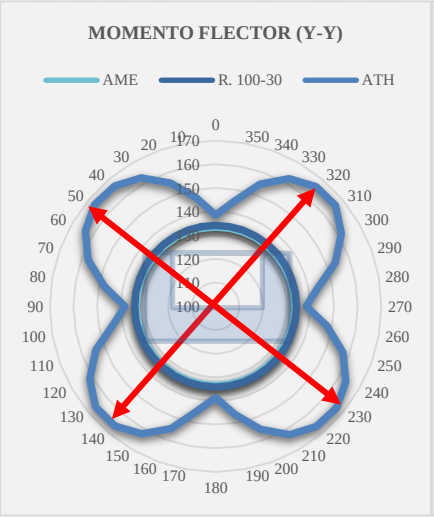

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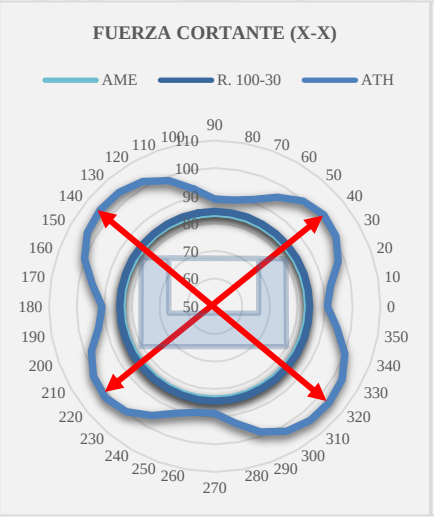

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R. 100-30
ATH

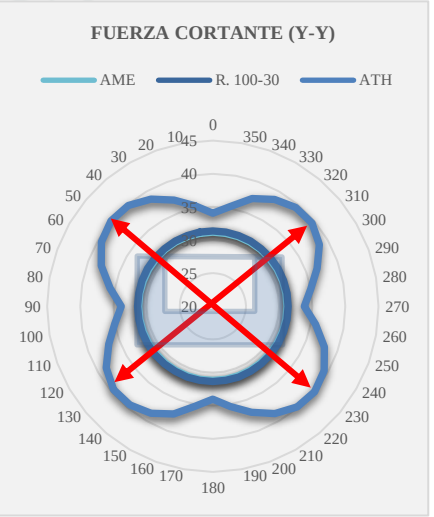

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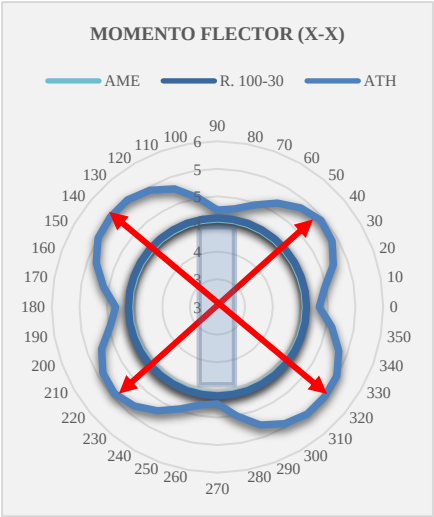

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

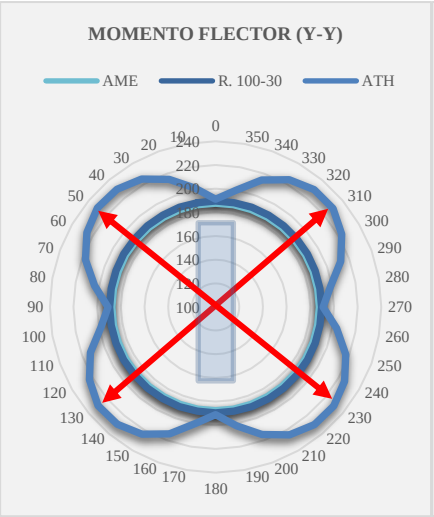

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

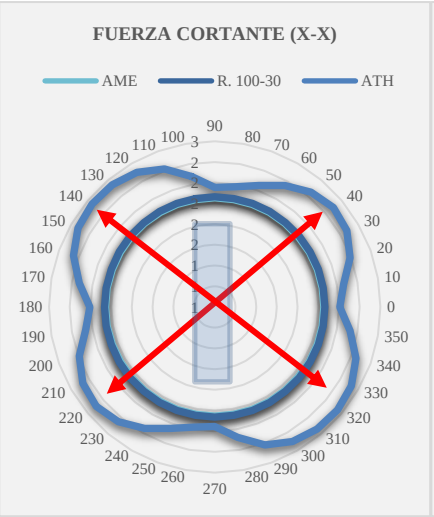

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

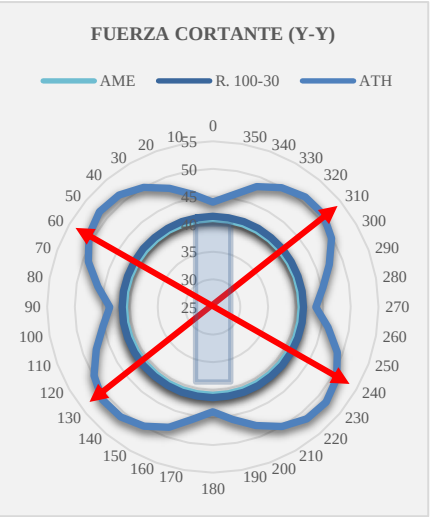

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

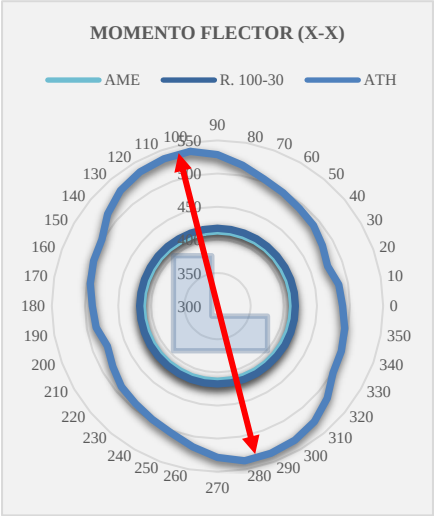

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R. 100-30
ATH

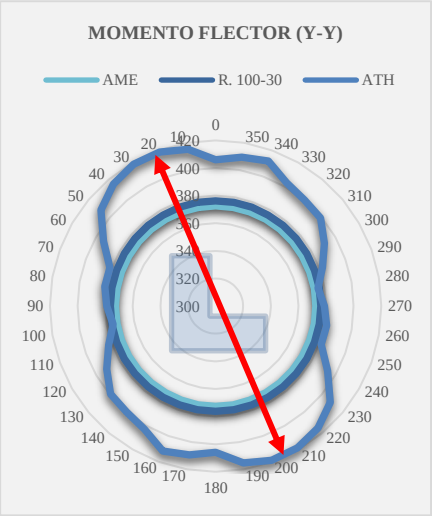

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R. 100-30
ATH

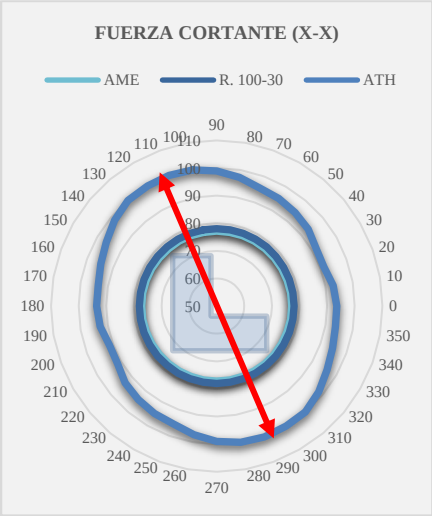

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

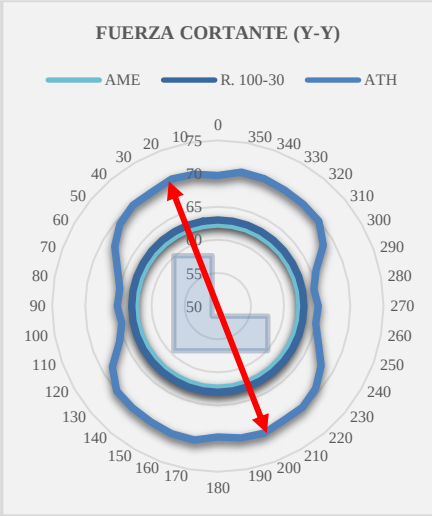

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

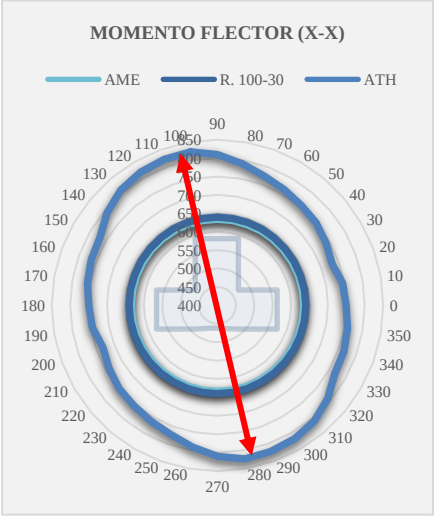
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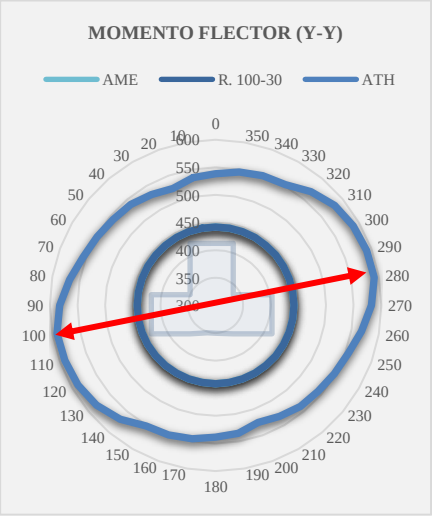

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

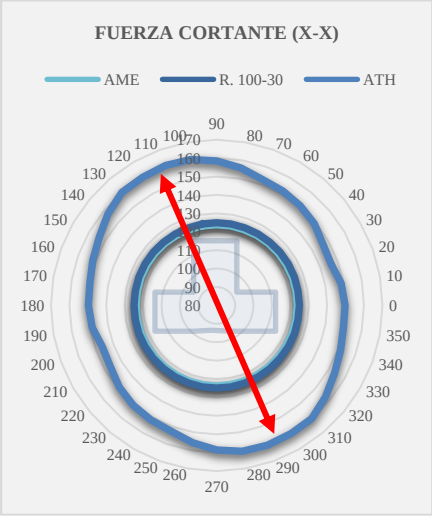

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

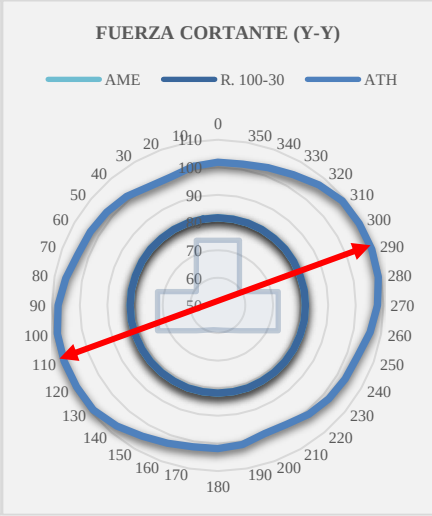

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

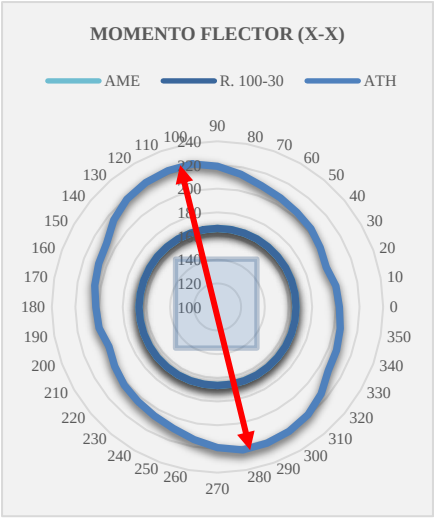

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

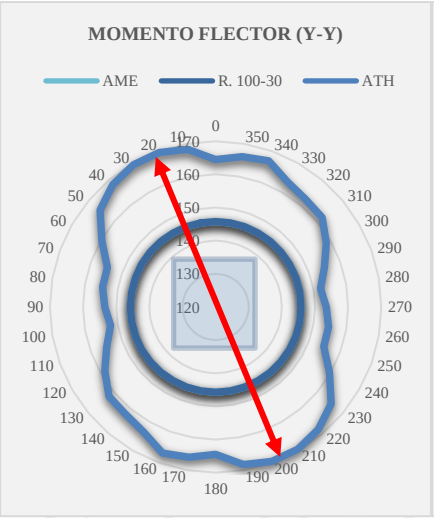

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

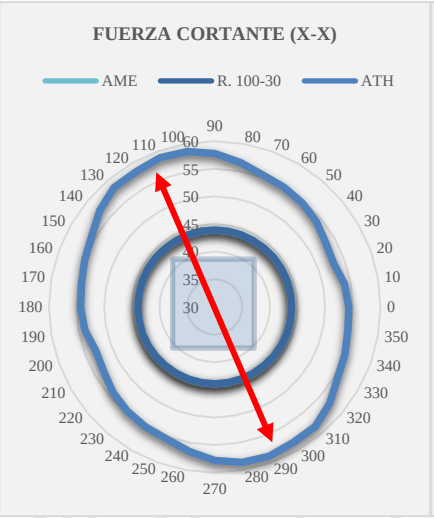

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

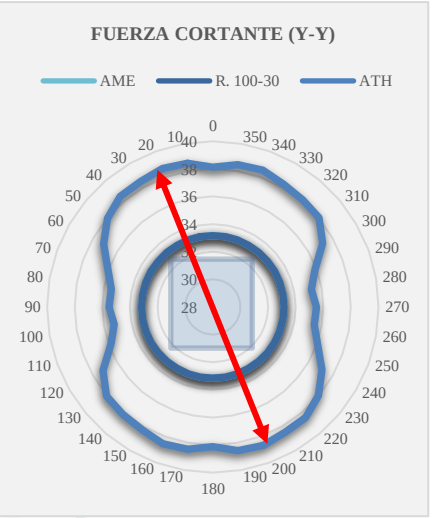

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

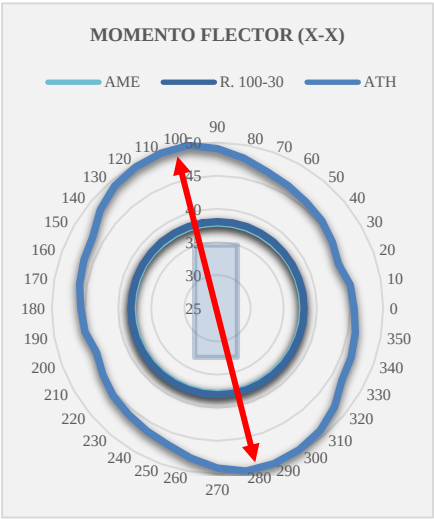

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

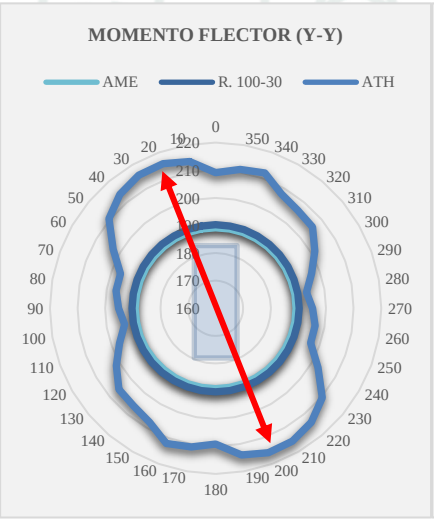

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

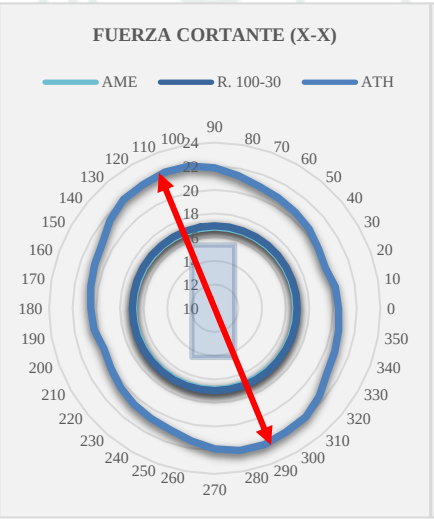

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

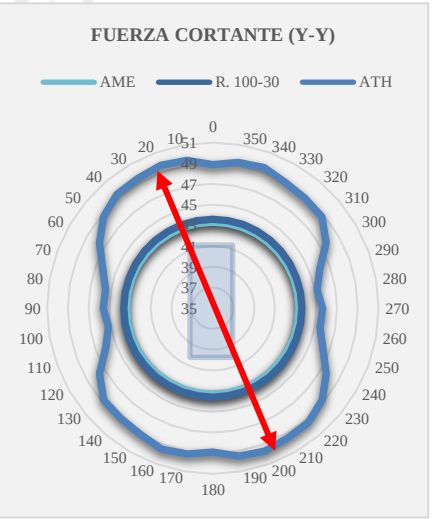

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

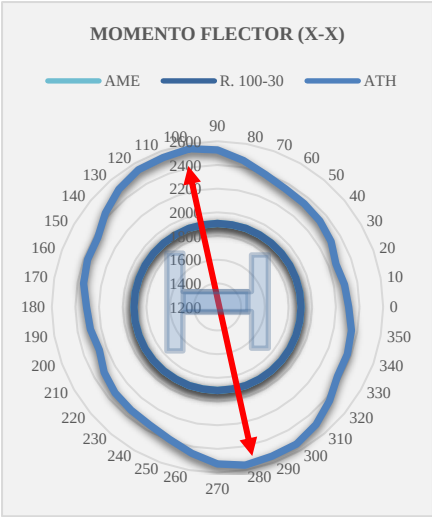

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

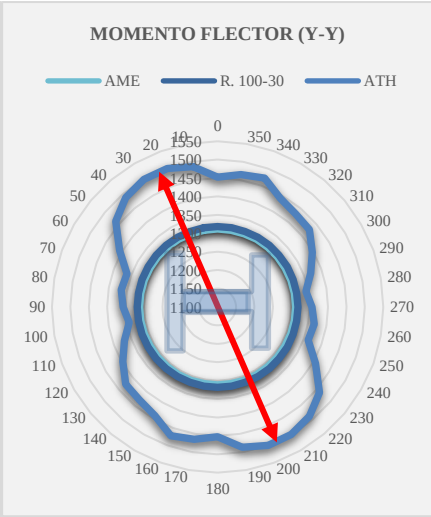

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

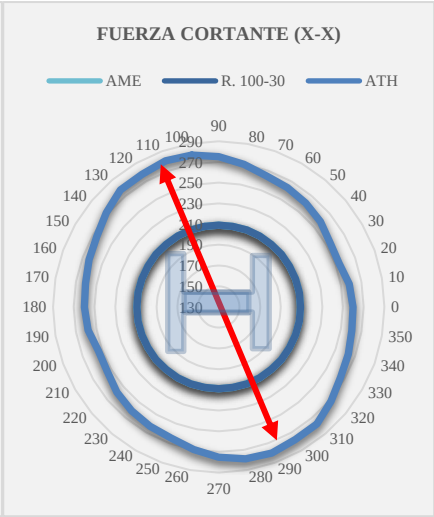

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

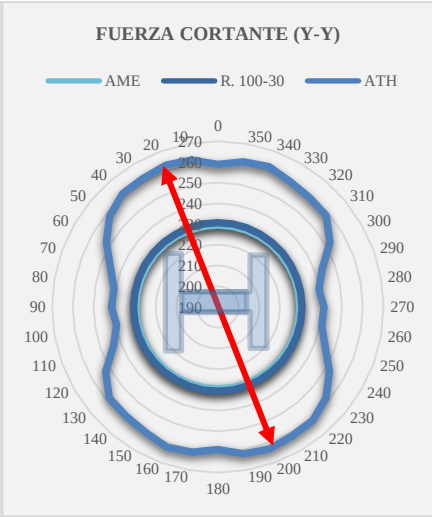

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AME
R. 100-30
ATH

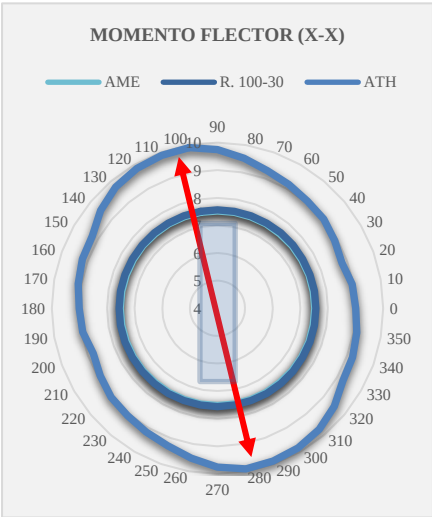

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

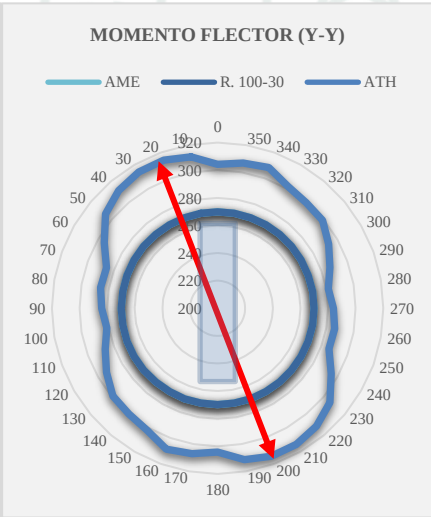

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

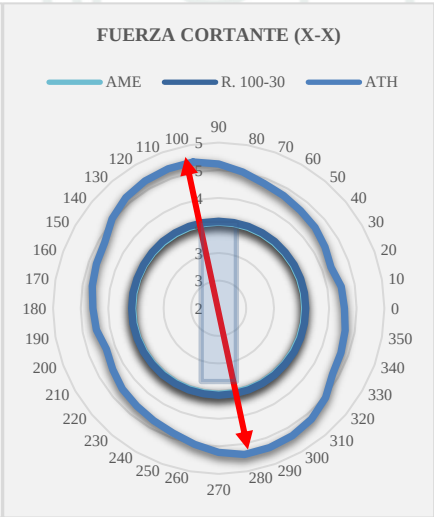

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

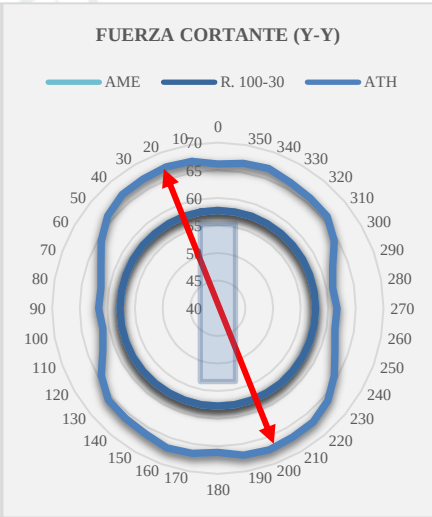

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

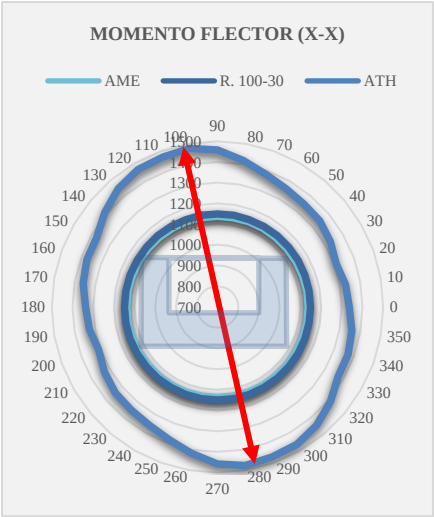

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

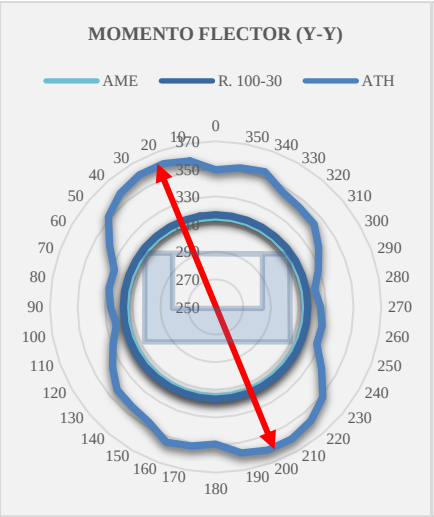

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

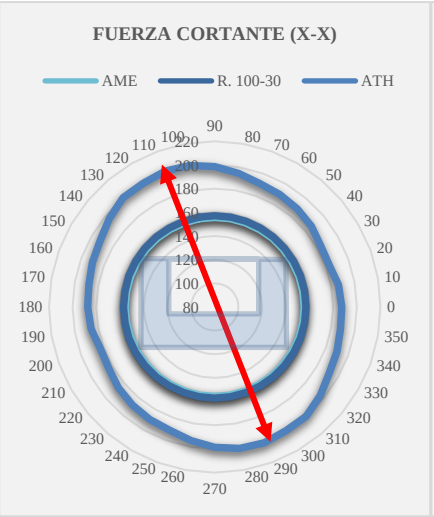

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

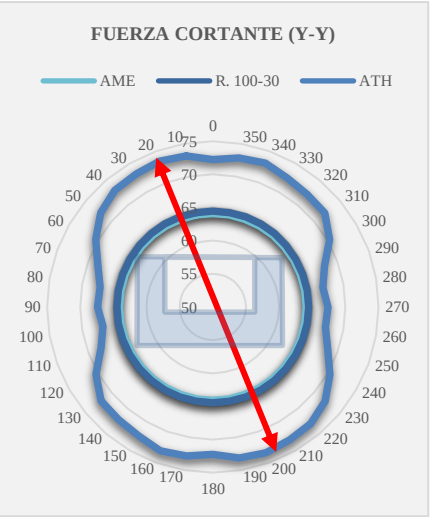

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

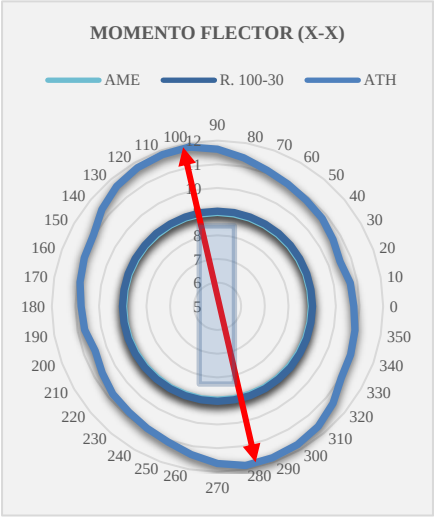

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

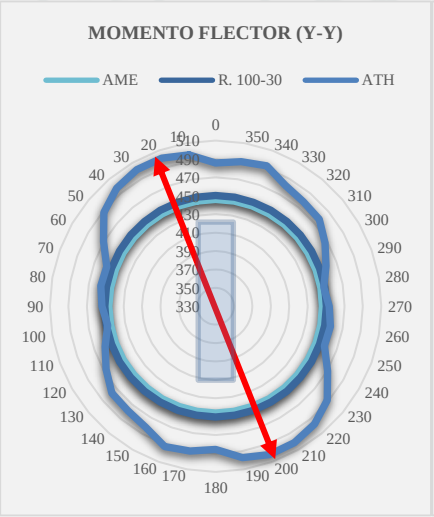

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

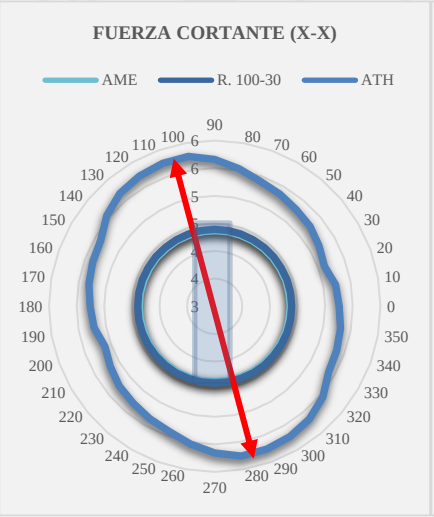

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

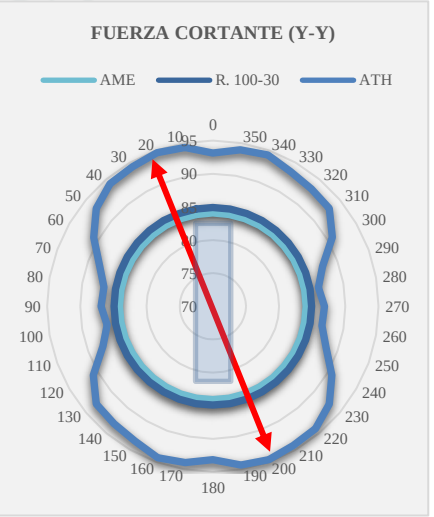

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

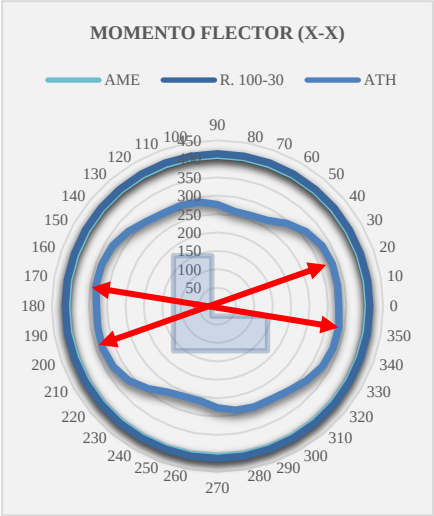

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

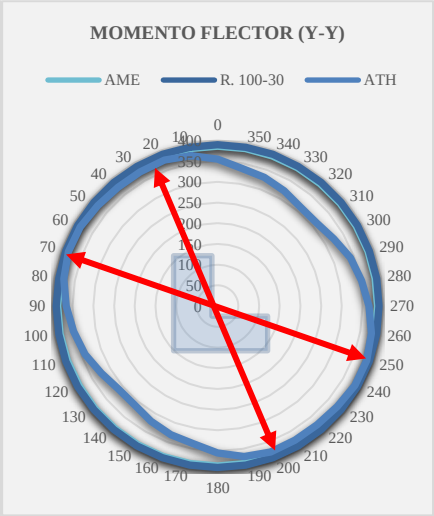

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

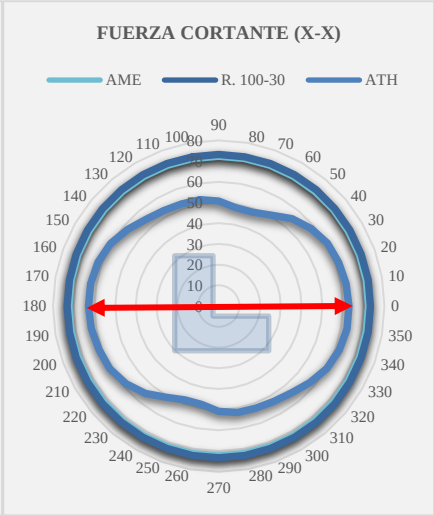

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

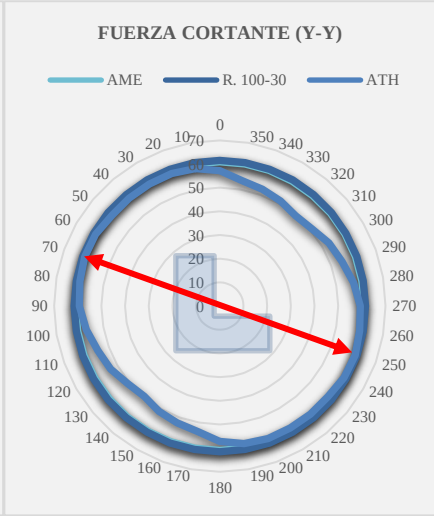

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

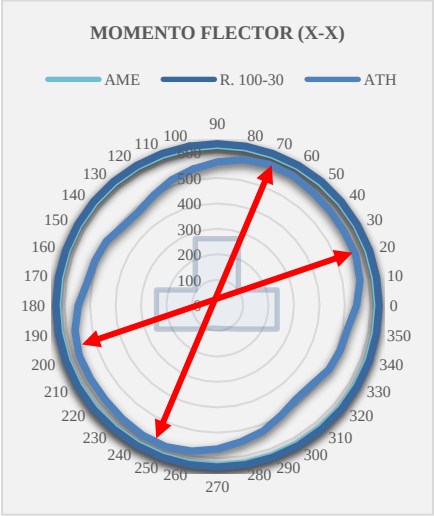
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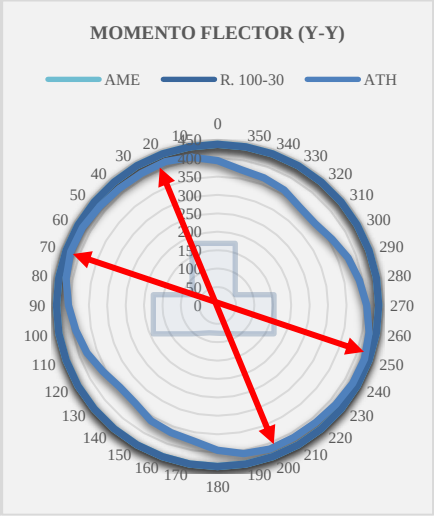


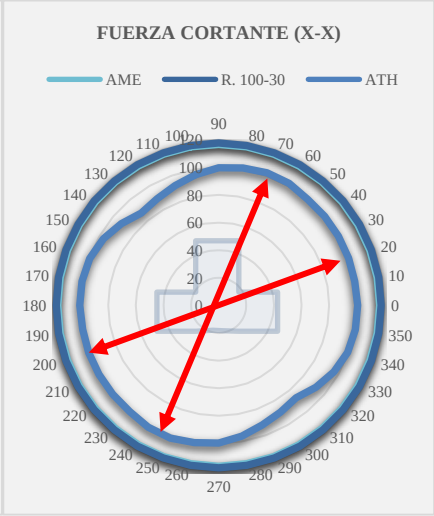


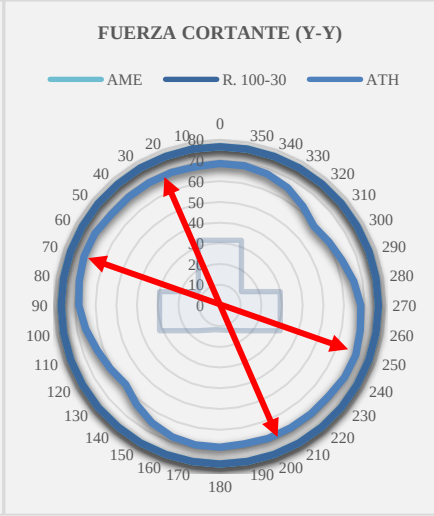


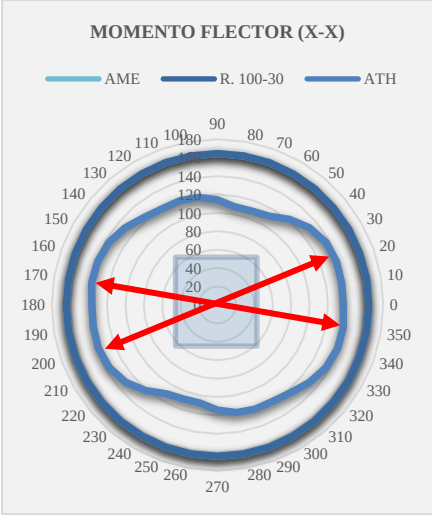


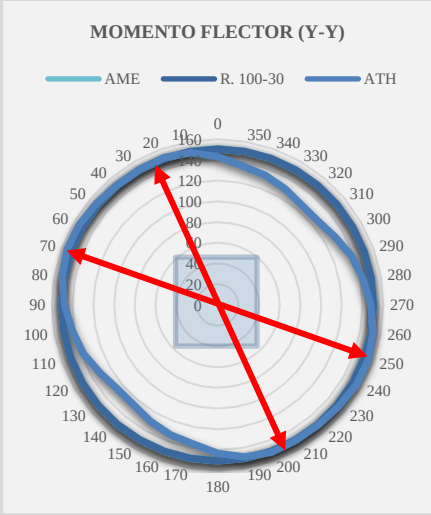


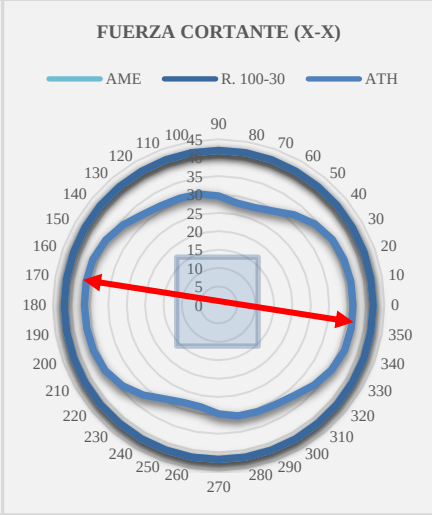


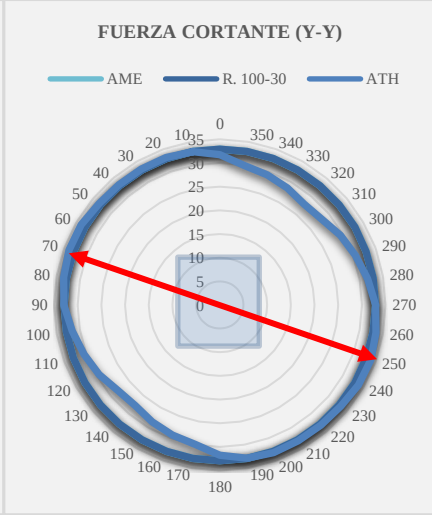


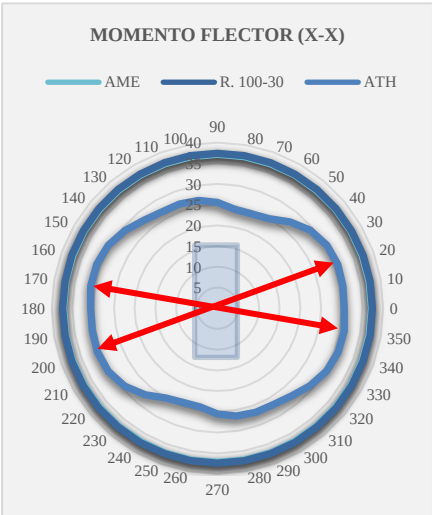


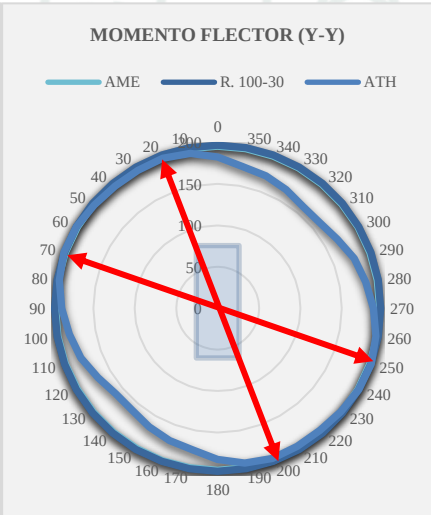

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

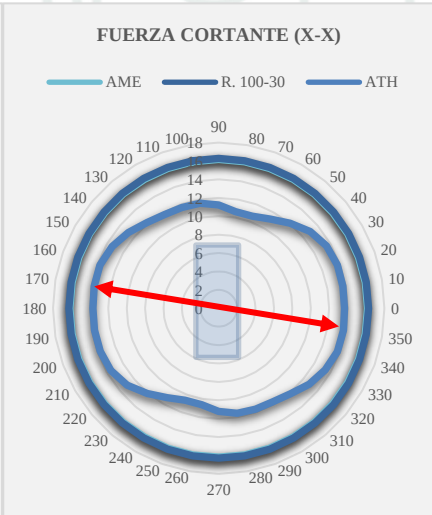

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

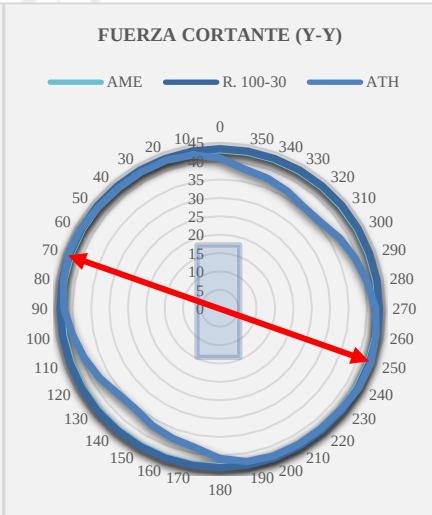

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

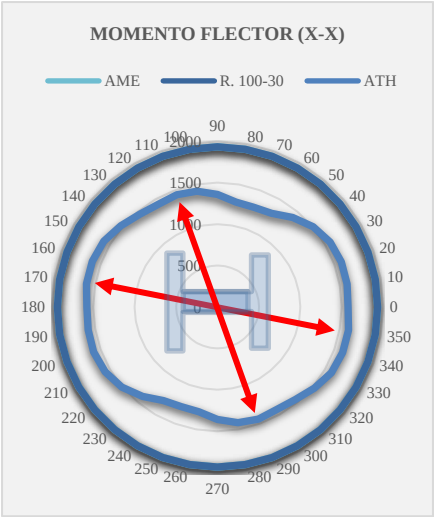

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

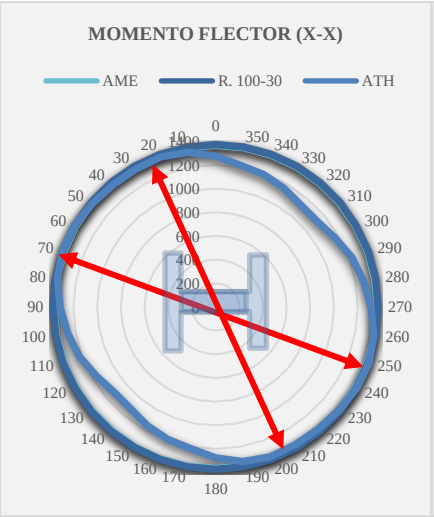

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

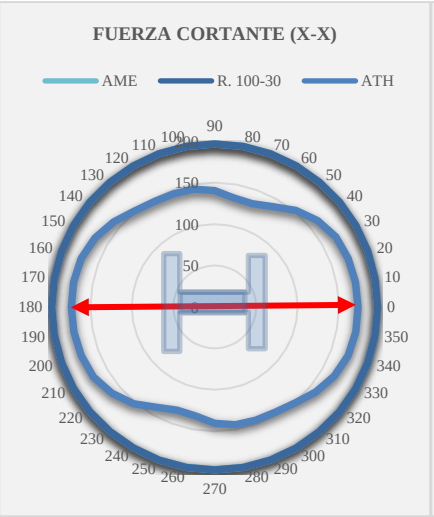

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

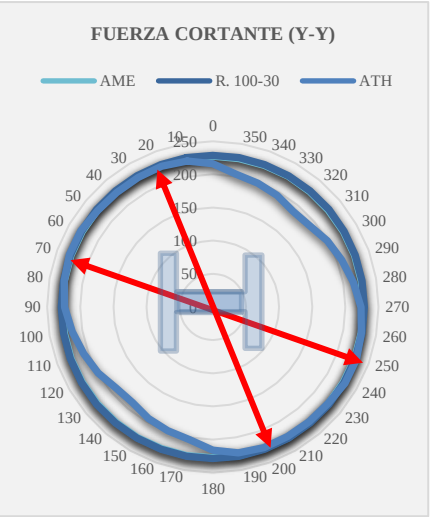

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

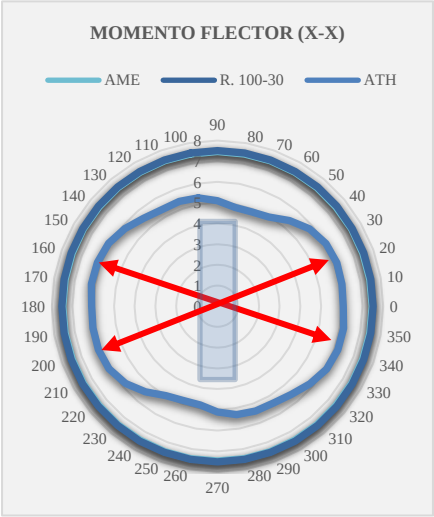

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

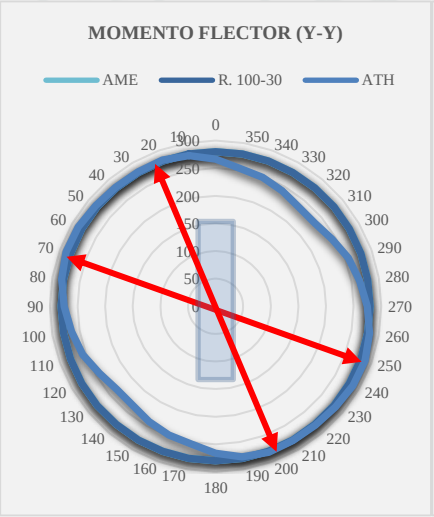

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

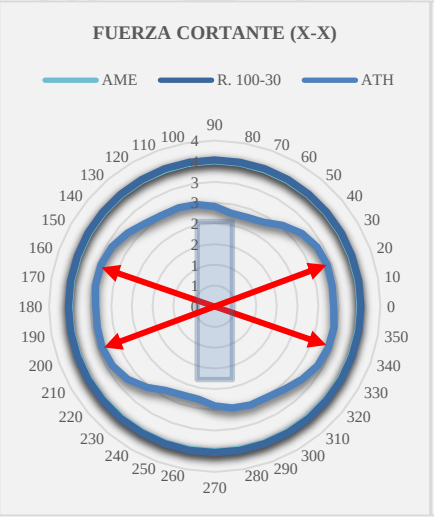

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

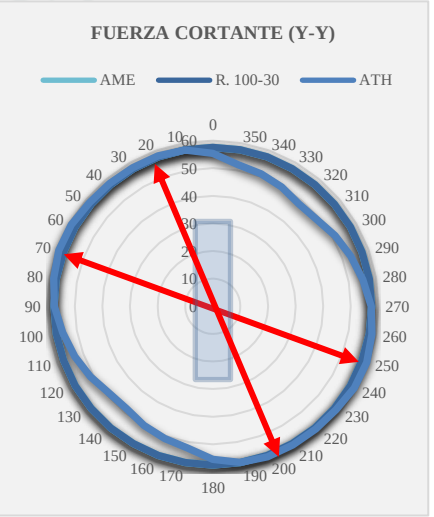

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

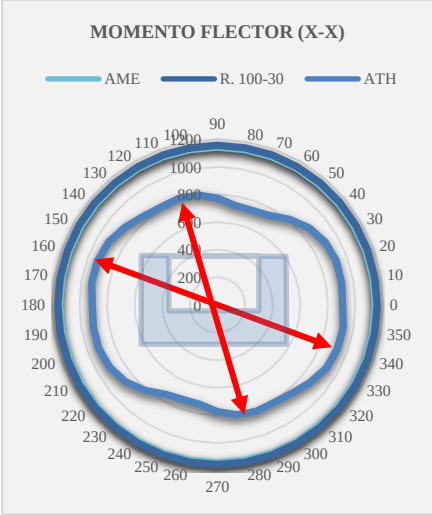

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

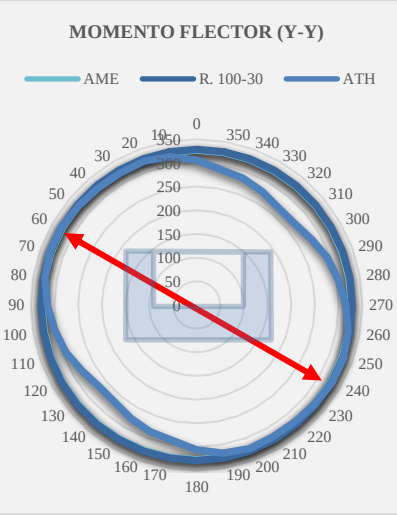

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

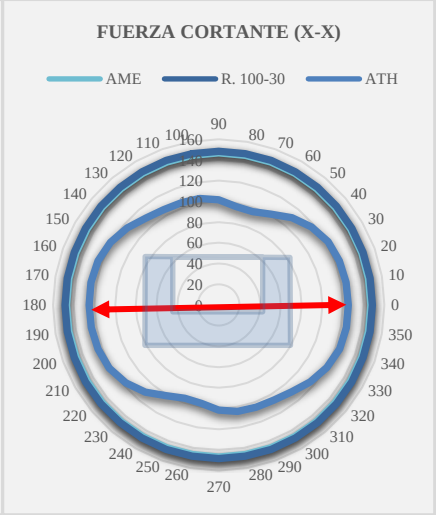

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

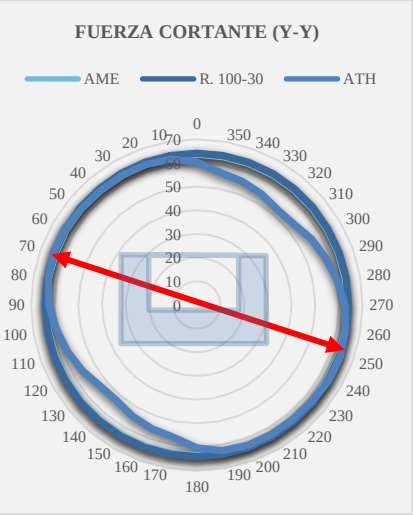

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

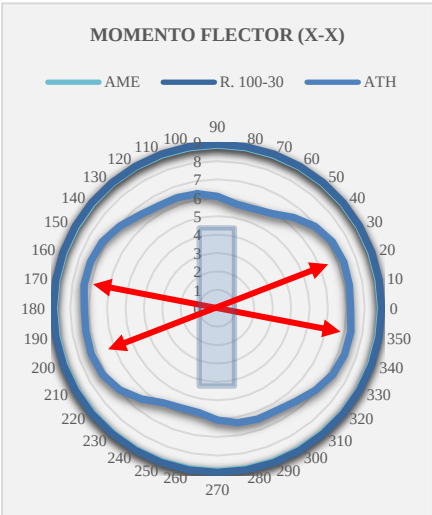

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

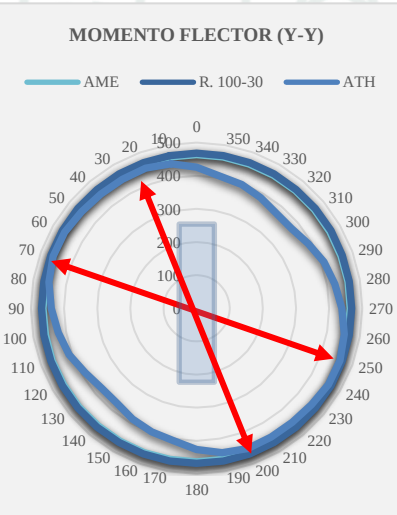

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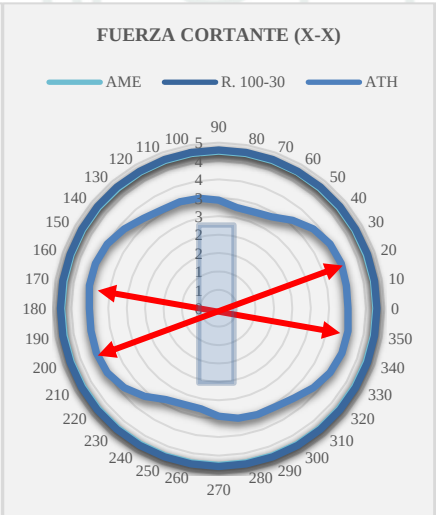

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

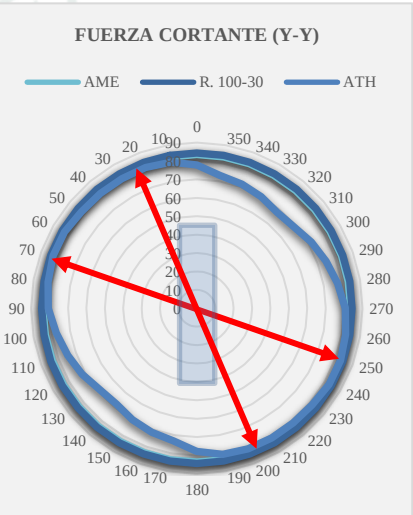

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

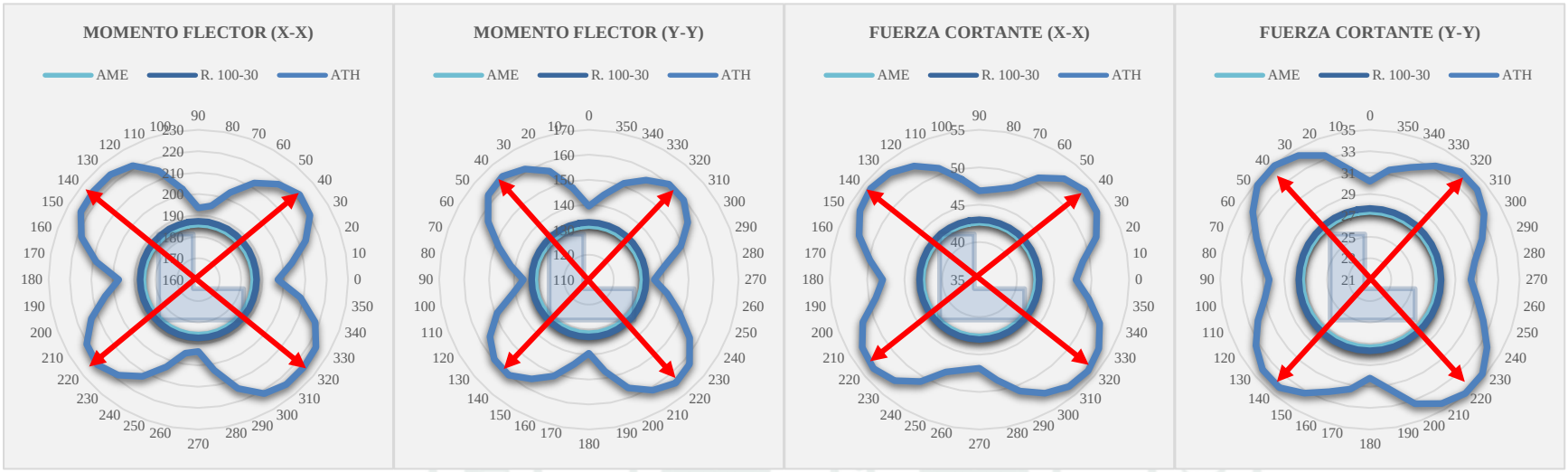

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

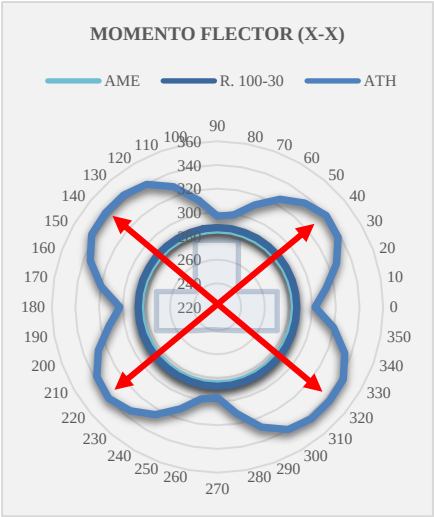

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R. 100-30
ATH

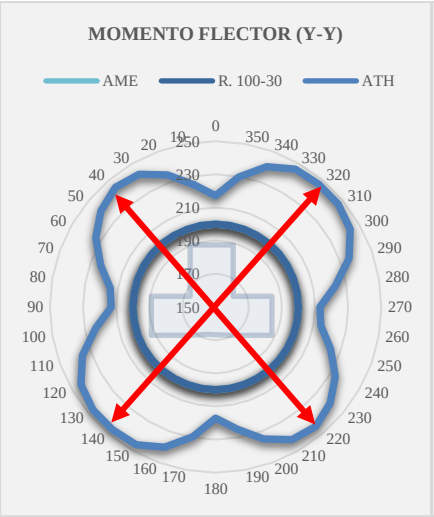

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

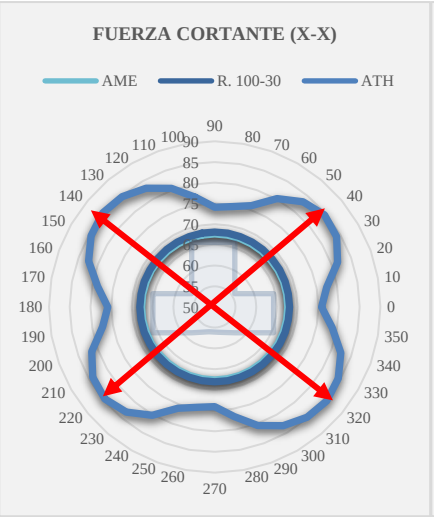
MODELO 4

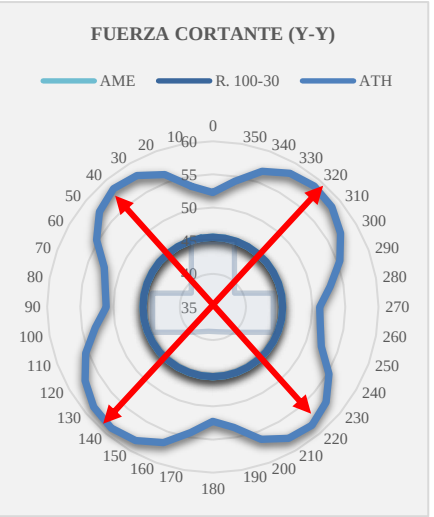
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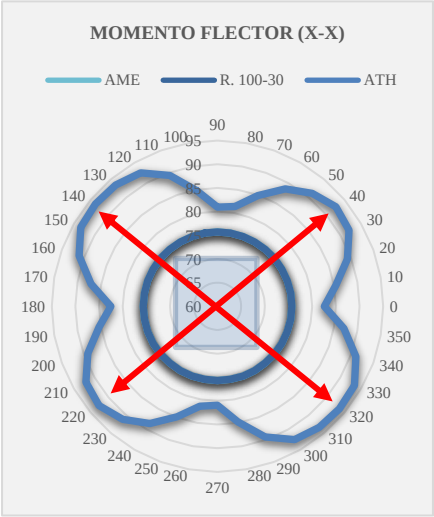


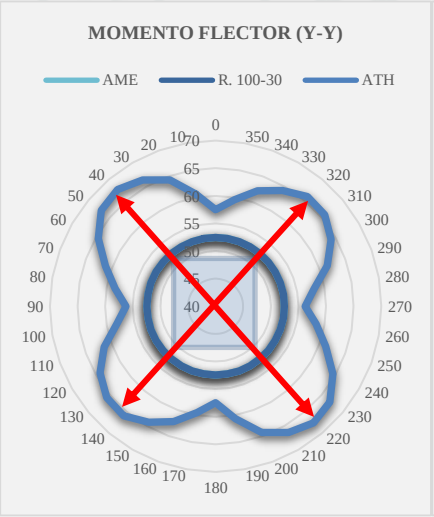

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

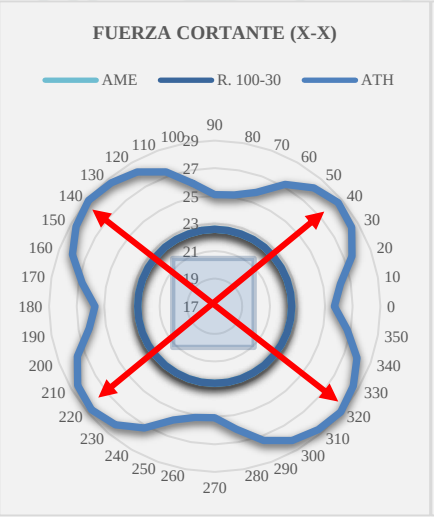

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

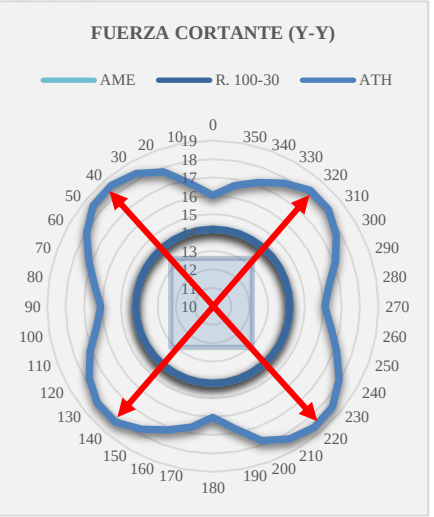

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

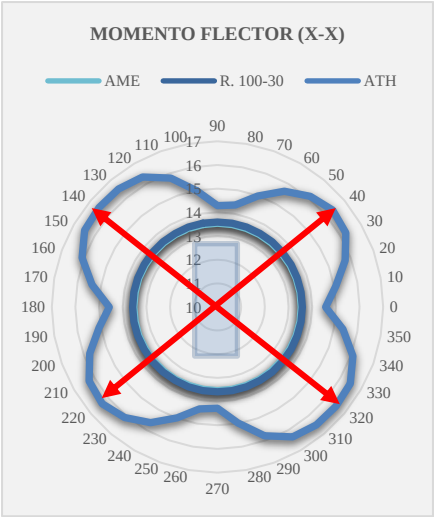

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

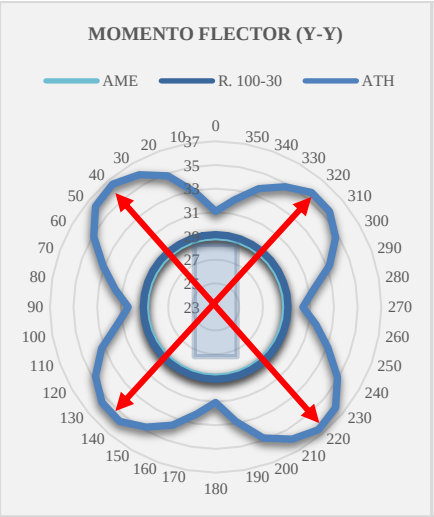

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

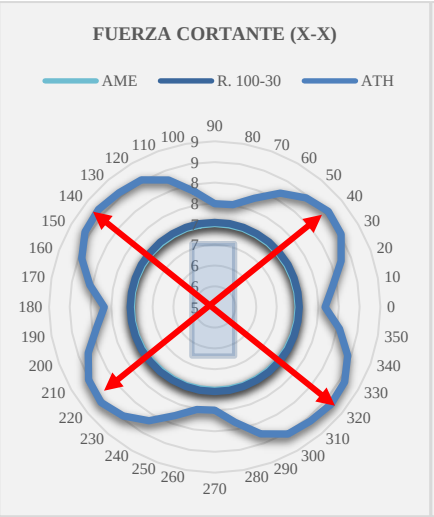

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

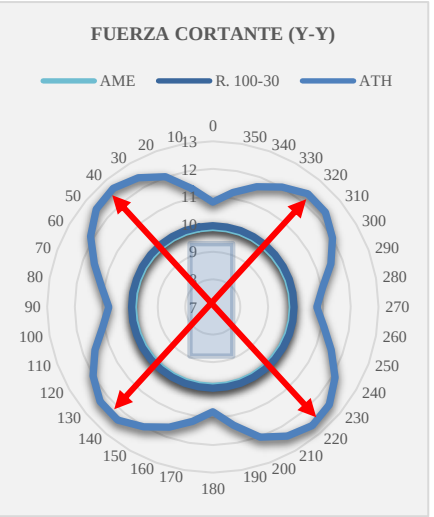

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

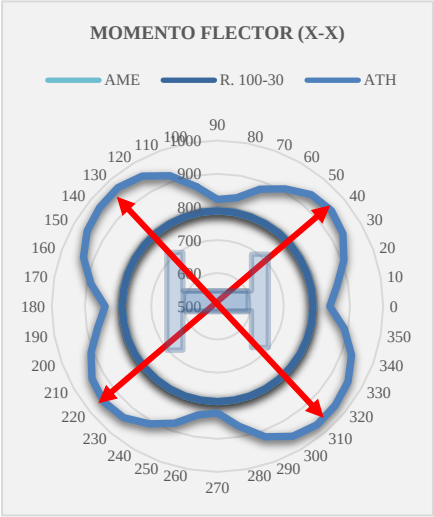

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

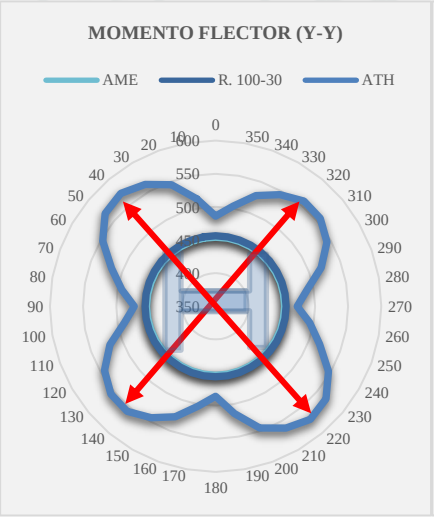

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

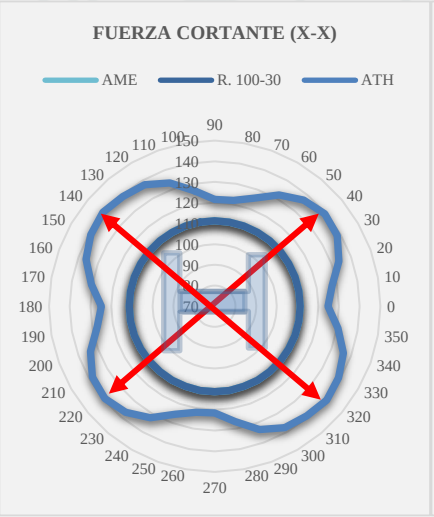

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

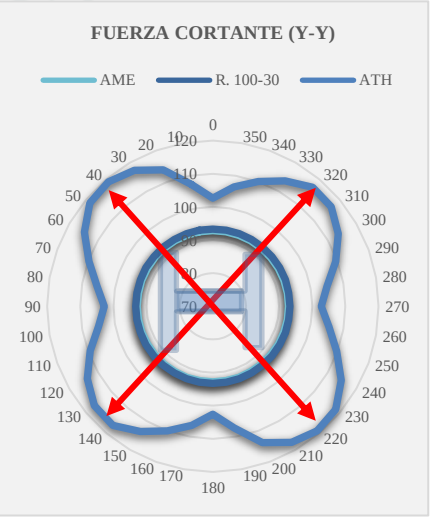

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R. 100-30
ATH

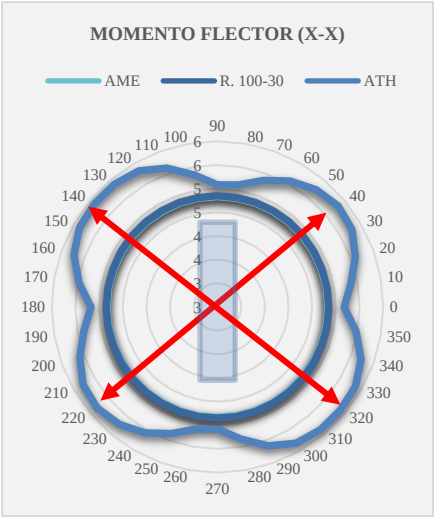

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

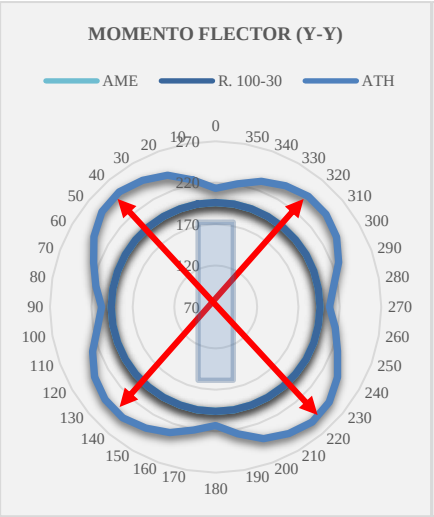

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ATH

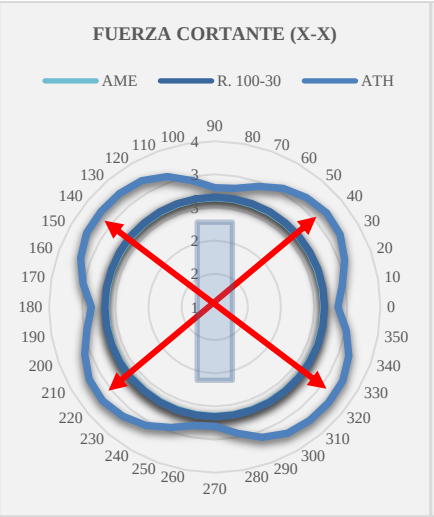

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

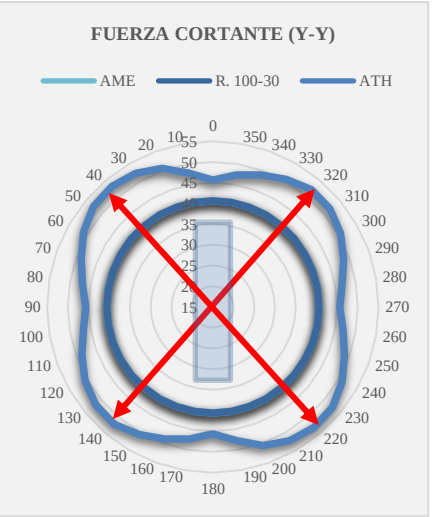

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

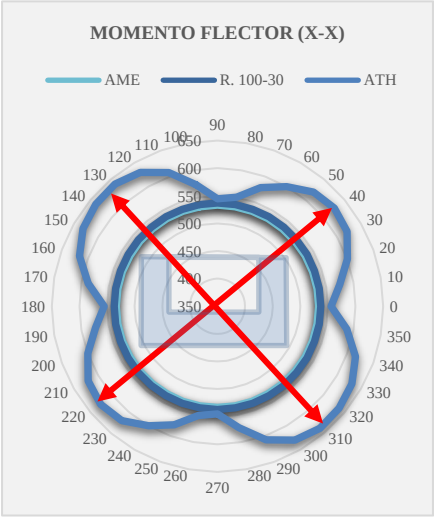

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

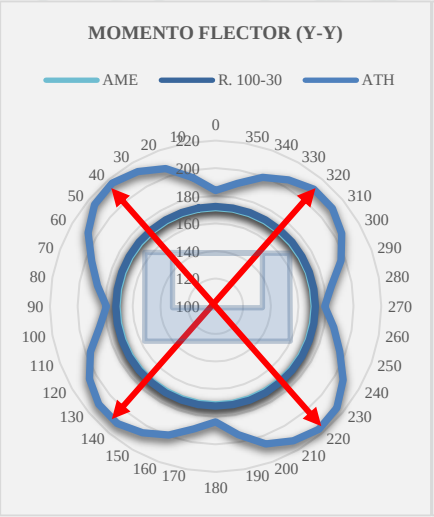

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R. 100-30
ATH

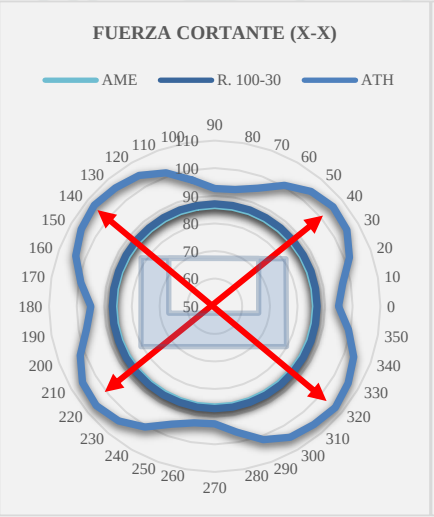

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

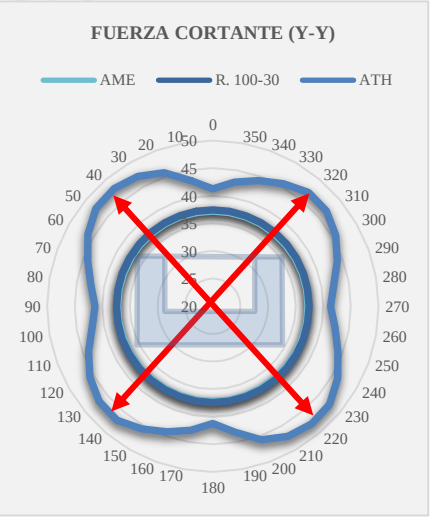

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

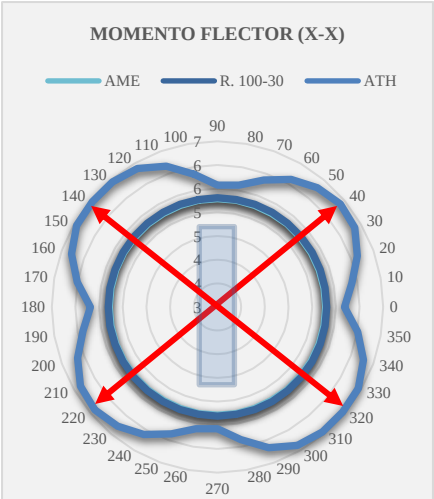

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

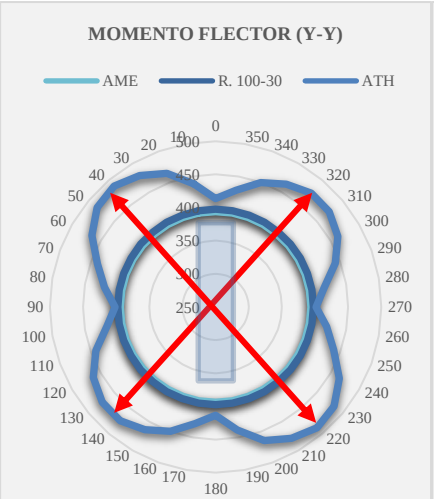

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

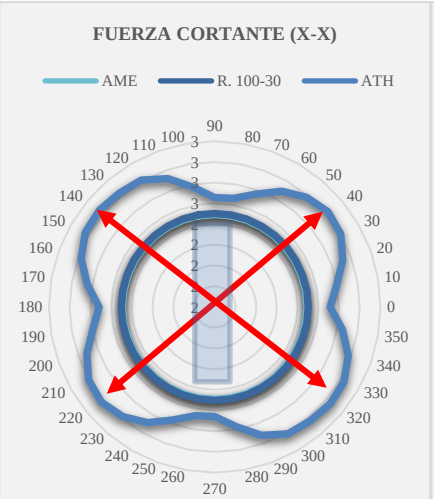

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

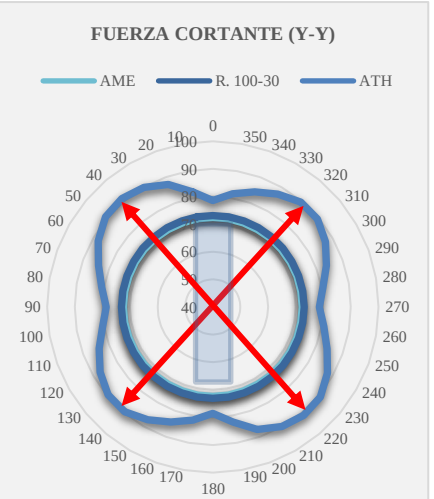

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

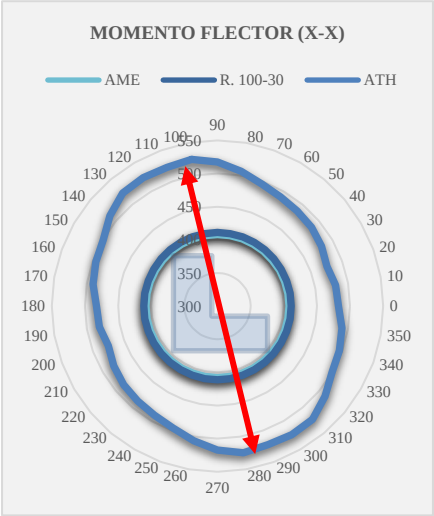

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

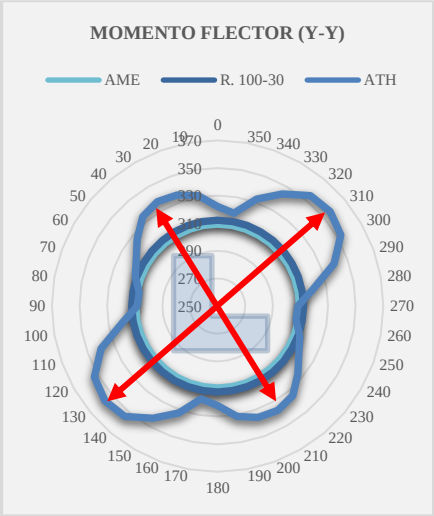

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

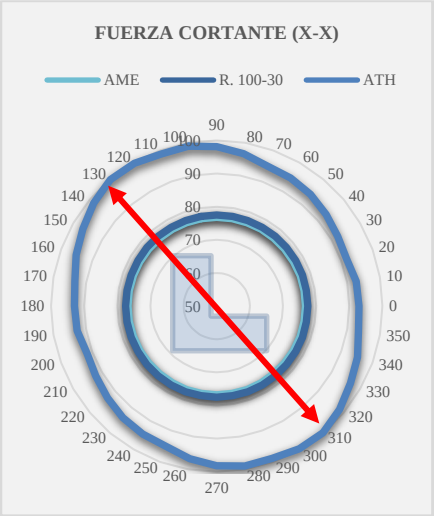

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

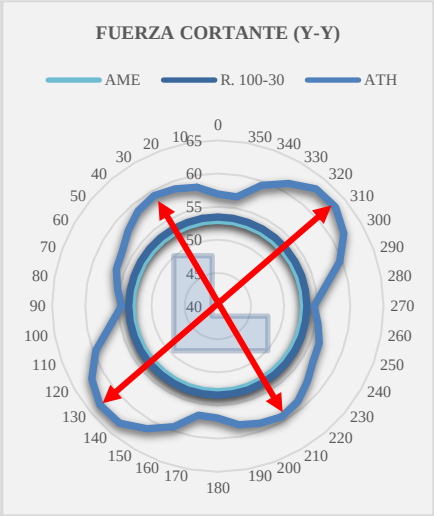

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

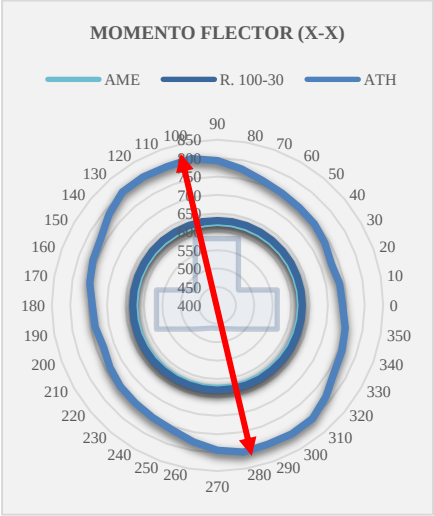
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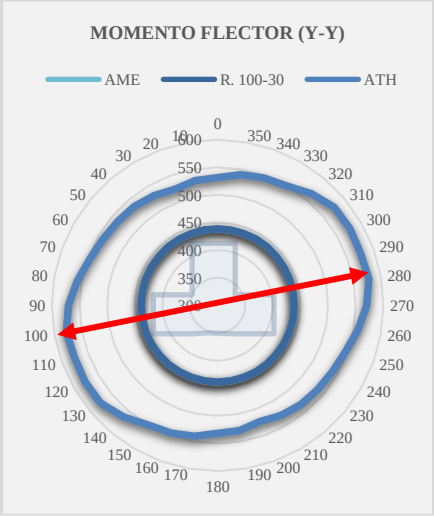

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

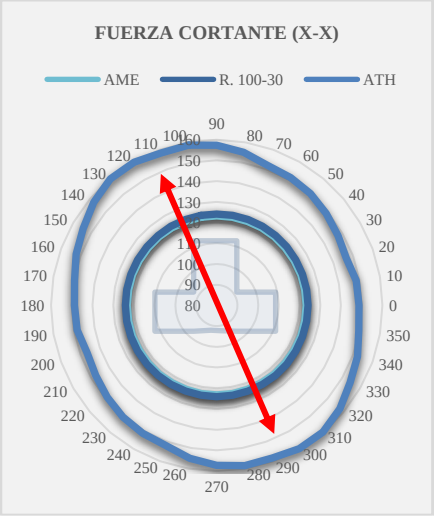

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

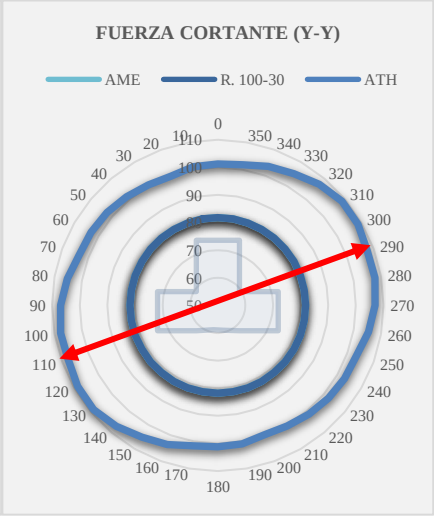

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

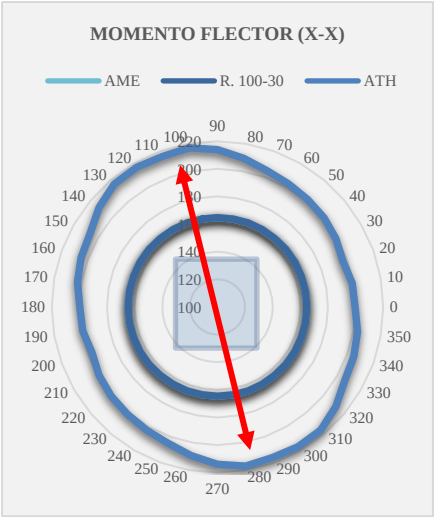

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

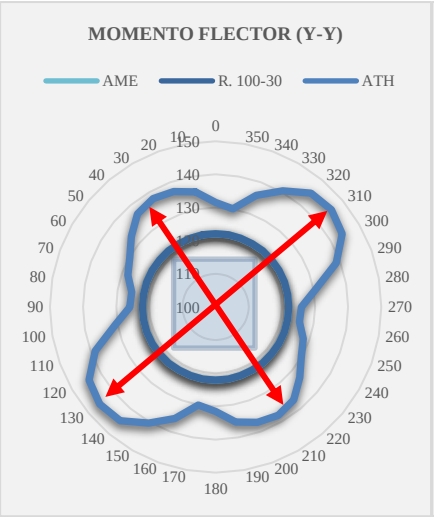

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

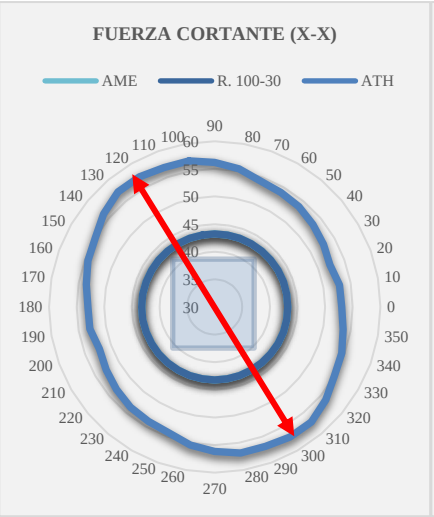

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

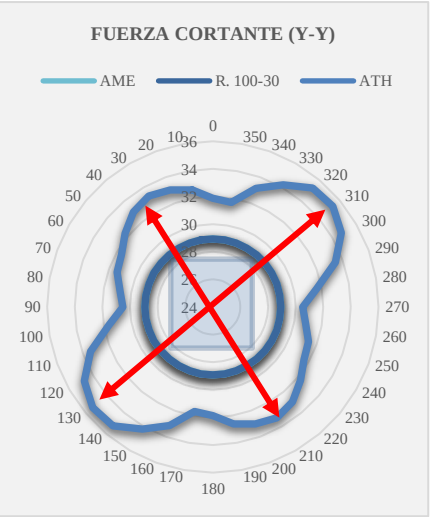

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

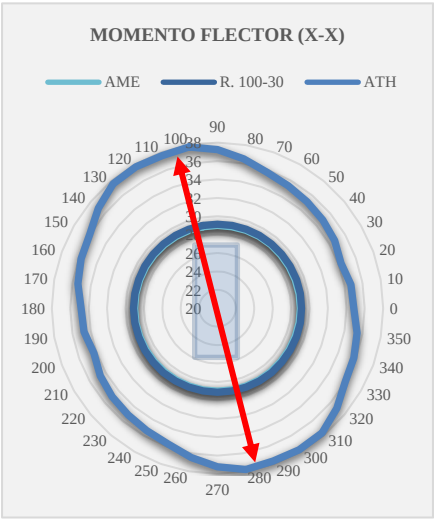

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

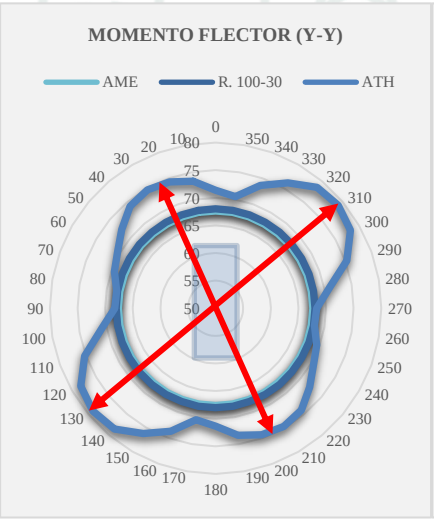

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

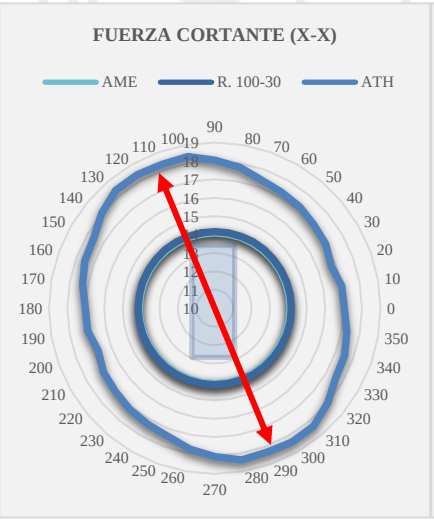

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AME
R. 100-30
ATH

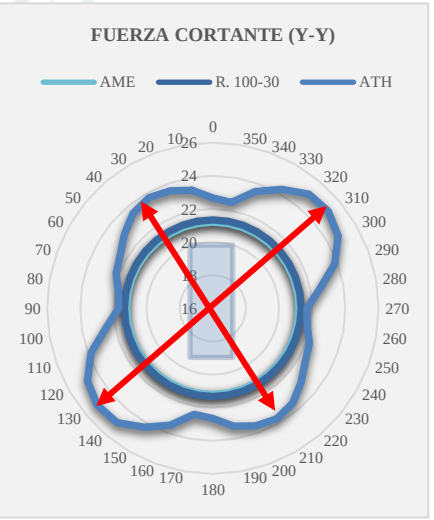

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AME
R. 100-30
ATH

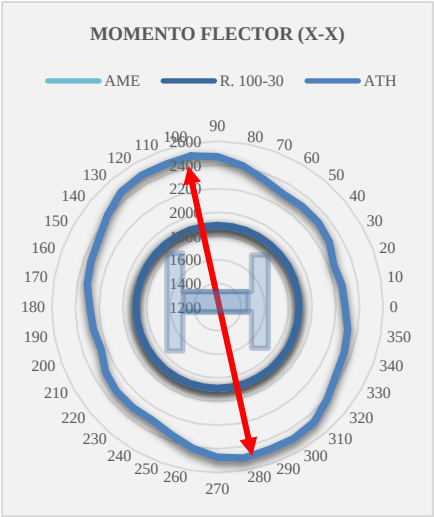

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AME
R. 100-30
ATH

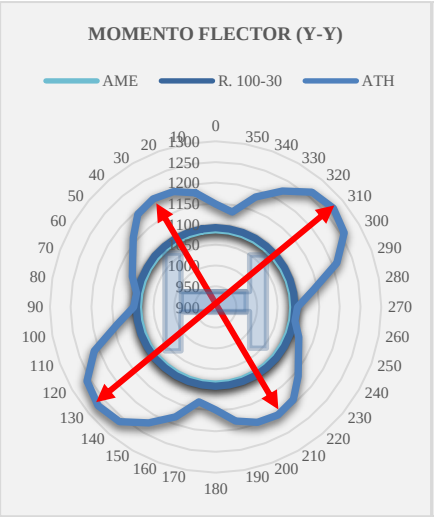

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R. 100-30
ATH

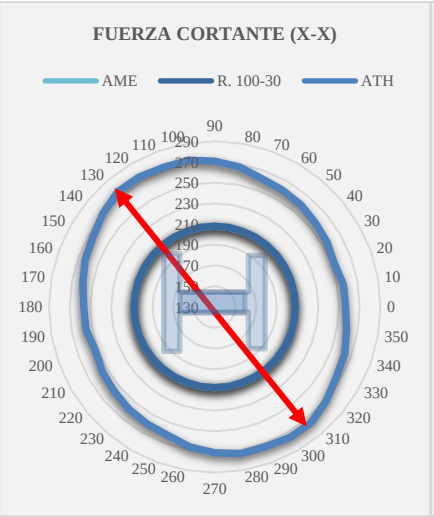

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

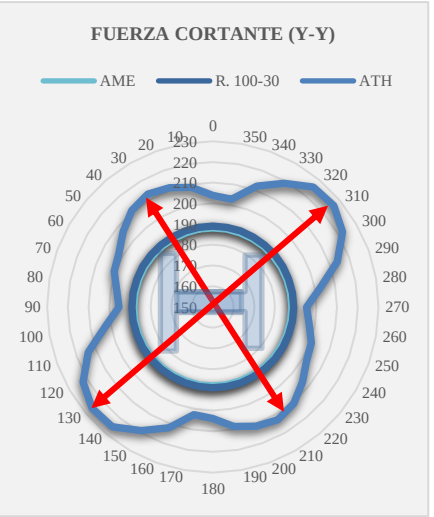

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R. 100-30
ATH

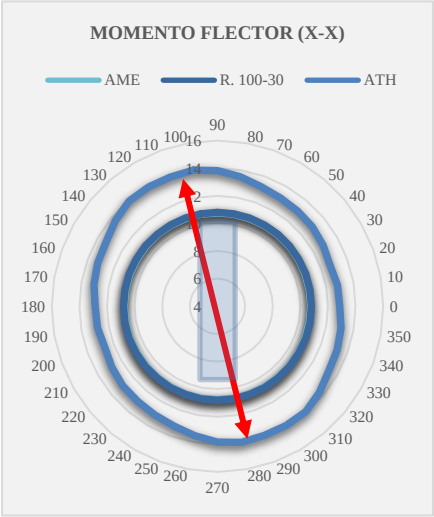

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R. 100-30
ATH

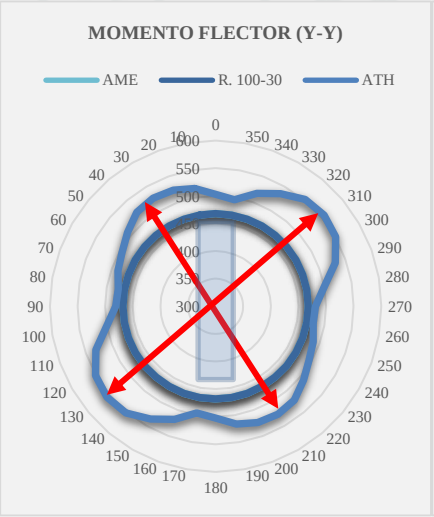

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

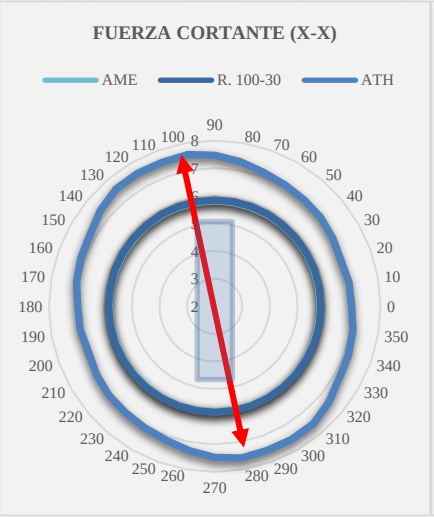

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

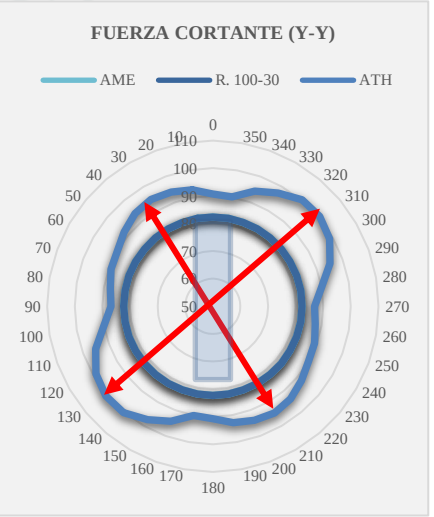

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

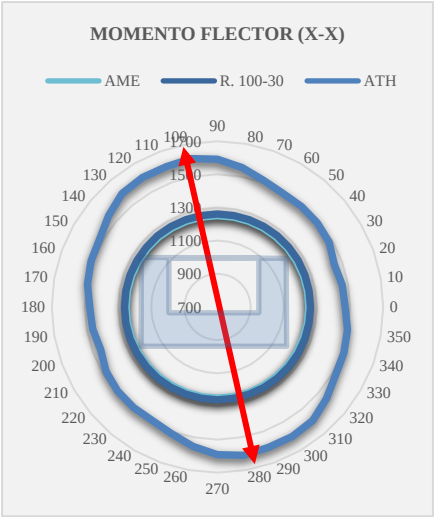

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AME
R. 100-30
ATH

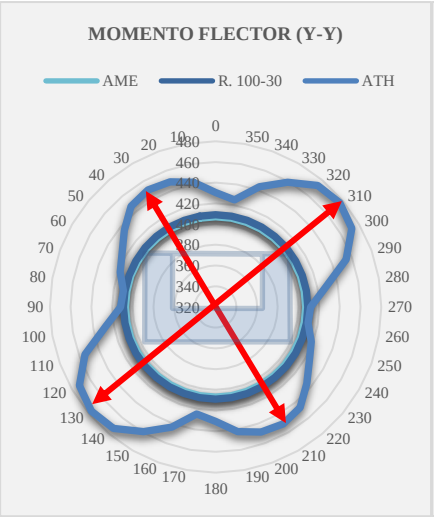

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R. 100-30
ATH

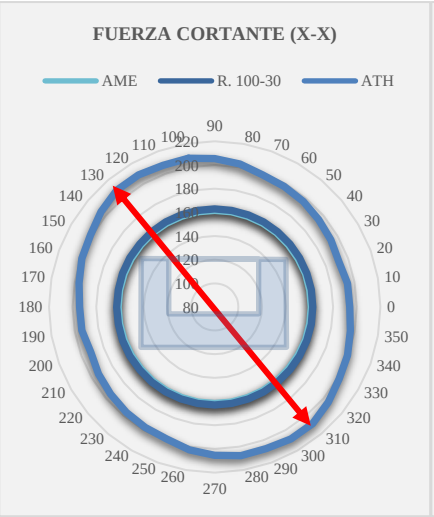

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

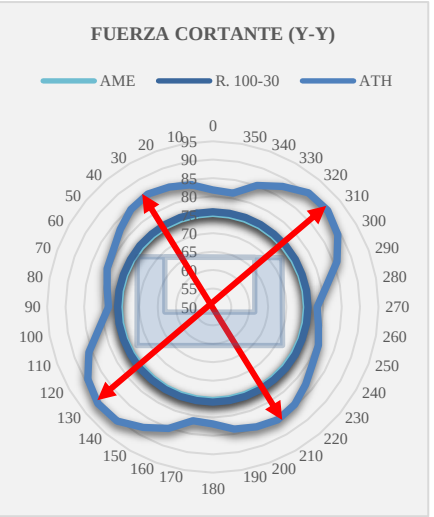

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R. 100-30
ATH

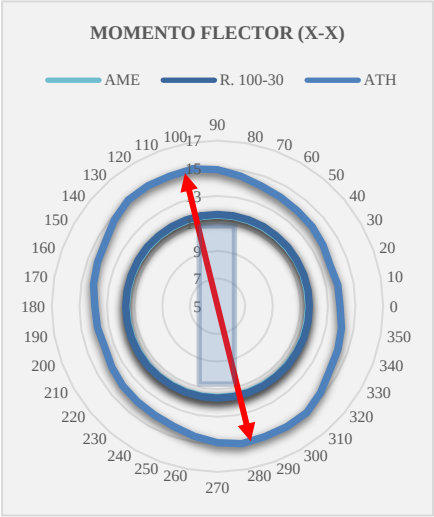

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R. 100-30
ATH

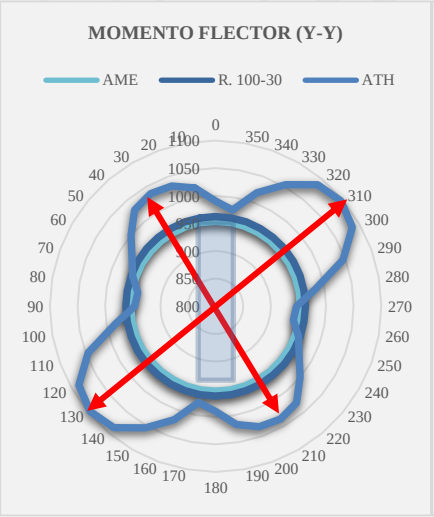

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R. 100-30
ATH

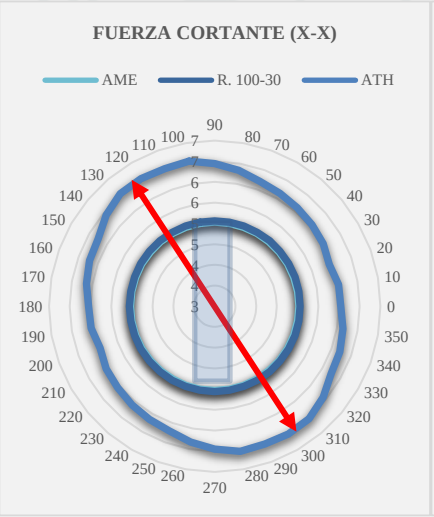

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

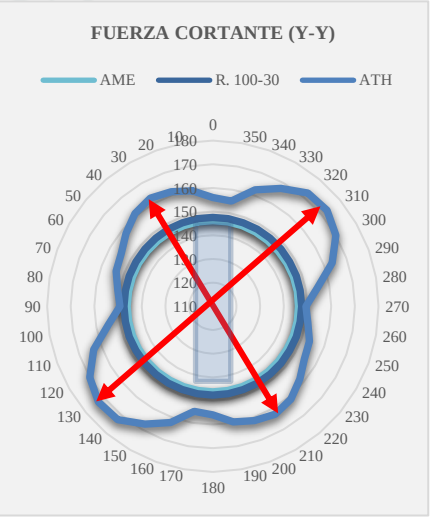

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

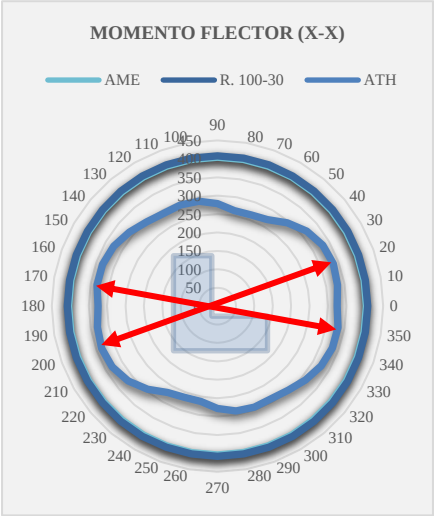

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

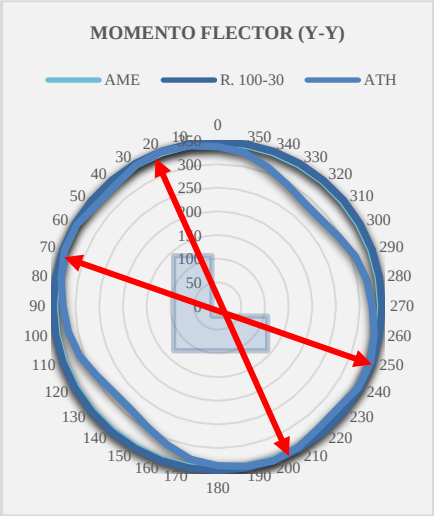

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AME
R. 100-30
ATH

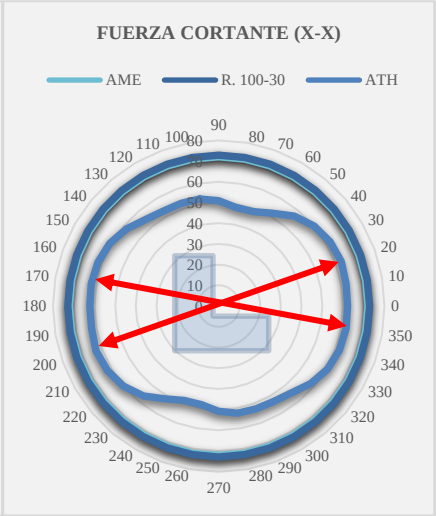

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R. 100-30
ATH

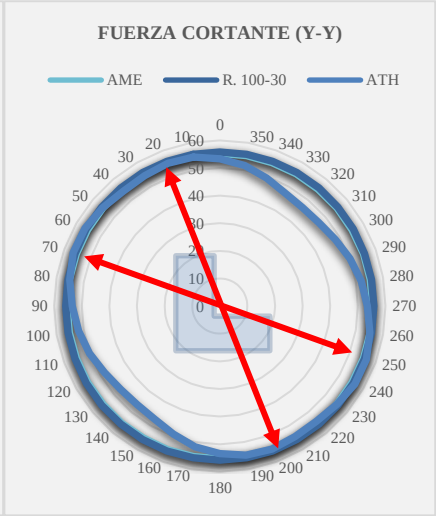

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

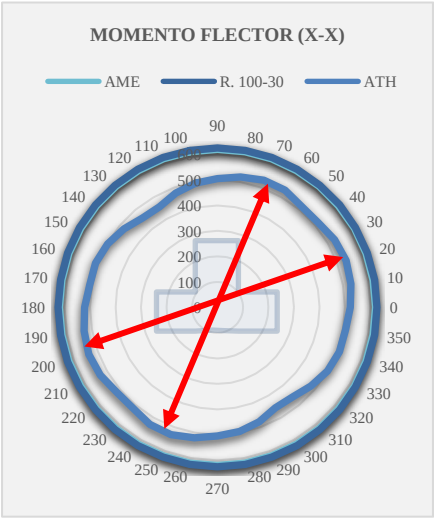
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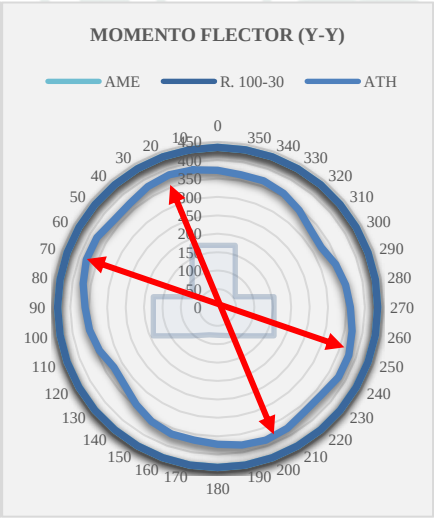


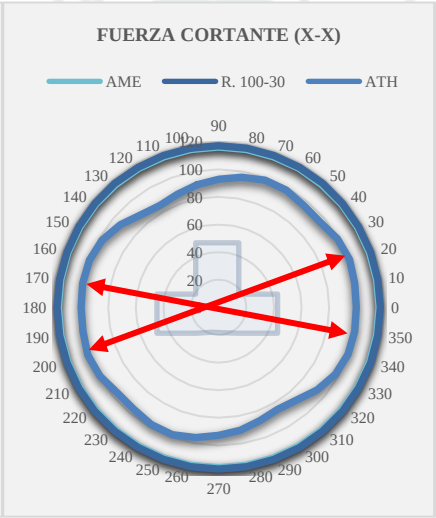


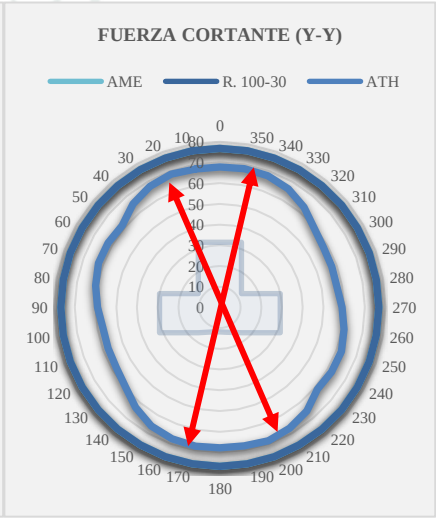


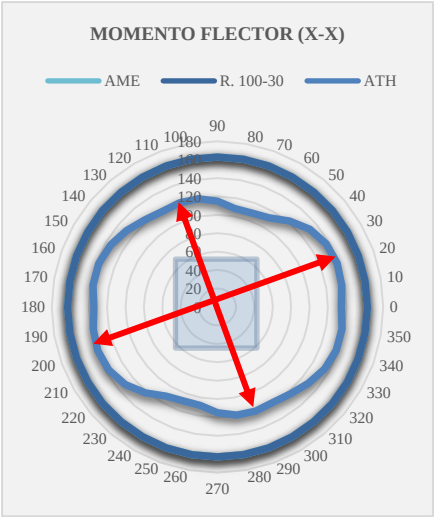


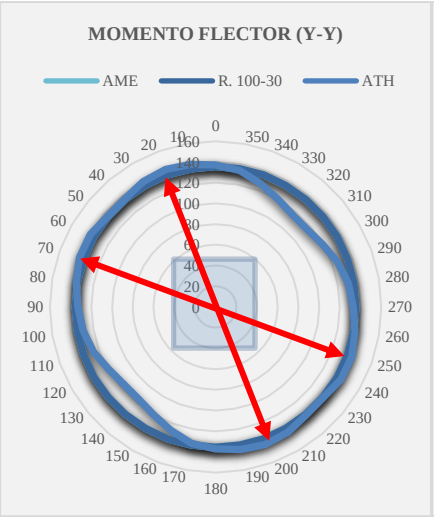


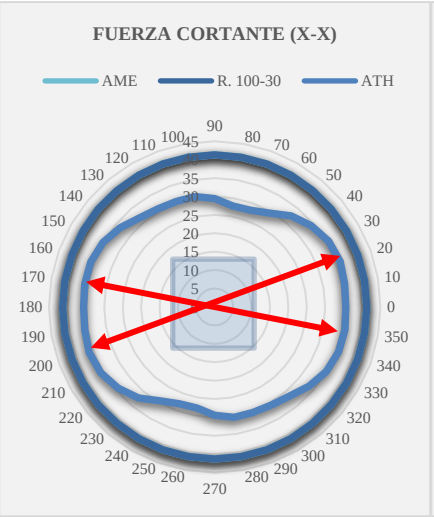


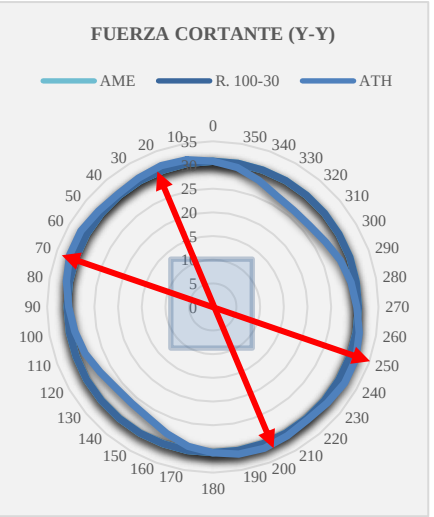


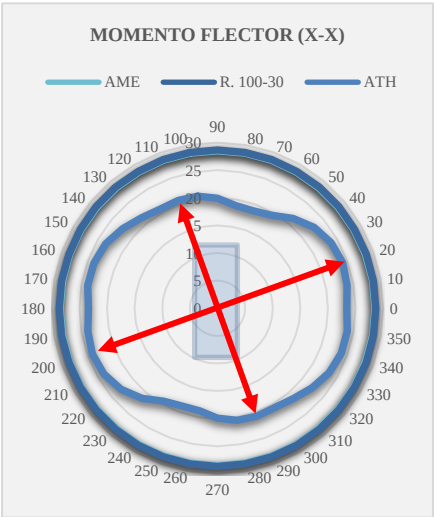


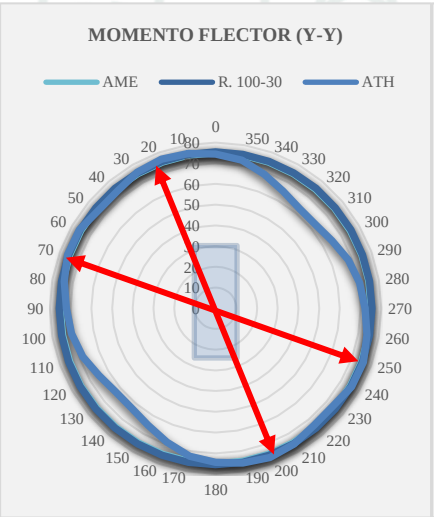

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

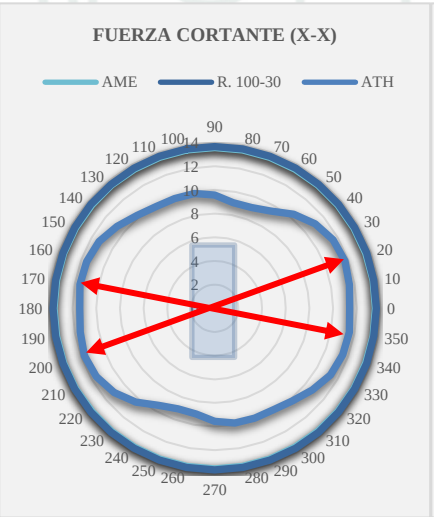

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

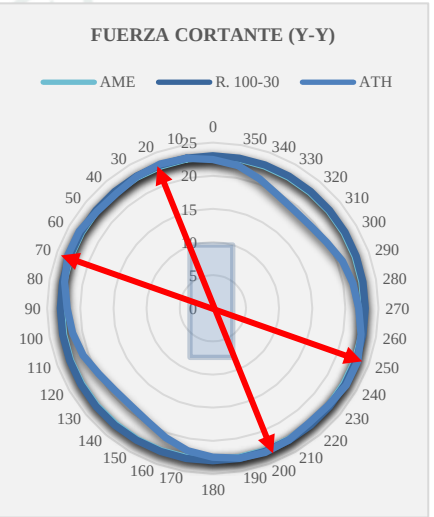

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

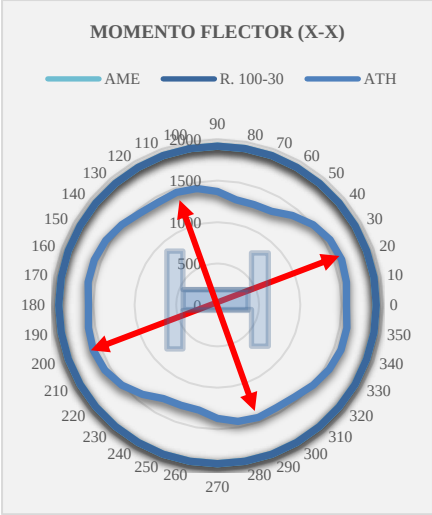

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

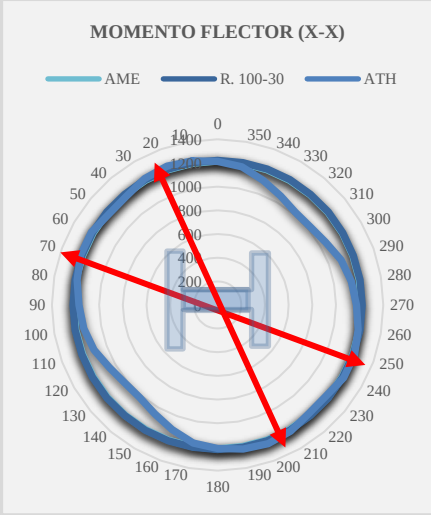

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R. 100-30
ATH

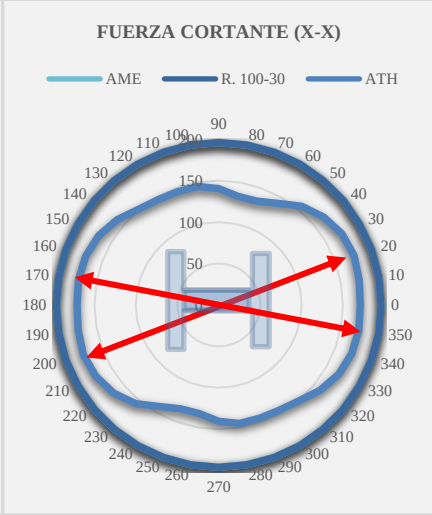

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R. 100-30
ATH

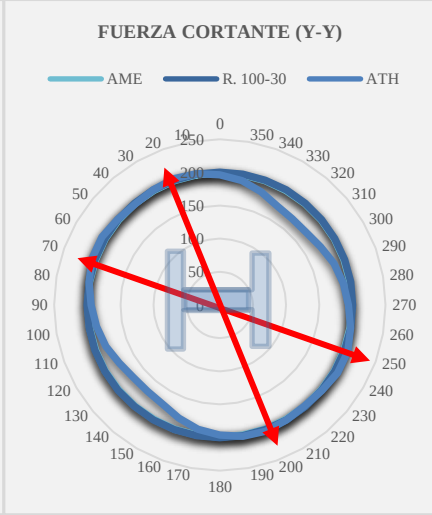

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R. 100-30
ATH

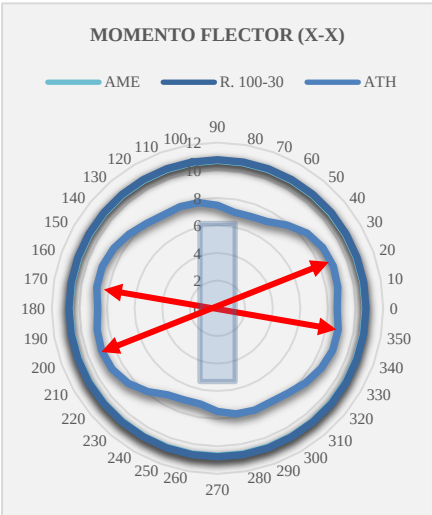

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R. 100-30
ATH

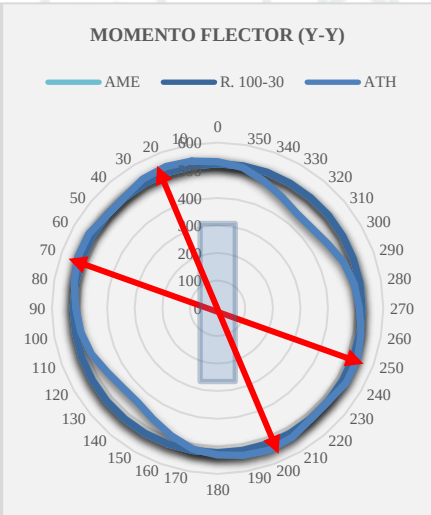

MOMENTO FLECTOR (X-X)
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ATH

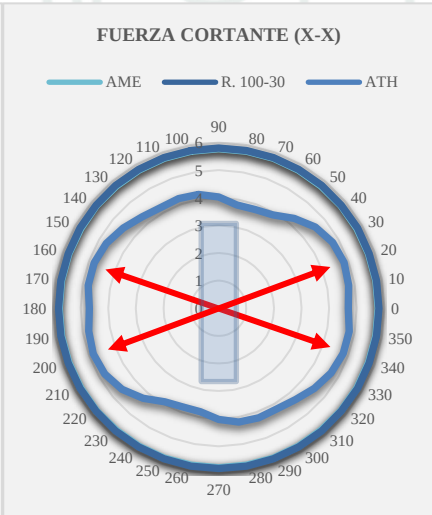

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

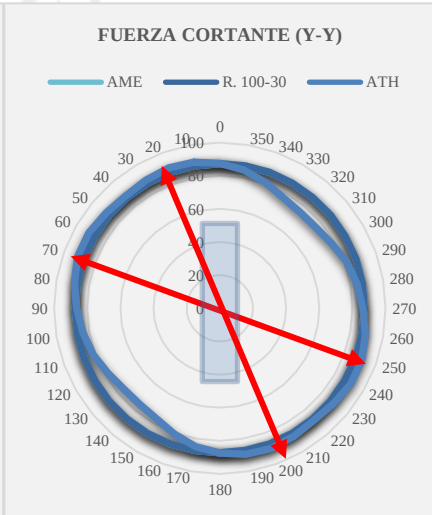

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R. 100-30
ATH

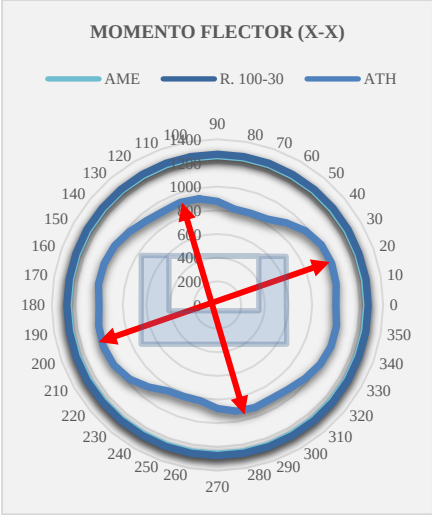

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

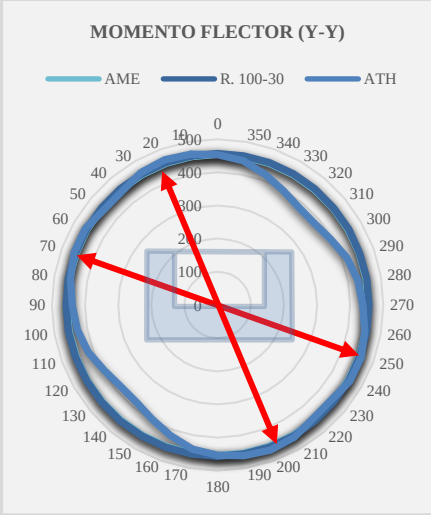

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

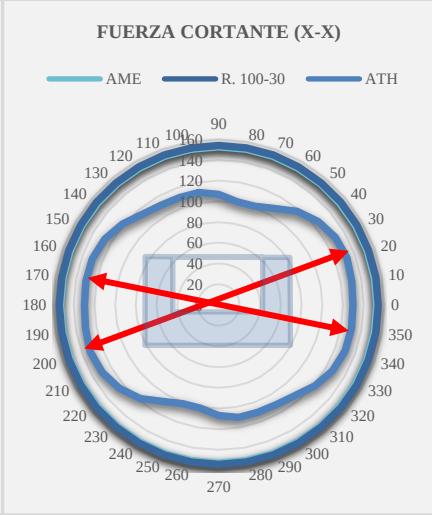

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

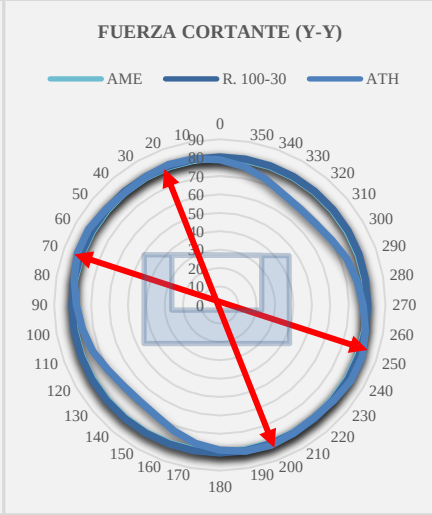

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R. 100-30
ATH

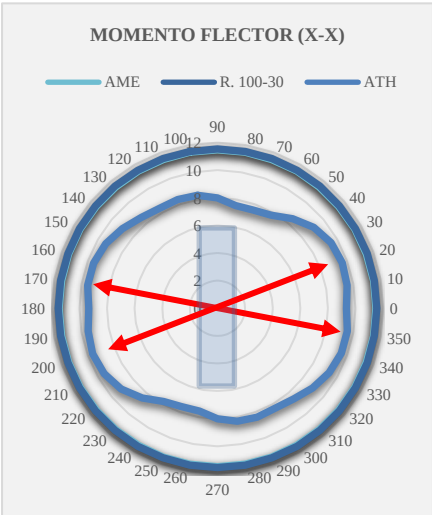

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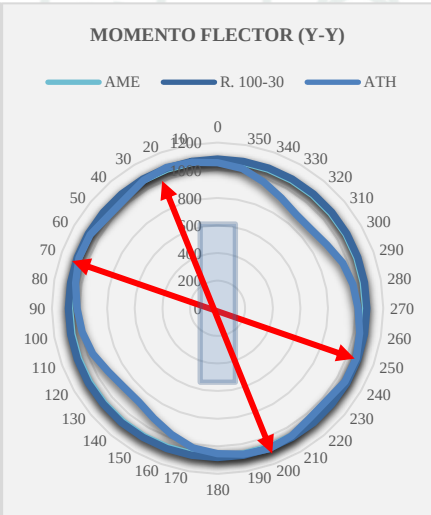

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

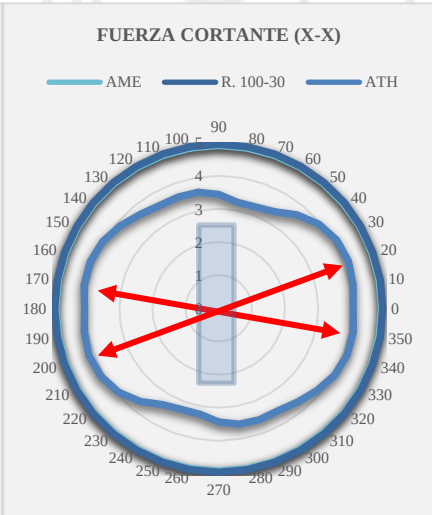

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

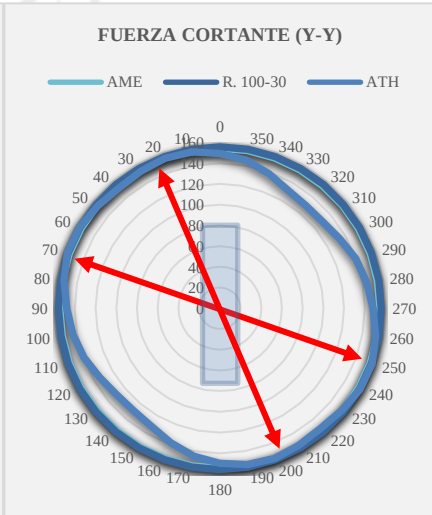

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

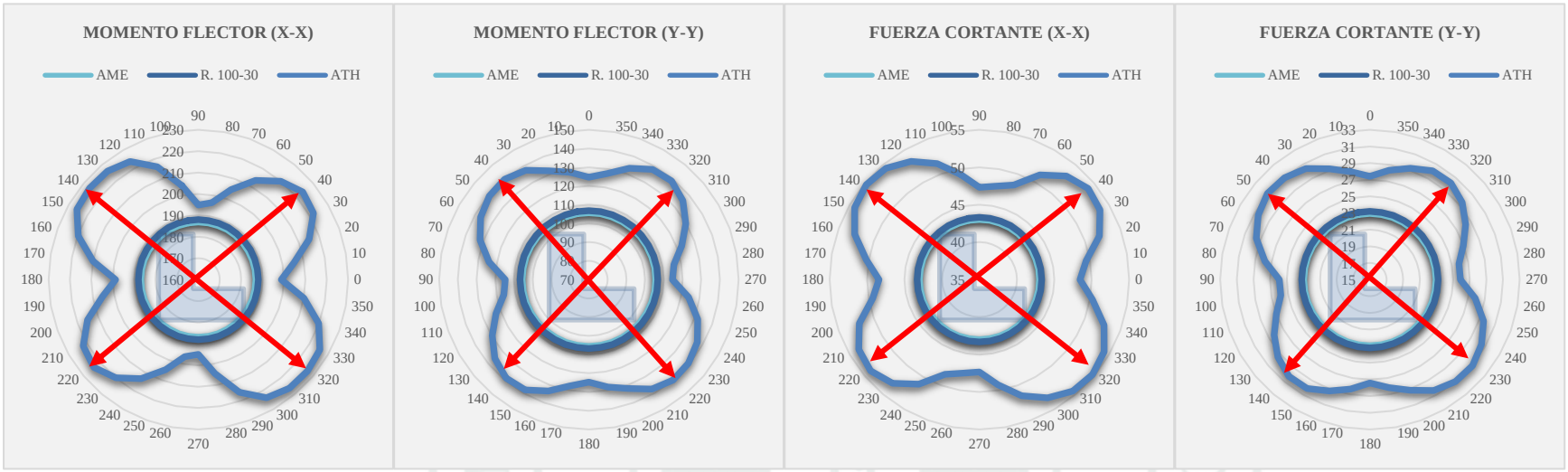

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

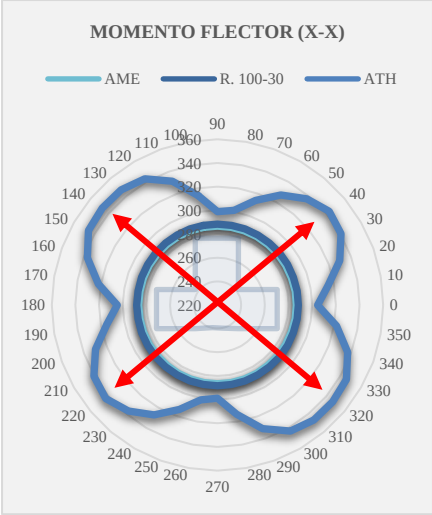

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

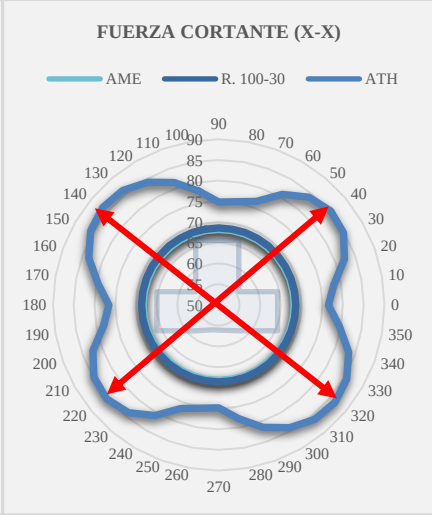
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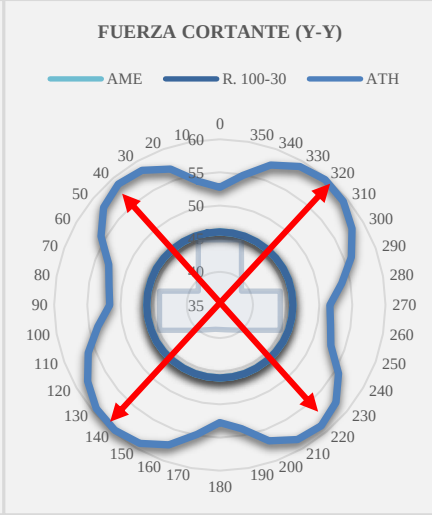
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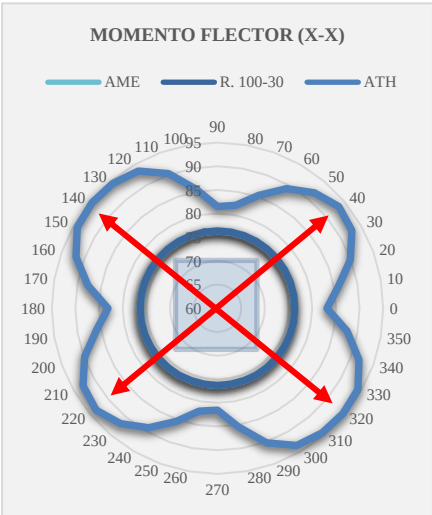


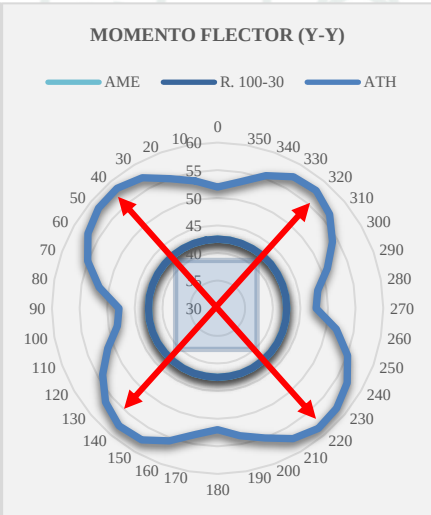

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

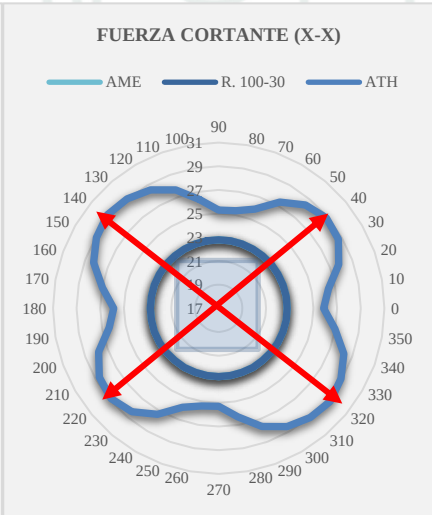

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

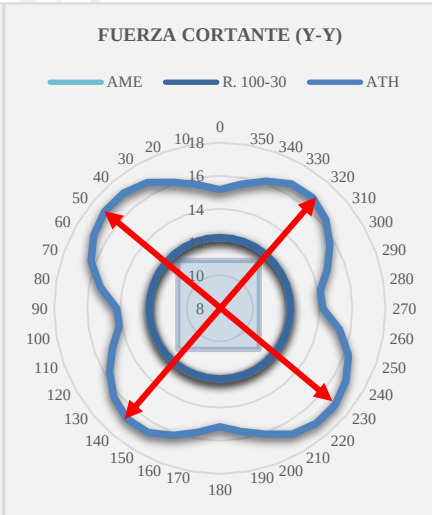

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

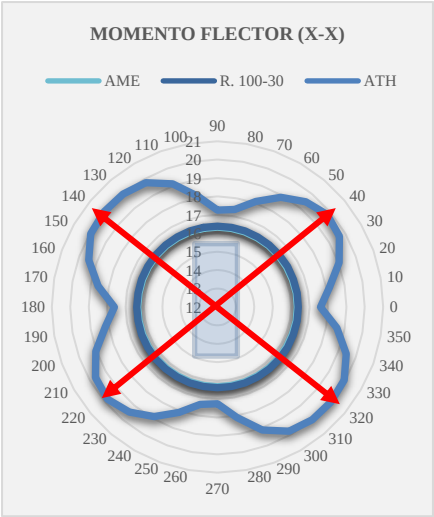

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

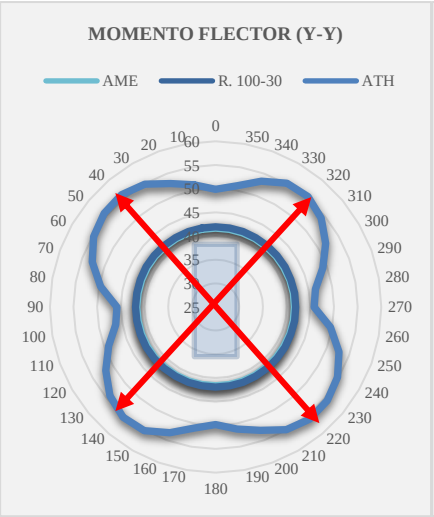

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

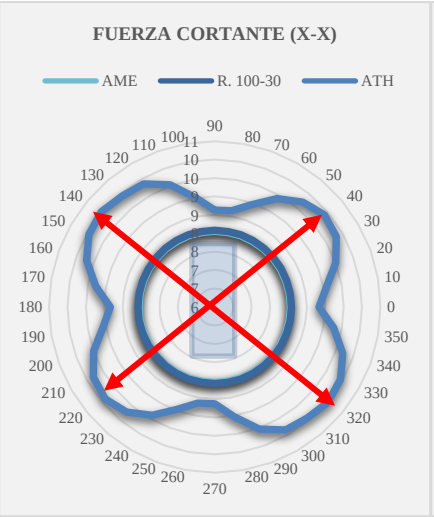

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

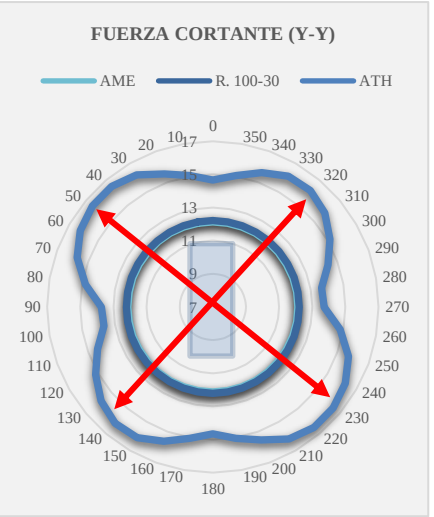

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

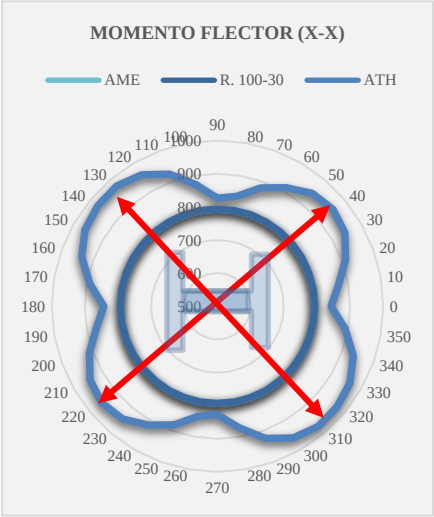

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

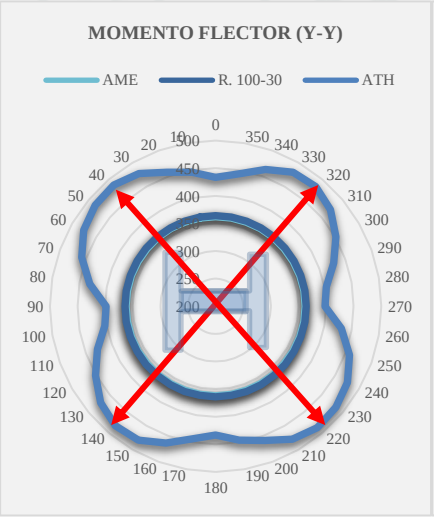

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

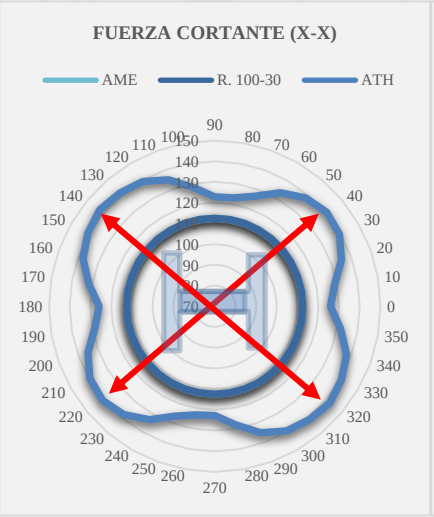

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

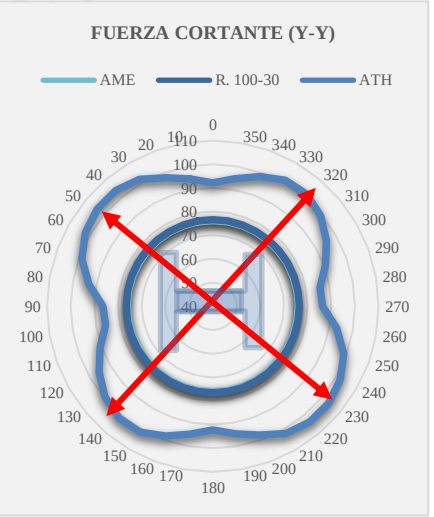

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

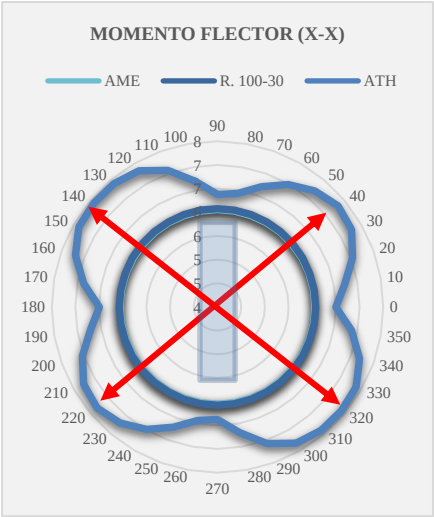

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

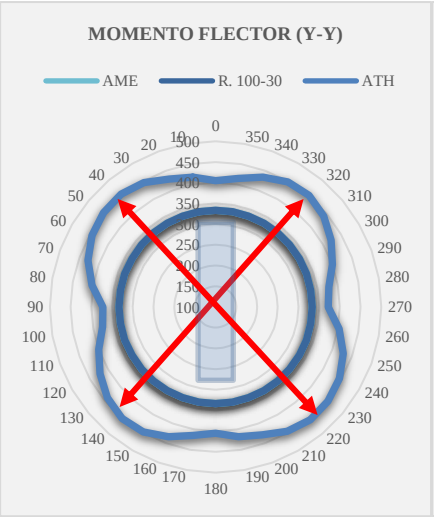

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

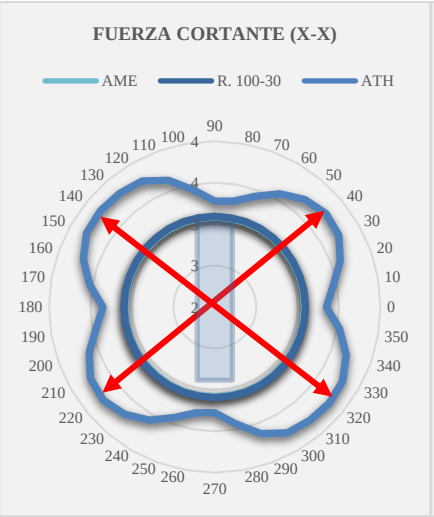

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

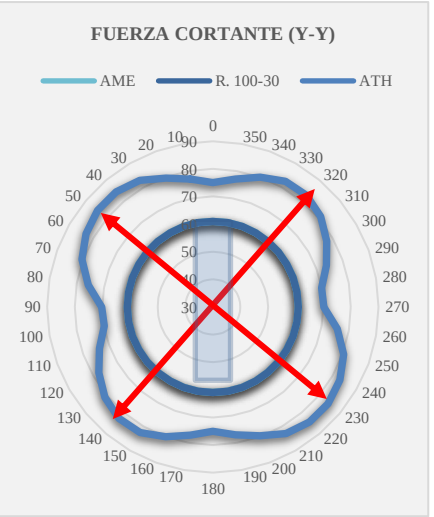

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

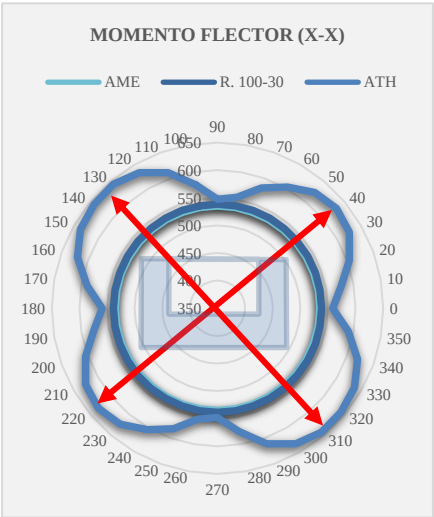

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

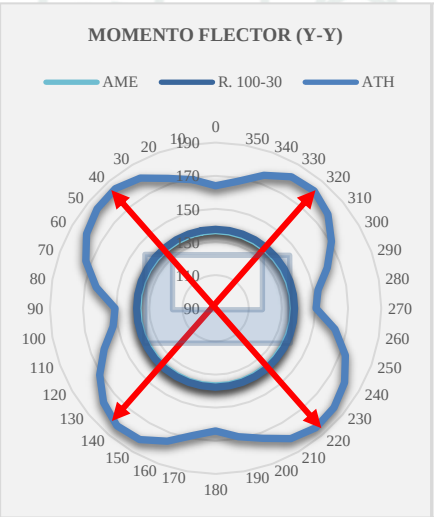

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

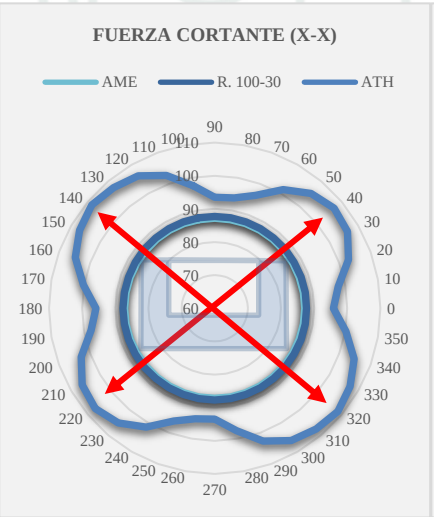

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

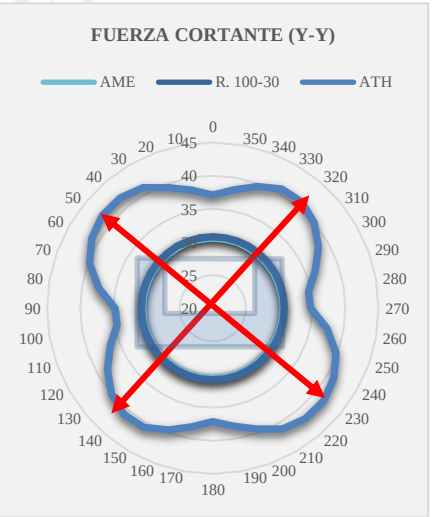

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

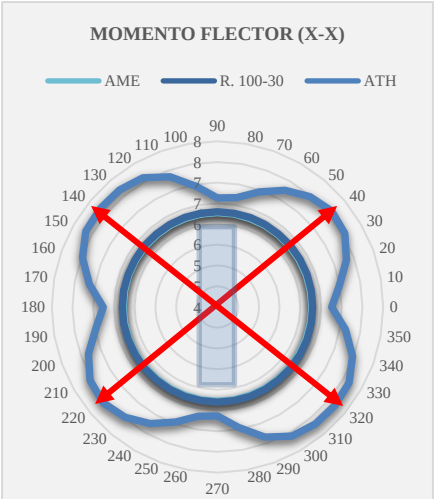

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

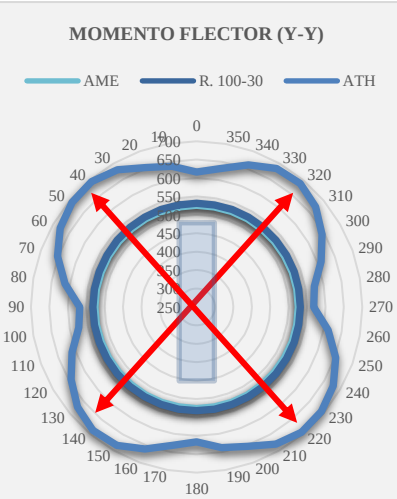

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

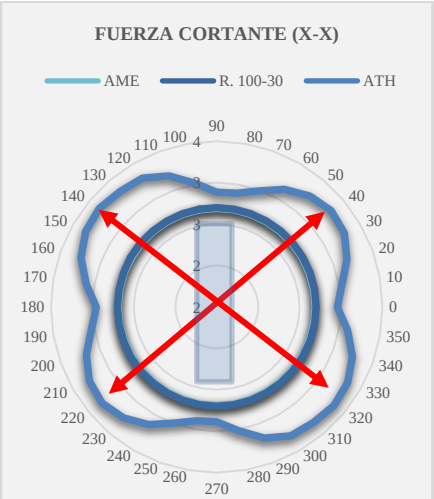

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

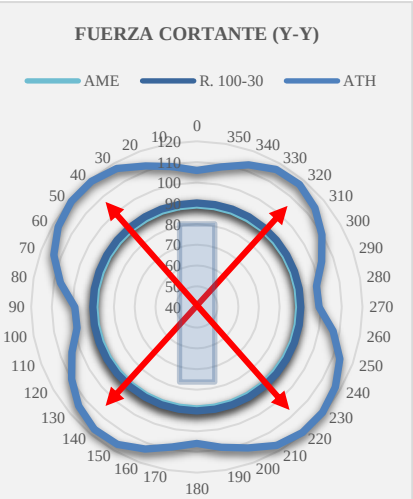

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

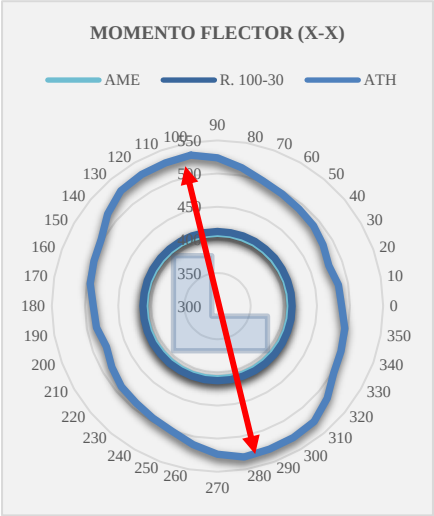

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

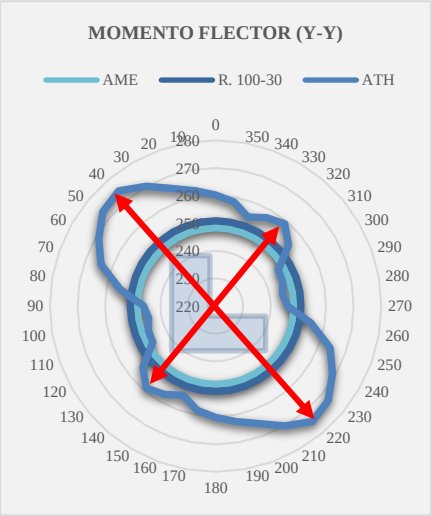

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

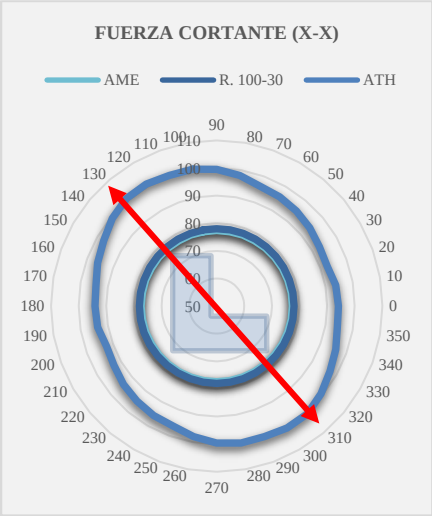

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

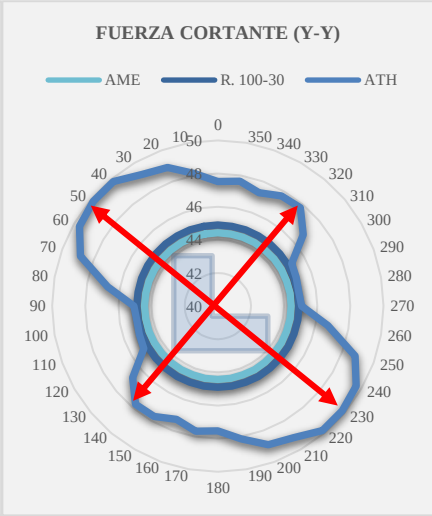

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

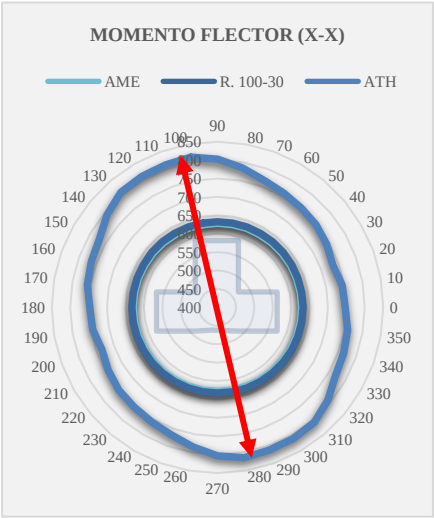
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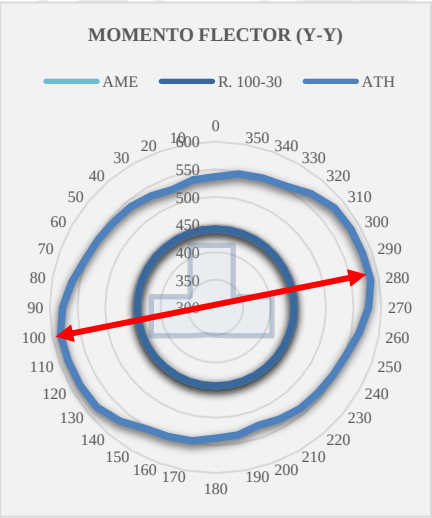

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

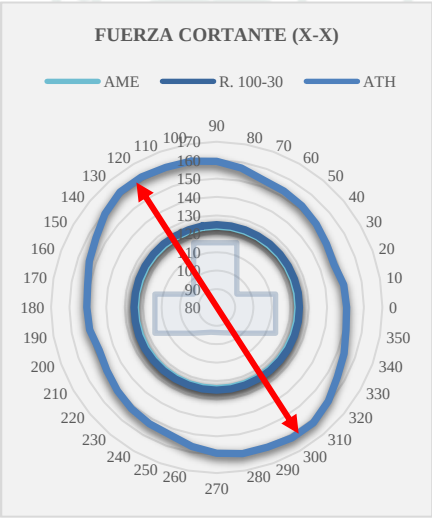

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

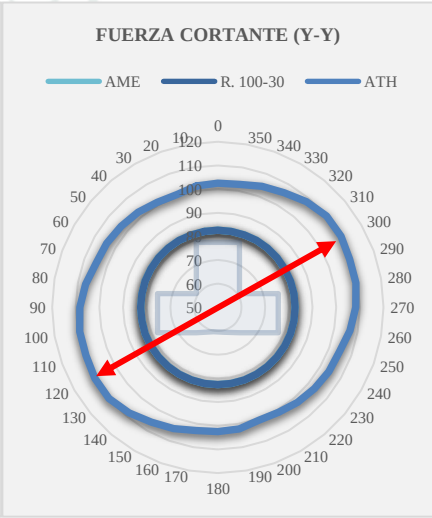

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

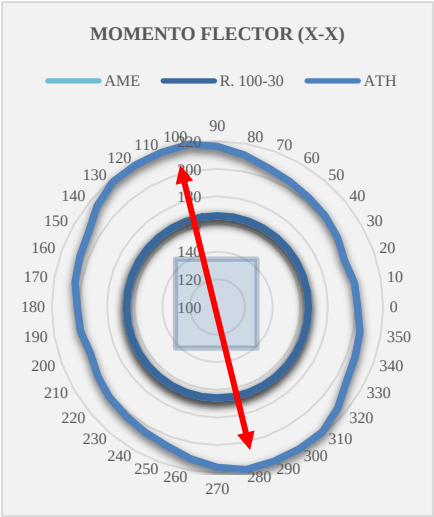

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

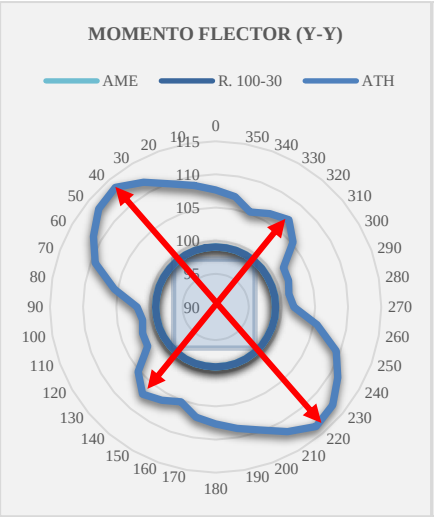

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

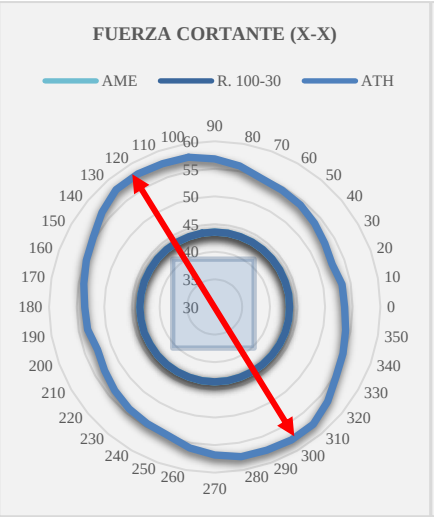

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

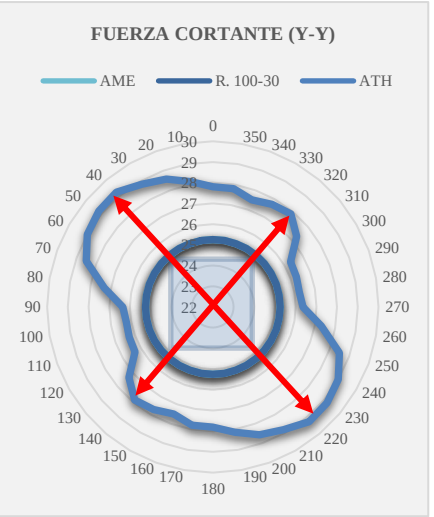

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

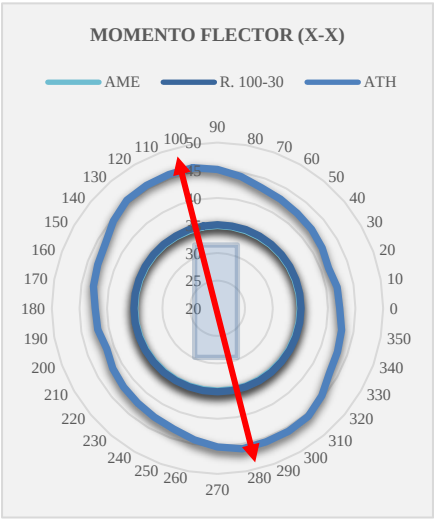

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

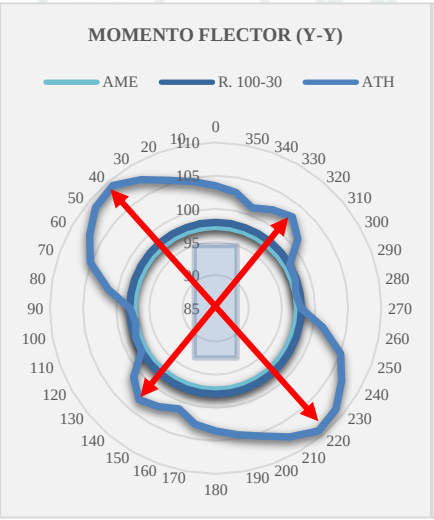

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

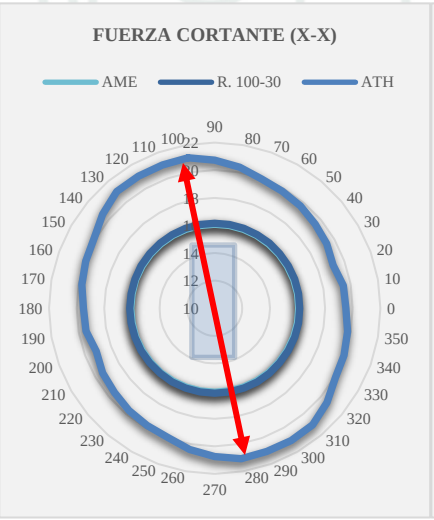

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

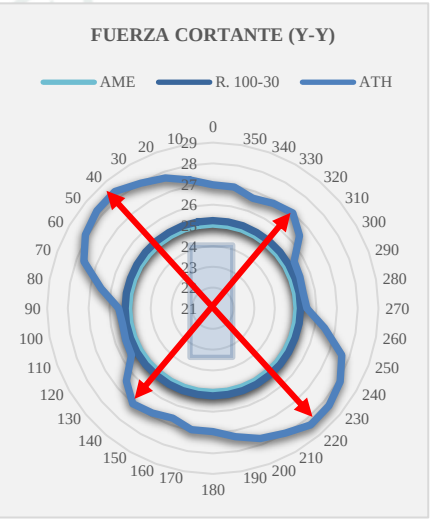

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

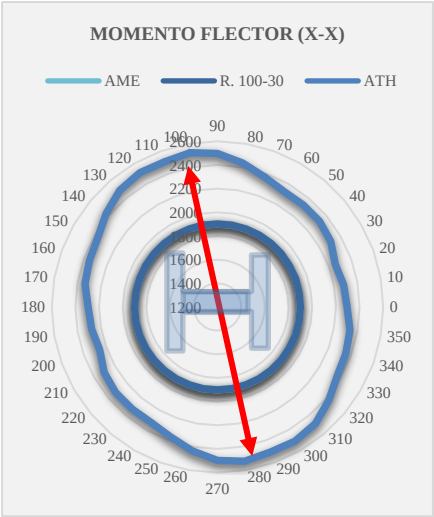

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

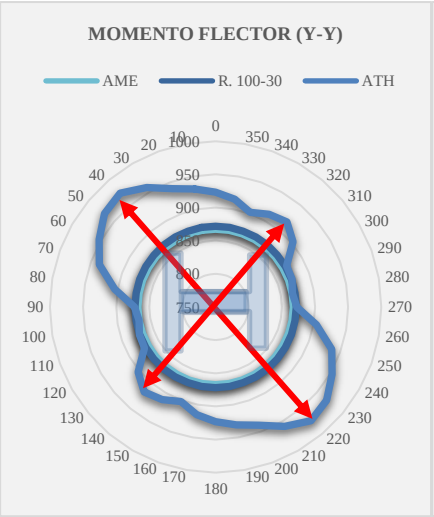

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

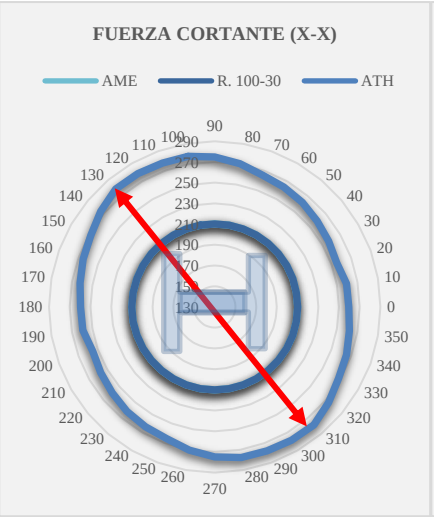

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

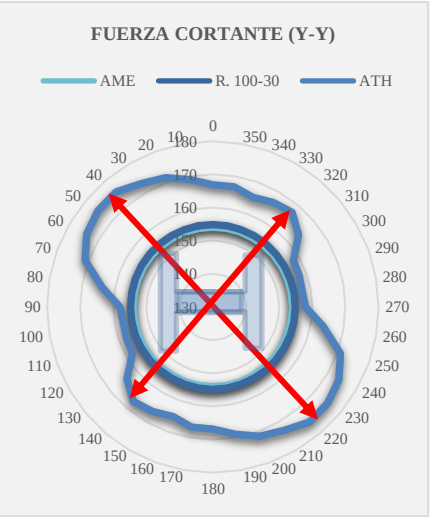

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

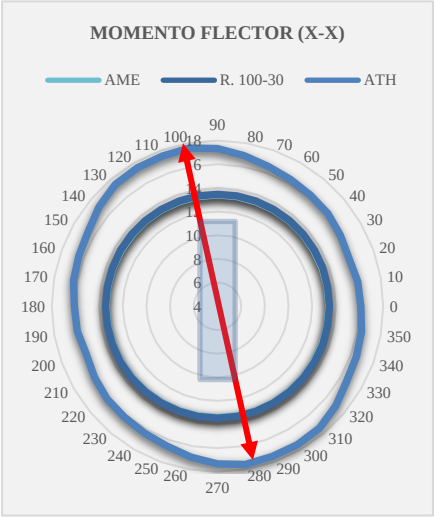

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

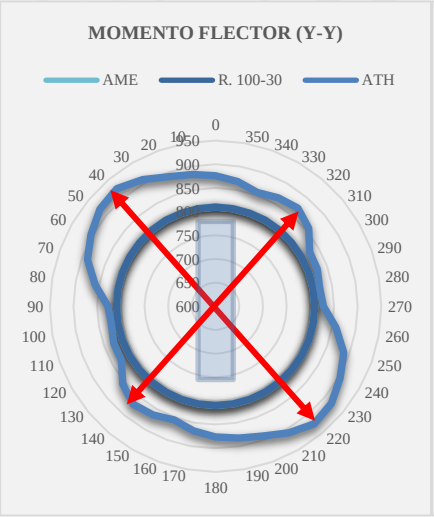

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

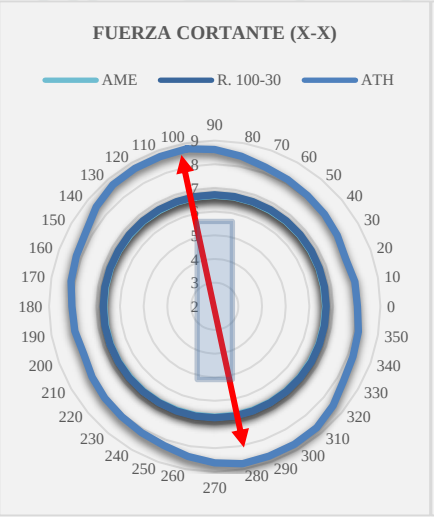

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

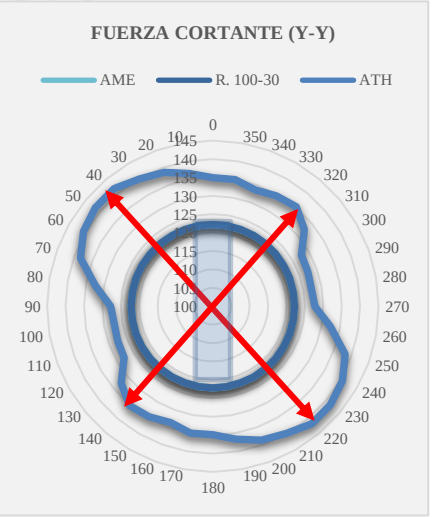

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

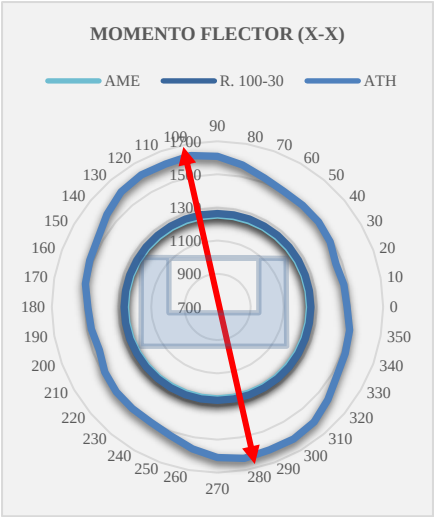

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

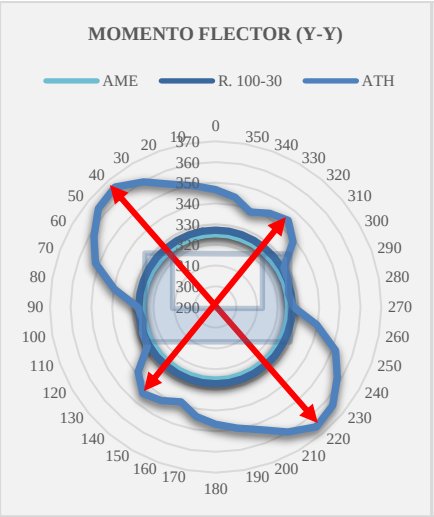

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

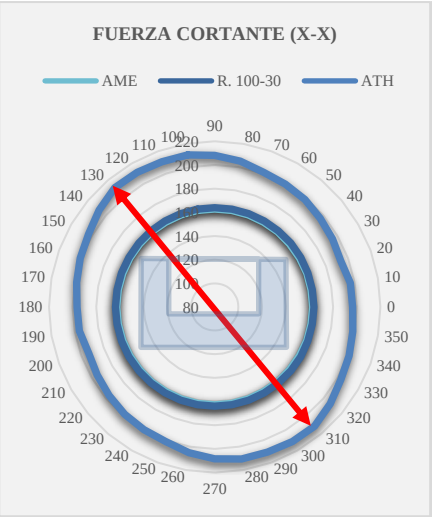

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

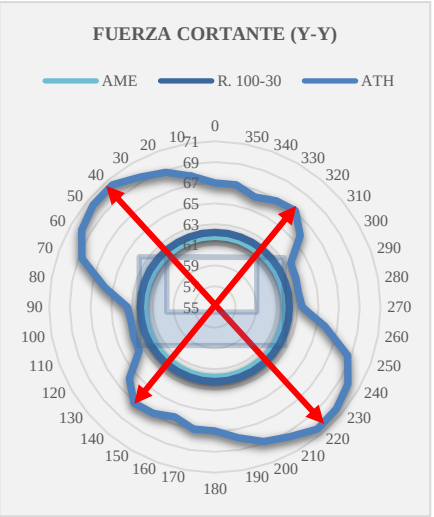

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

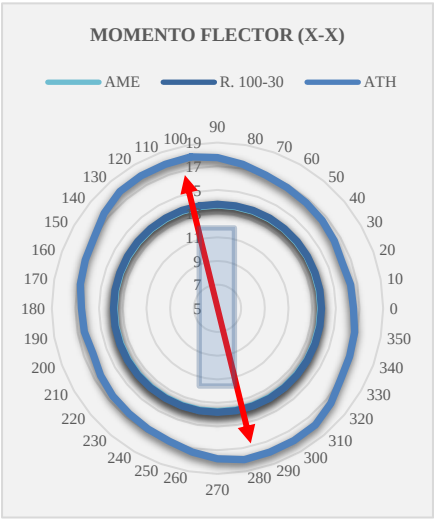

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

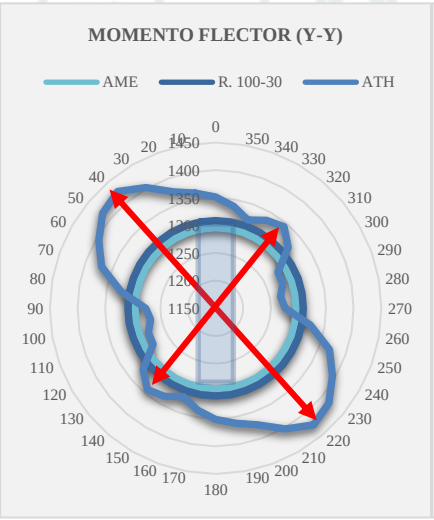

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

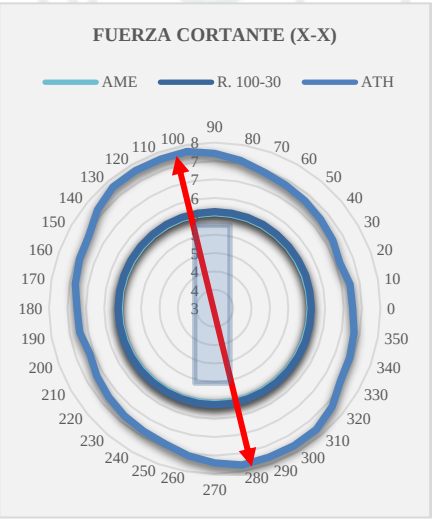

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

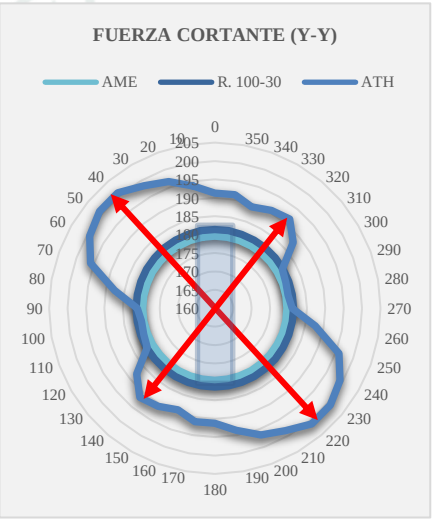

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

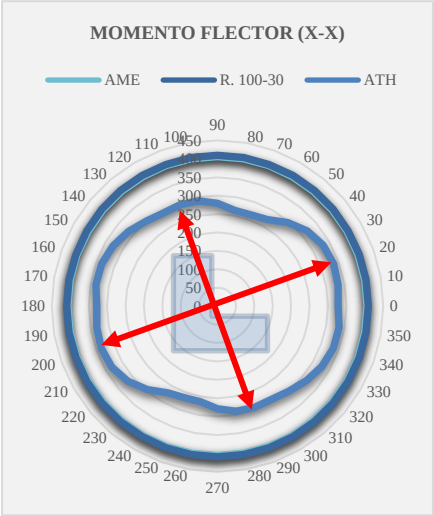

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

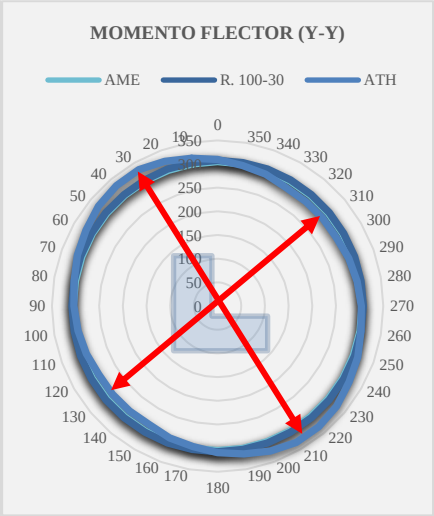

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

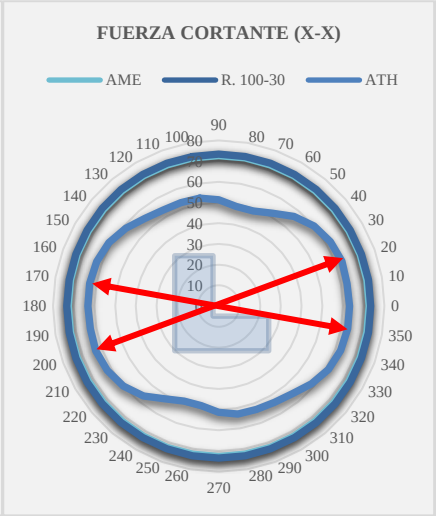

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

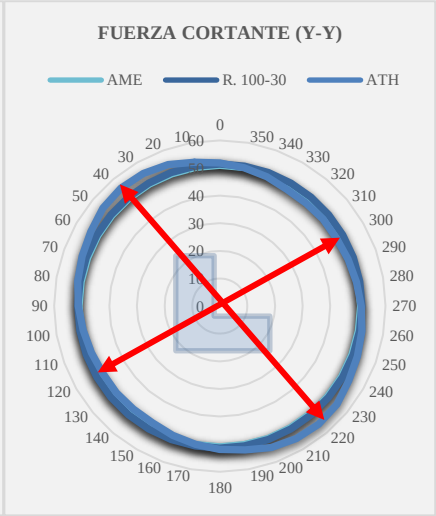

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

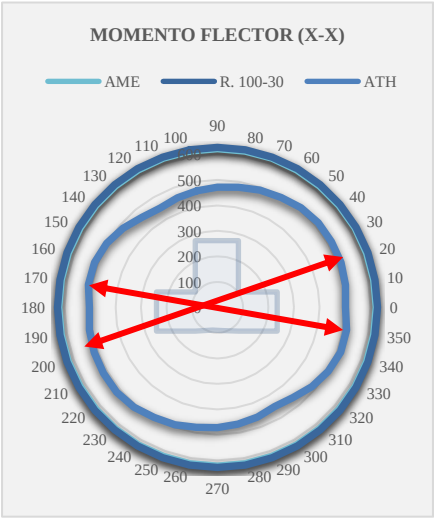
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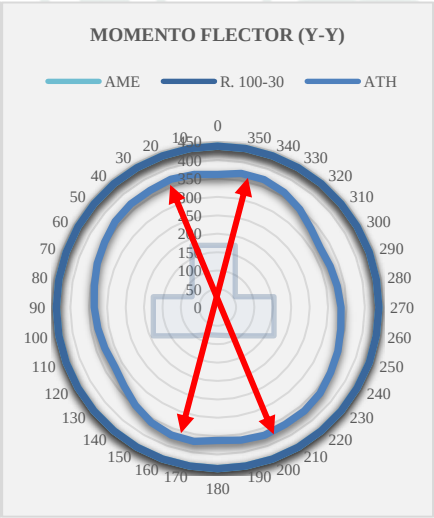


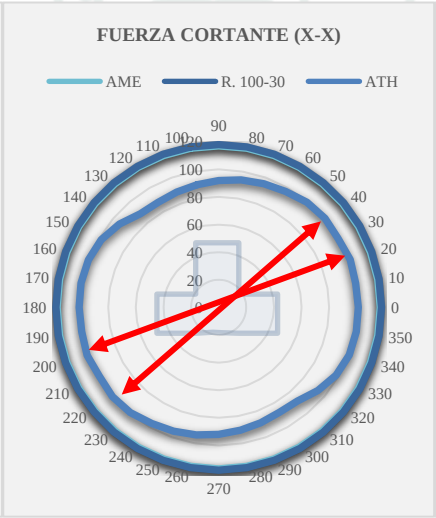


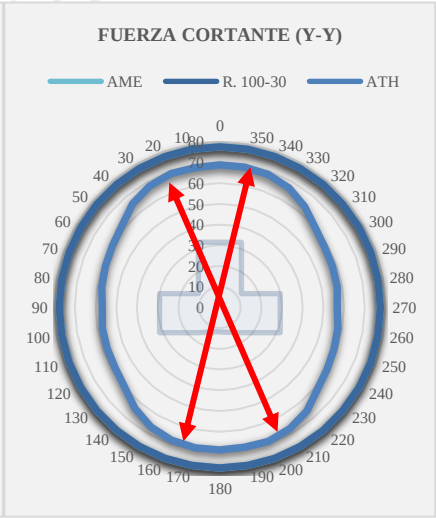


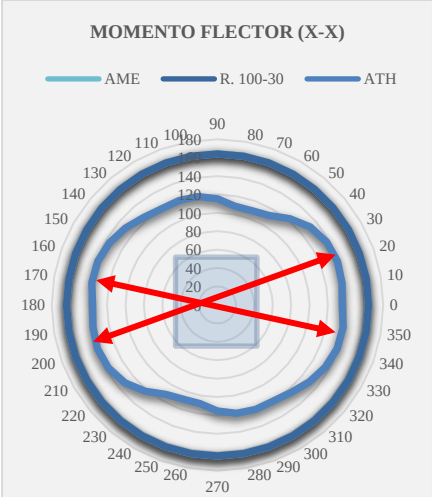


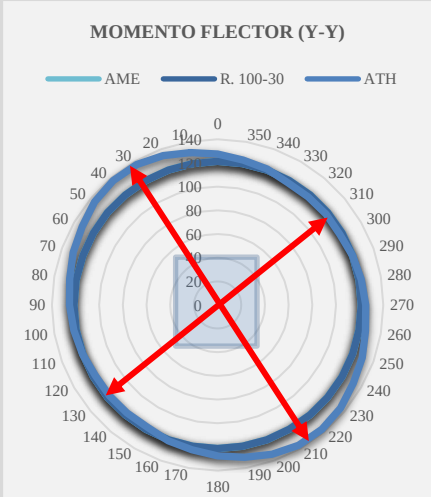


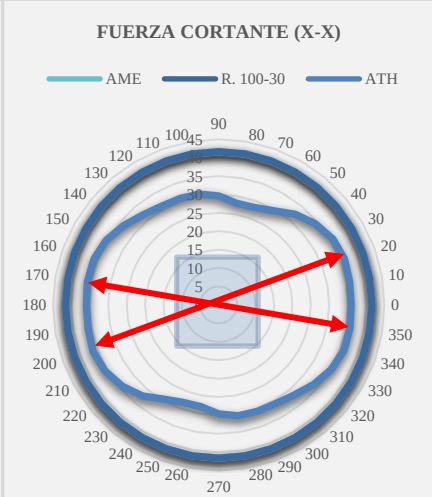


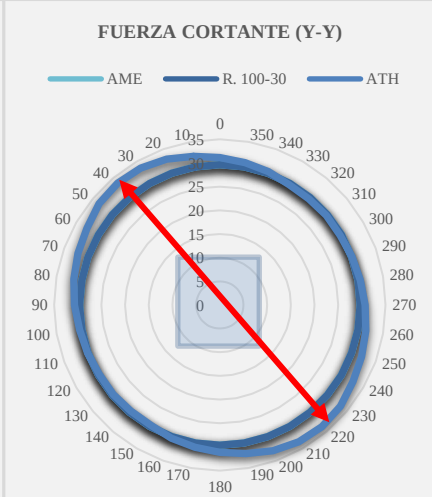


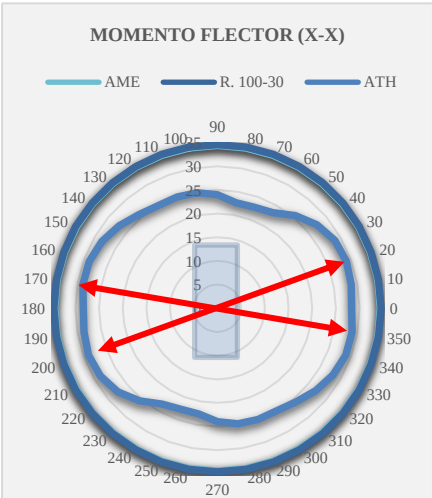


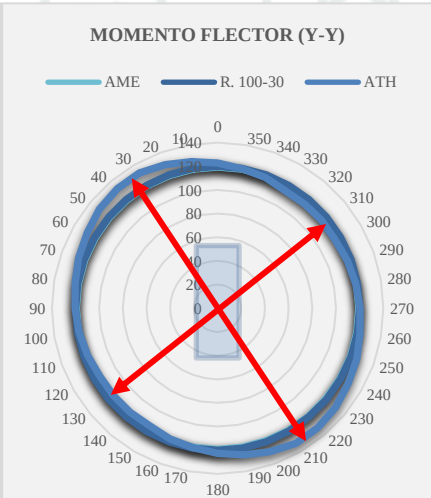

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

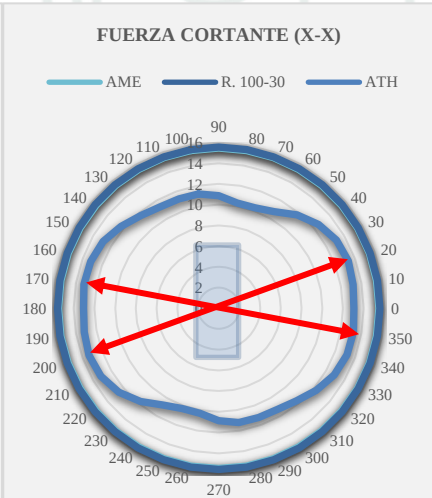

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

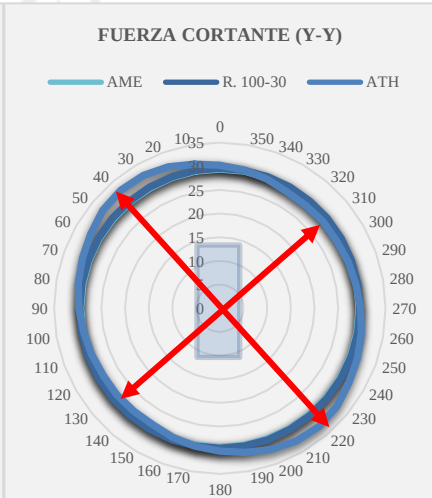

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

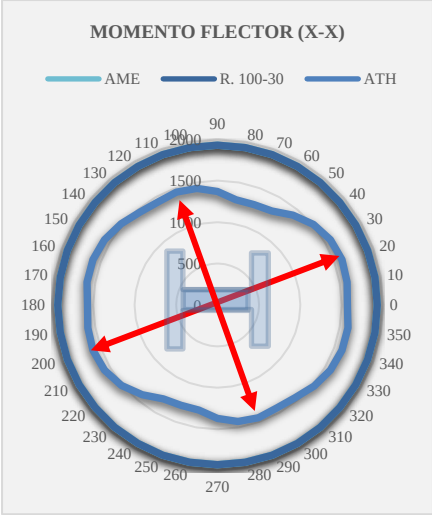

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

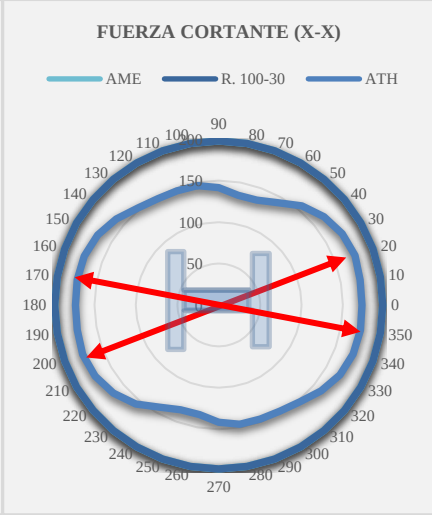

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

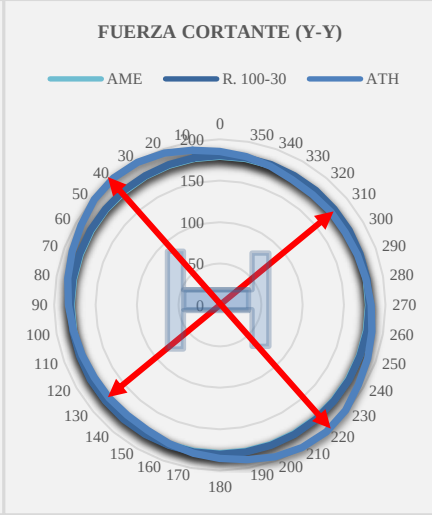

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

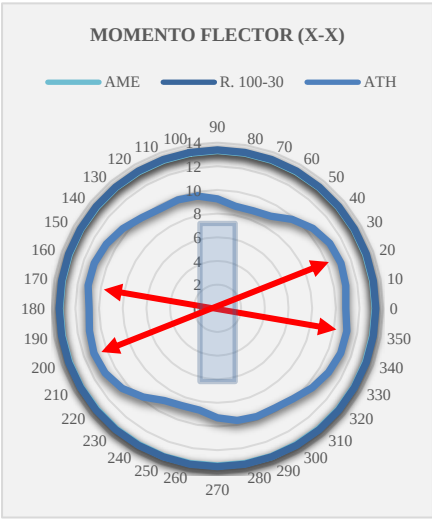

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

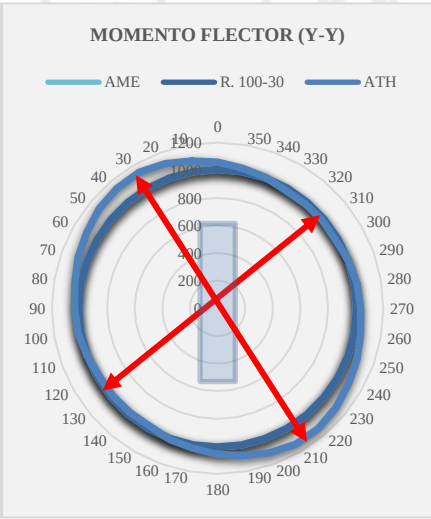

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

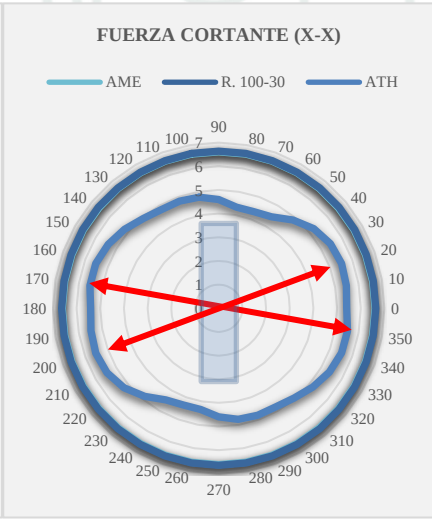

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

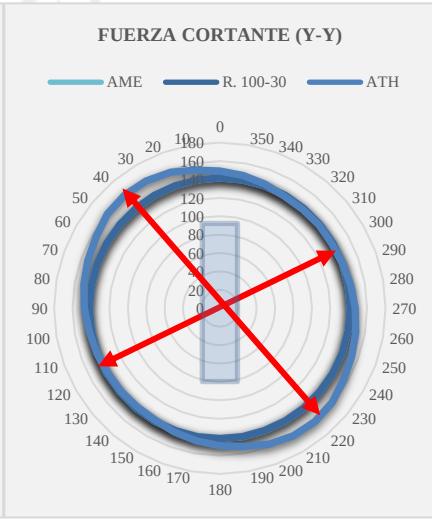

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

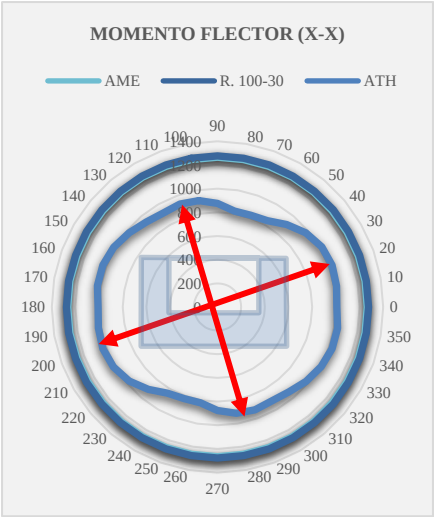

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

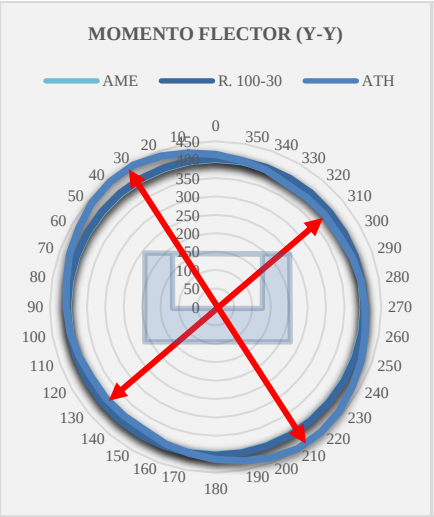

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

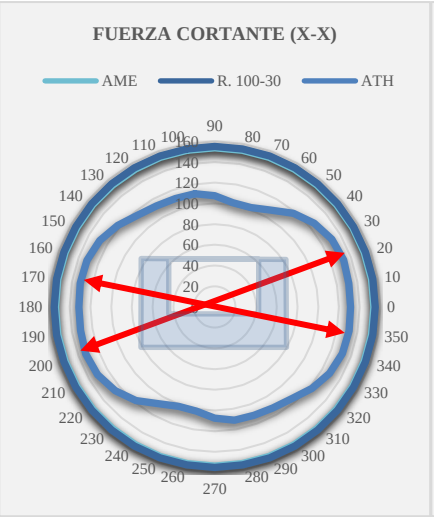

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

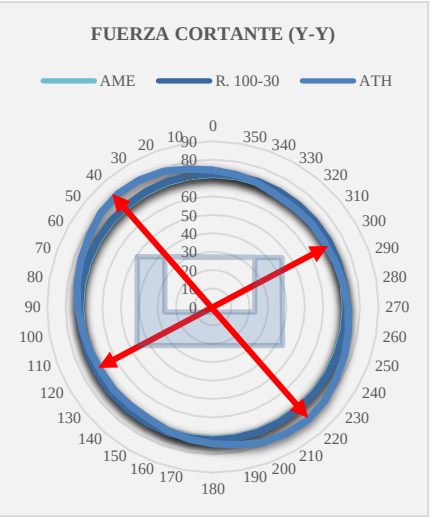

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

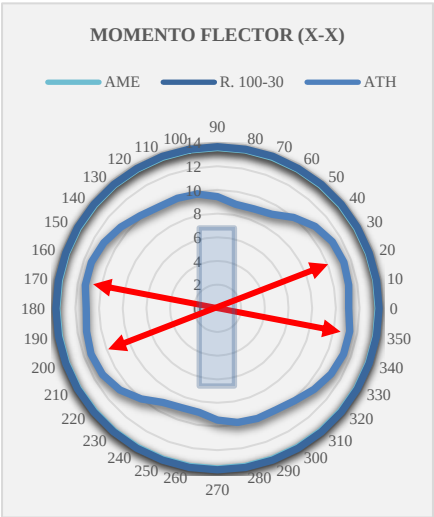

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

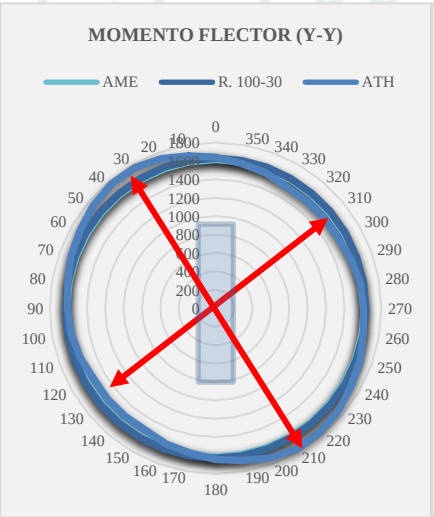

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

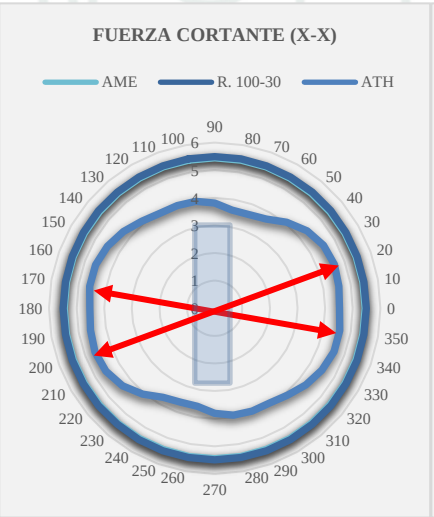

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

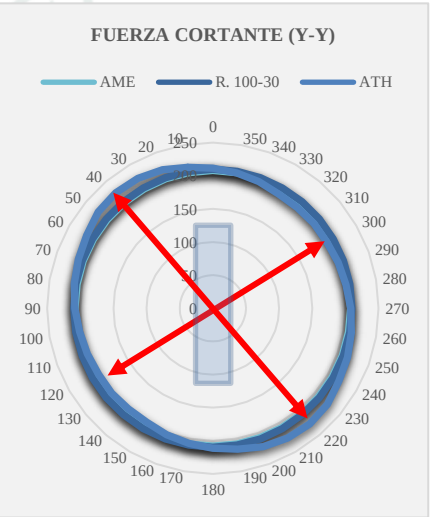

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

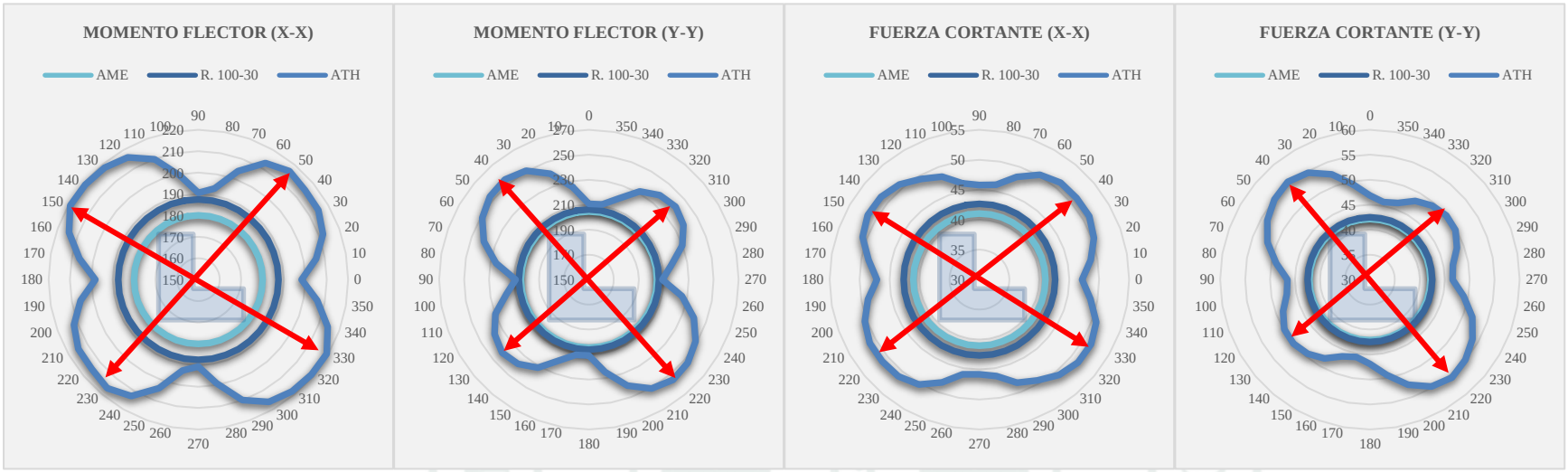

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

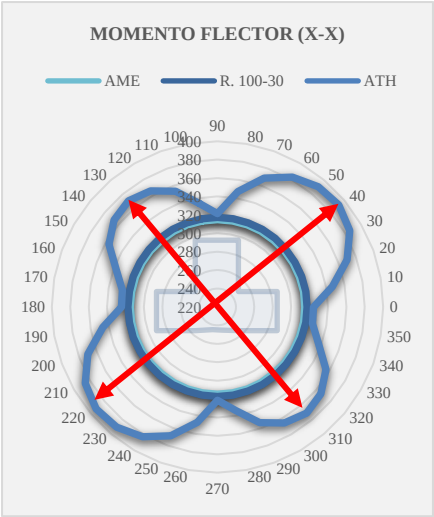

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

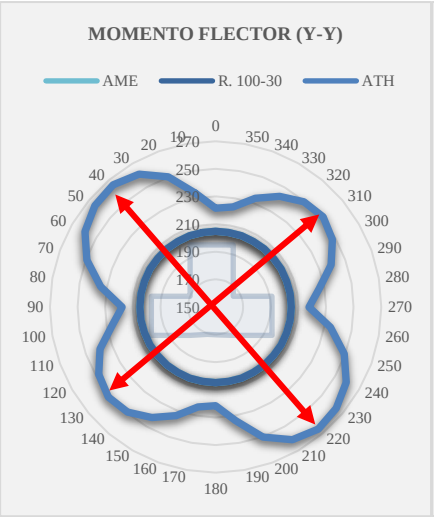

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

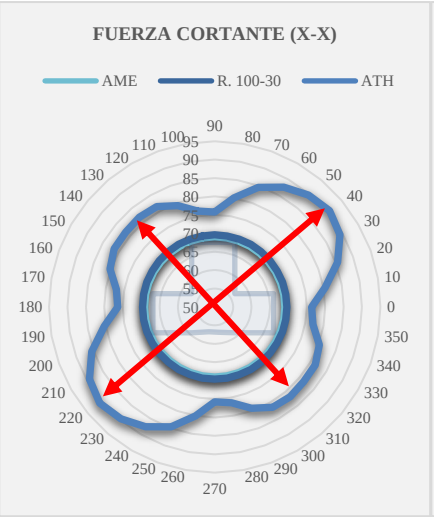
MODELO 6

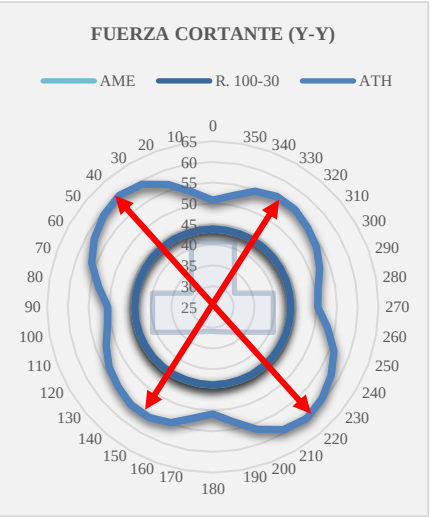
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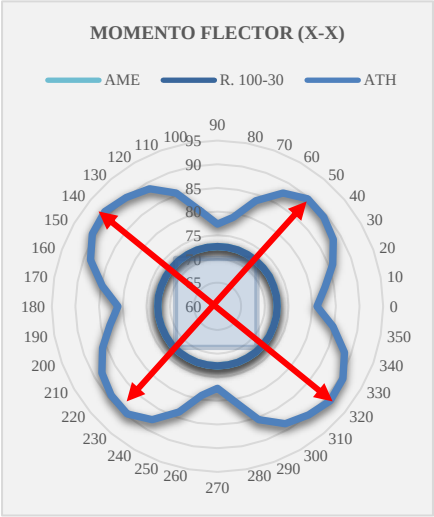


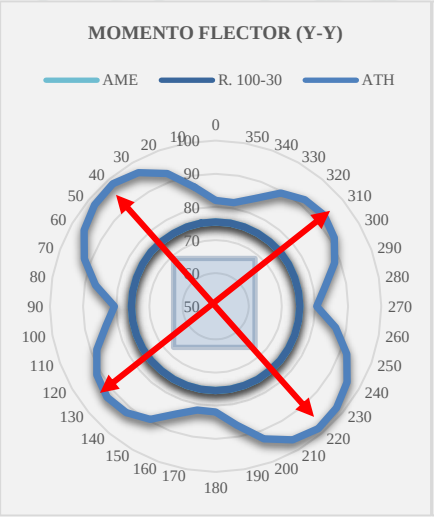

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

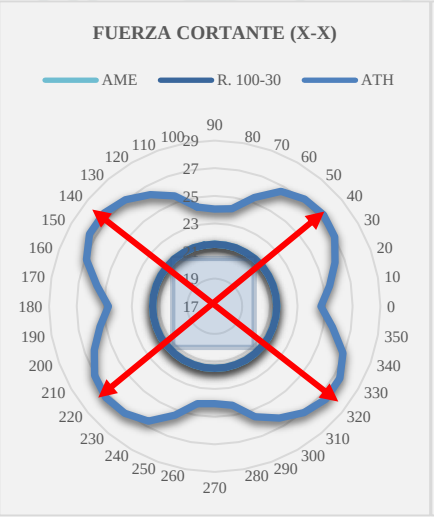

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

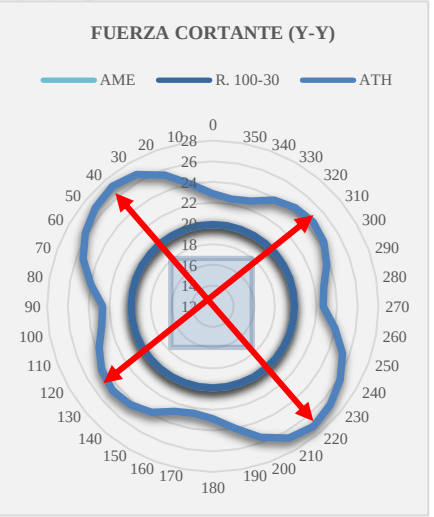

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

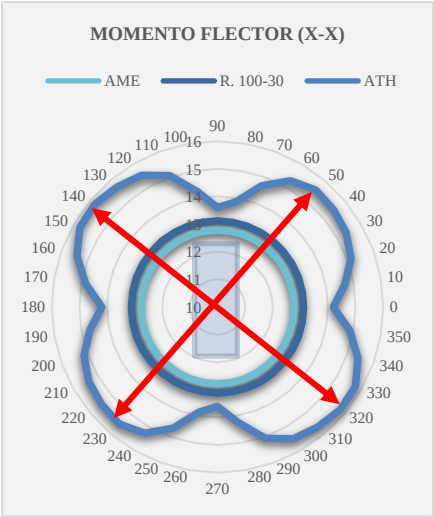

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

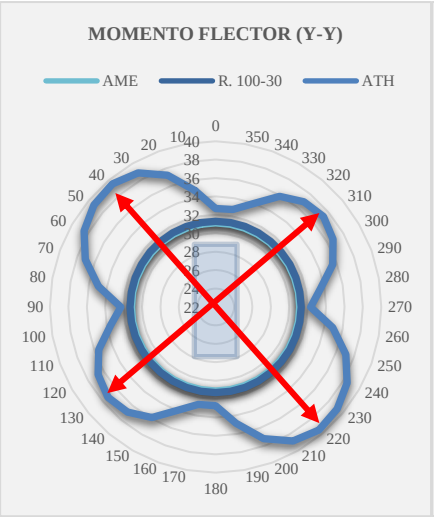

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

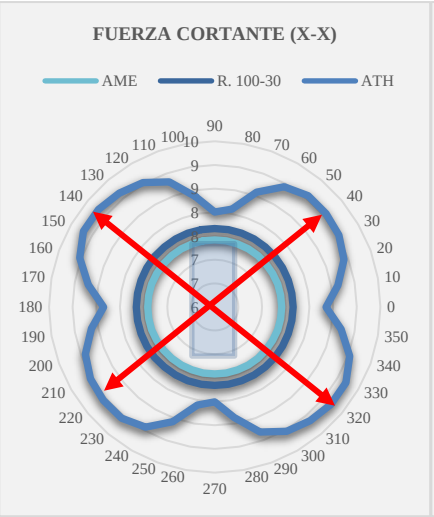

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AME
R. 100-30
ATH

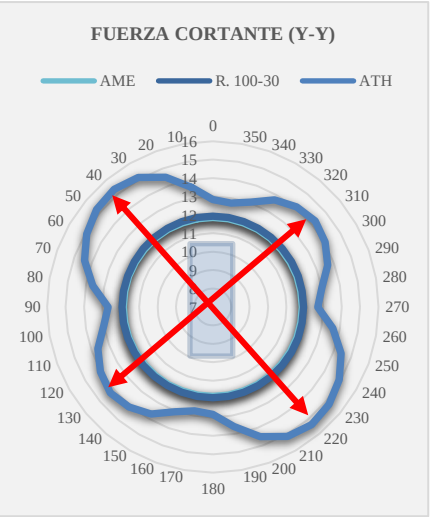

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ATH

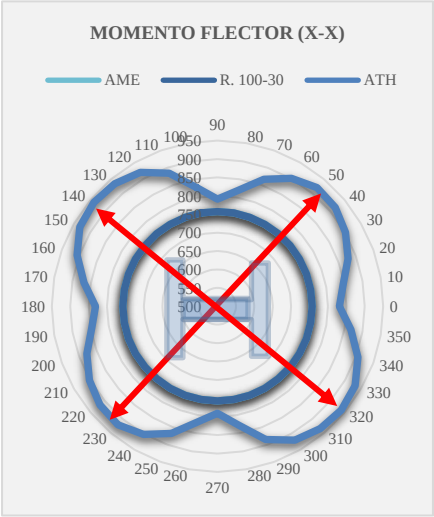

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

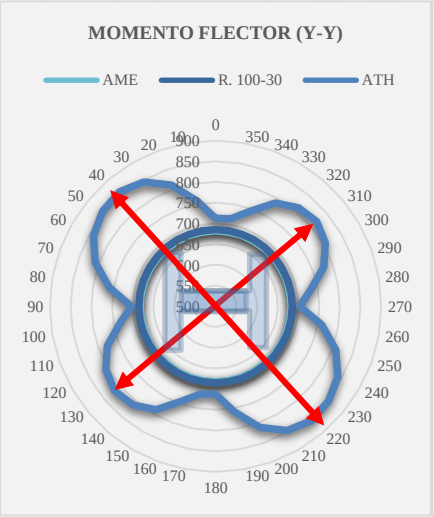

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ATH

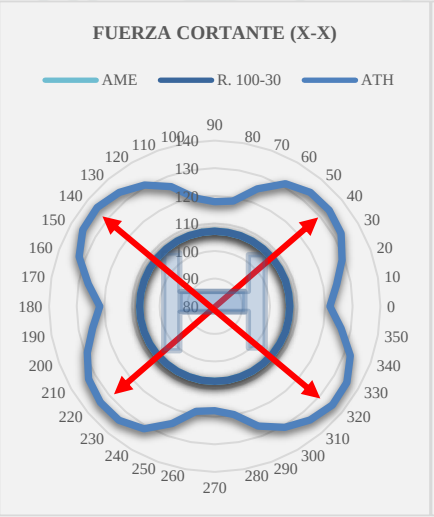

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ATH

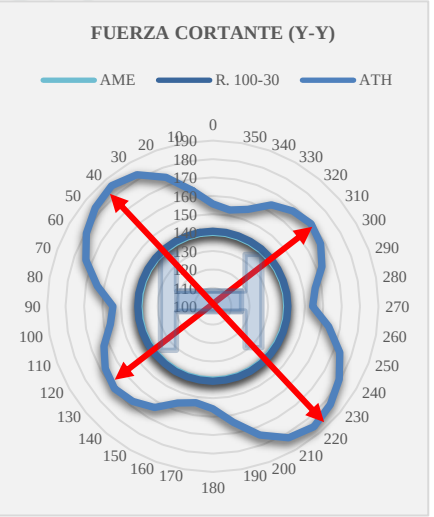

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

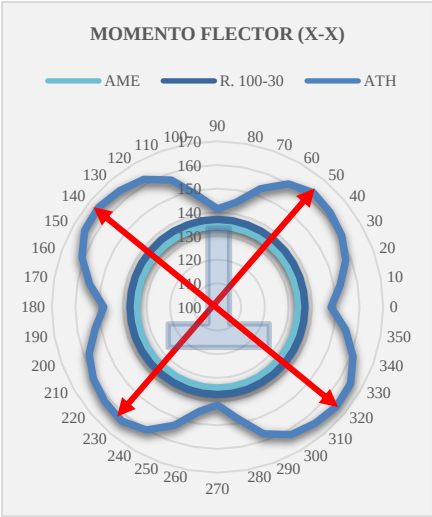

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

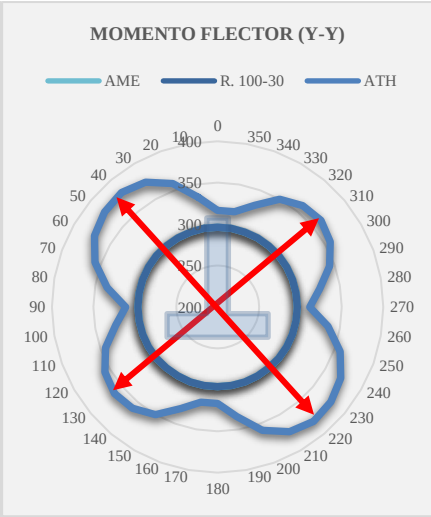

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

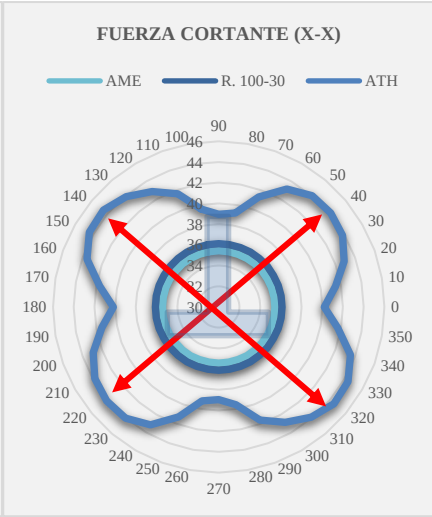

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R. 100-30
ATH

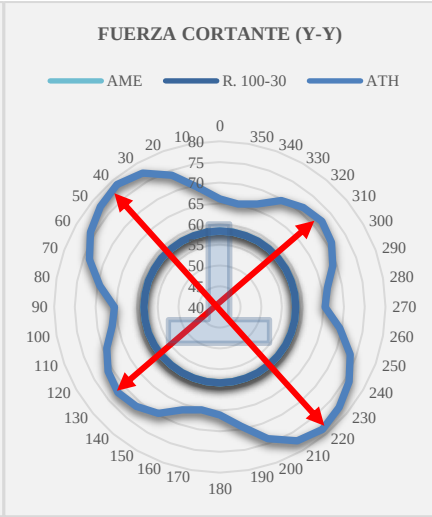

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

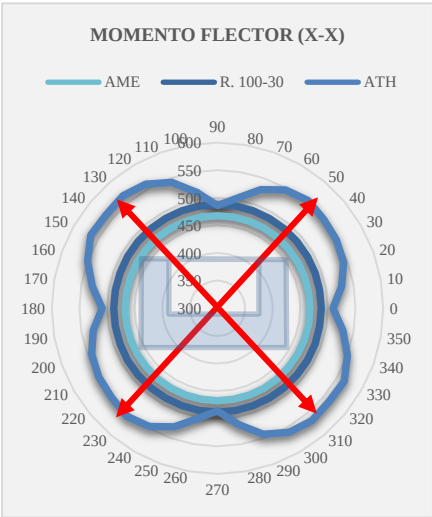

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R. 100-30
ATH

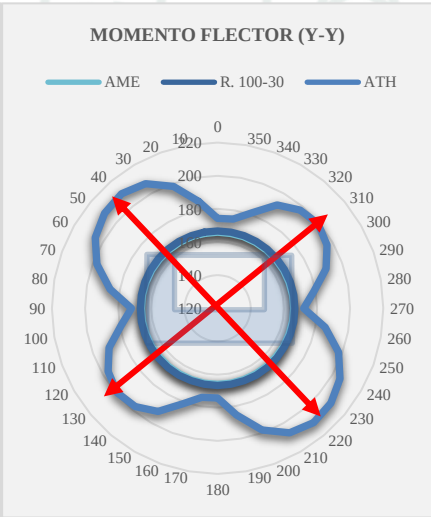

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

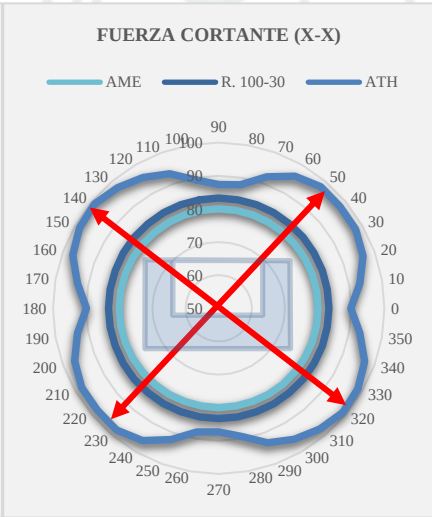

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

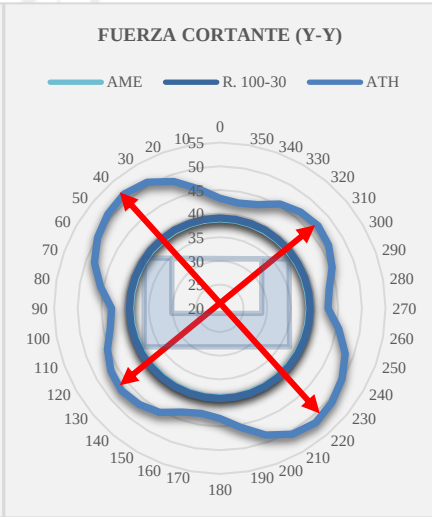

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

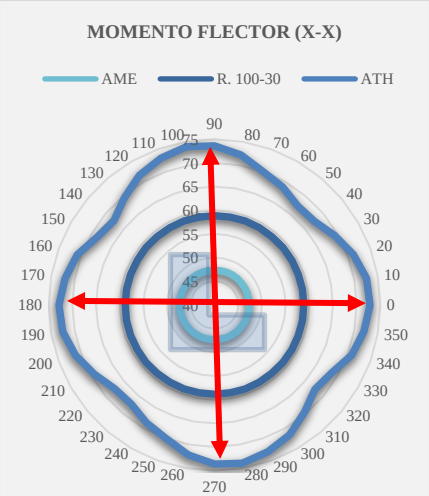

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

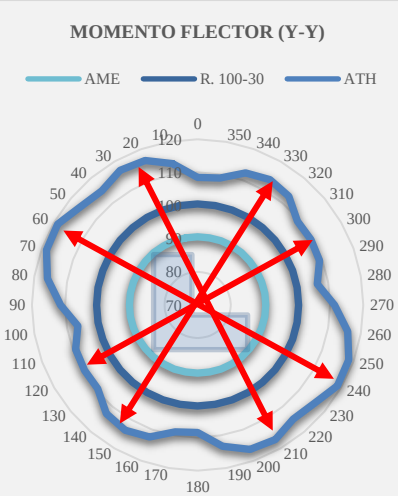

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH


MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

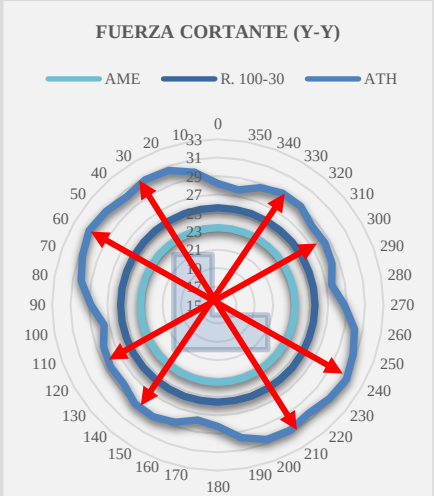

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

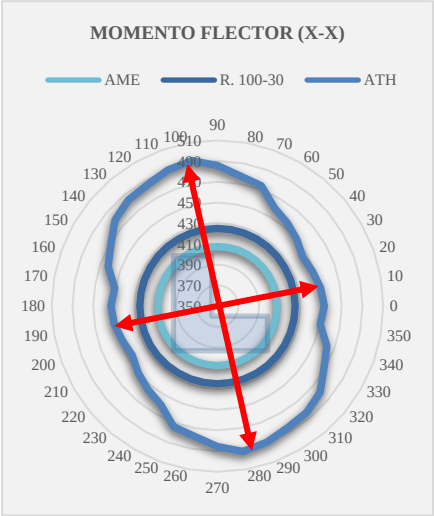

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R. 100-30
ATH

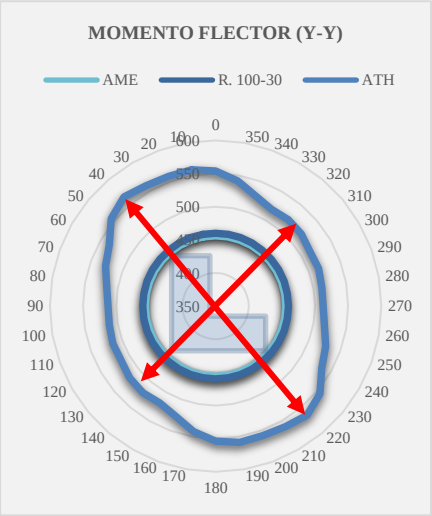

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

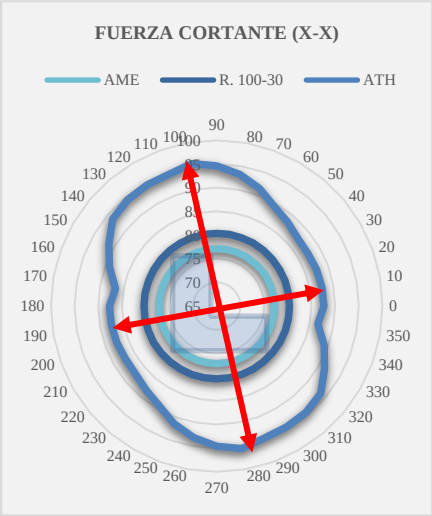

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

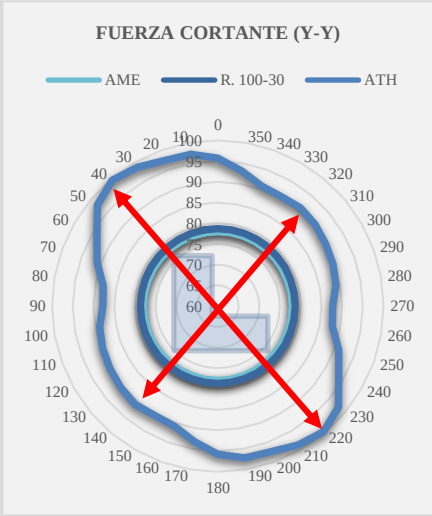

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

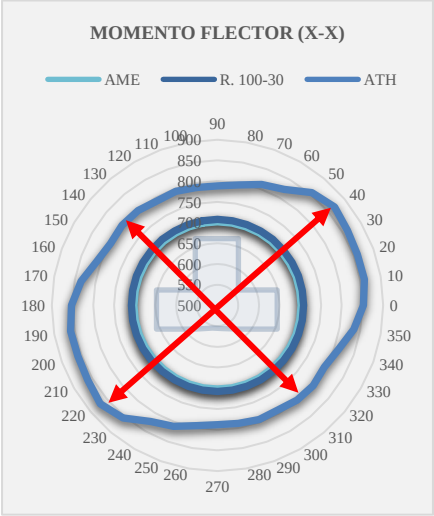
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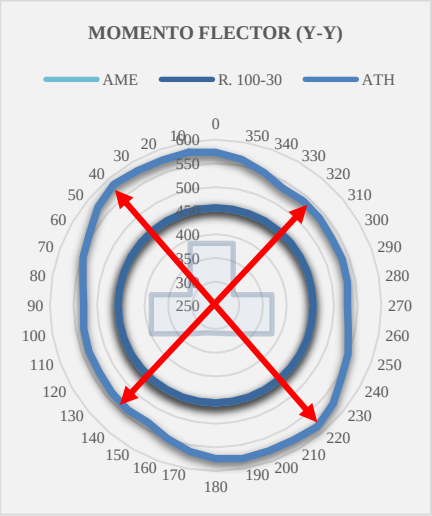

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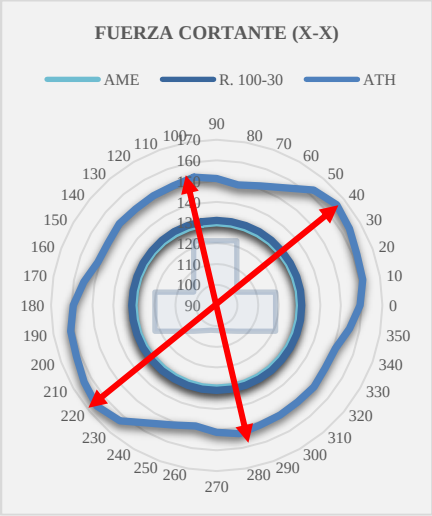

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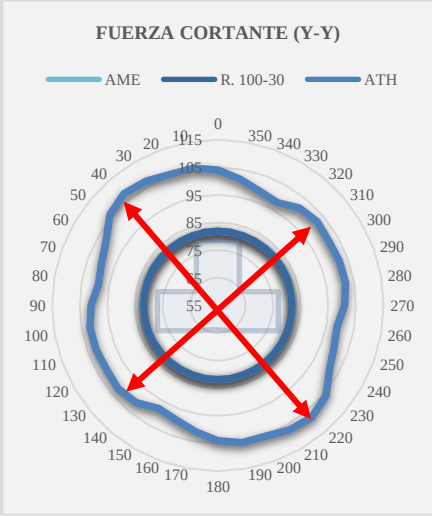

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R. 100-30
ATH

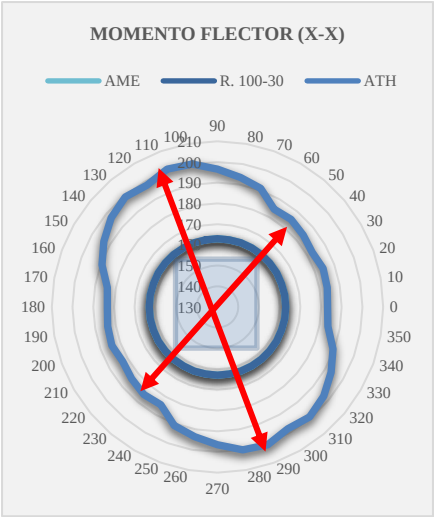

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

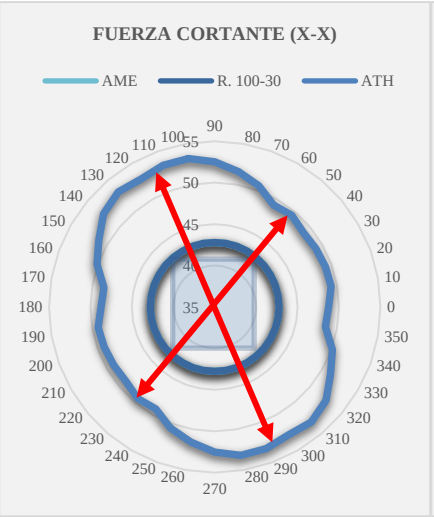

MOMENTO FLECTOR (Y-Y)
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R. 100-30
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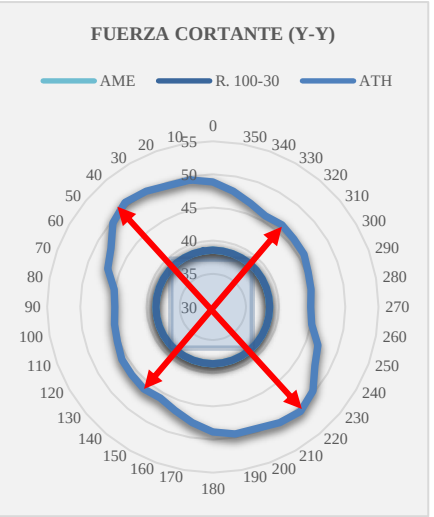

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R. 100-30
ATH

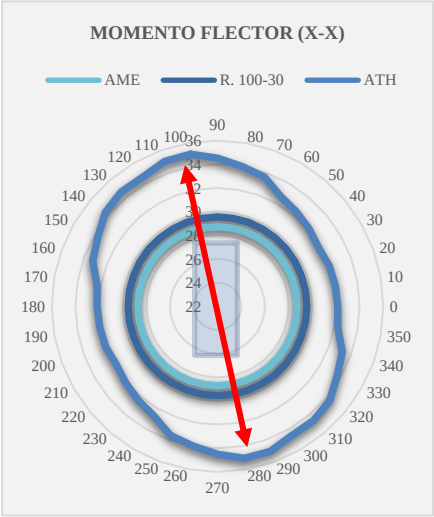

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

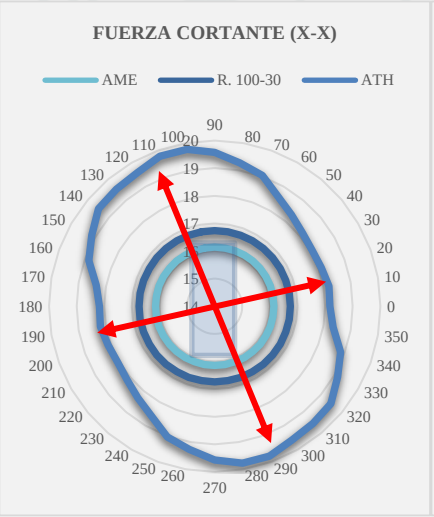

MOMENTO FLECTOR (Y-Y)
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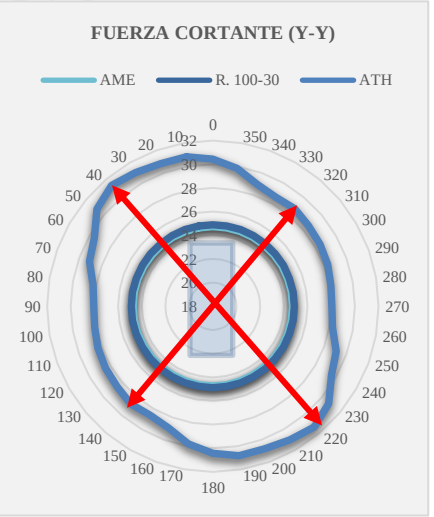

FUERZA CORTANTE (X-X)
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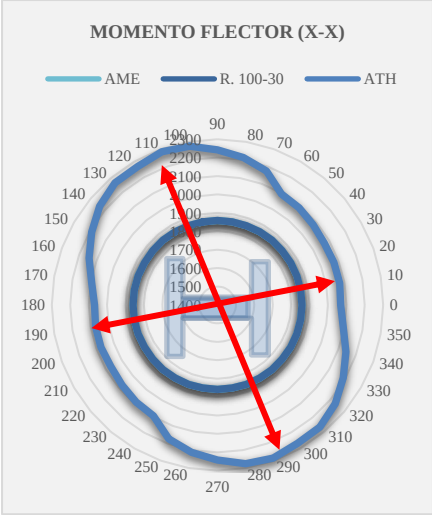

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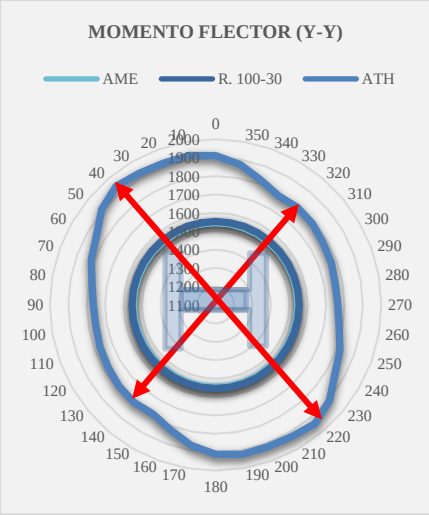

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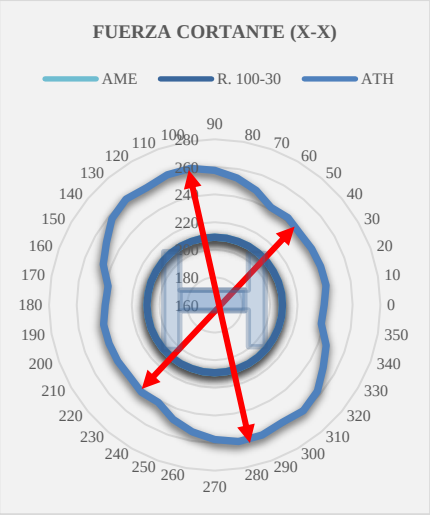

MOMENTO FLECTOR (Y-Y)
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FUERZA CORTANTE (X-X)
AME
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ATH

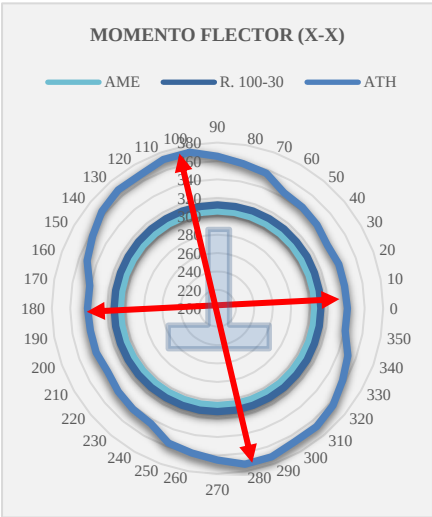

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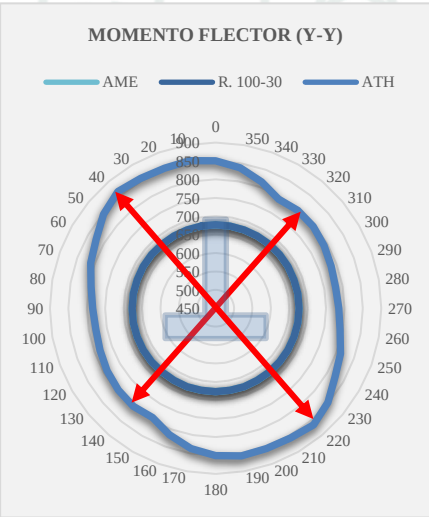

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ATH

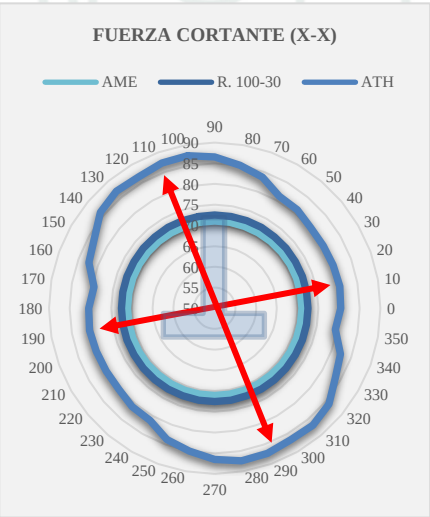

MOMENTO FLECTOR (Y-Y)
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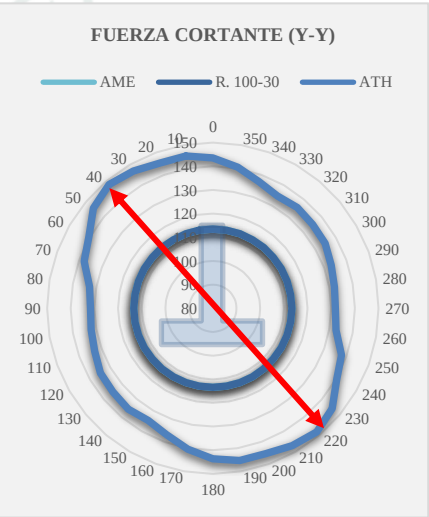

FUERZA CORTANTE (X-X)
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ATH

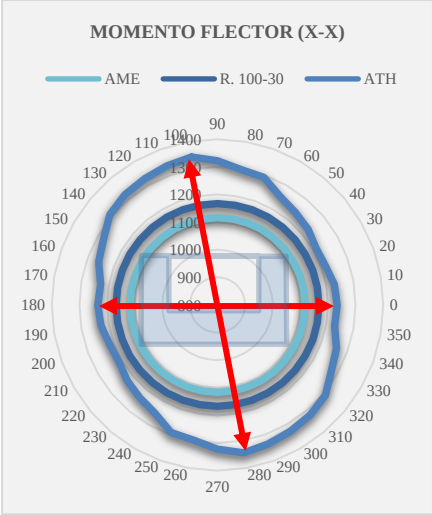

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R. 100-30
ATH

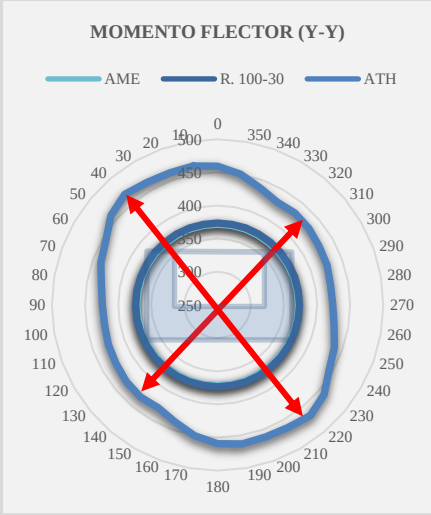

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

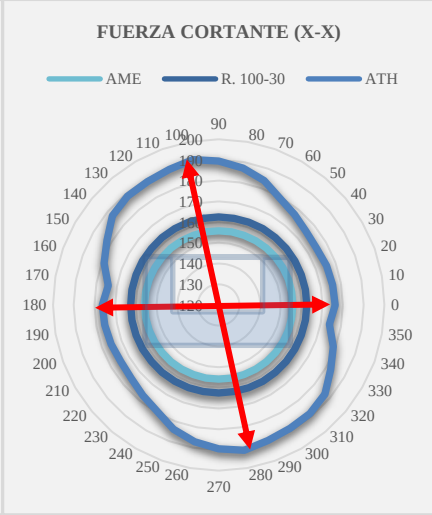

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

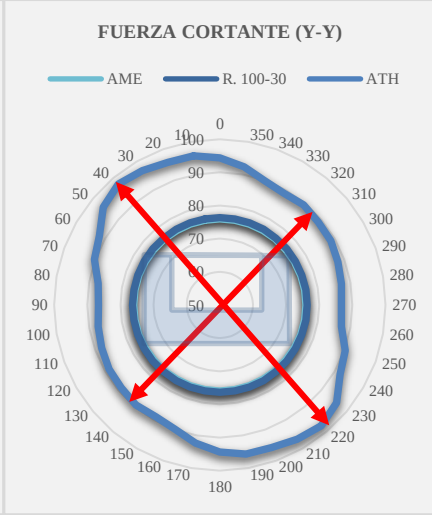

FUERZA CORTANTE (X-X)
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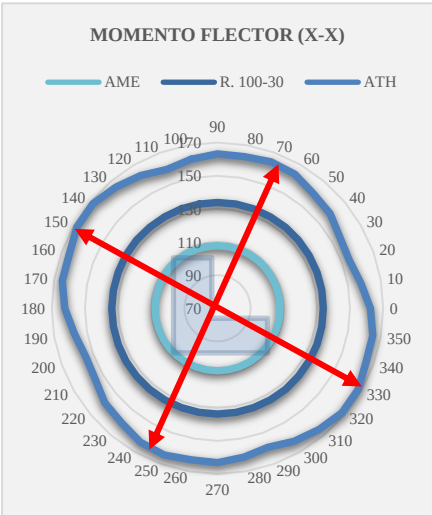

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R. 100-30
ATH

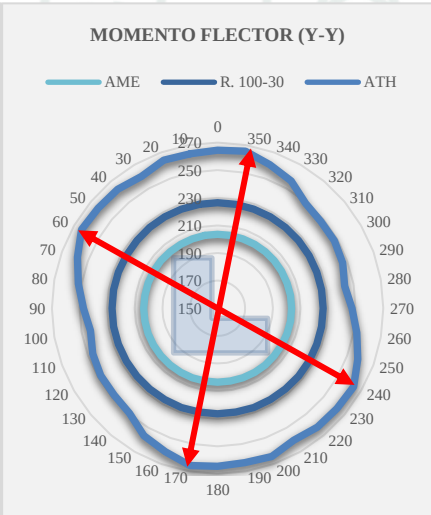

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R. 100-30
ATH

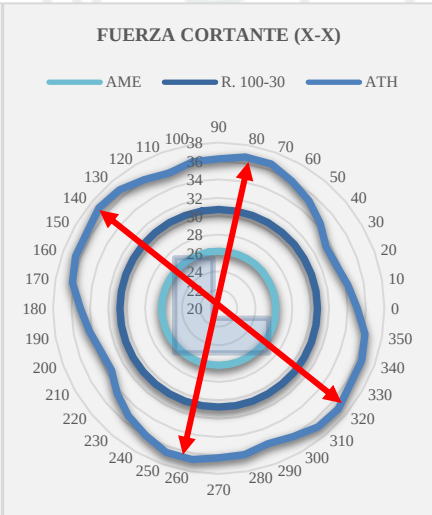

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

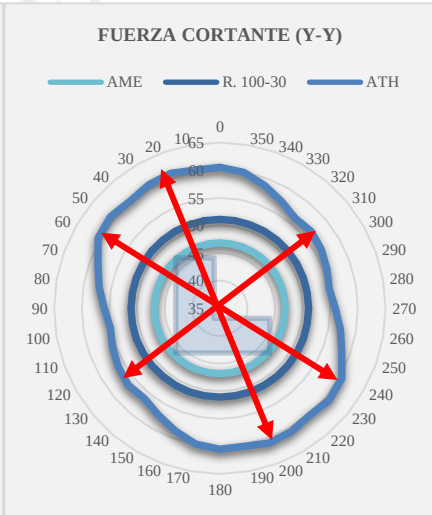

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

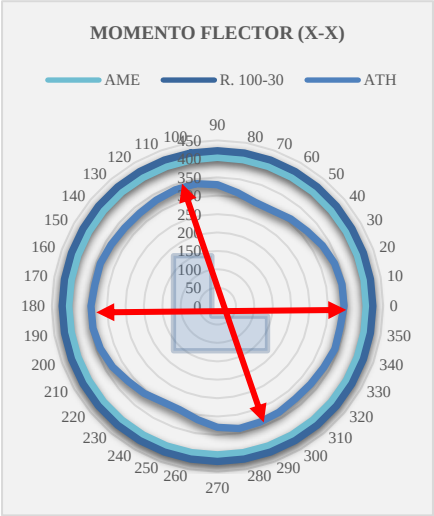

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

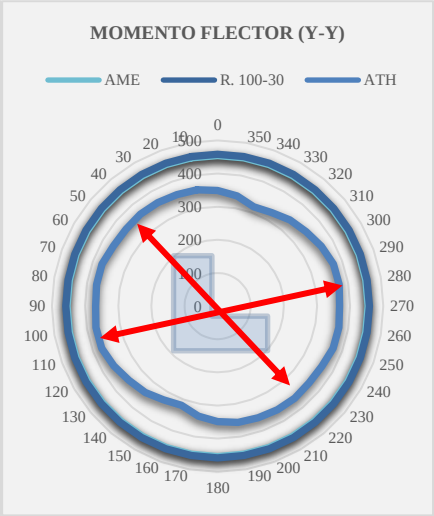

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

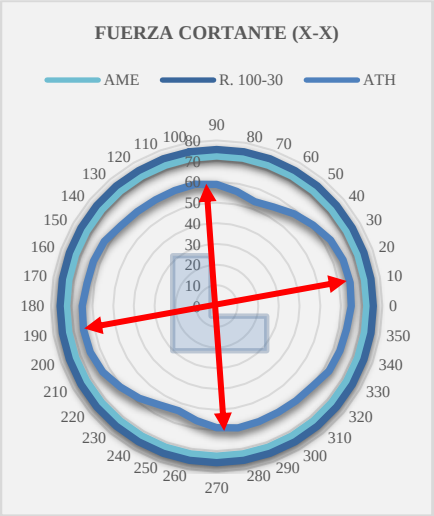

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

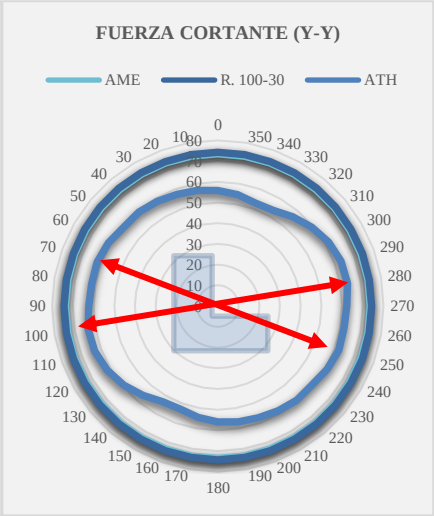

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

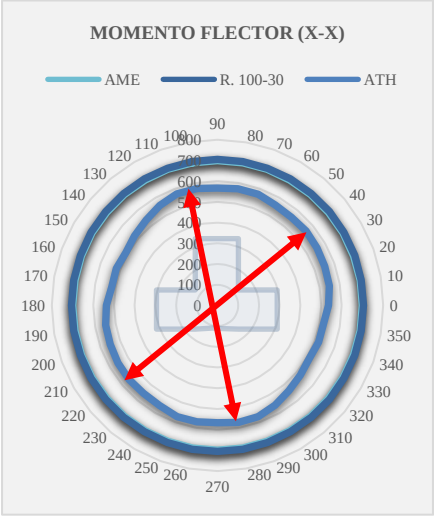
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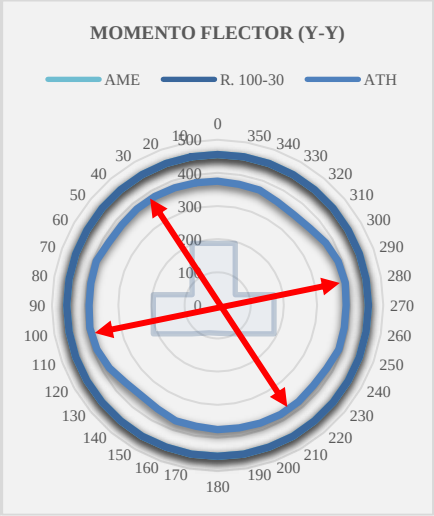


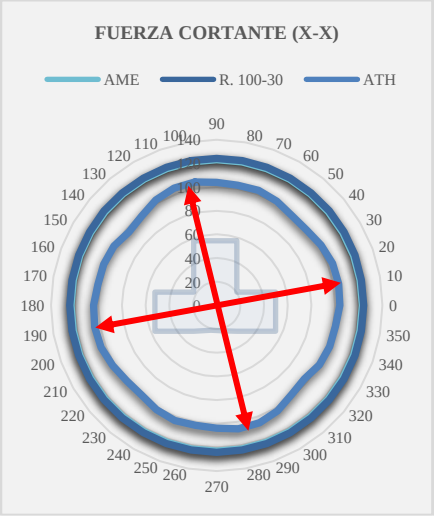


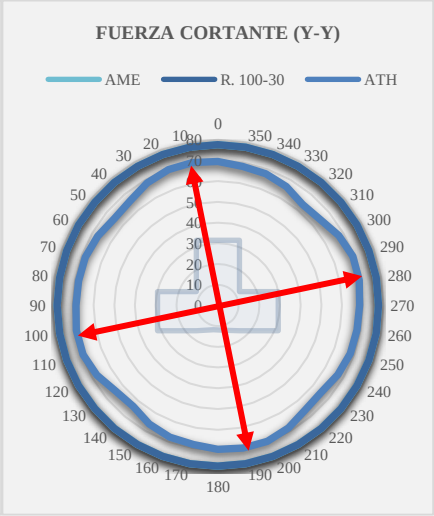


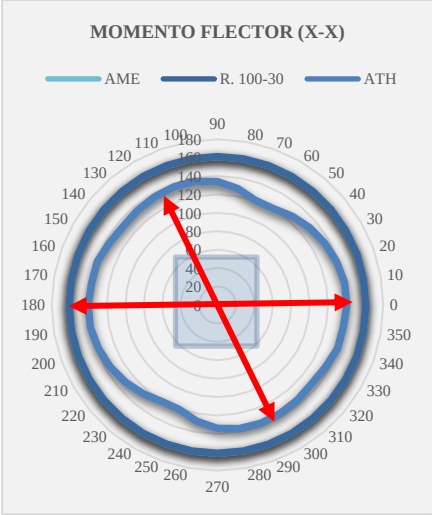


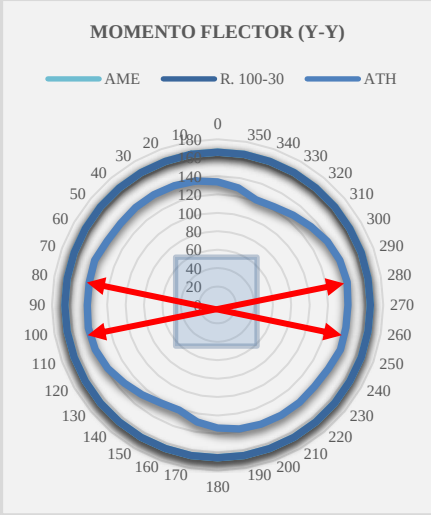


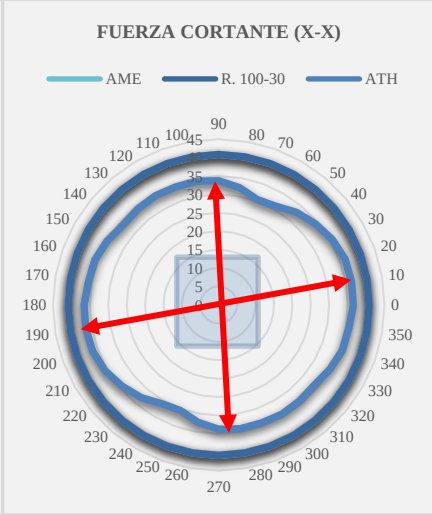


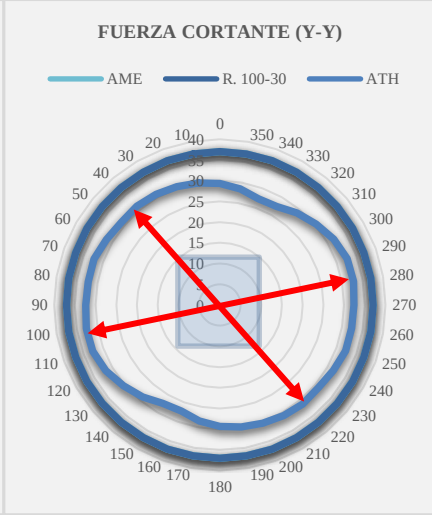


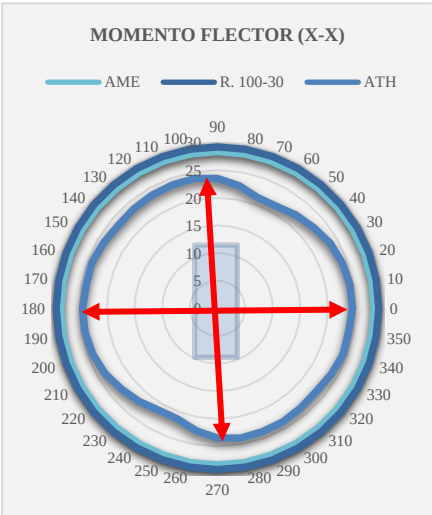


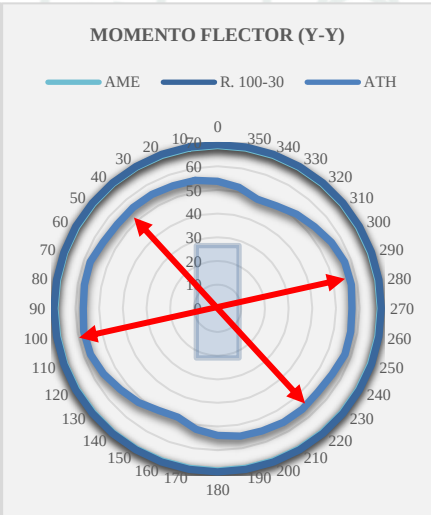

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

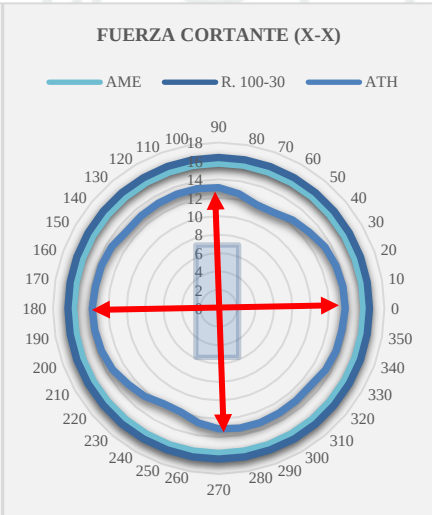

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

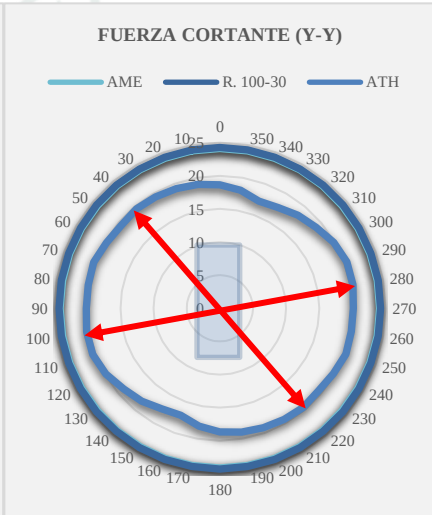

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

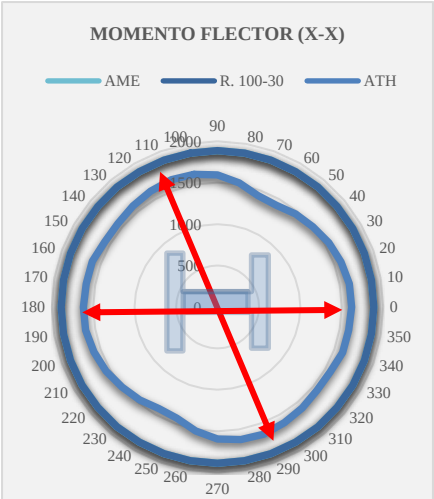

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

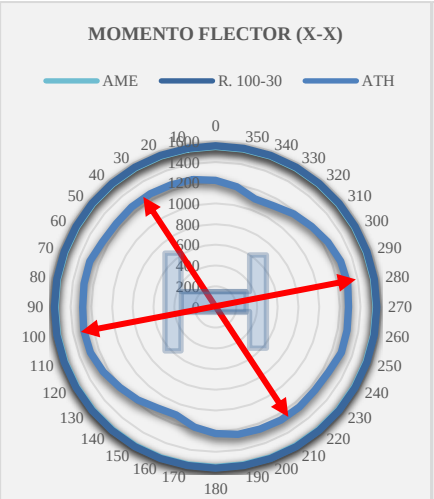

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

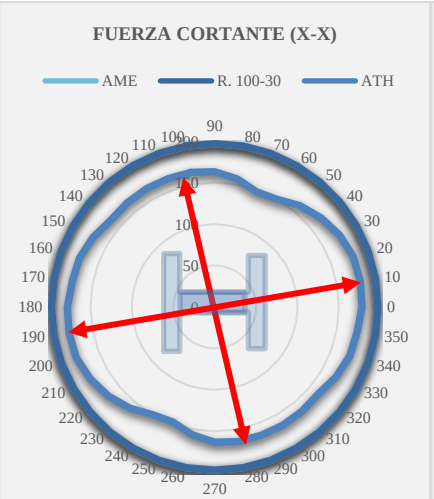

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

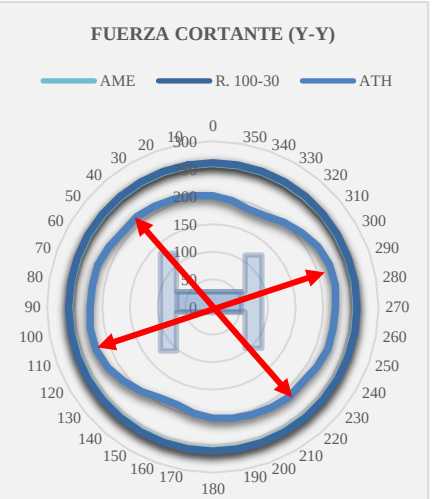

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

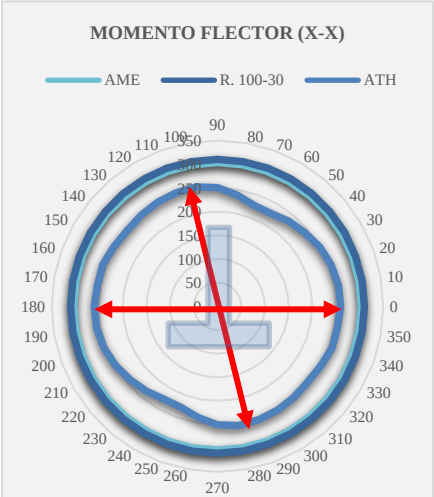

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

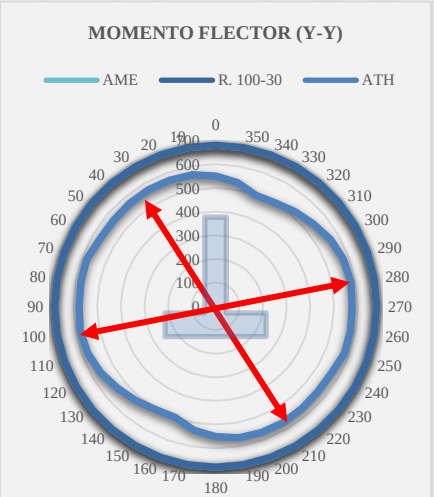

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

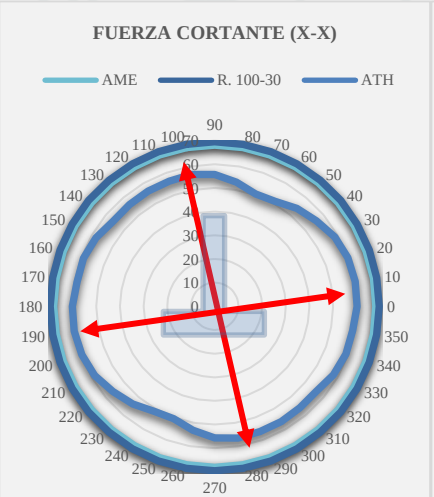

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R. 100-30
ATH

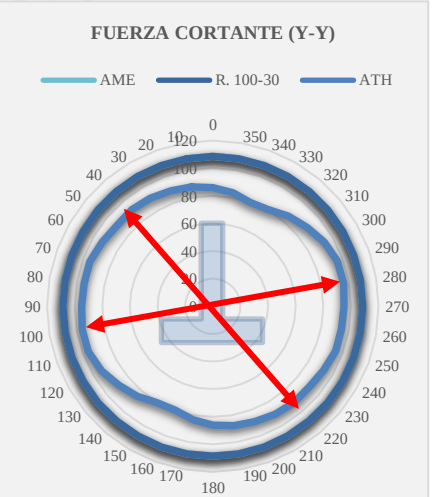

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

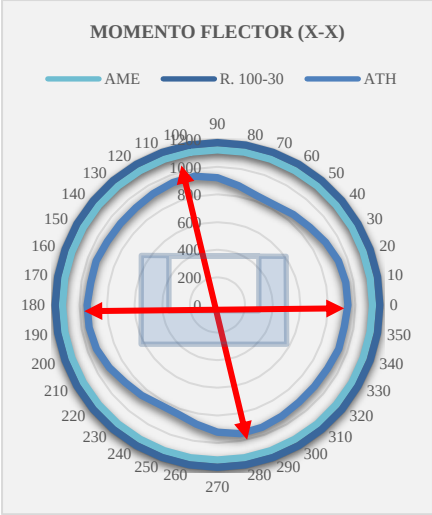

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R. 100-30
ATH

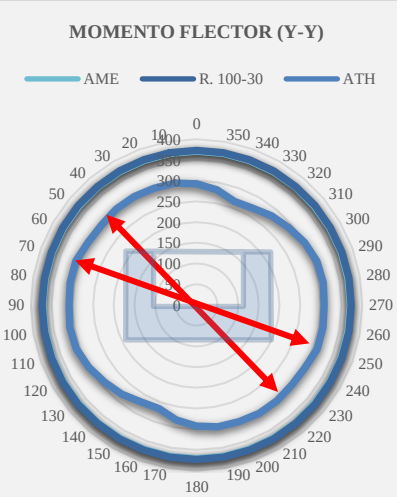

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R. 100-30
ATH

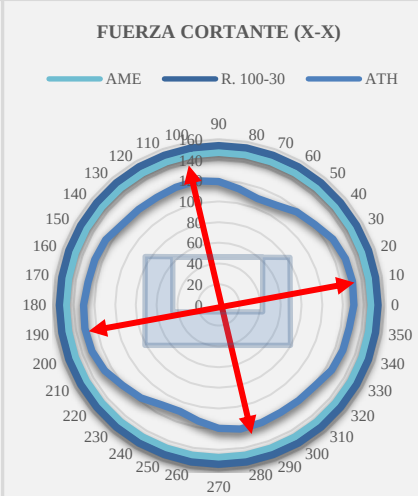

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

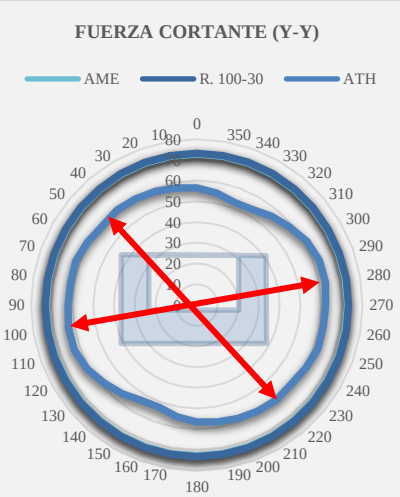

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R. 100-30
ATH

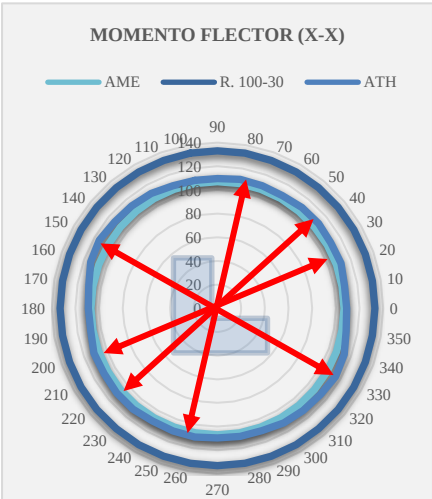

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

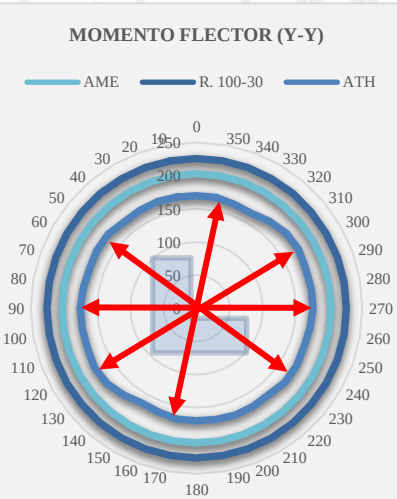

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

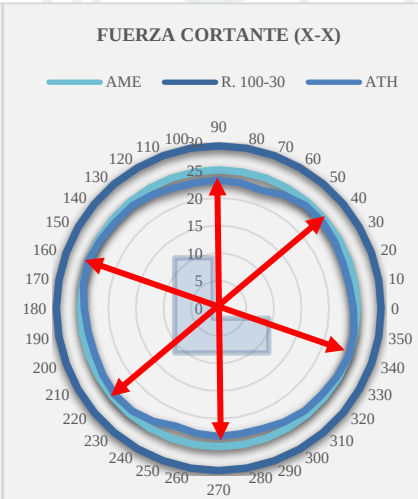

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

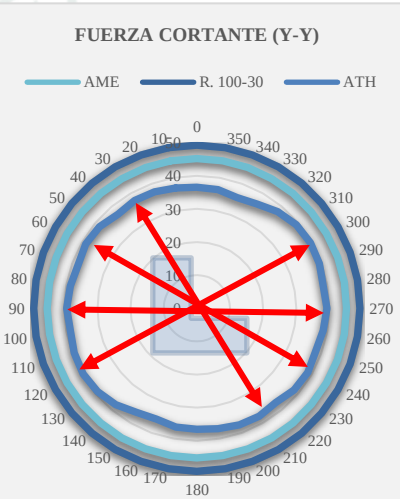

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

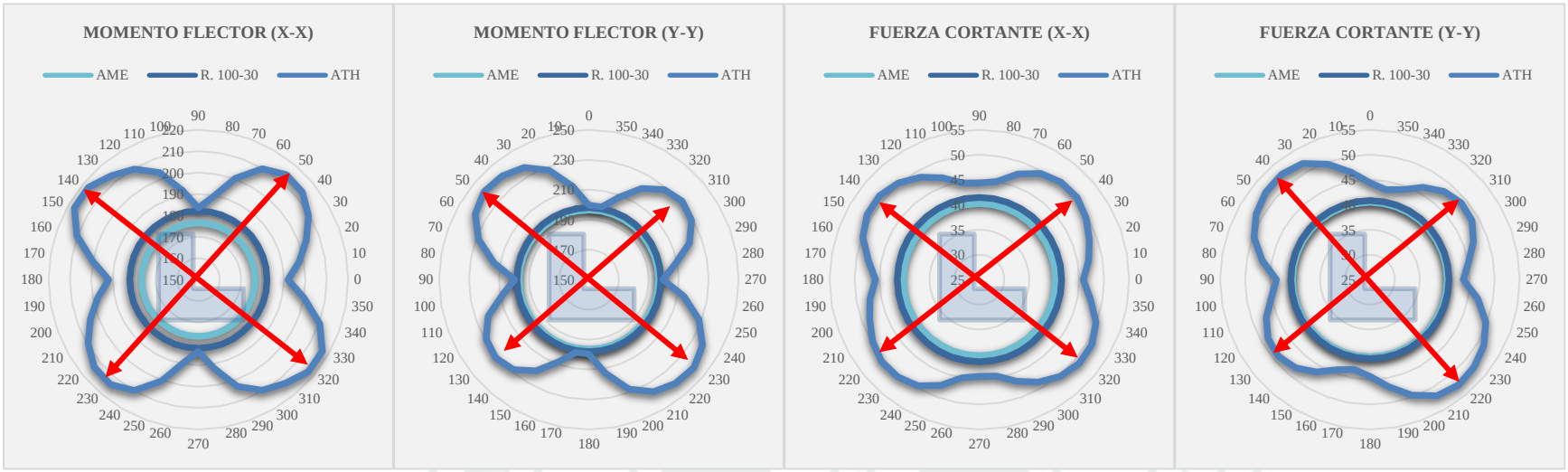

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

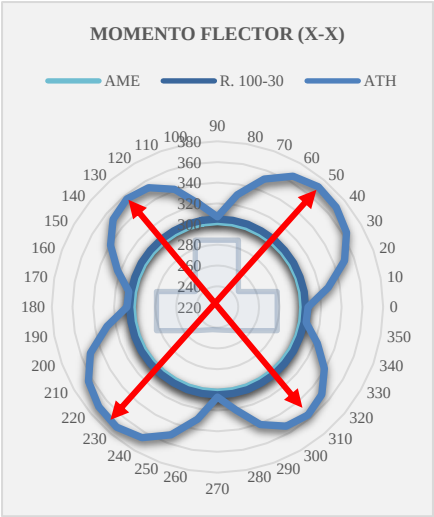

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

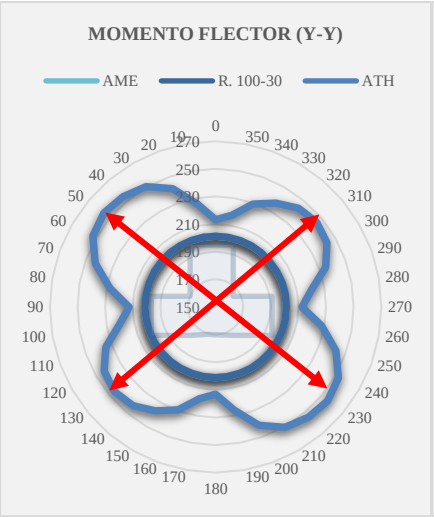

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

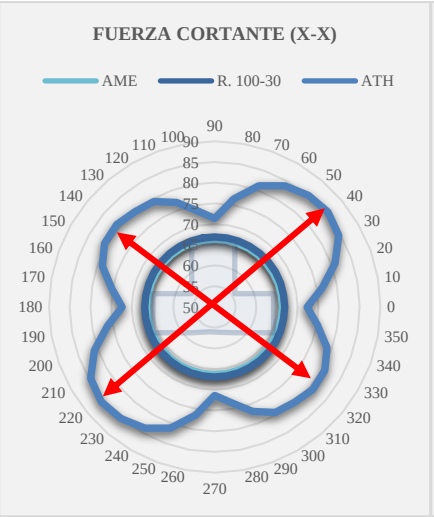
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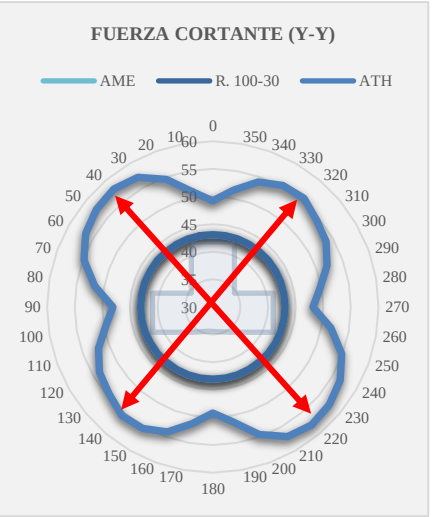
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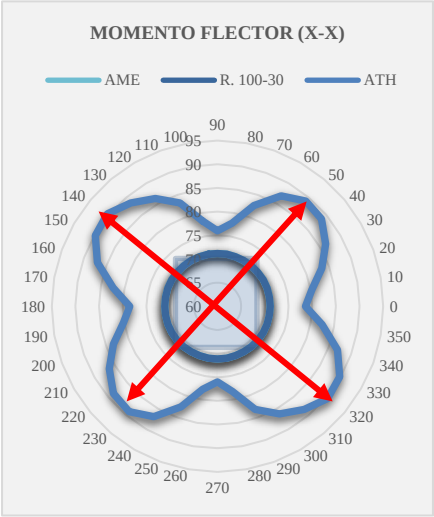


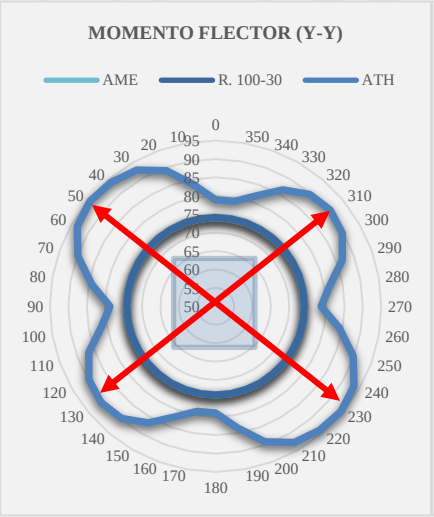

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

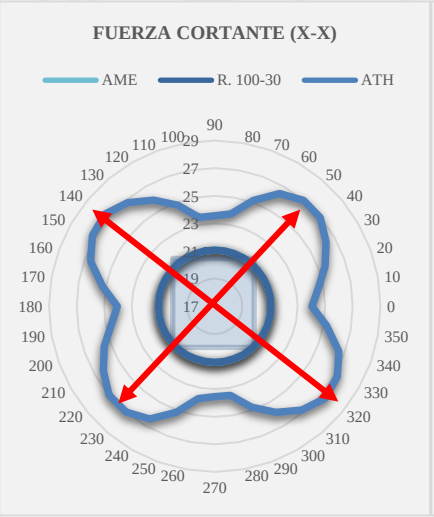

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

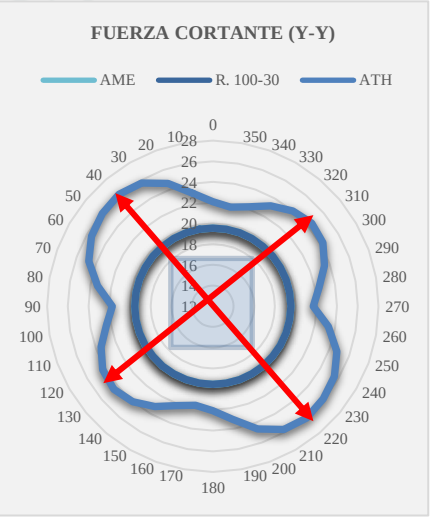

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

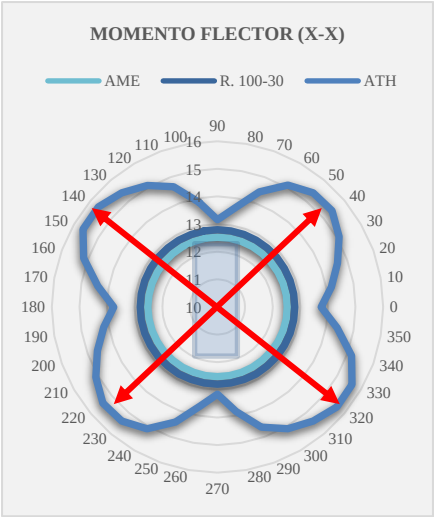

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

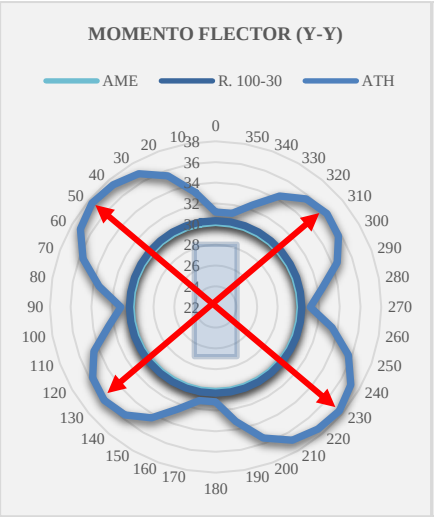

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

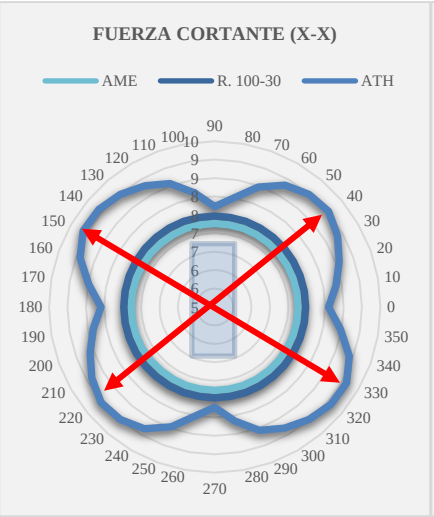

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

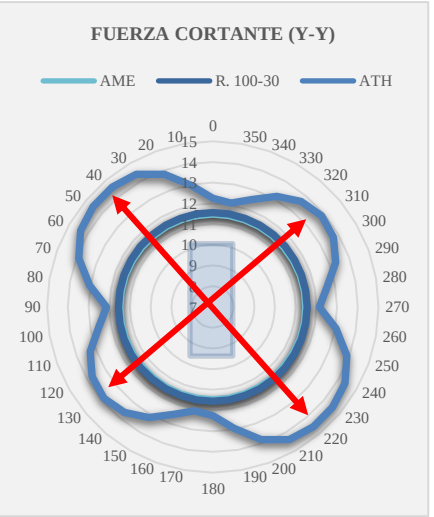

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

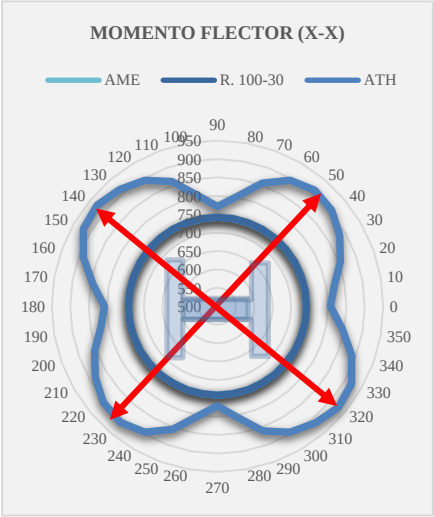

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

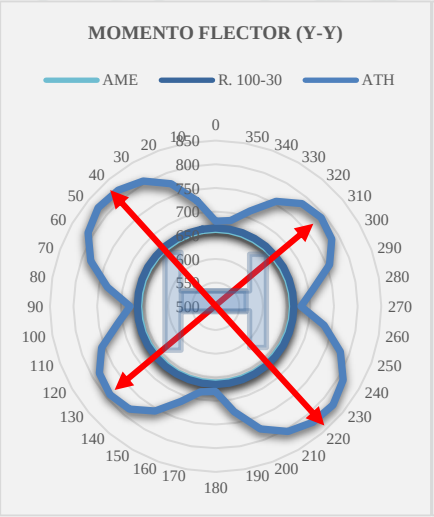

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

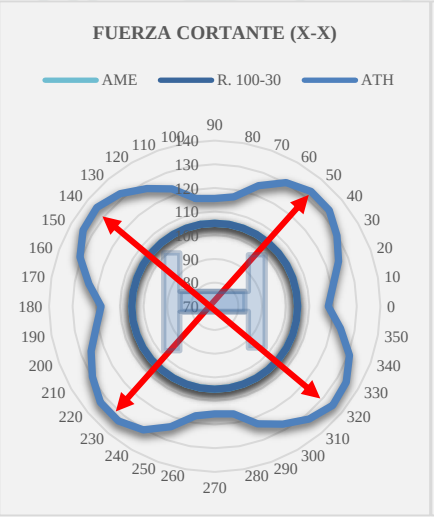

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

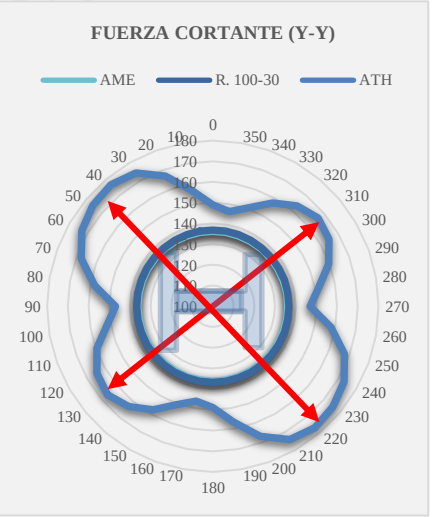

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

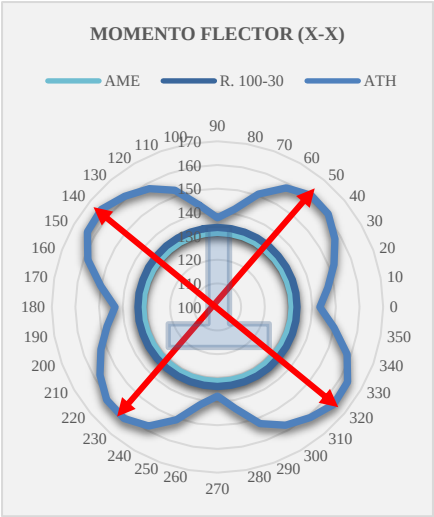

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

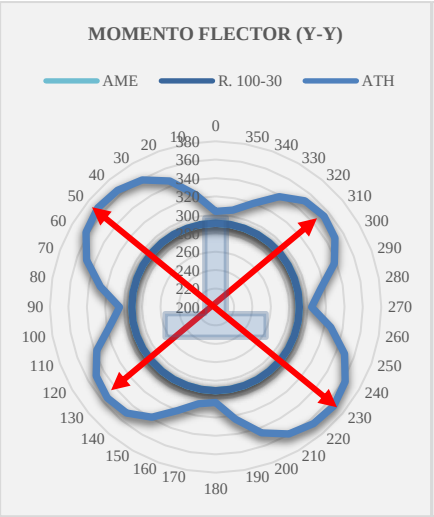

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

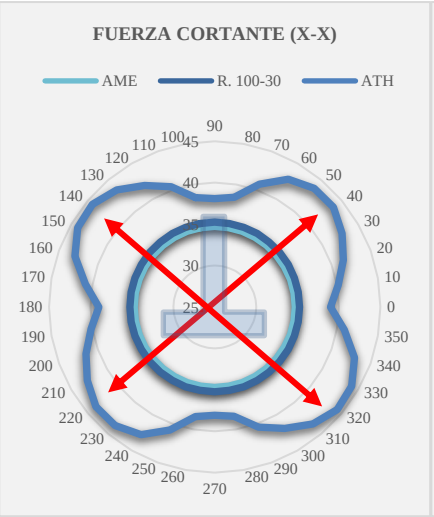

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

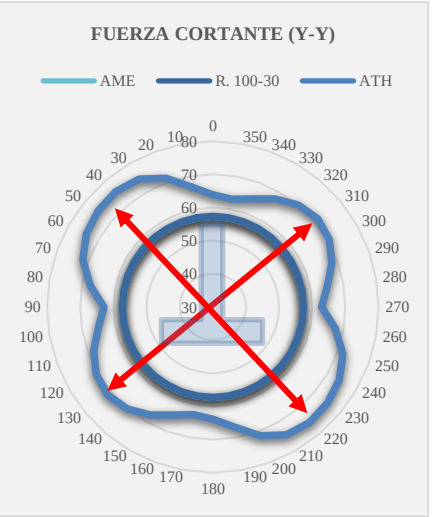

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

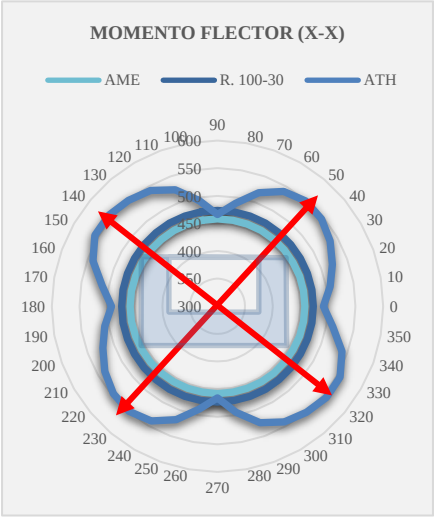

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

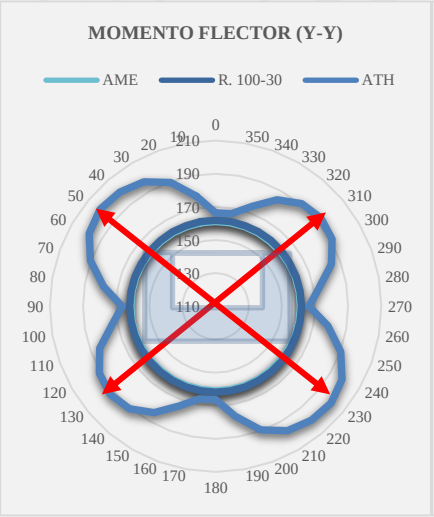

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

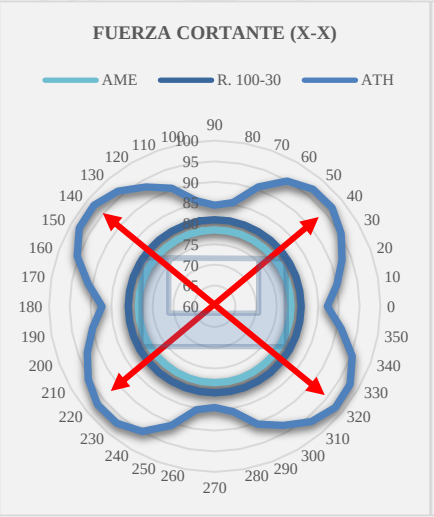

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

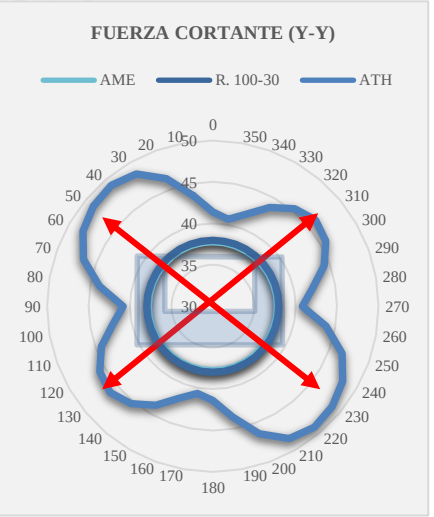

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

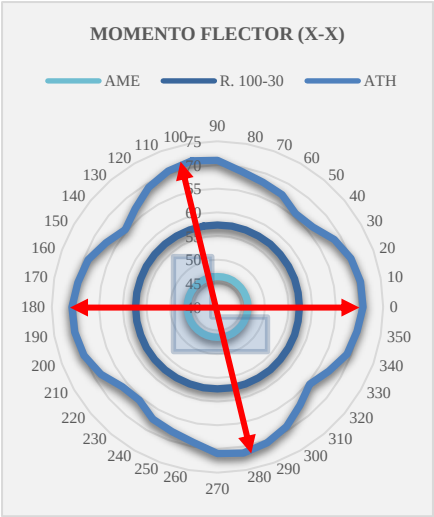

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

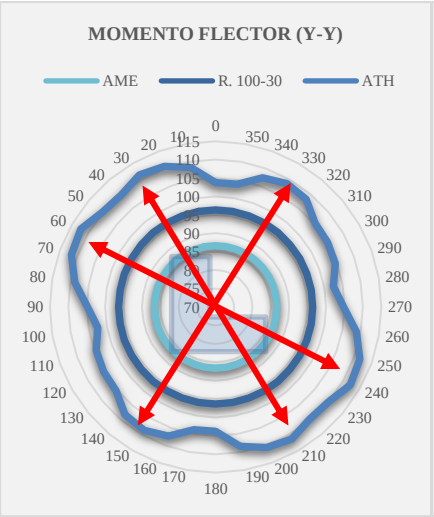

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

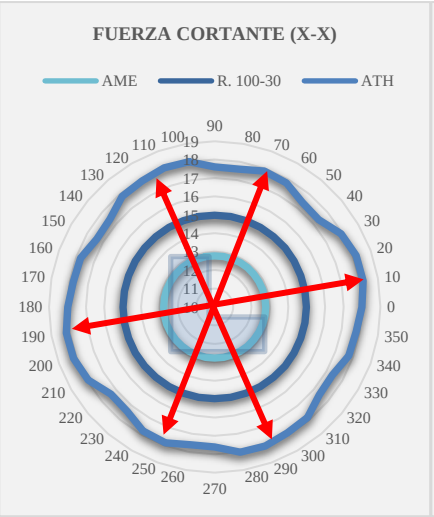

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

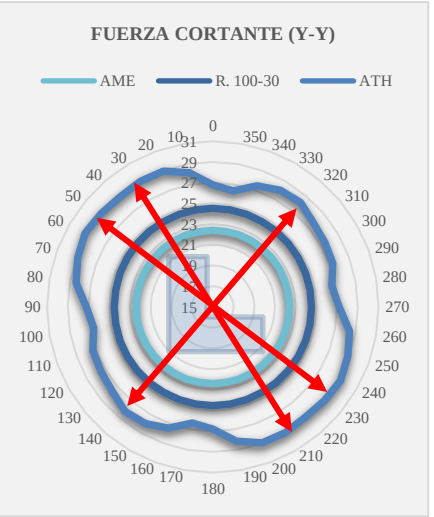

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

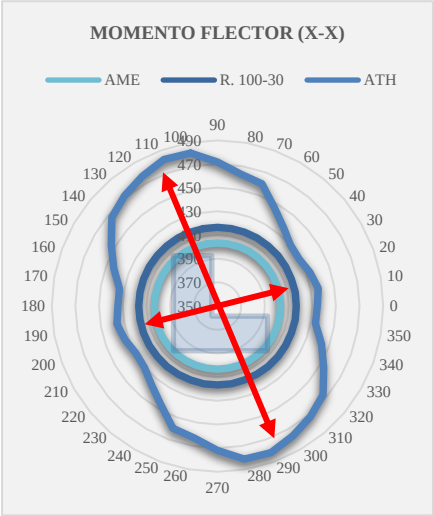

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

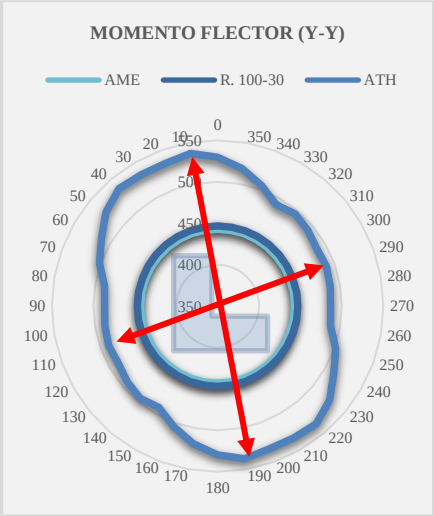

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

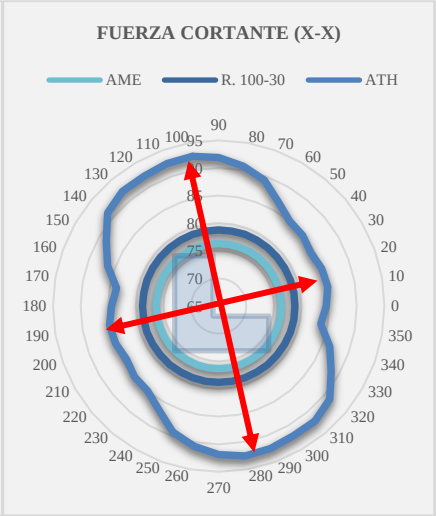

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

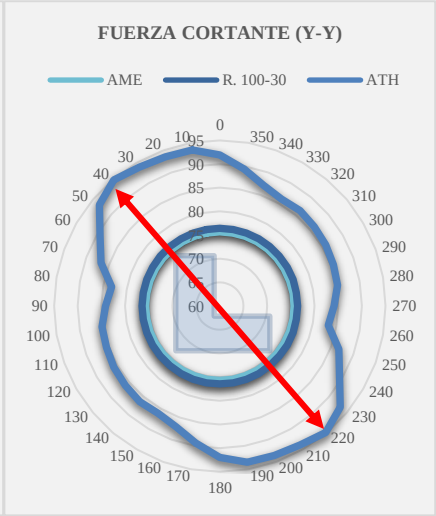

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

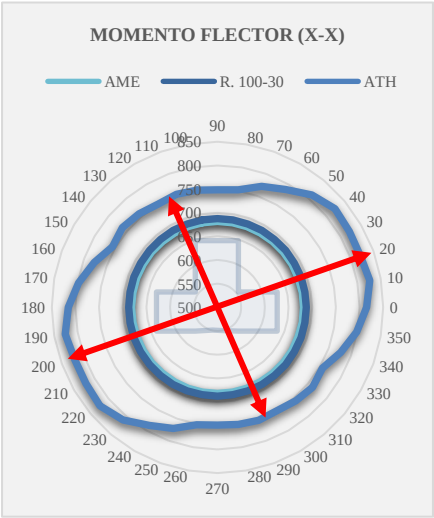
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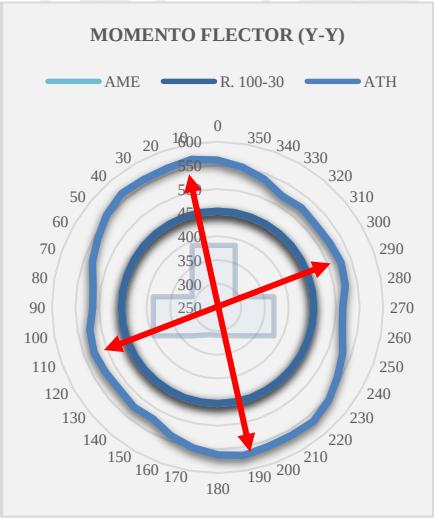

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

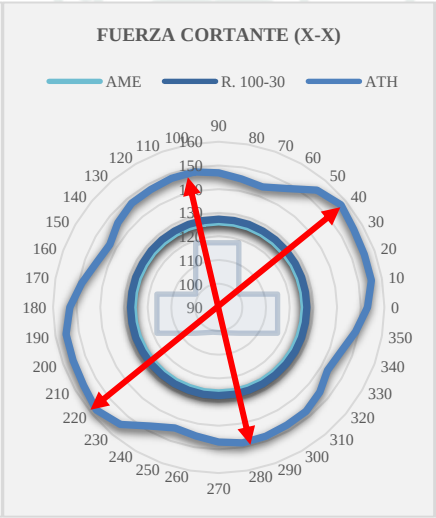

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

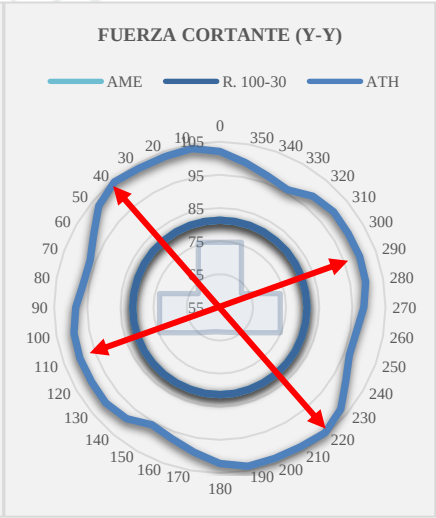

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

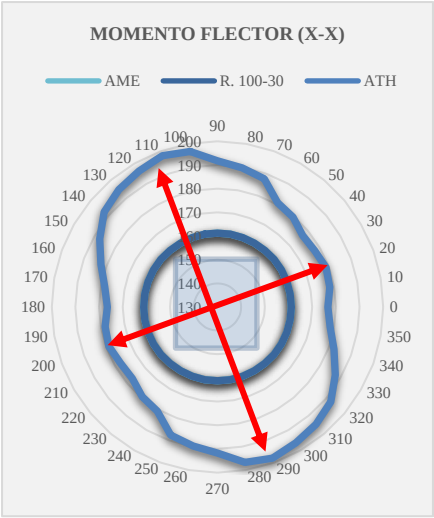

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

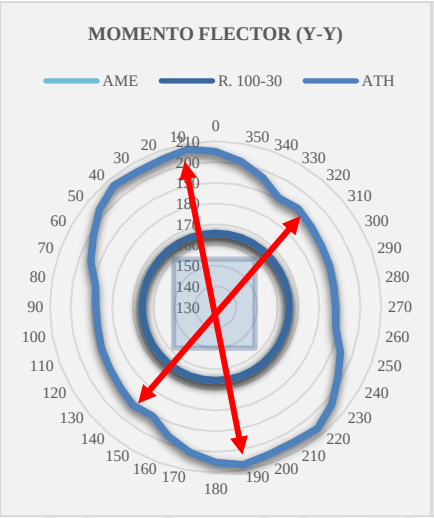

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

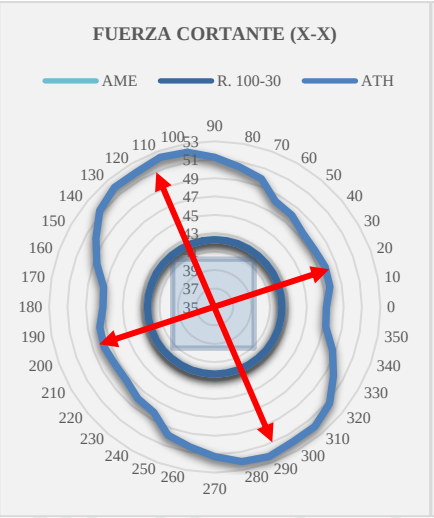

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

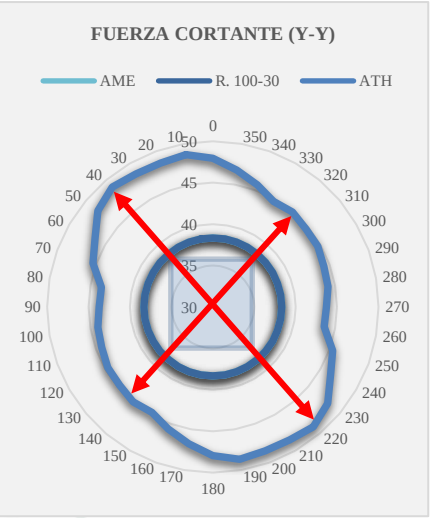

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

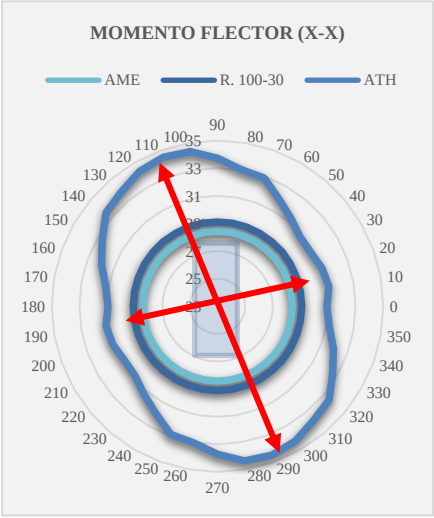

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

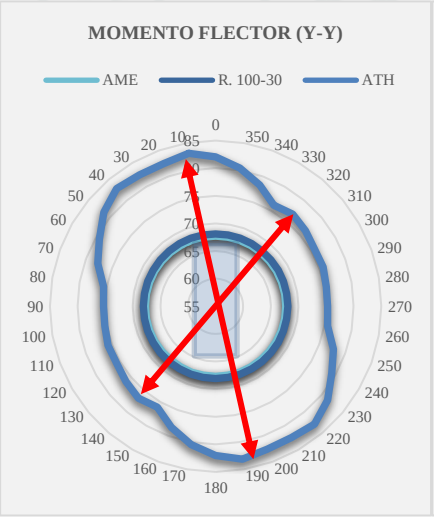

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

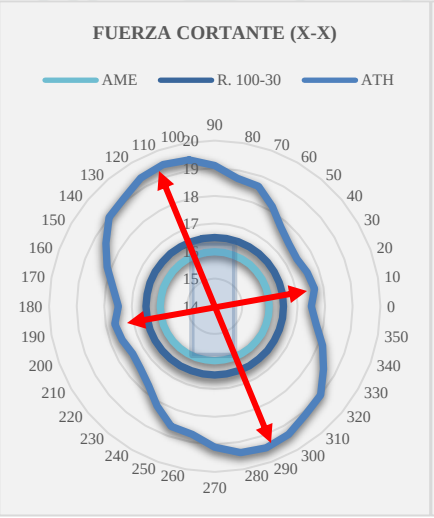

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

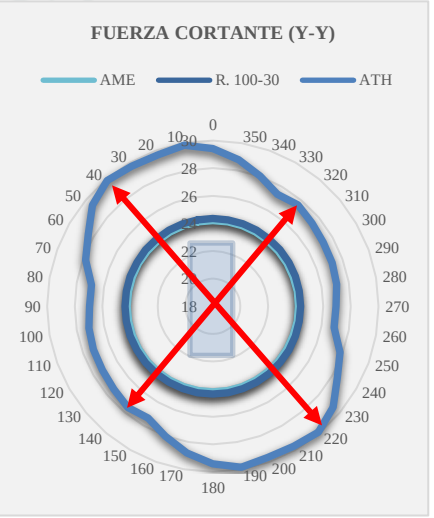

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

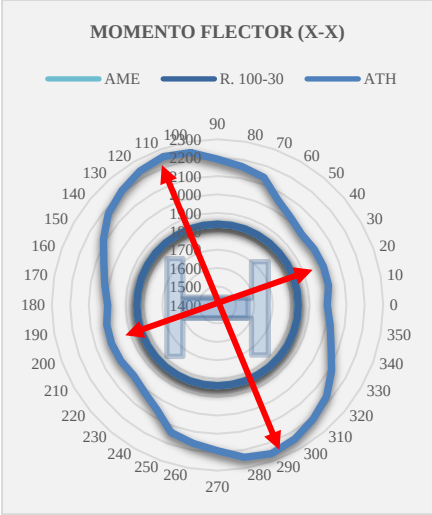

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

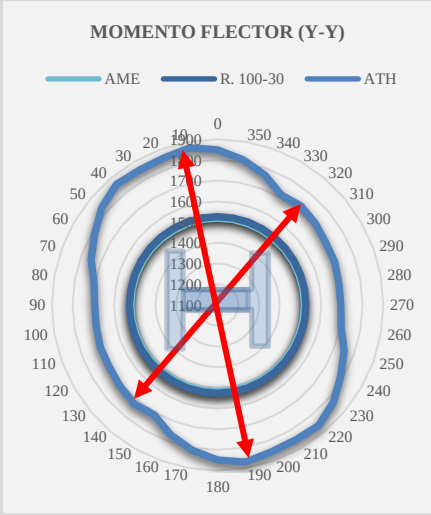

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

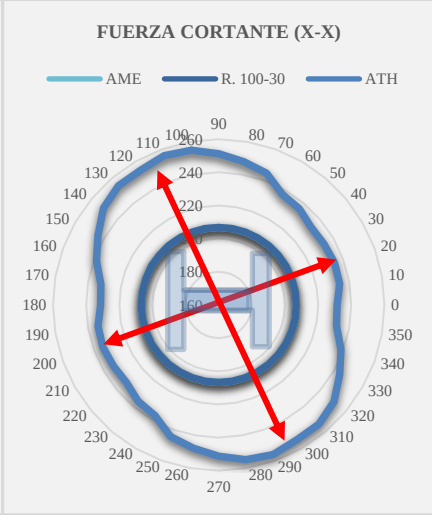

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

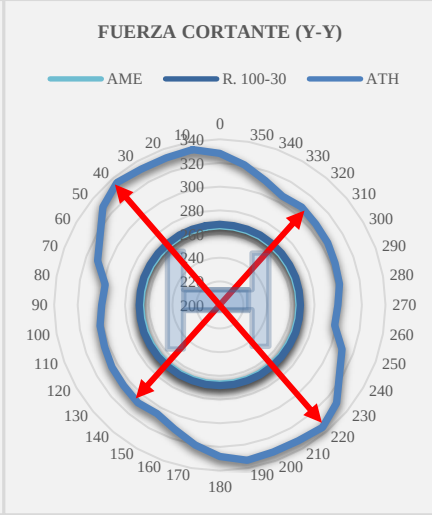

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

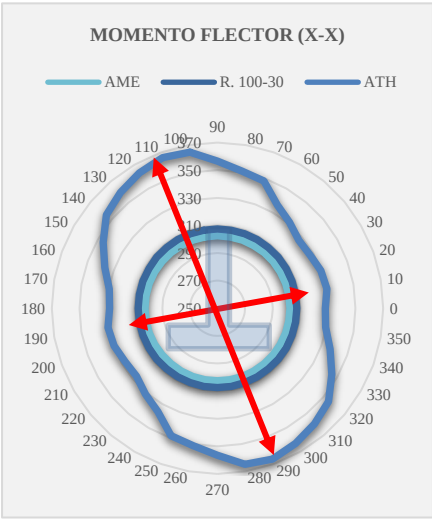

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

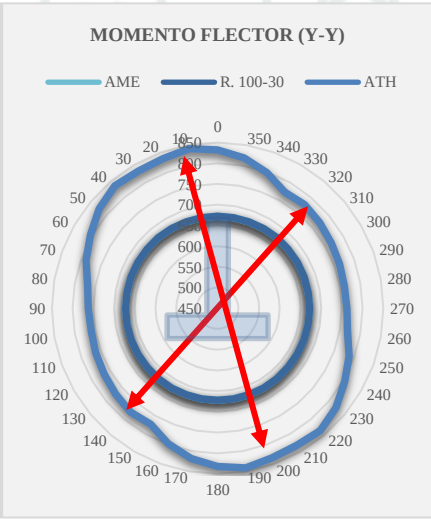

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

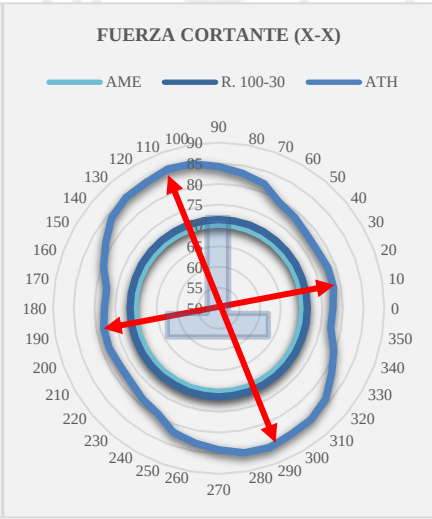

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

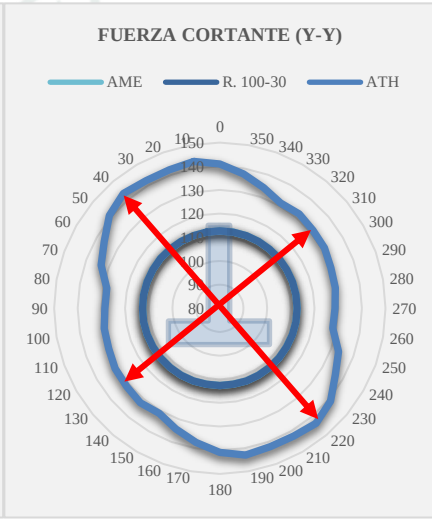

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

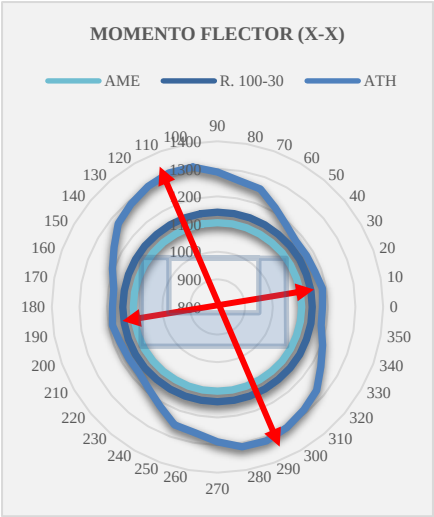

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

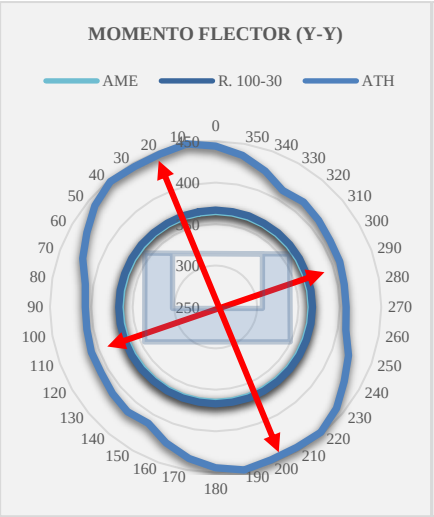

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

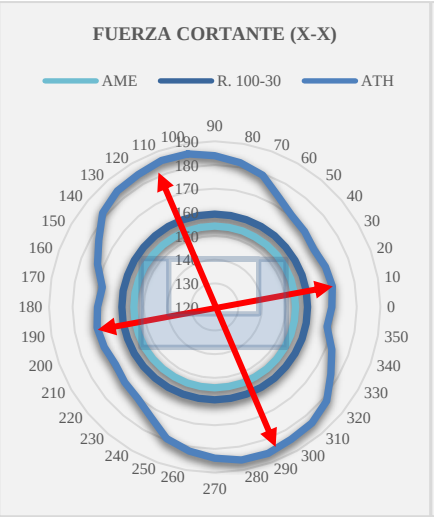

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

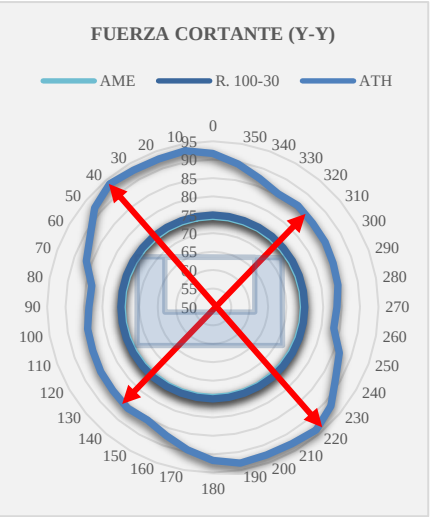

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

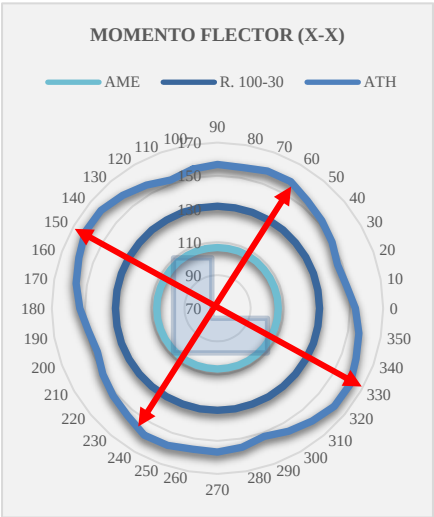

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

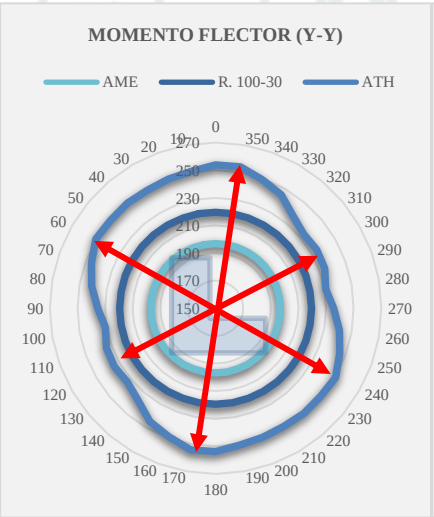

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

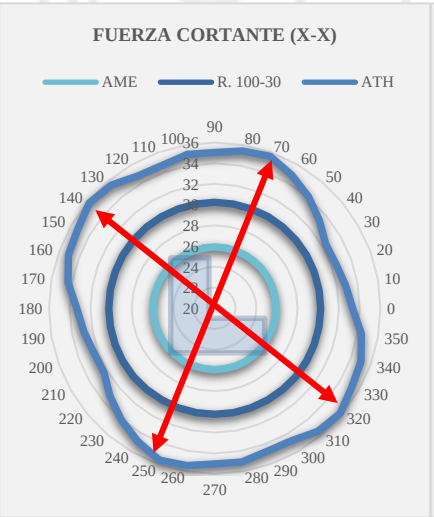

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

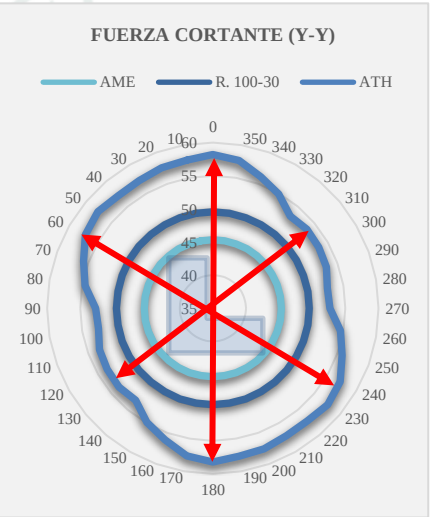

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

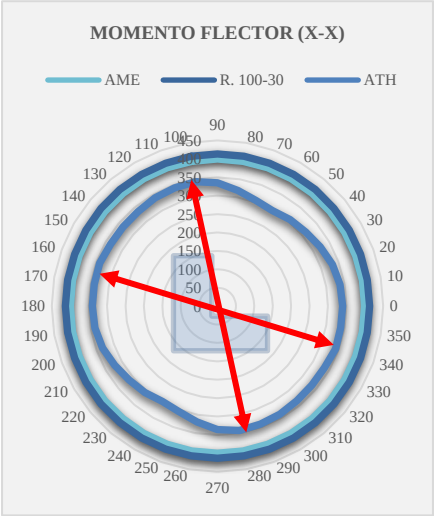

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

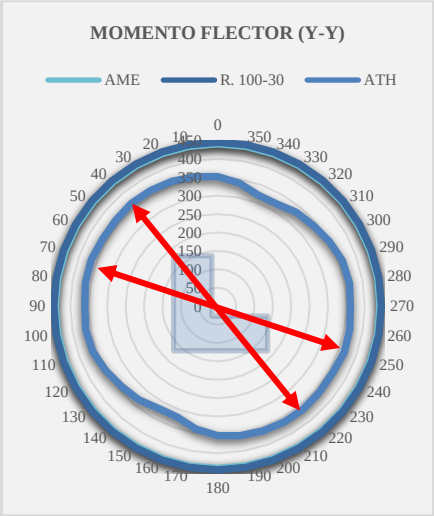

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

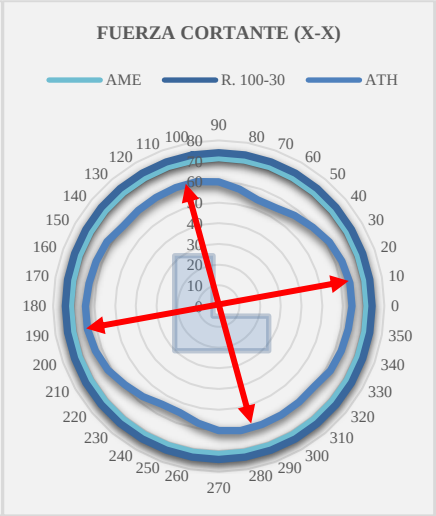

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

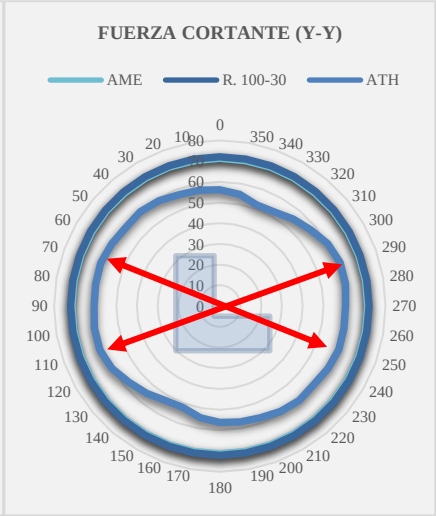

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

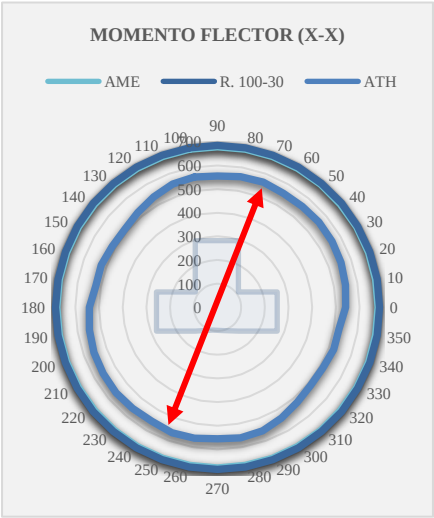
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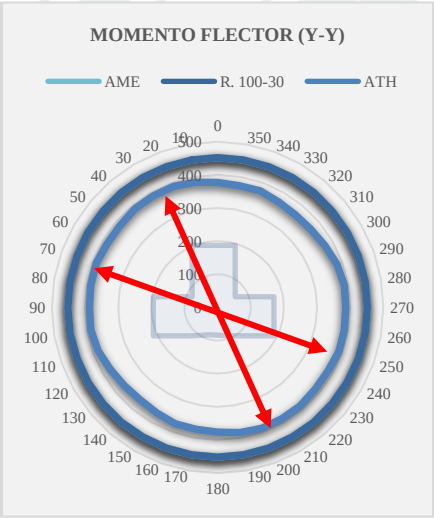


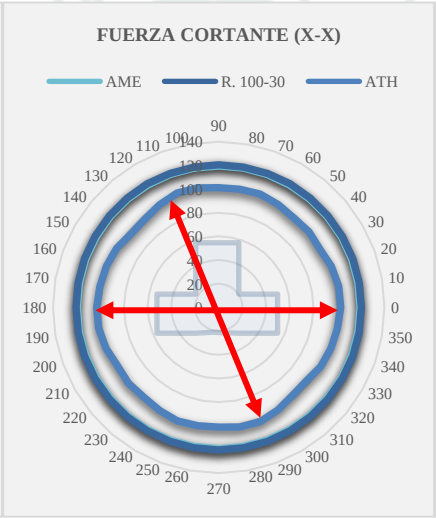


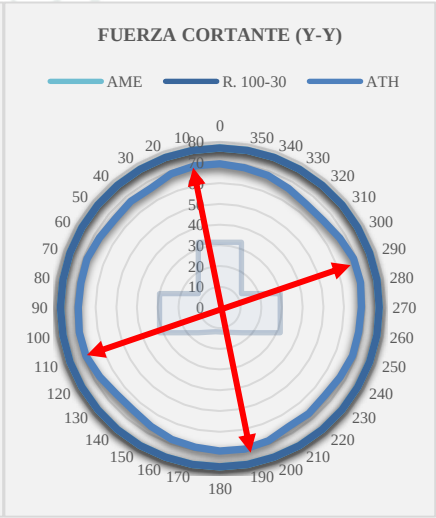


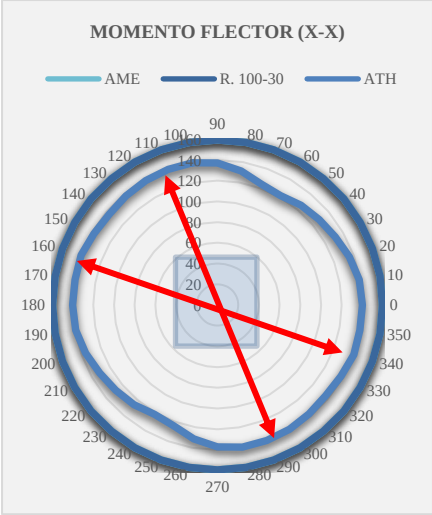


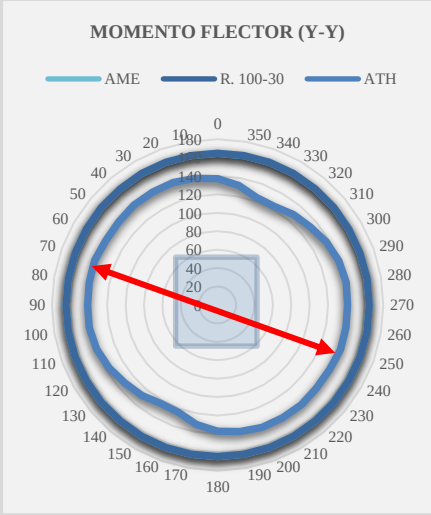


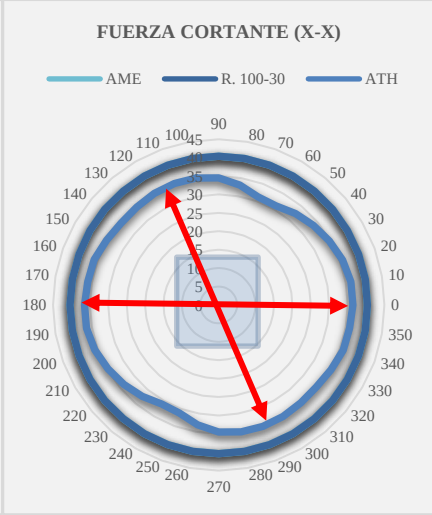


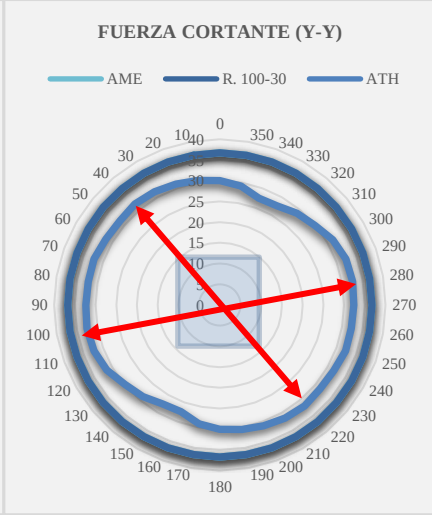


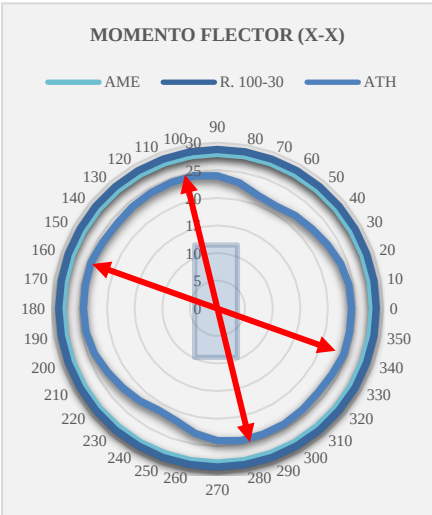


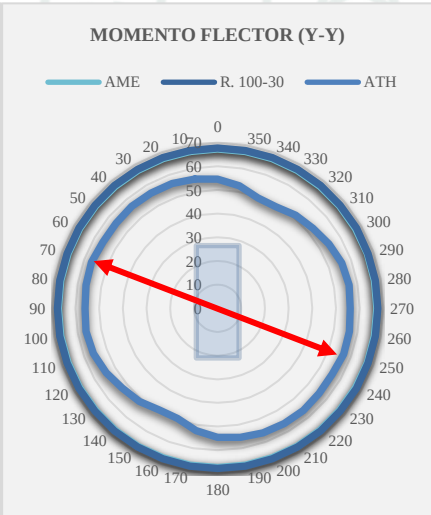

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

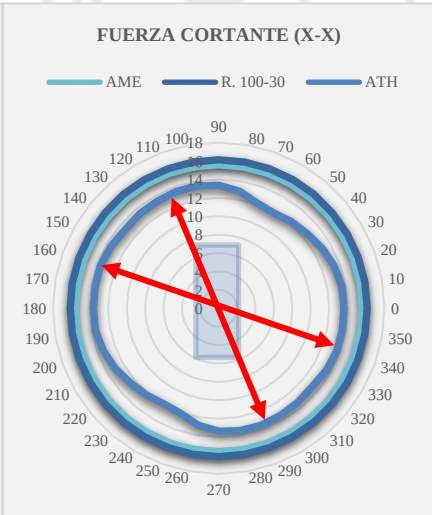

MOMENTO FLECTOR (Y-Y)
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ATH

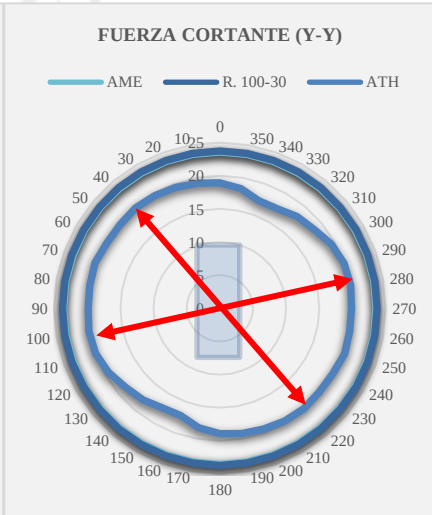

FUERZA CORTANTE (X-X)
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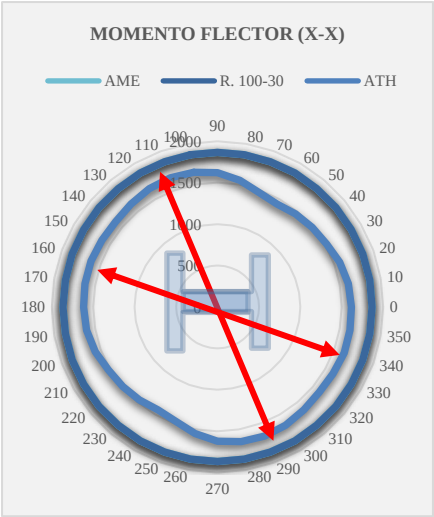

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ATH

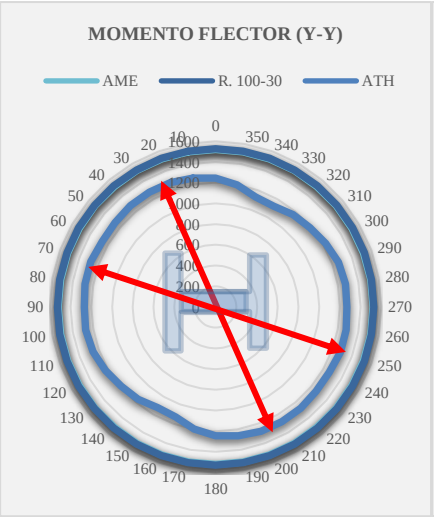

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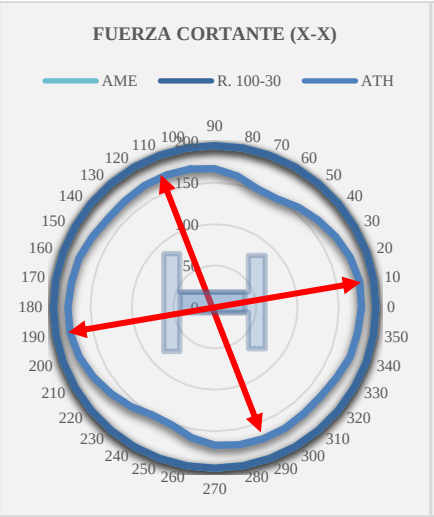

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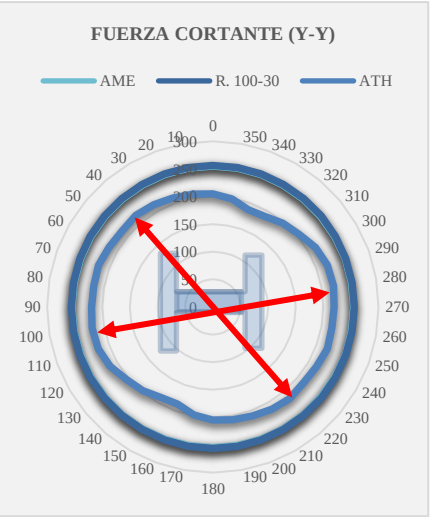

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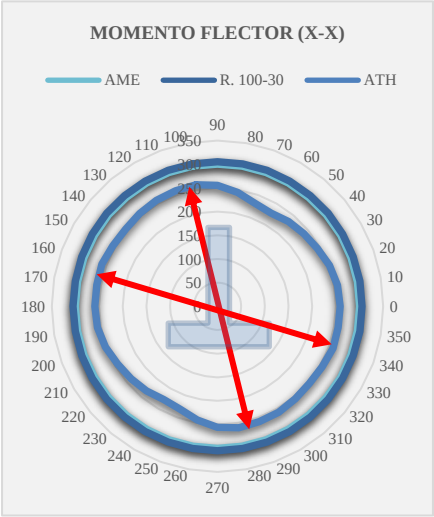

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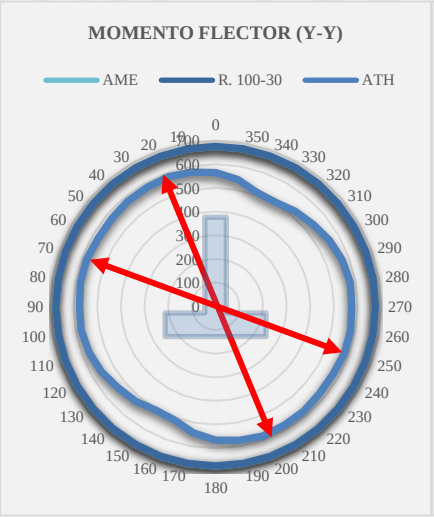

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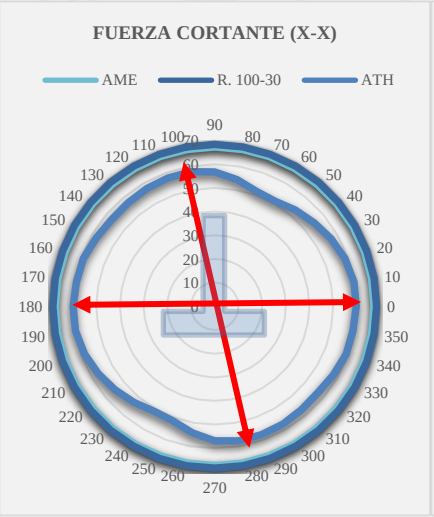

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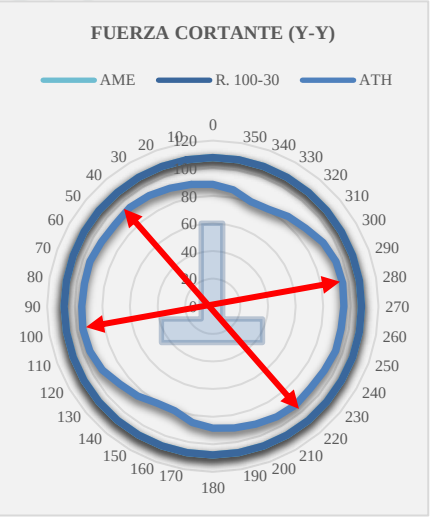

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ATH

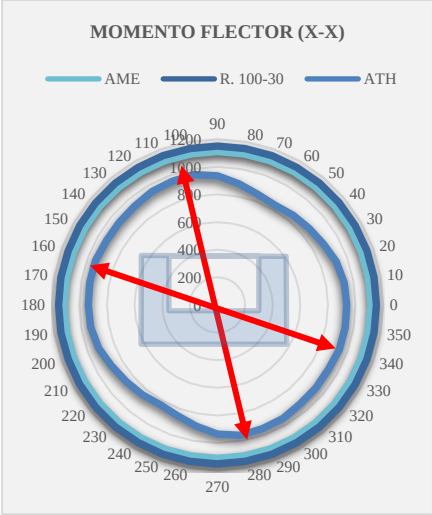

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ATH

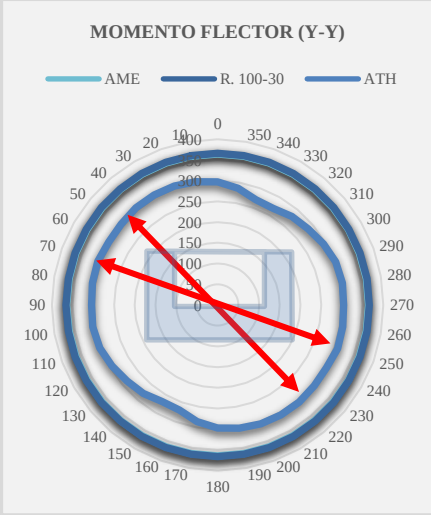

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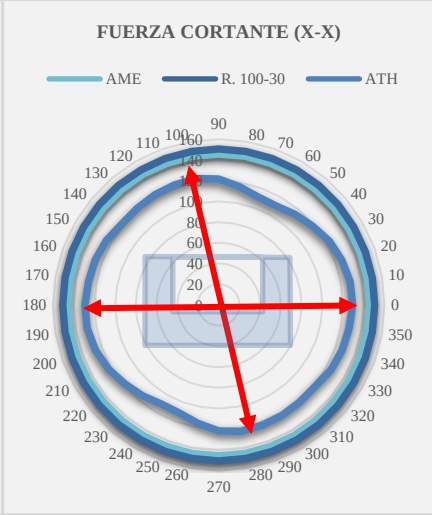

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ATH

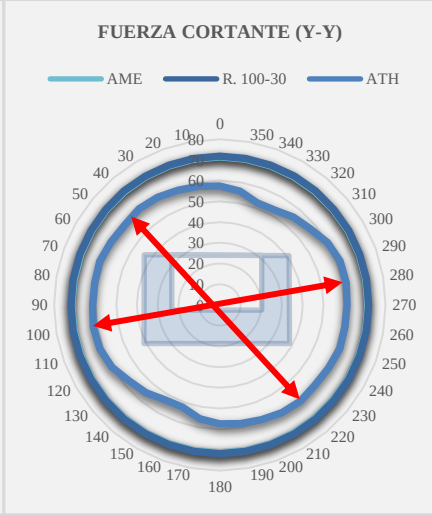

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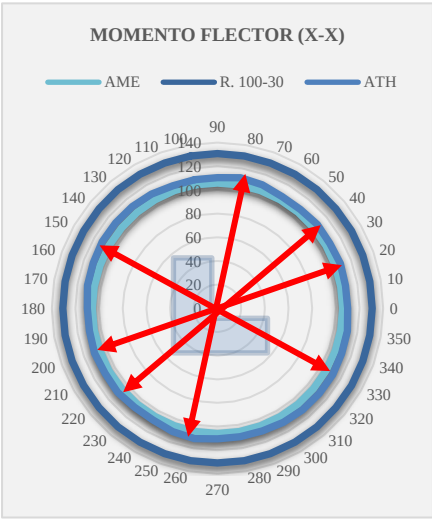

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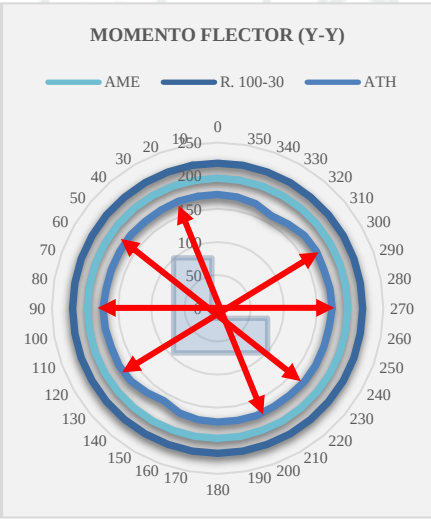

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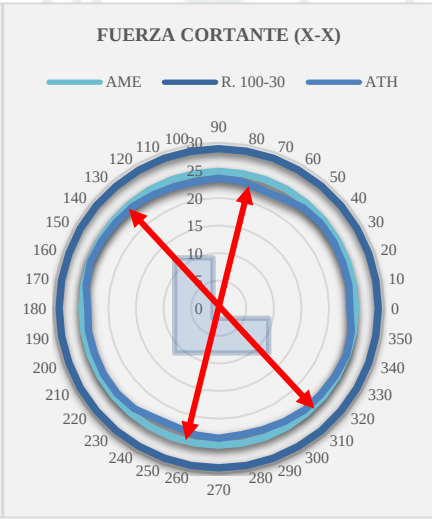

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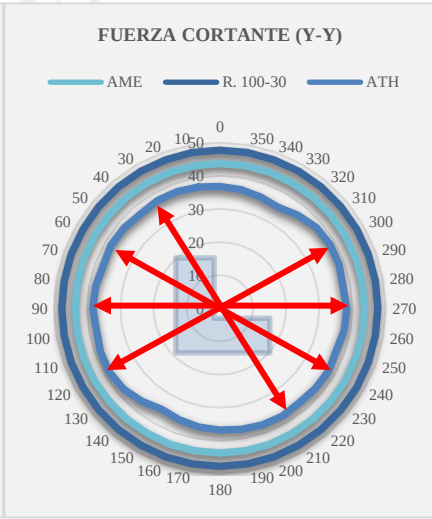

FUERZA CORTANTE (X-X)
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FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
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ATH

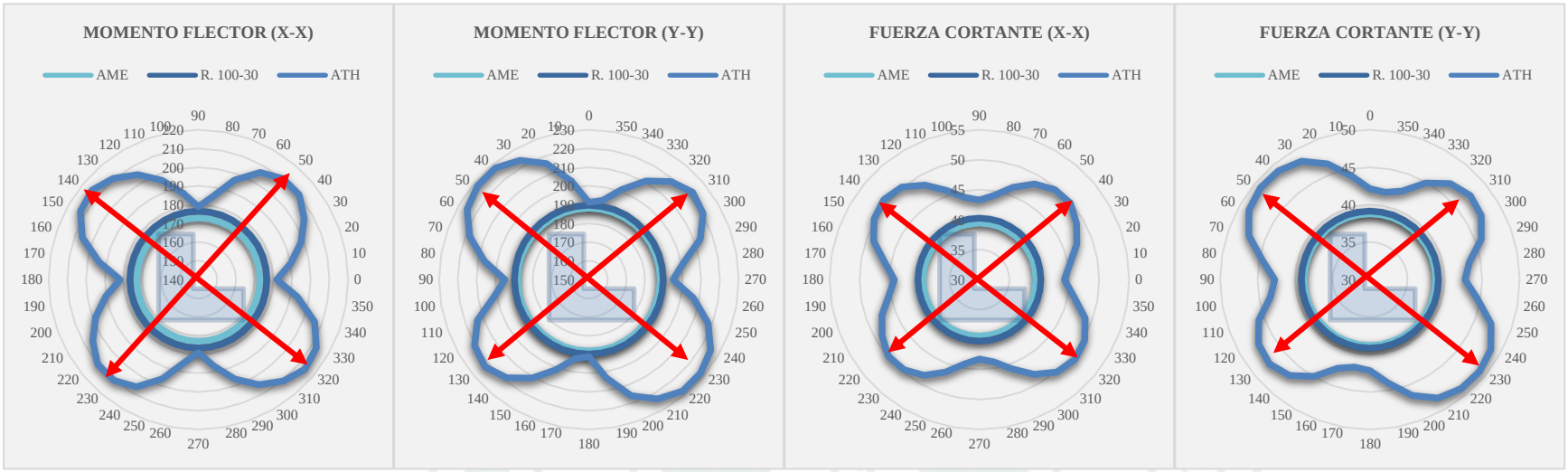

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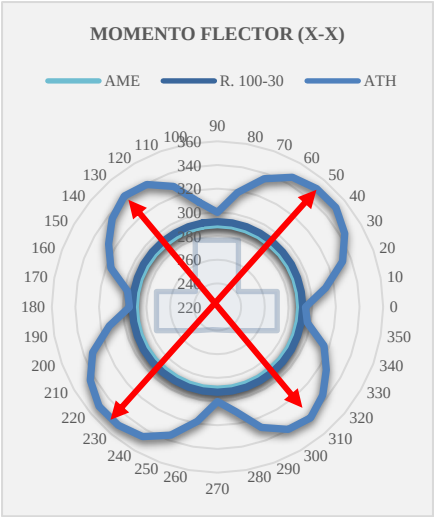

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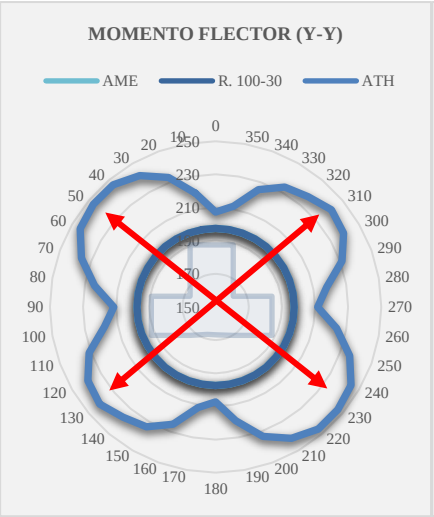

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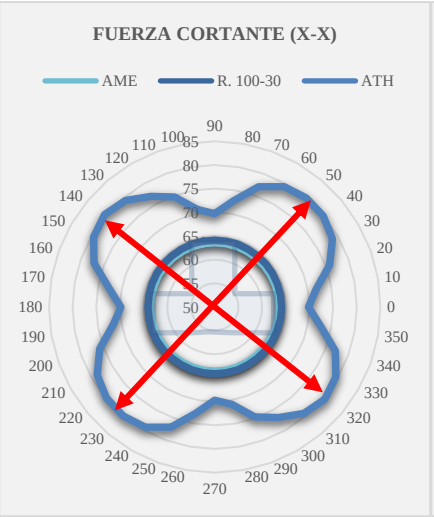
MODELO 8

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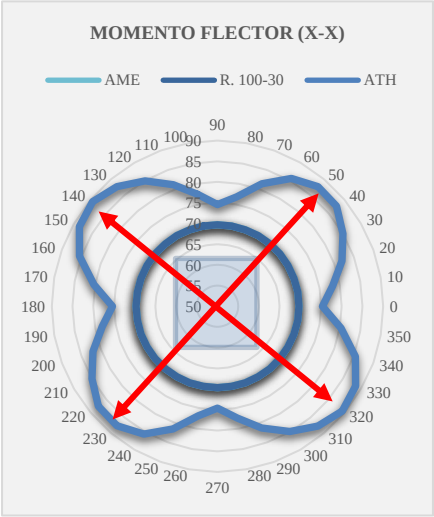


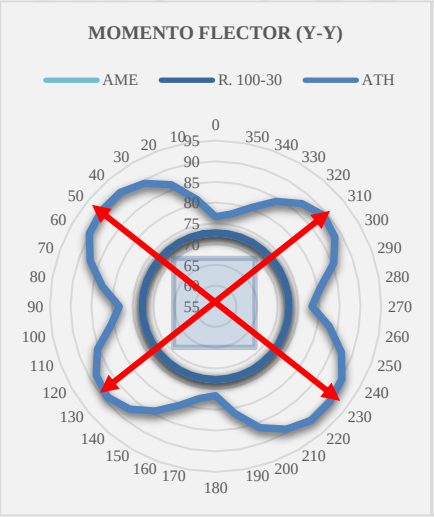

MOMENTO FLECTOR (X-X)
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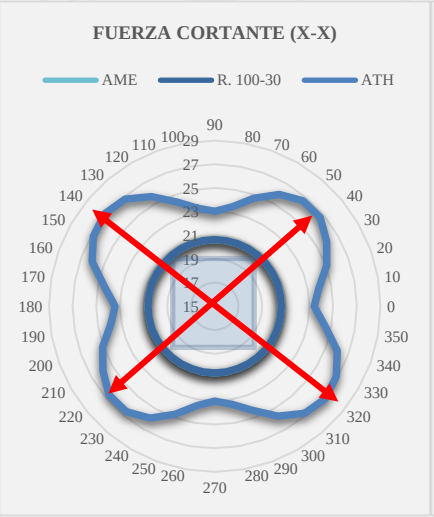

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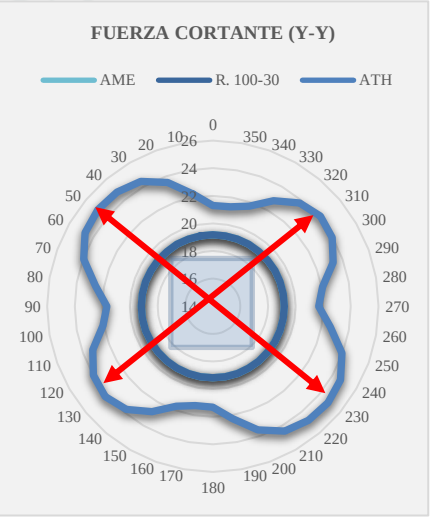

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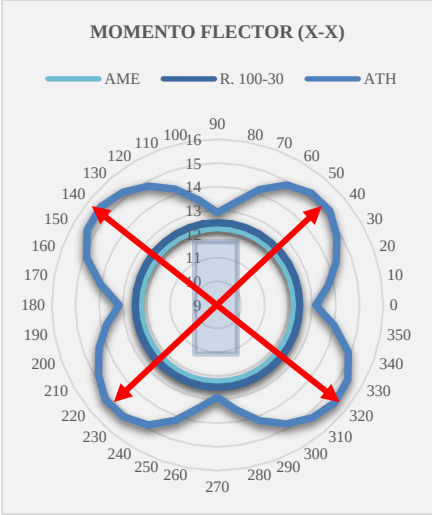

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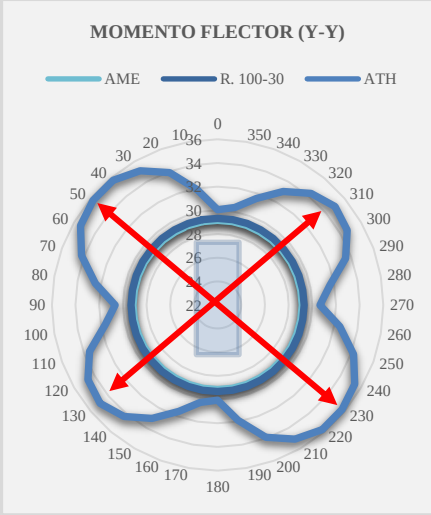

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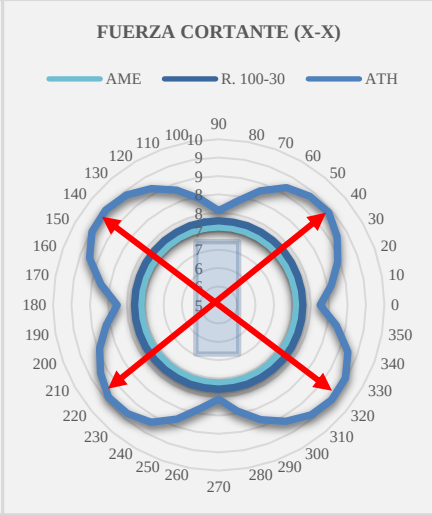

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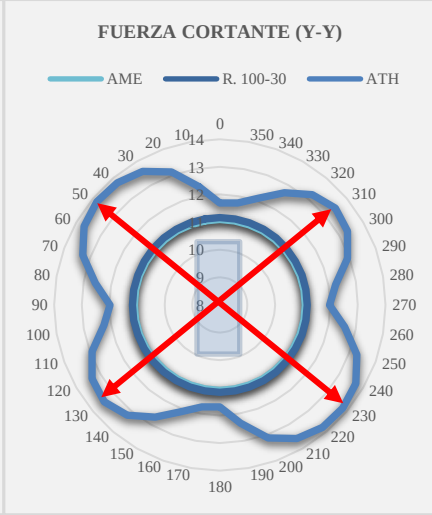

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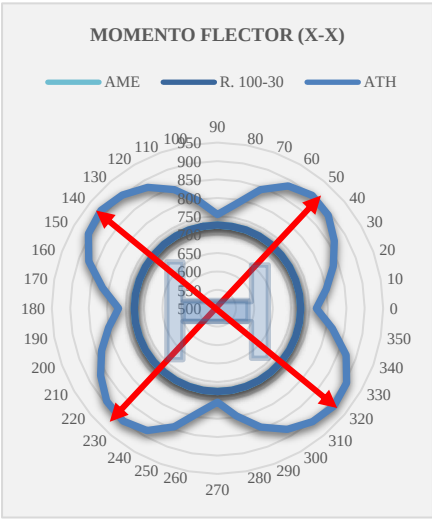

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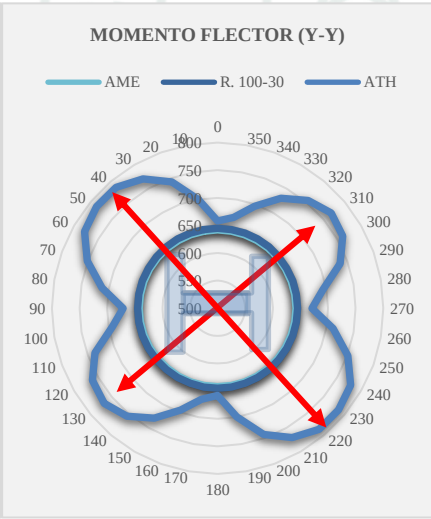

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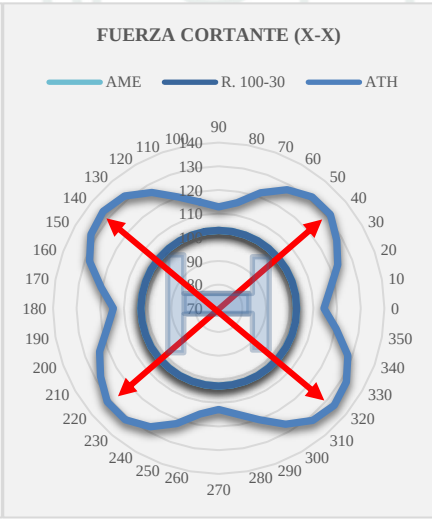

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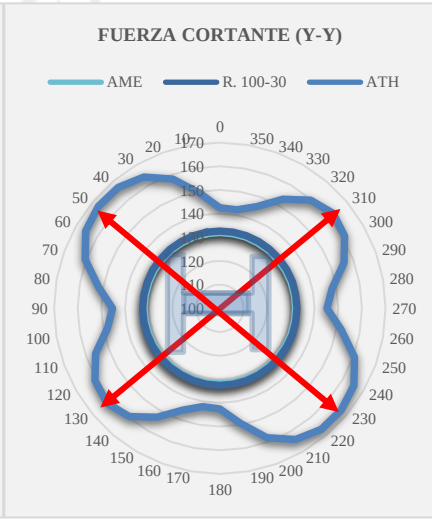

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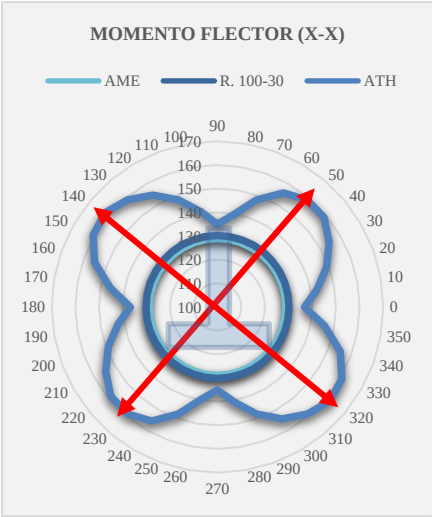

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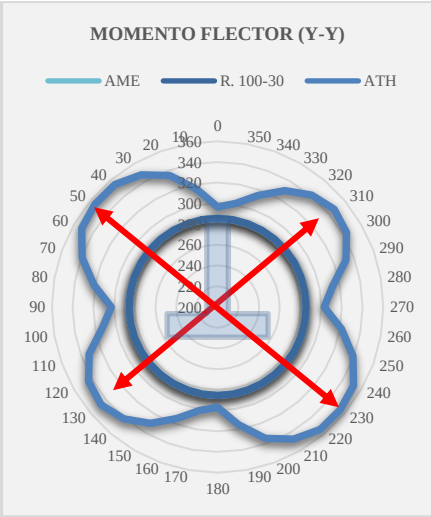

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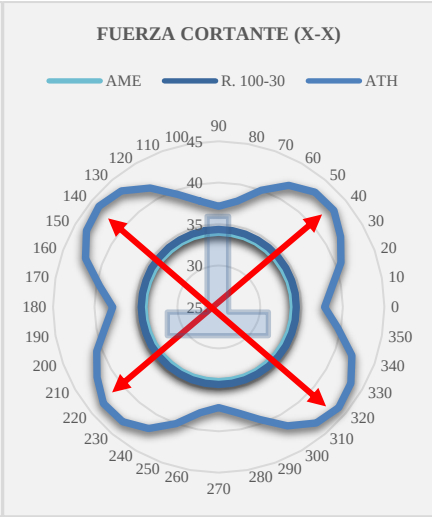

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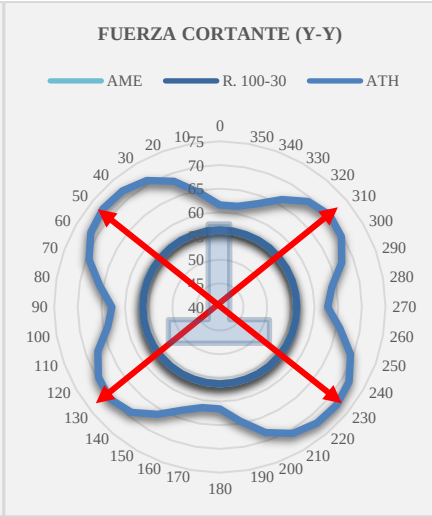

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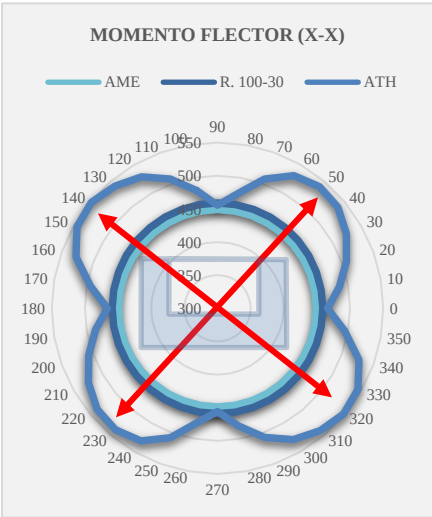

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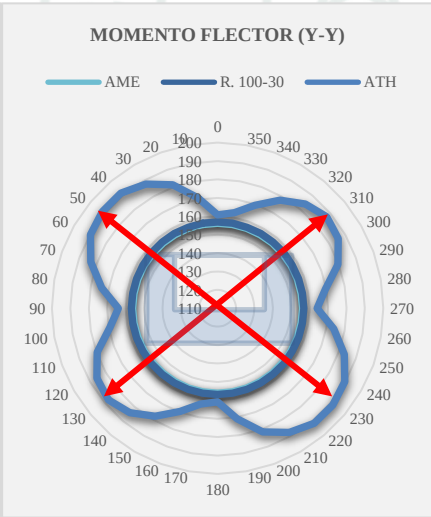

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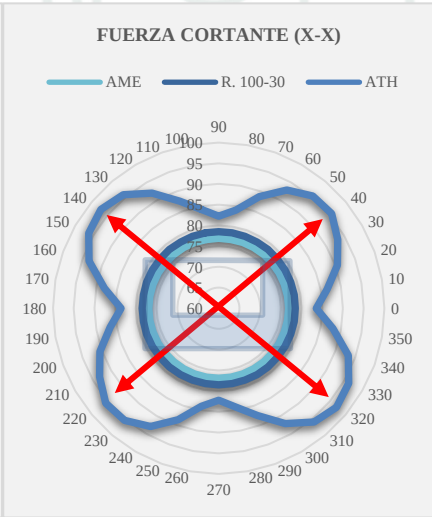

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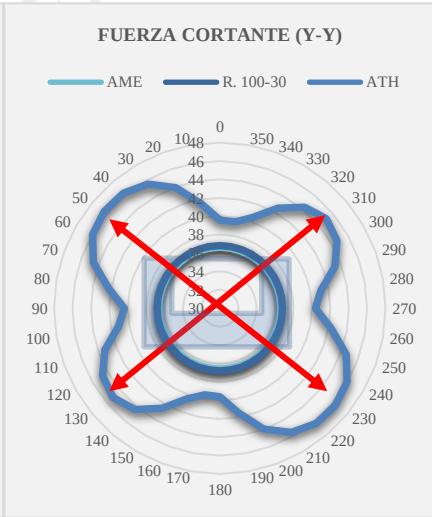

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

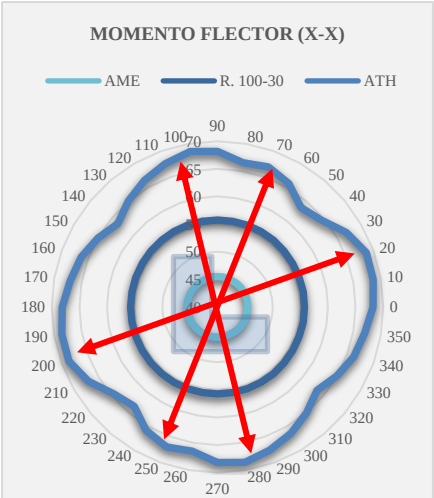

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

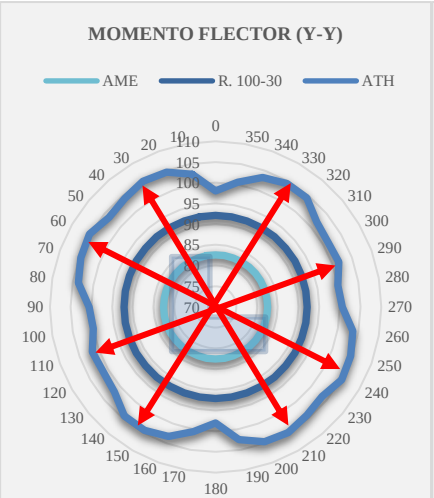

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

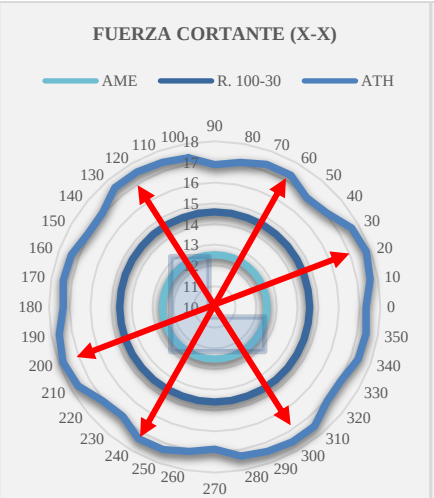

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

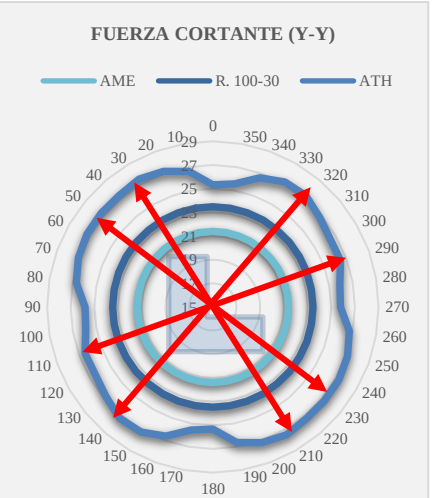

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

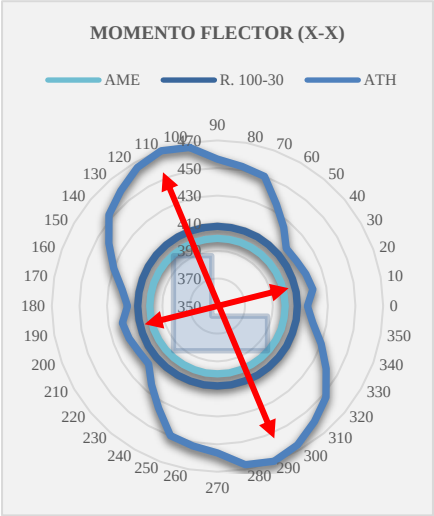

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

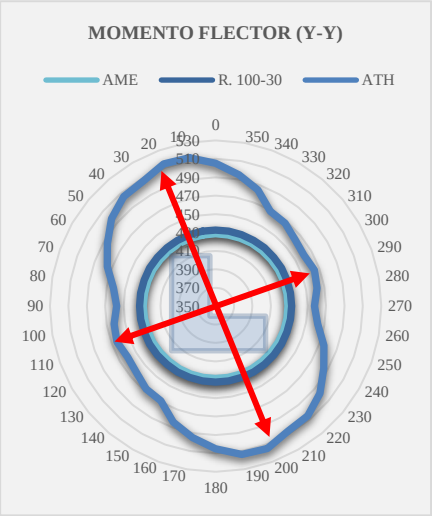

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

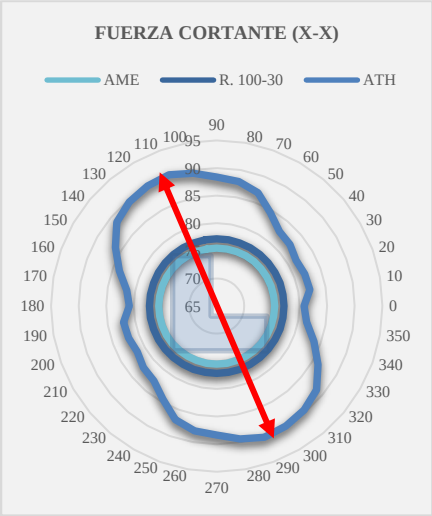

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

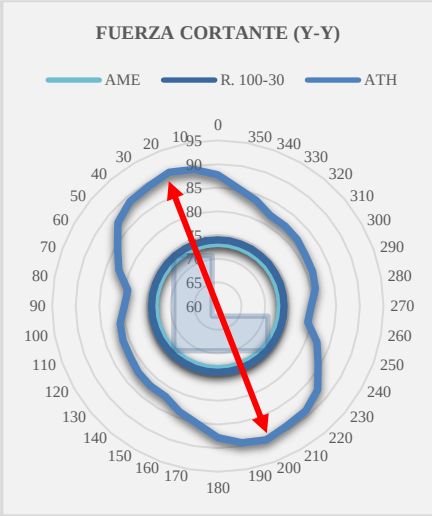

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

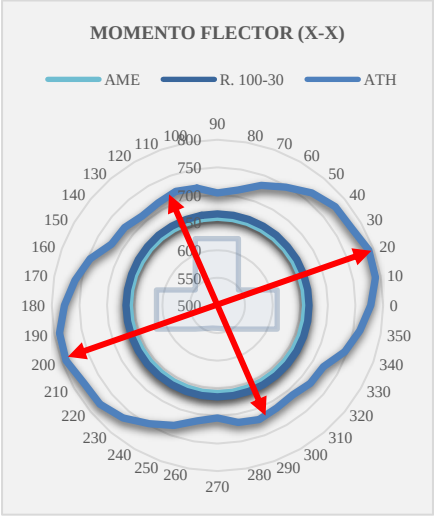
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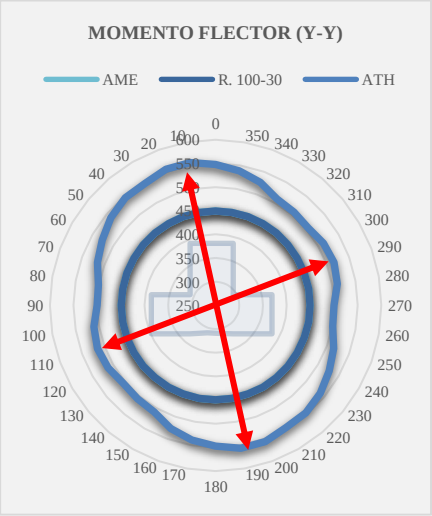

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

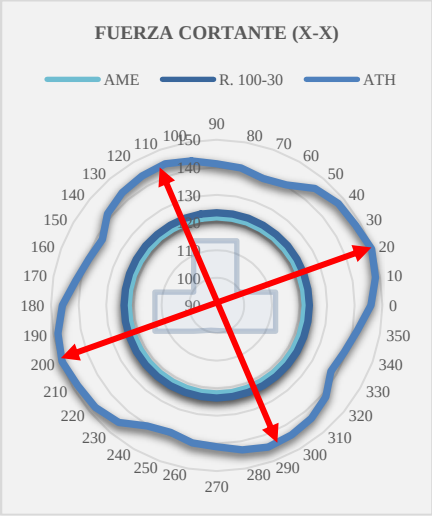

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

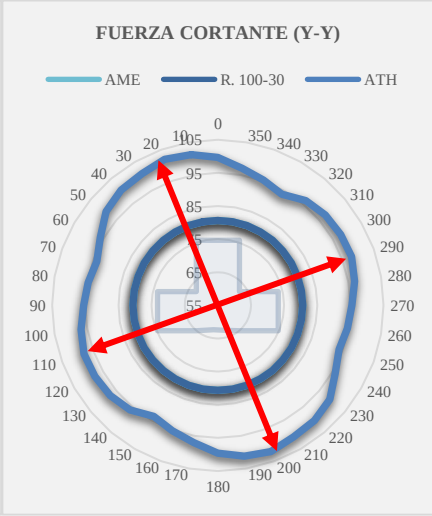

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

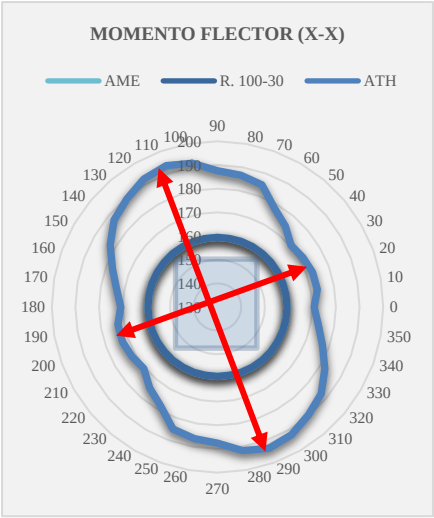

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

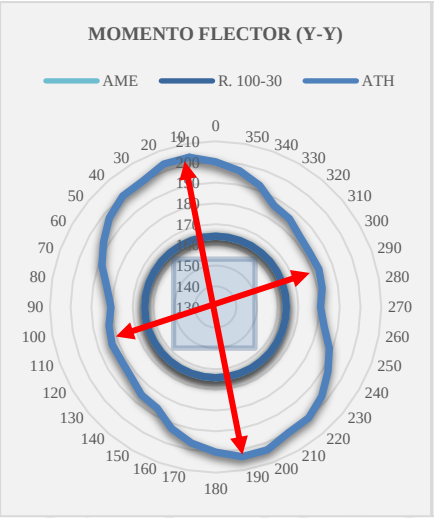

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

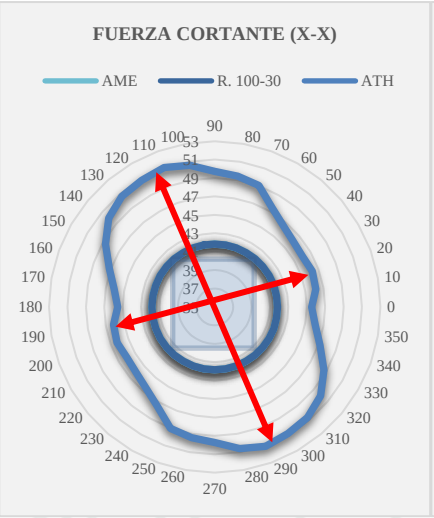

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

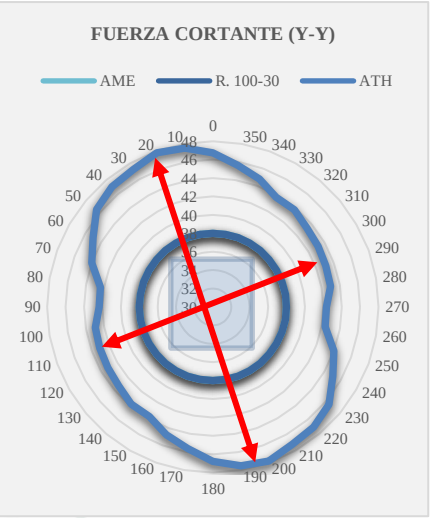

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

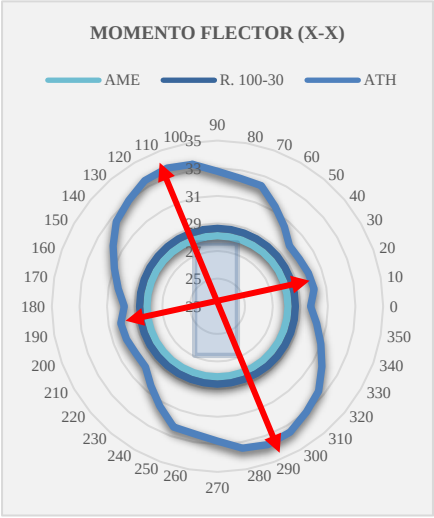

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

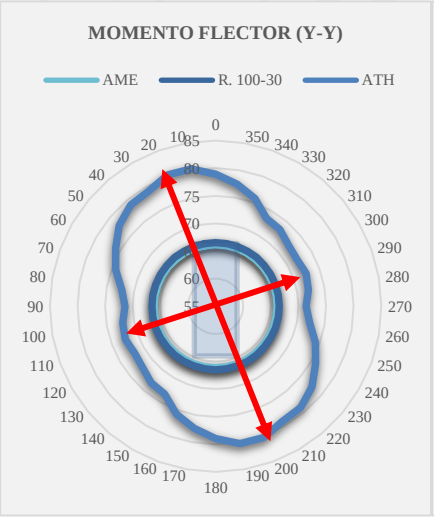

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

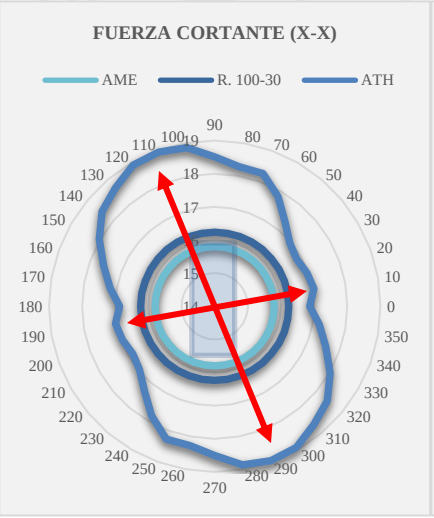

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

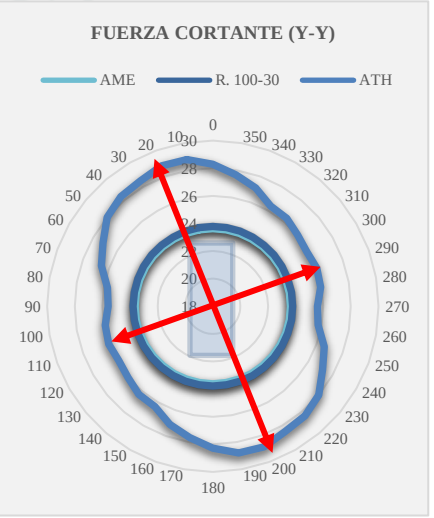

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

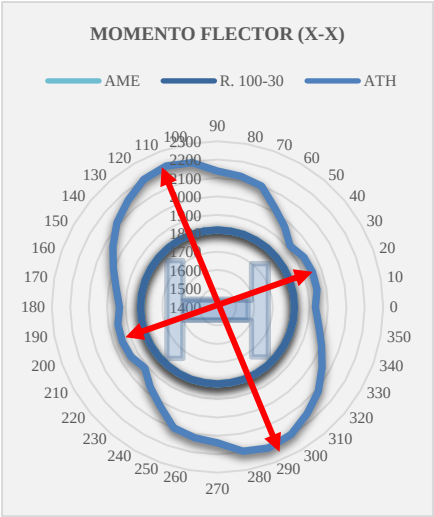

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

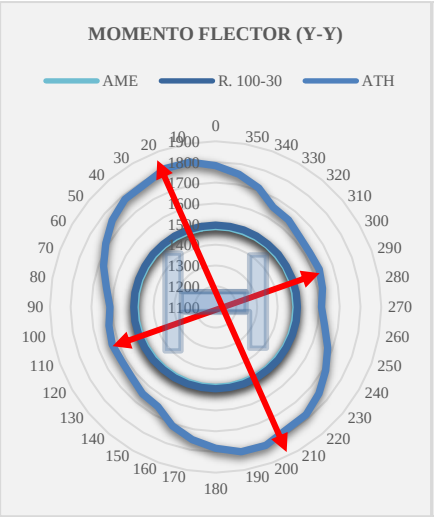

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

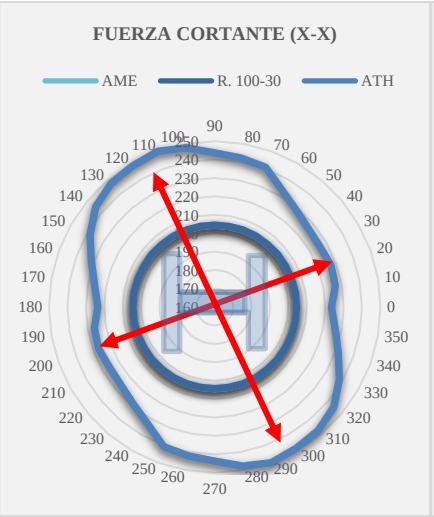

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

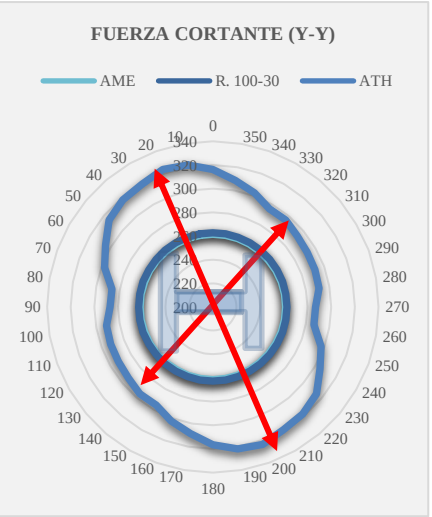

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

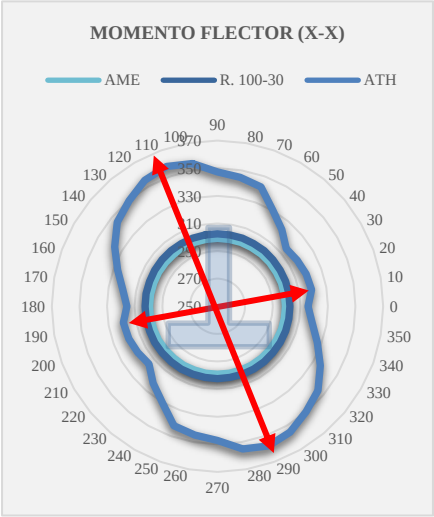

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

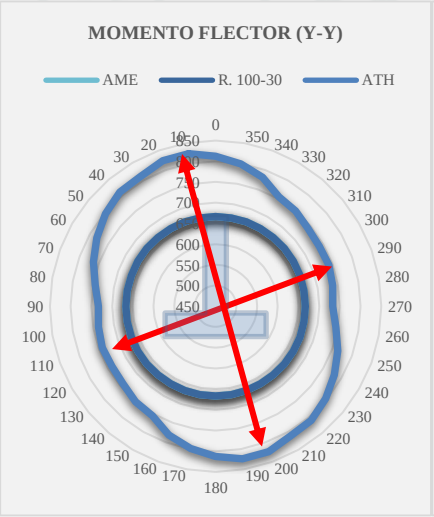

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

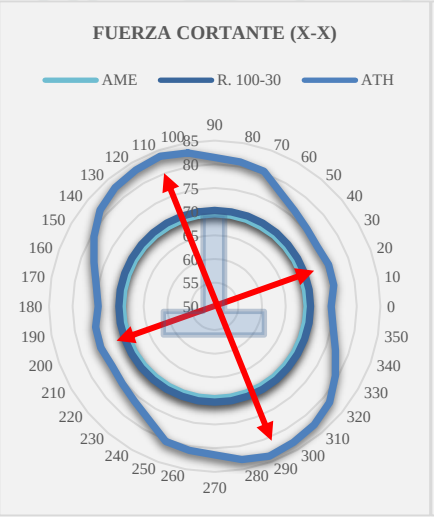

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

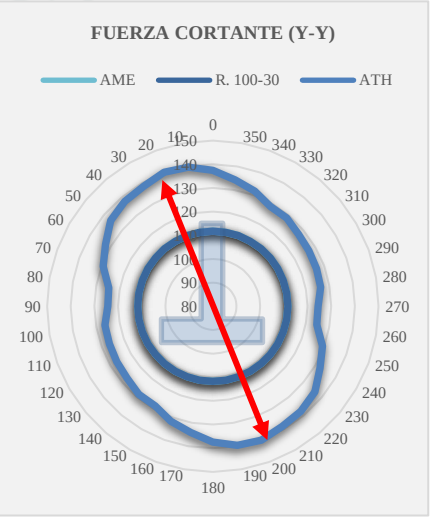

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

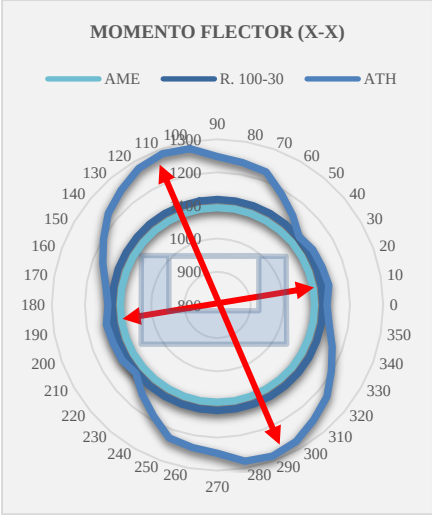

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

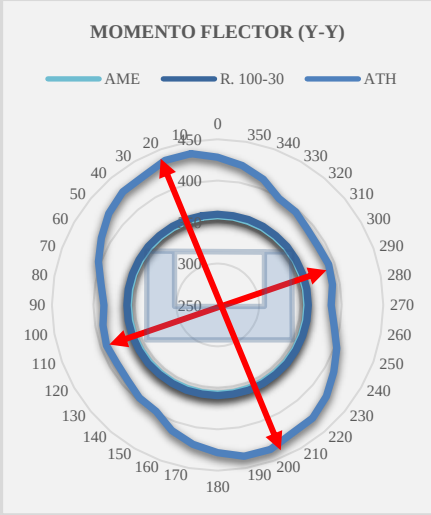

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

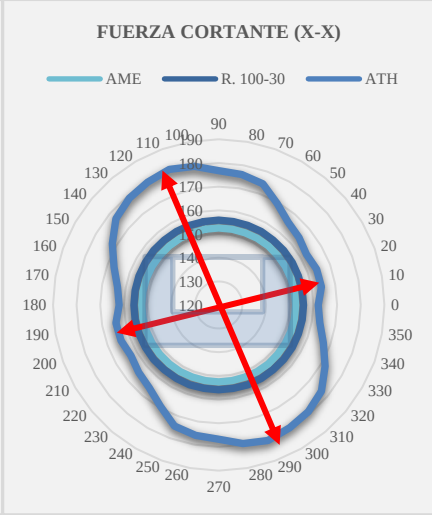

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

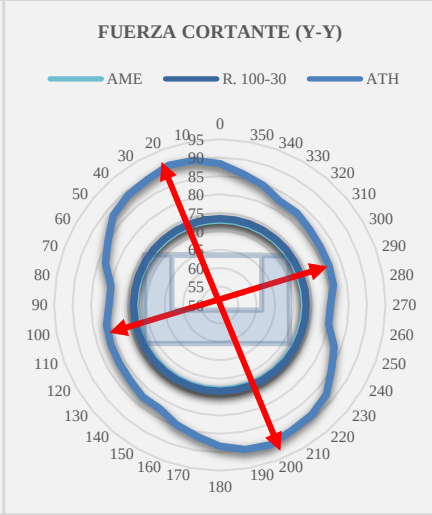

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

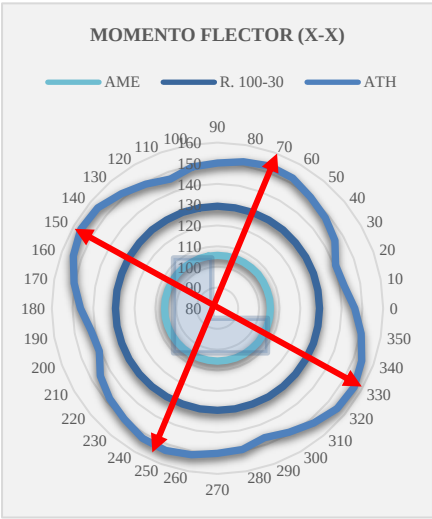

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

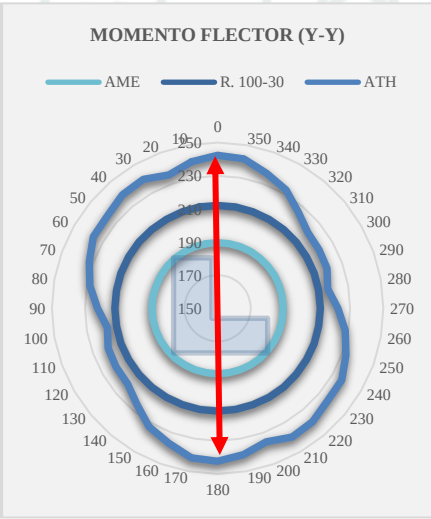

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

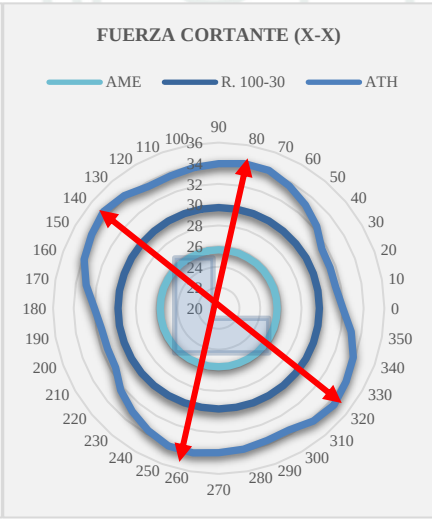

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

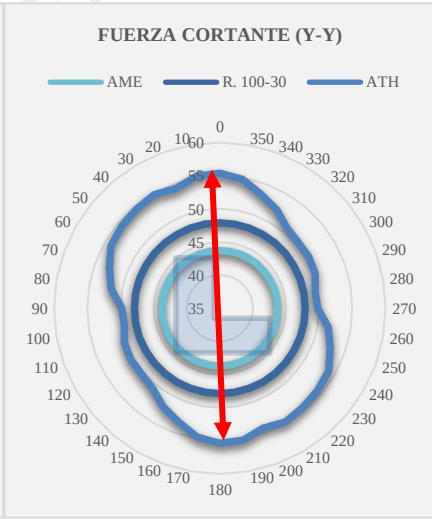

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

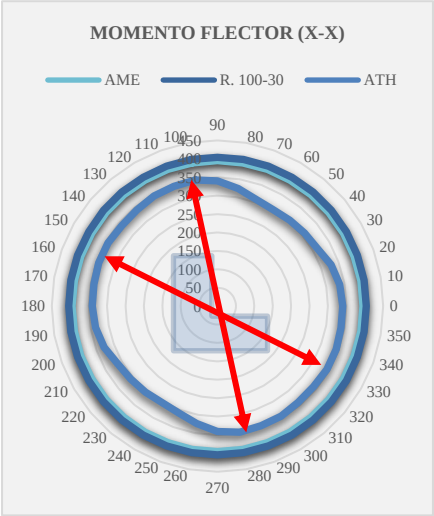

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

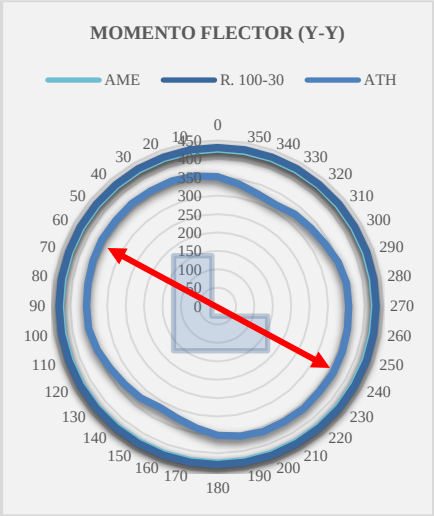

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

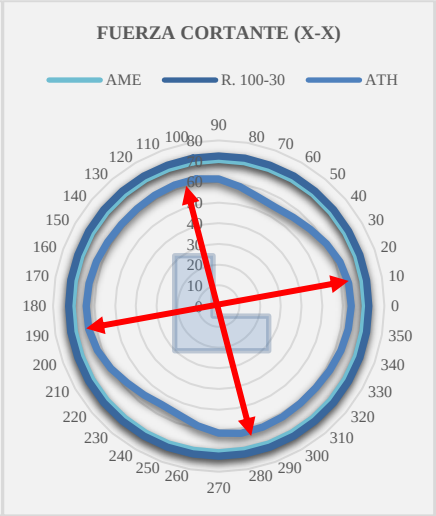

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

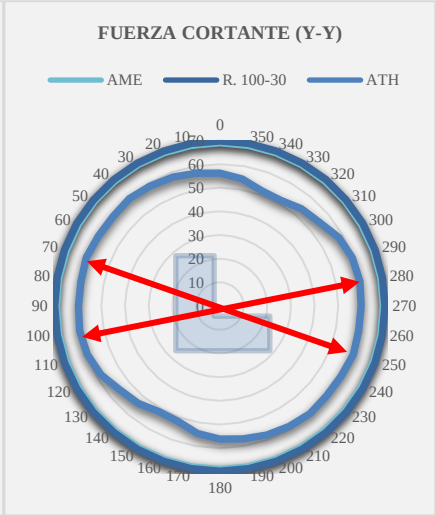

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

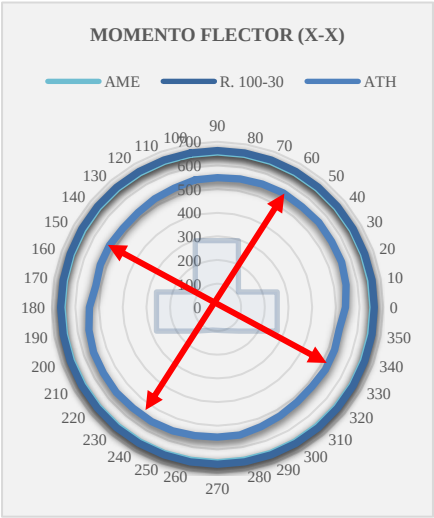
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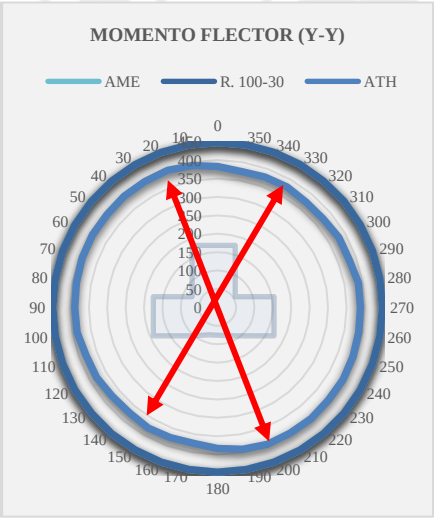


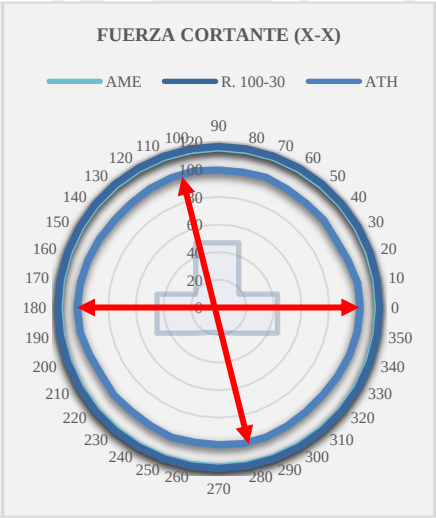


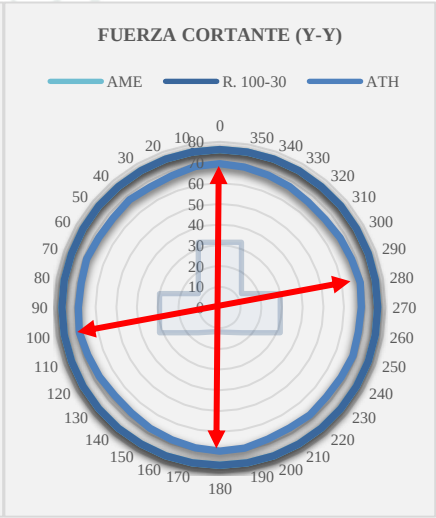


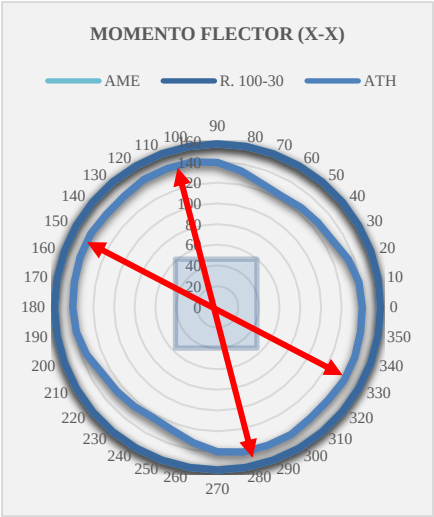


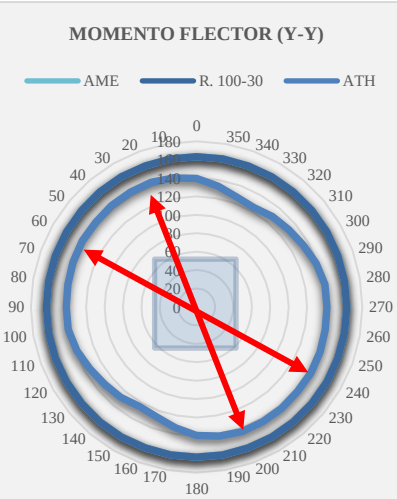


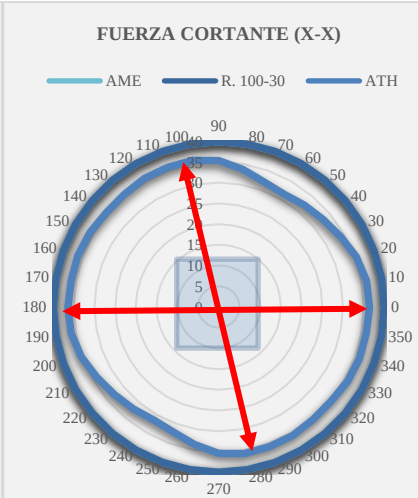


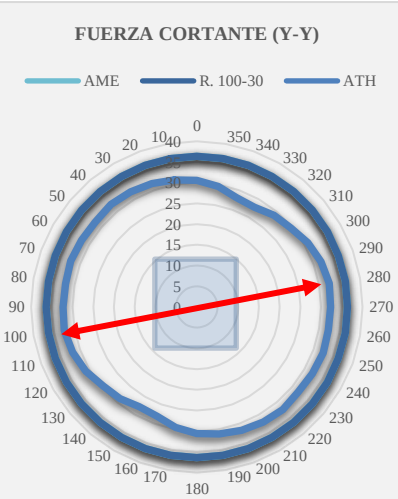


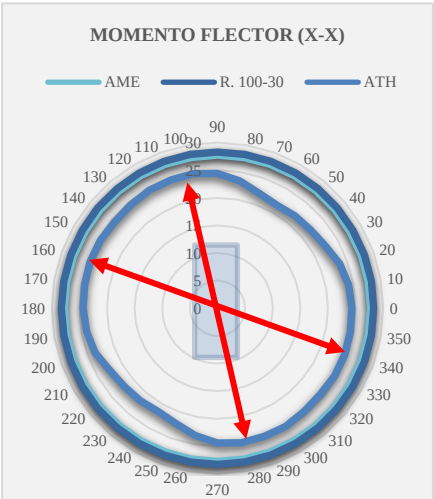


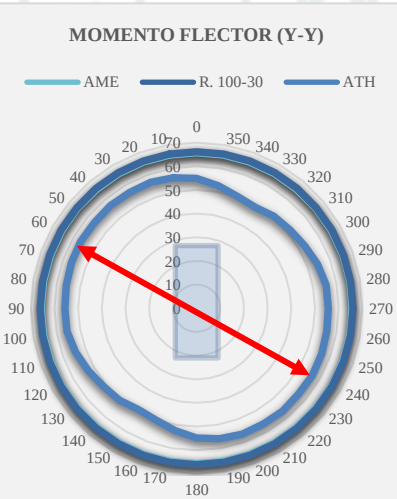

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

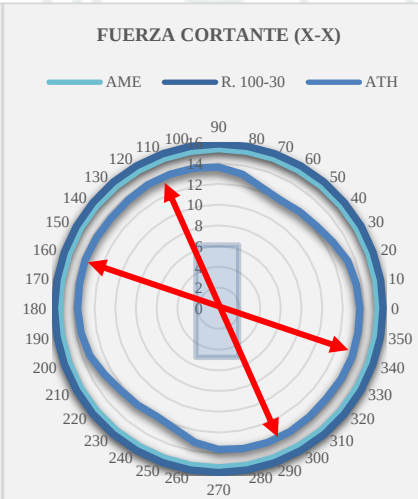

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

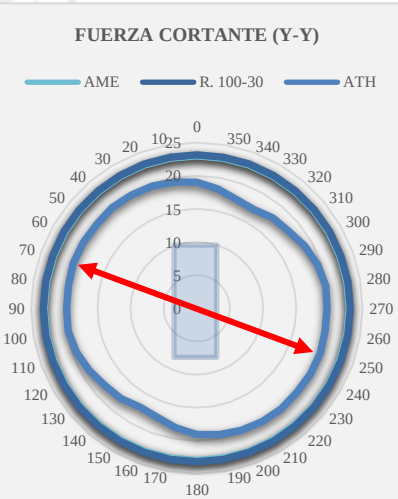

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

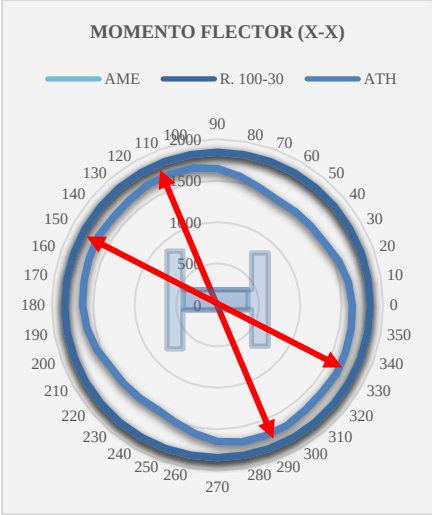

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

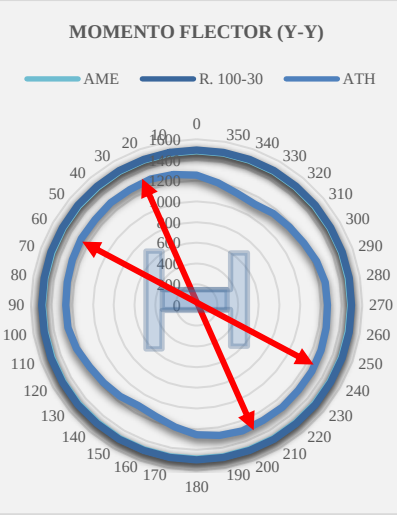

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

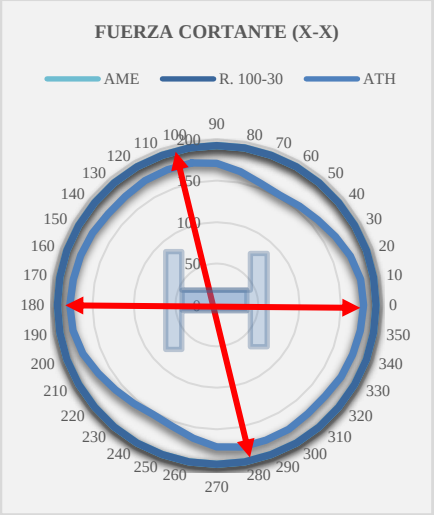

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

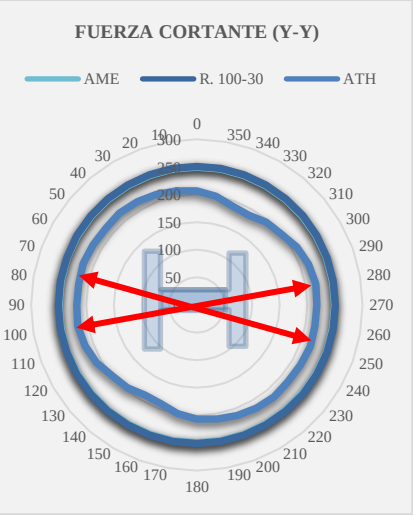

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

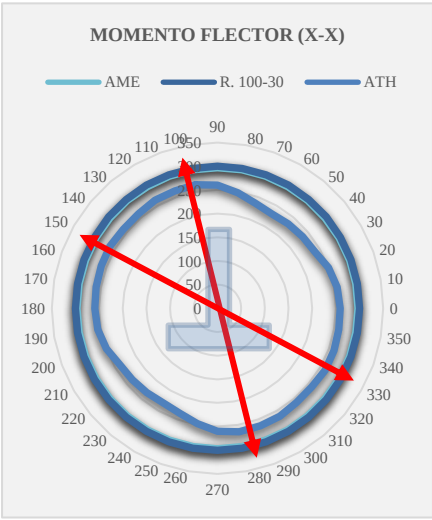

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

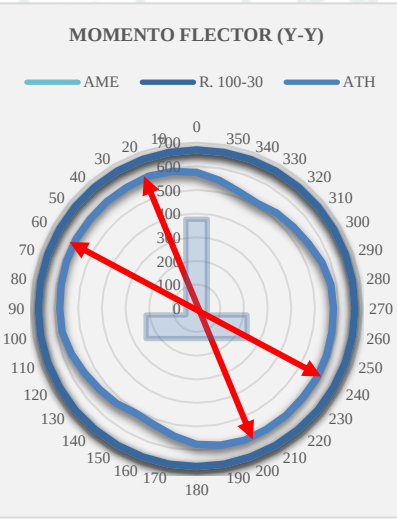

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

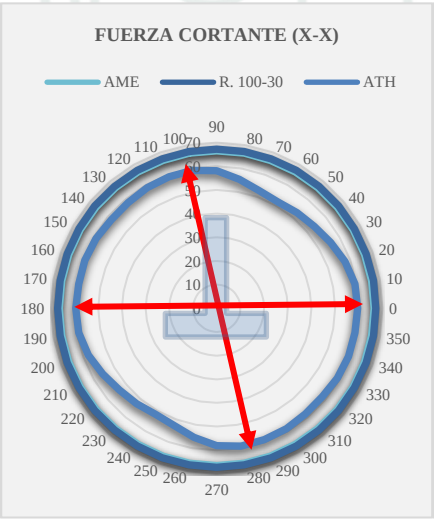

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

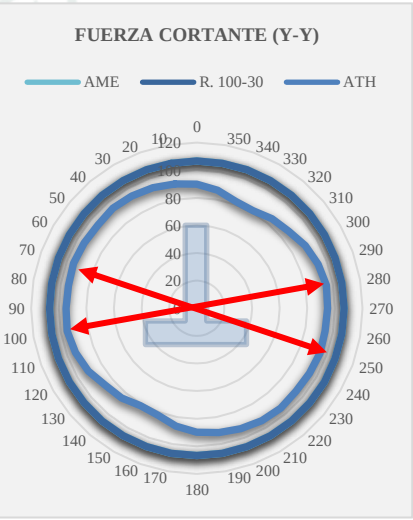

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

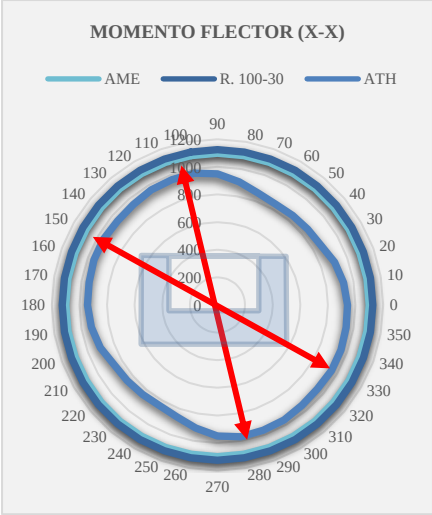

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

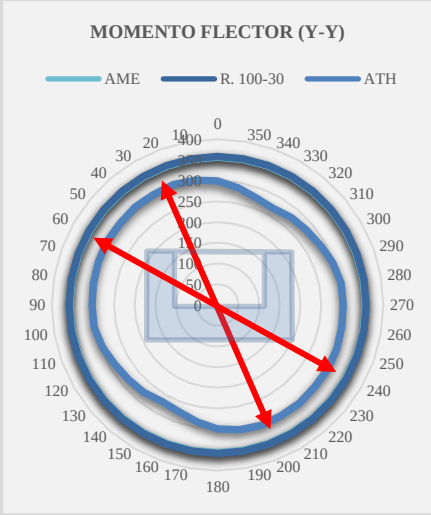

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

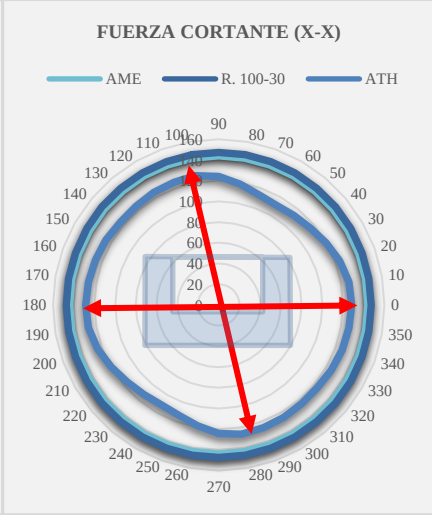

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

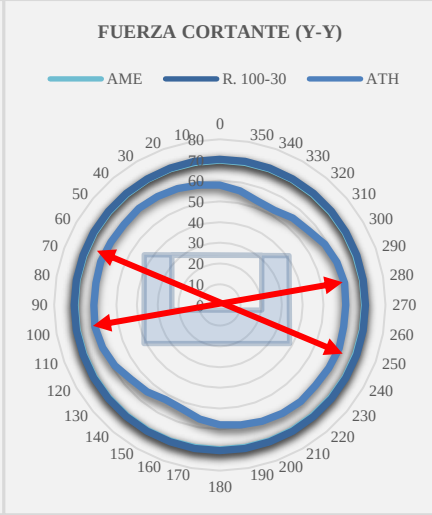

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

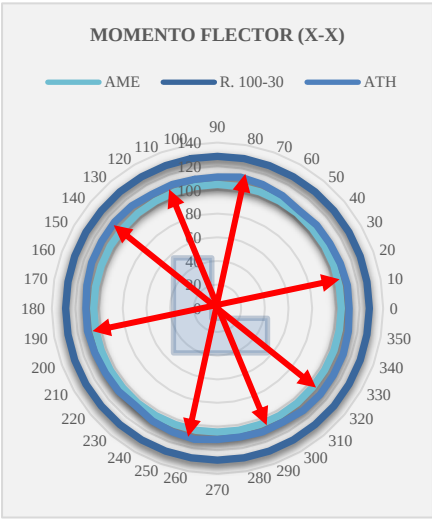

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

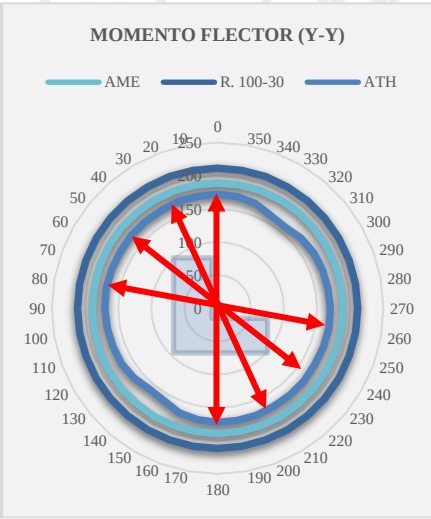

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

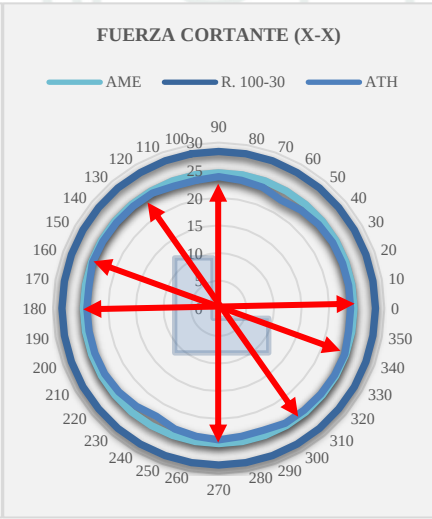

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

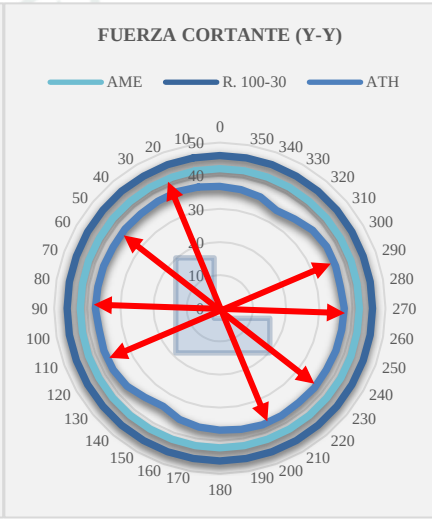

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

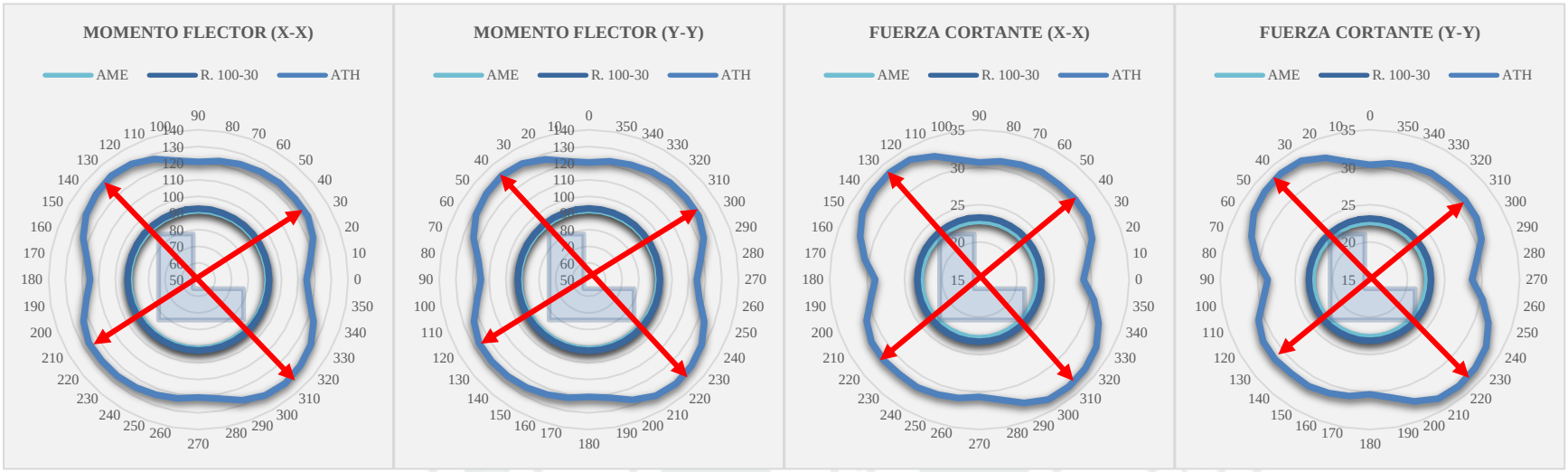

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

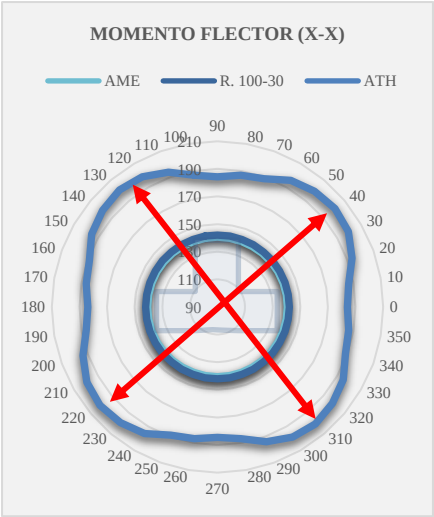

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

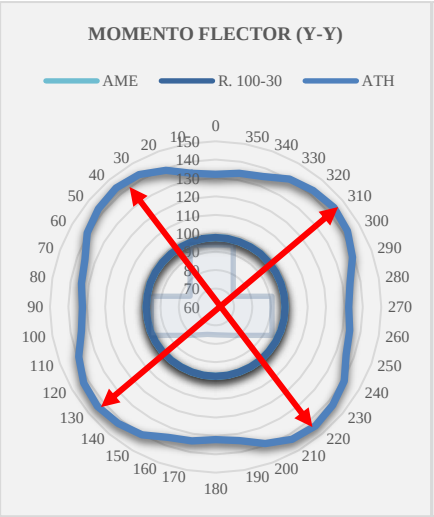

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

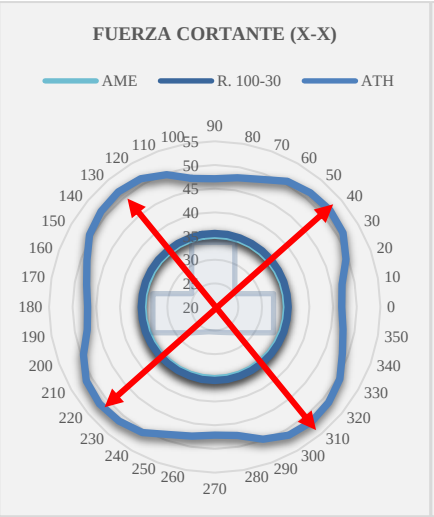
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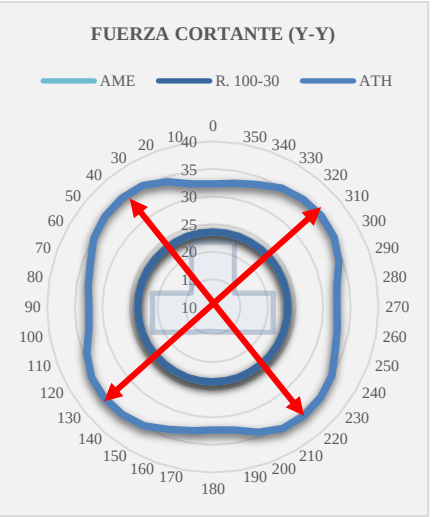
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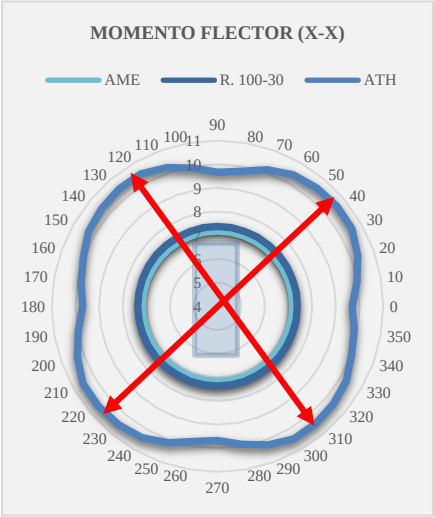


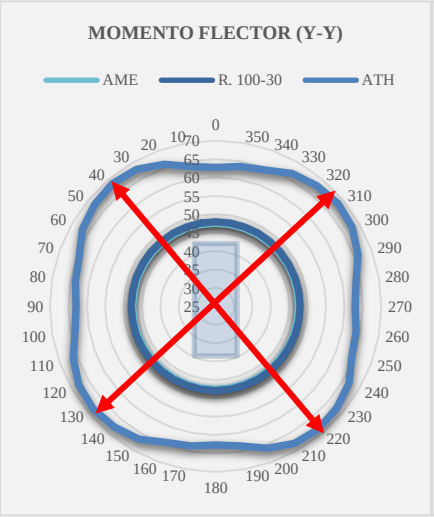

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

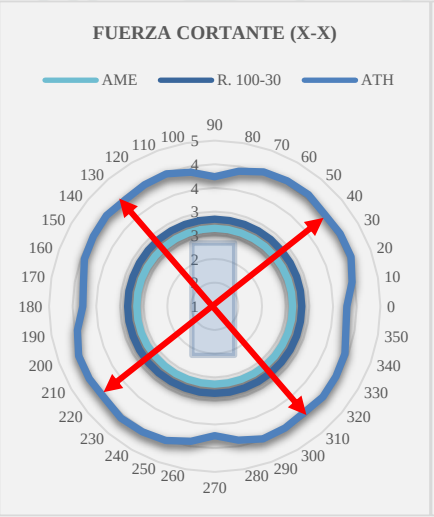

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

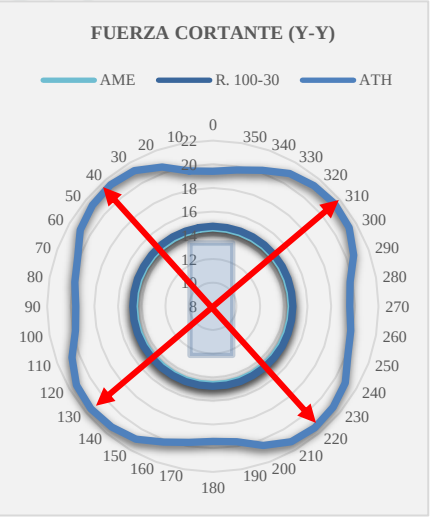

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

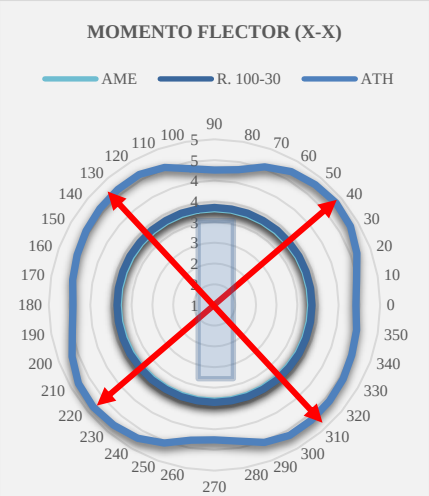

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

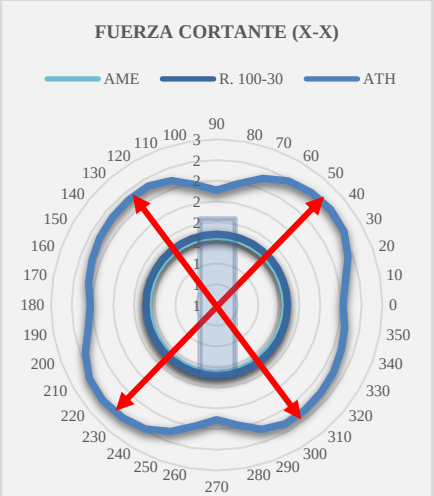

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

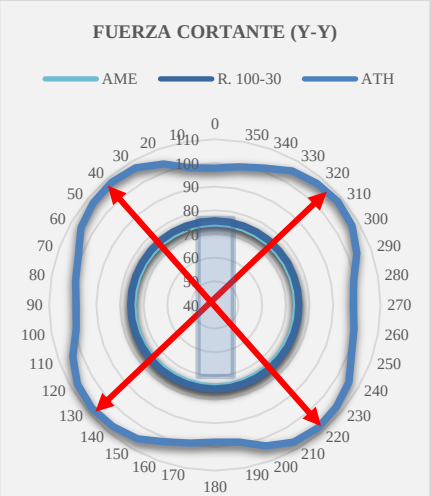

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

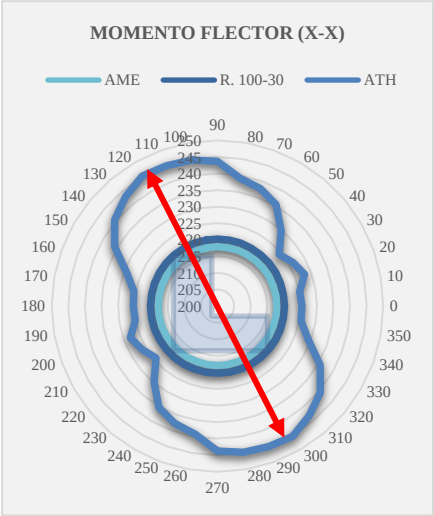

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

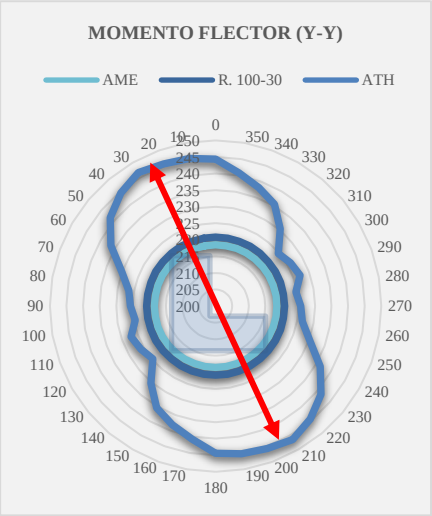

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

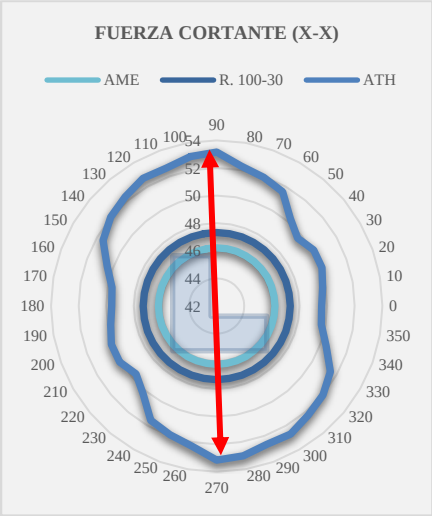

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

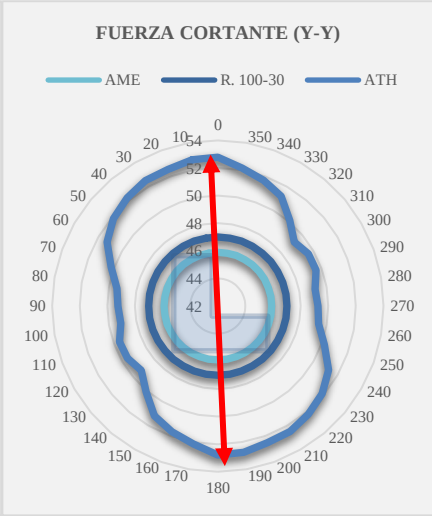

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

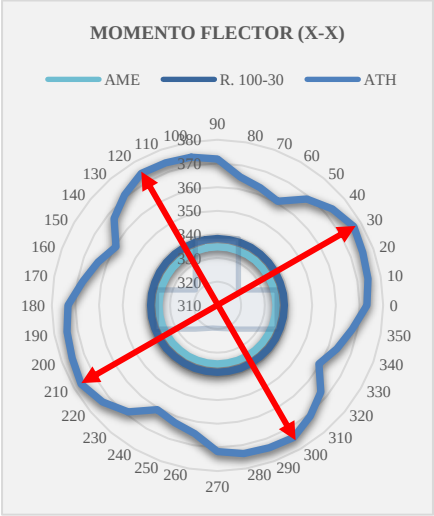
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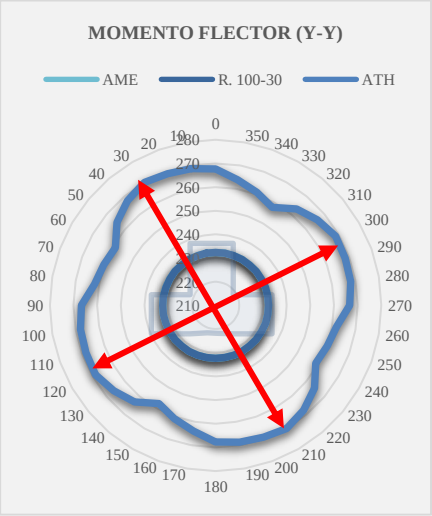

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

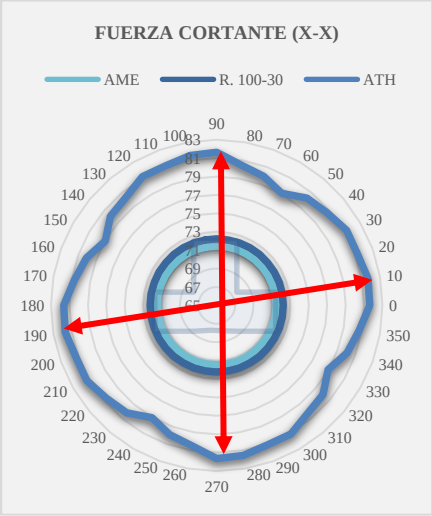

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

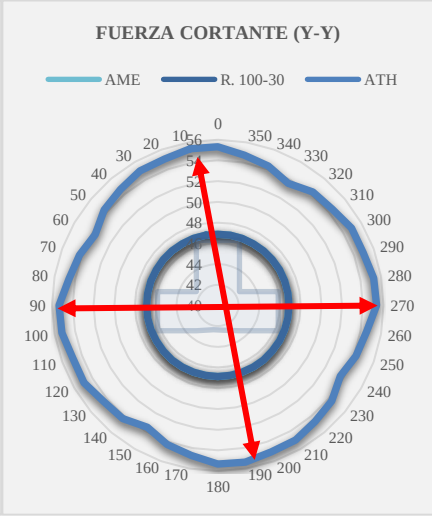

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

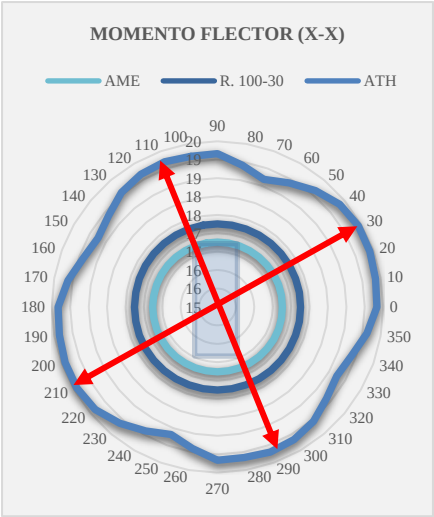

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

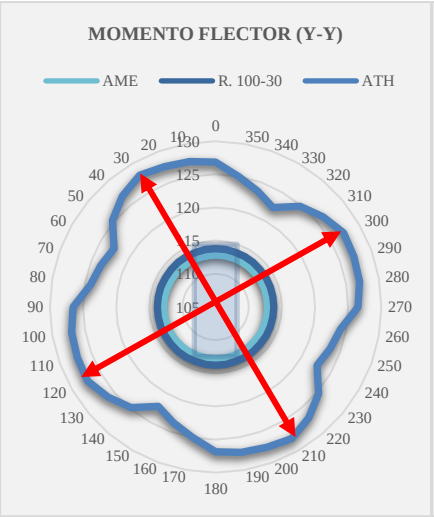

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

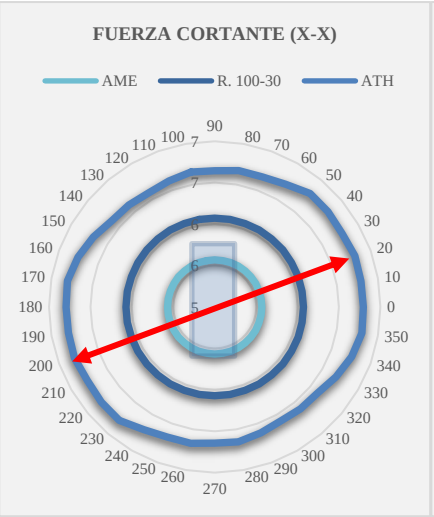

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

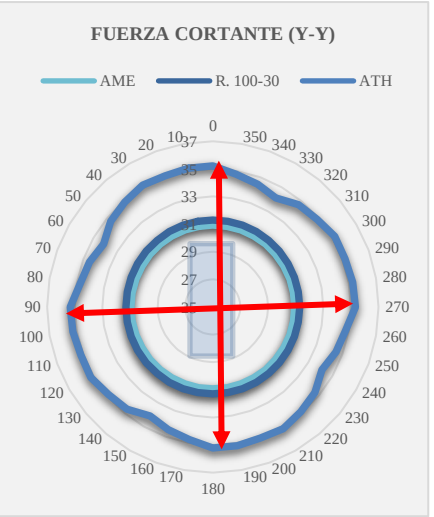

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

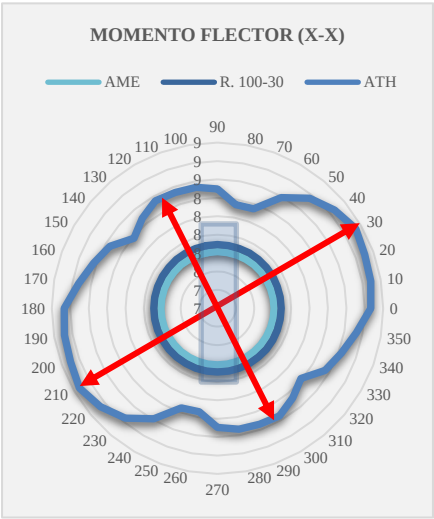

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

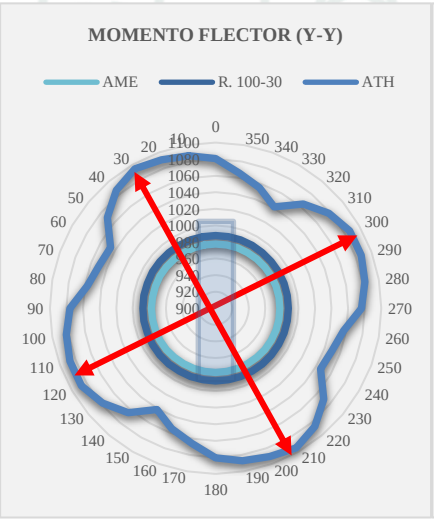

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

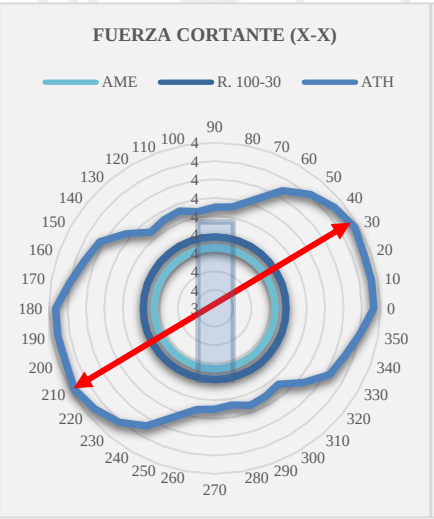

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

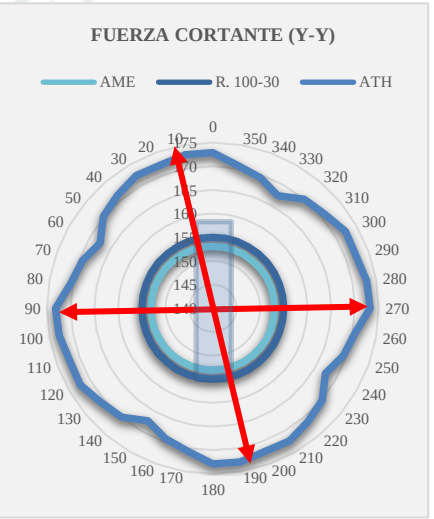

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

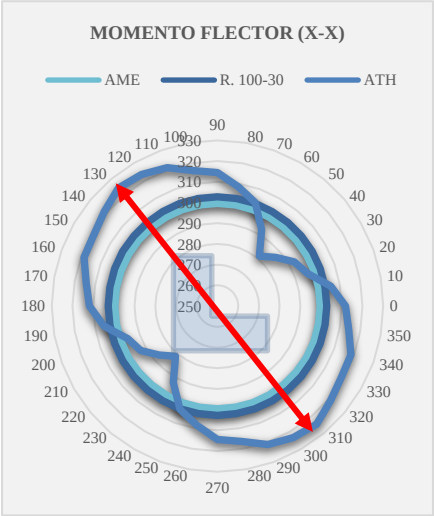

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

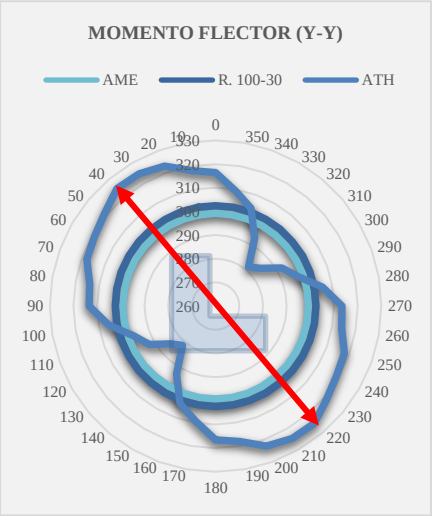

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

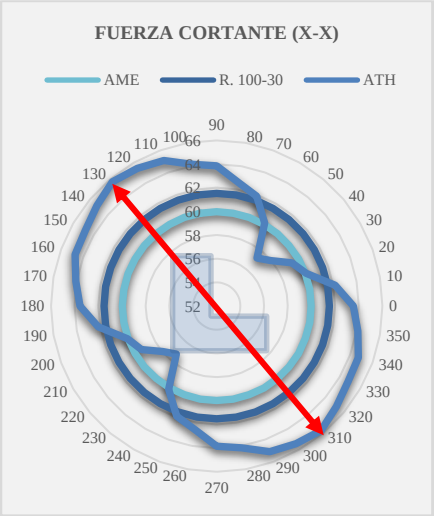

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

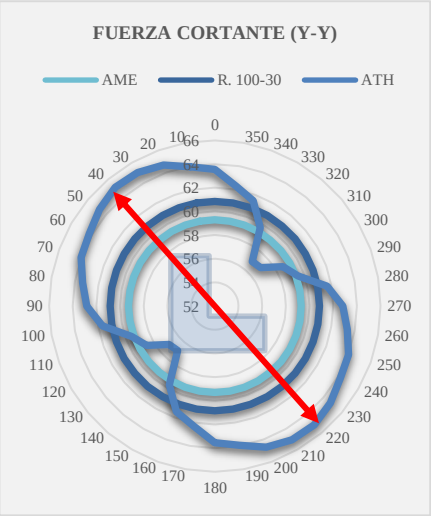

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

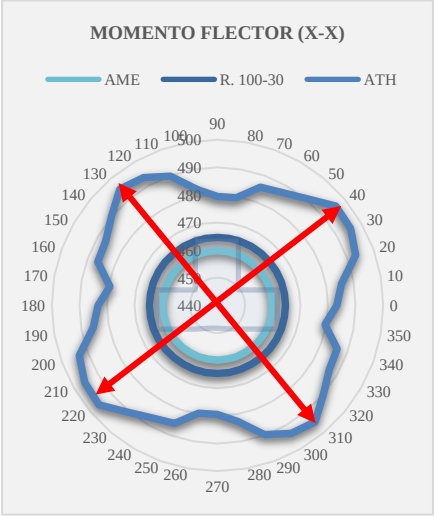
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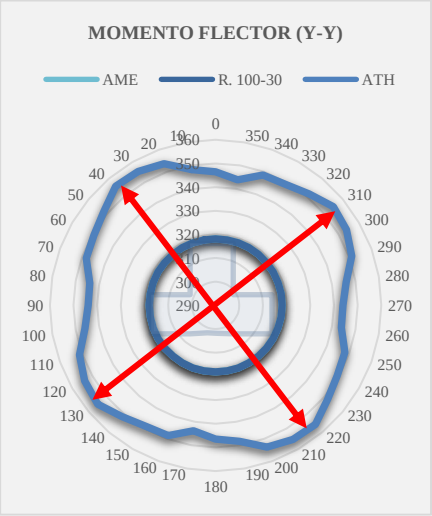


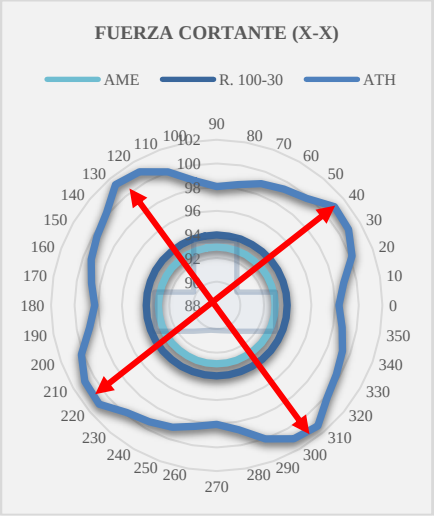




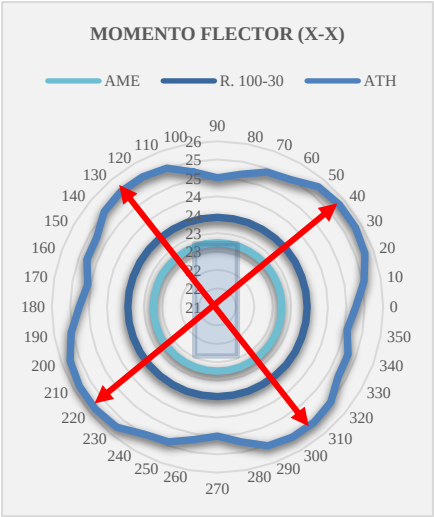




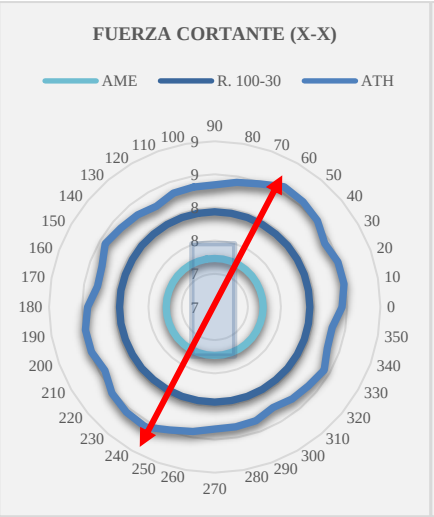




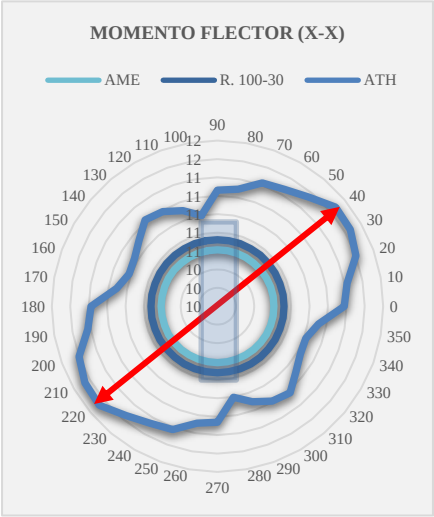



MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

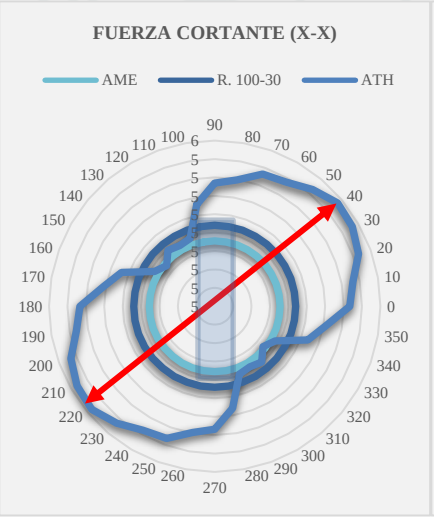

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH


FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

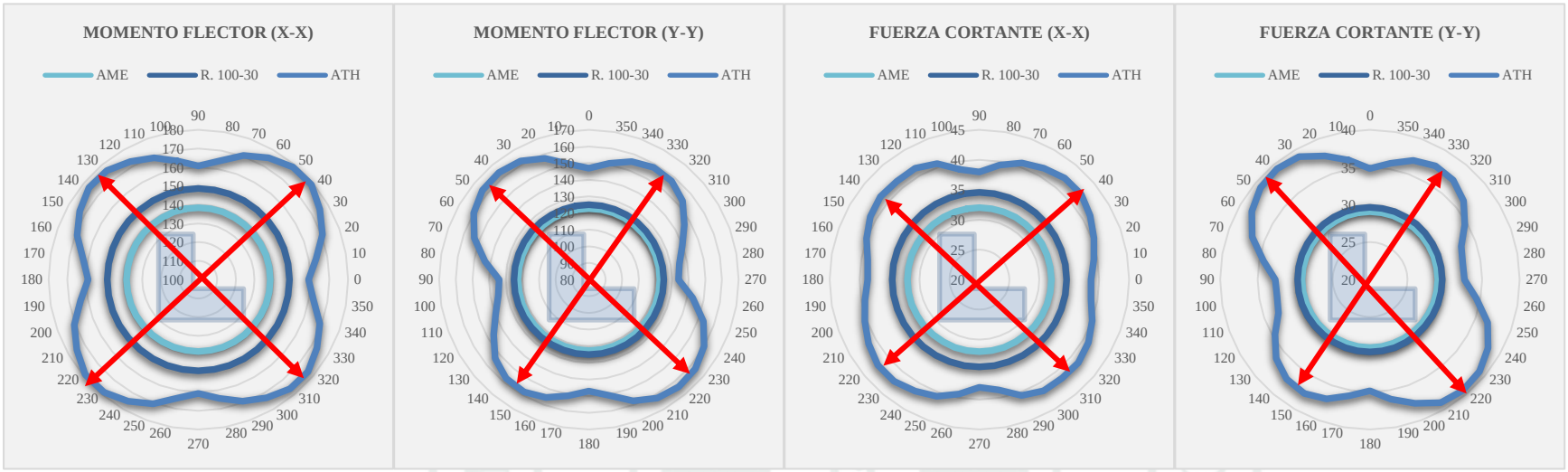

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

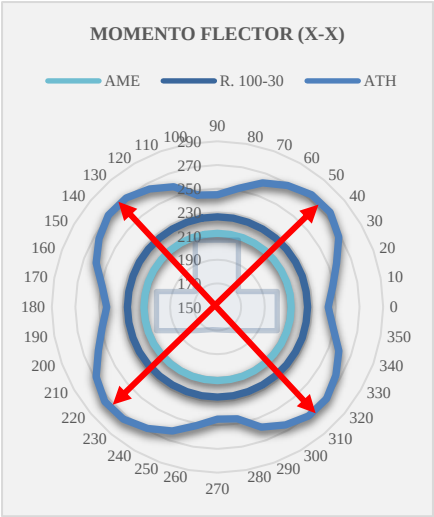

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

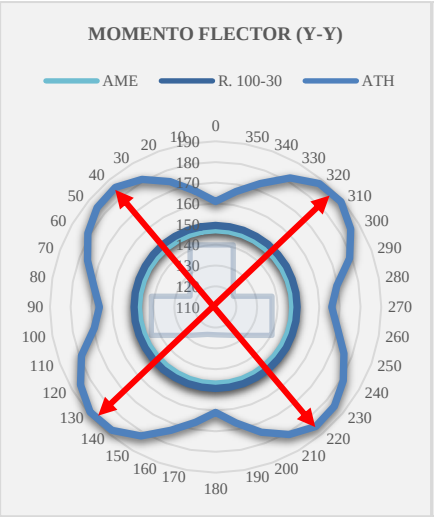

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

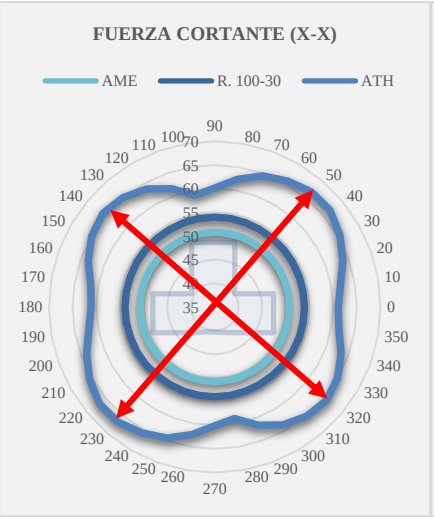
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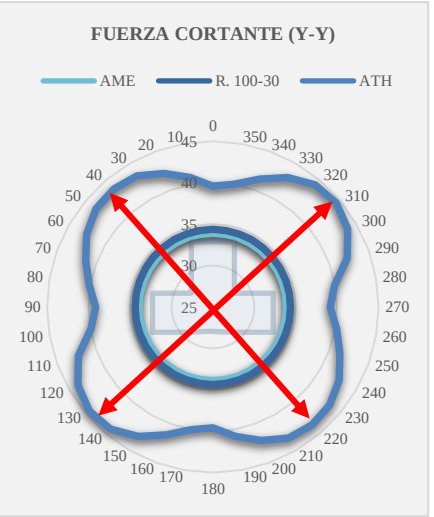
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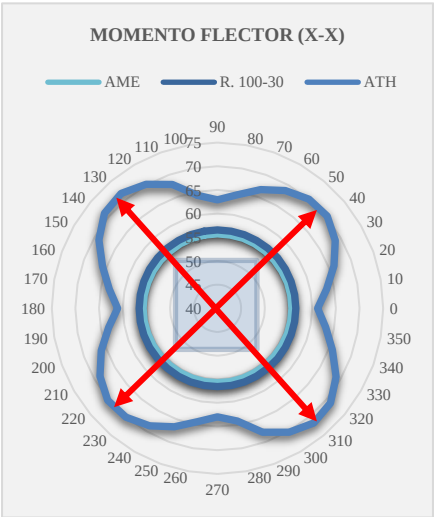


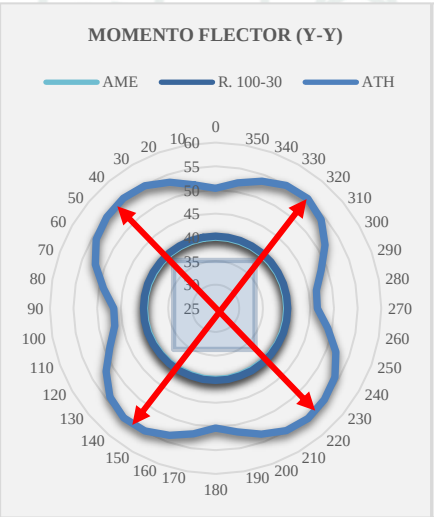

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

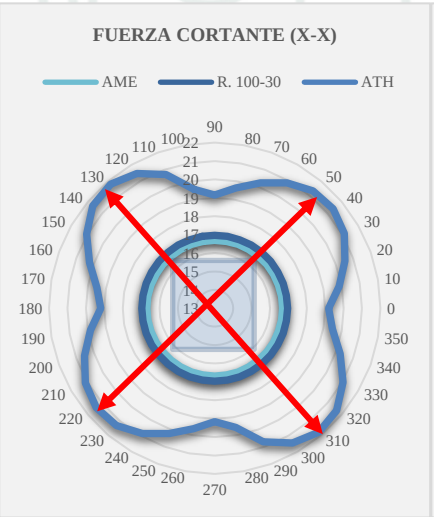

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

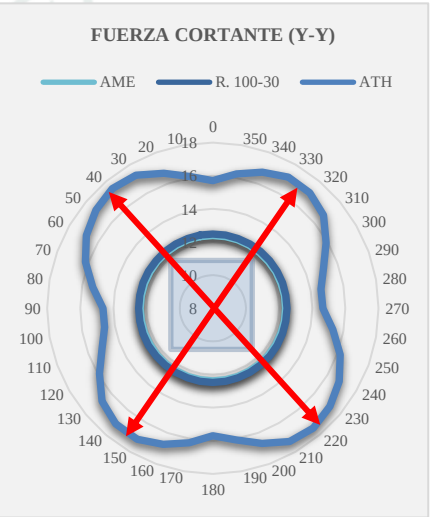

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

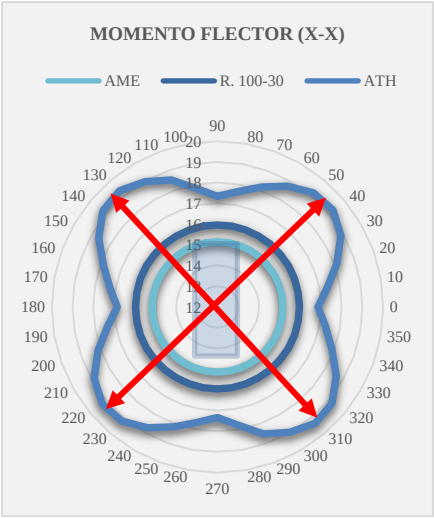

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

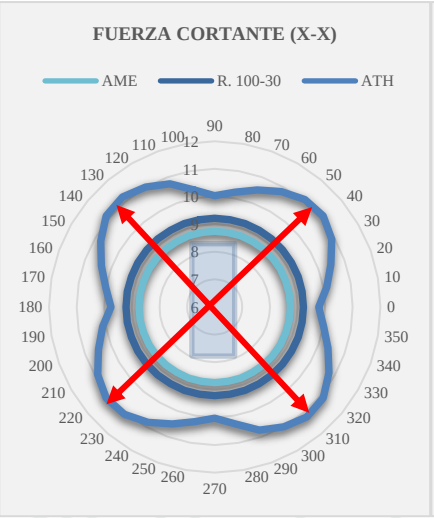

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

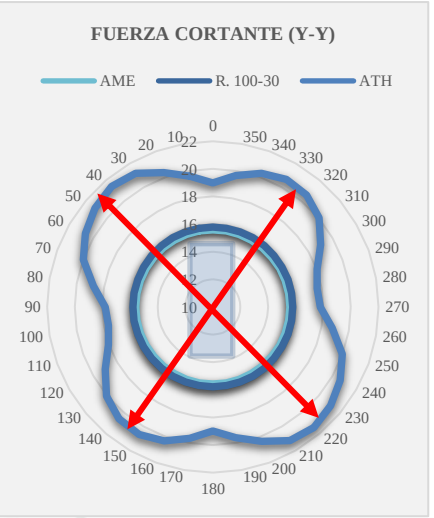

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

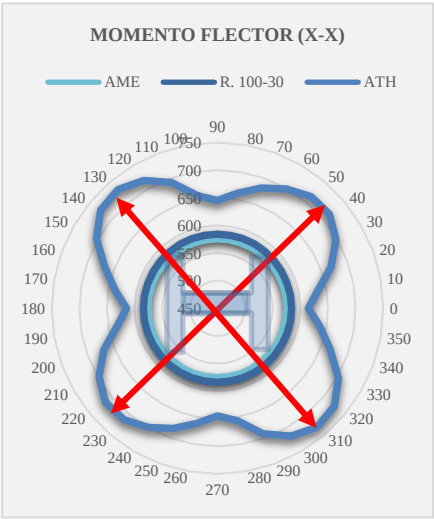

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

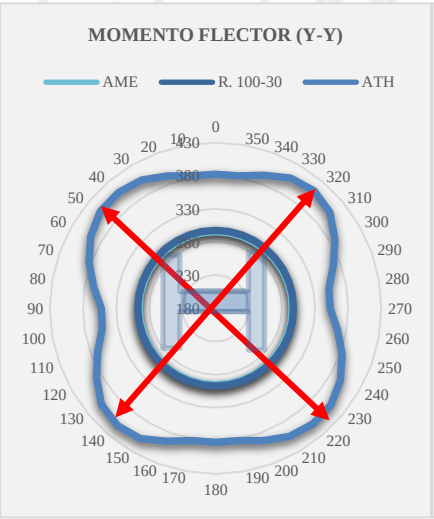

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

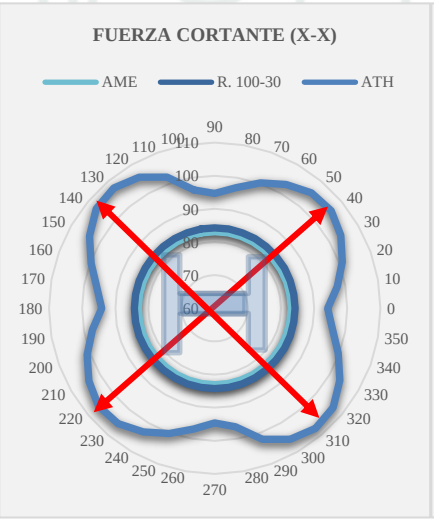

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

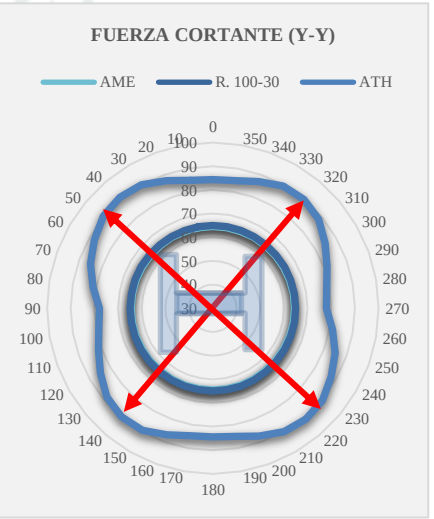

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

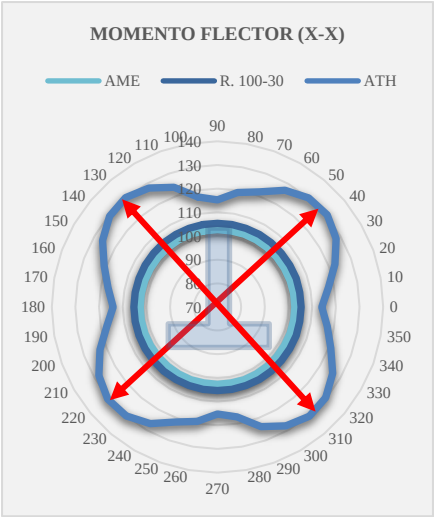

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

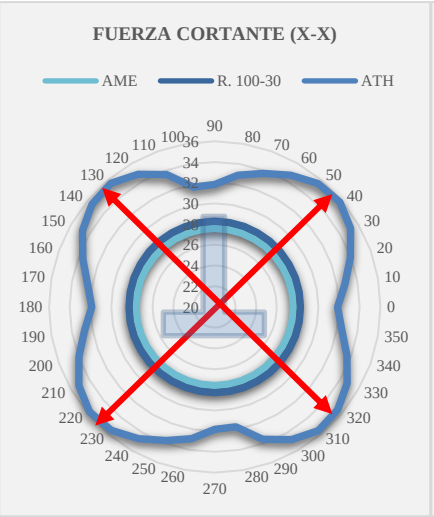

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

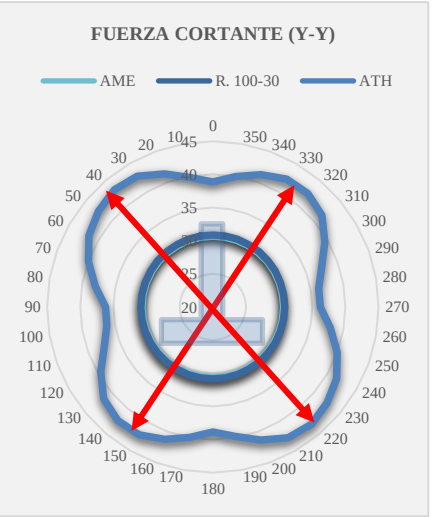

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

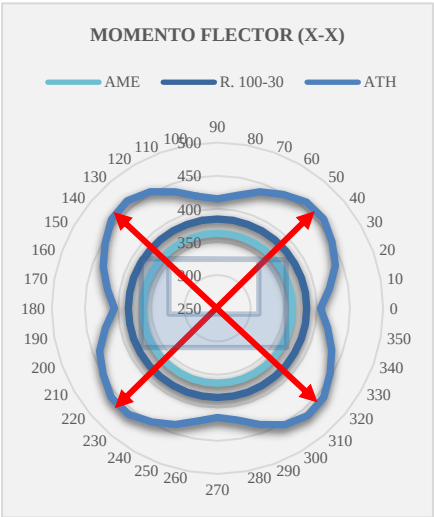

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

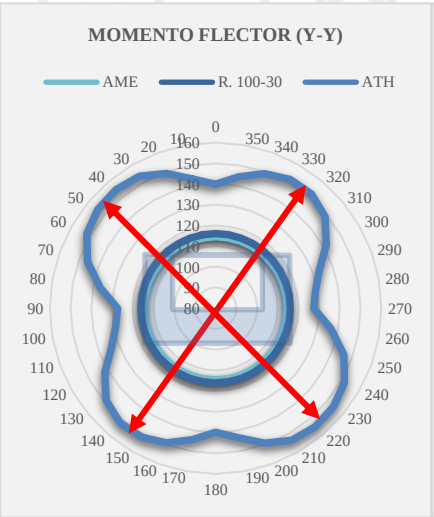

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ATH

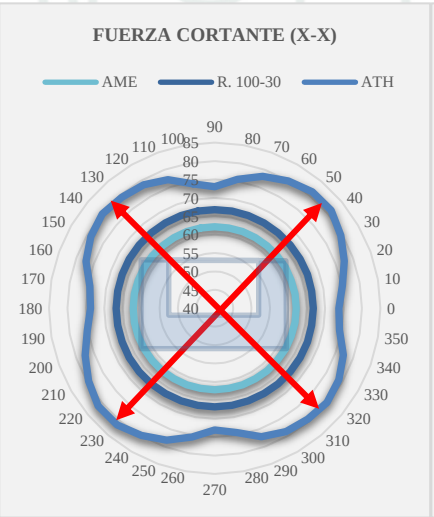

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

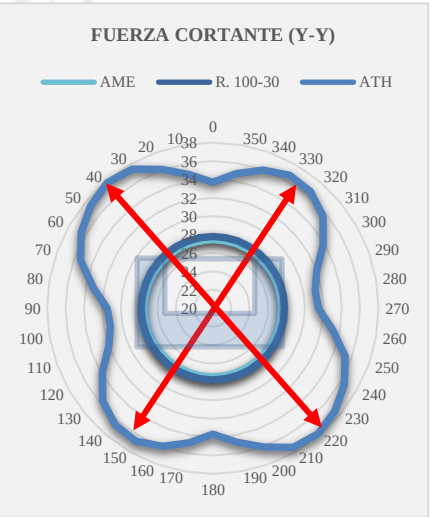

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R. 100-30
ATH

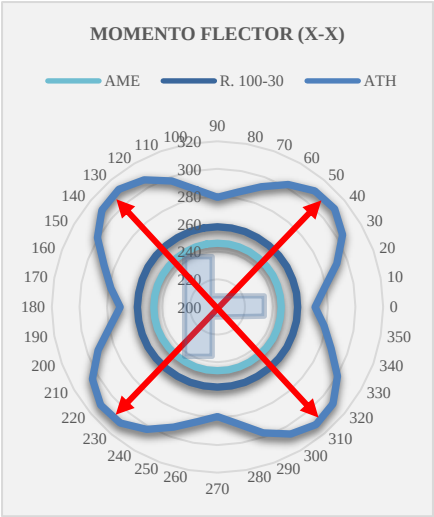

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

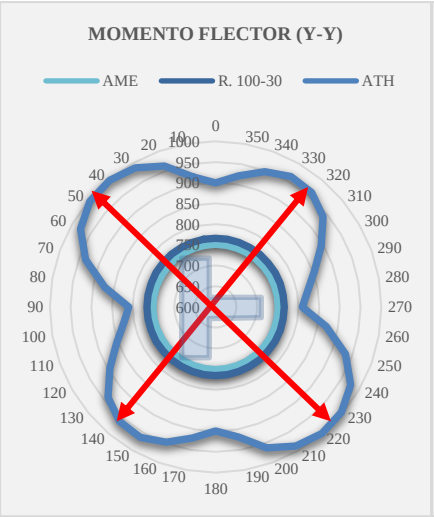

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

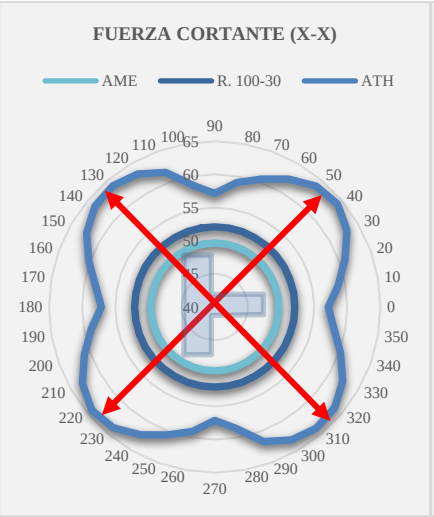

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

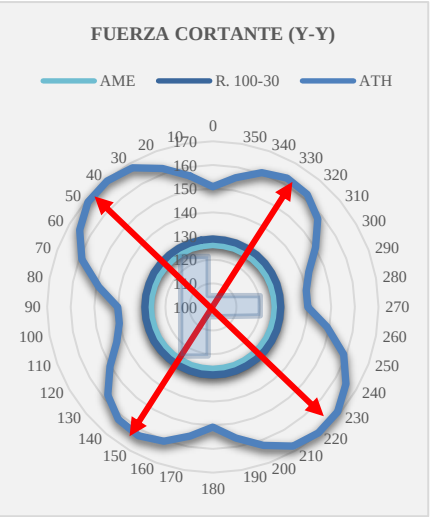

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

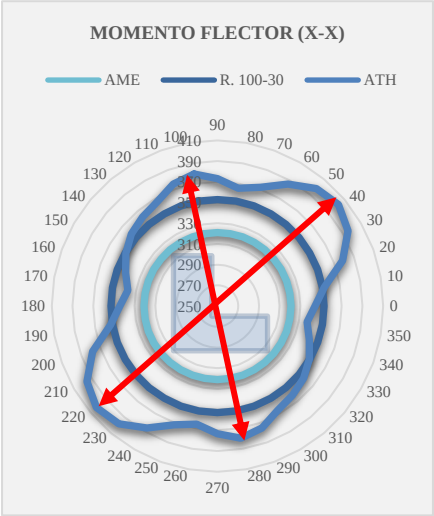

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

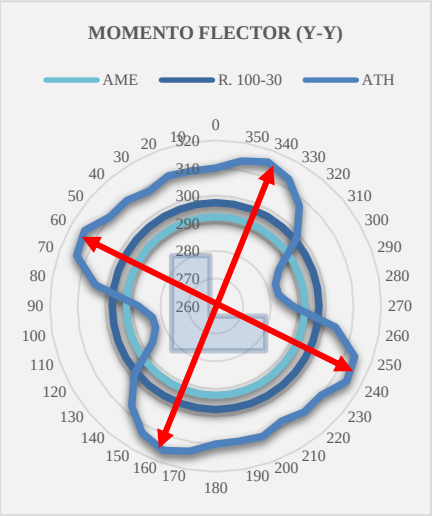

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

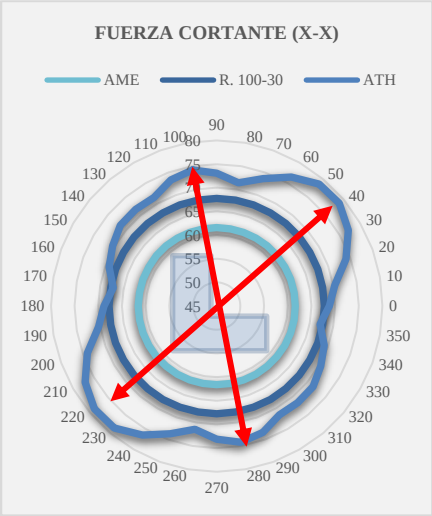

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

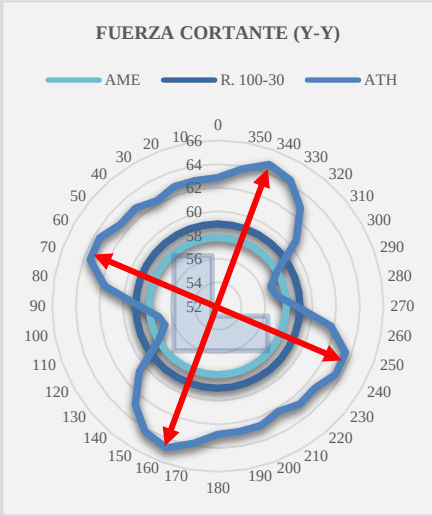

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

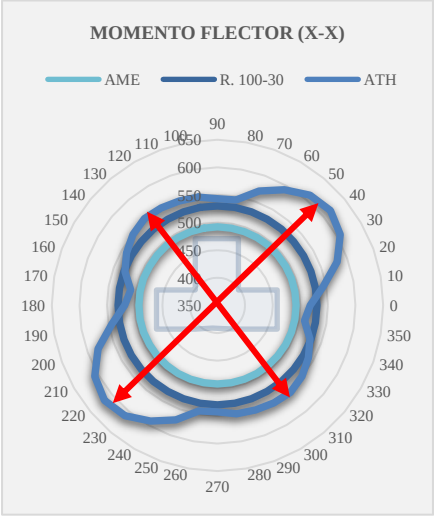
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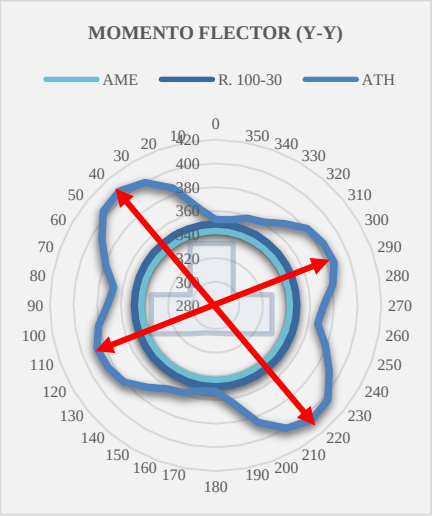

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

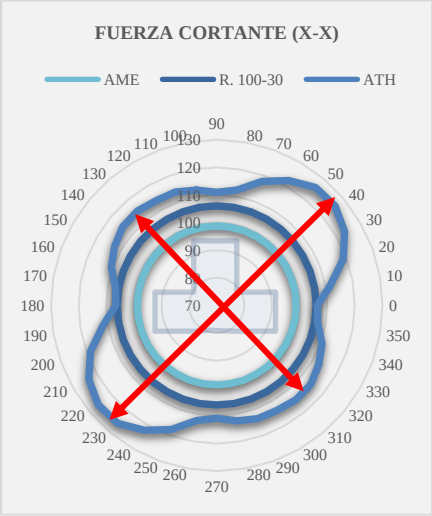

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

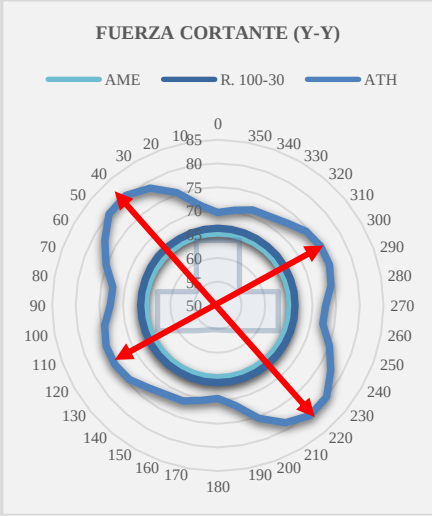

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

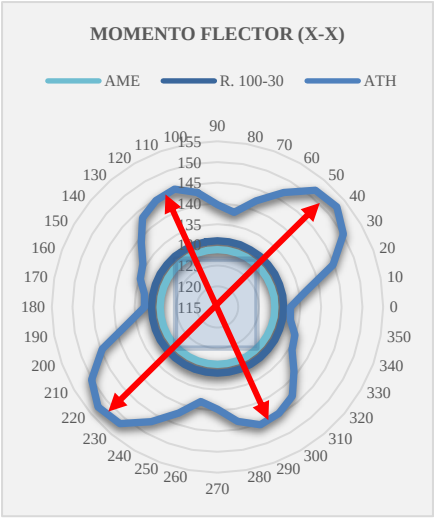

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

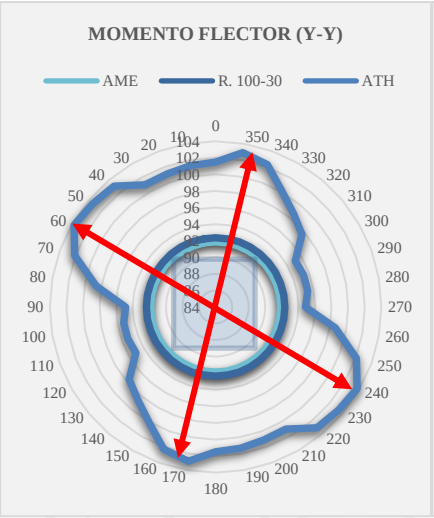

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

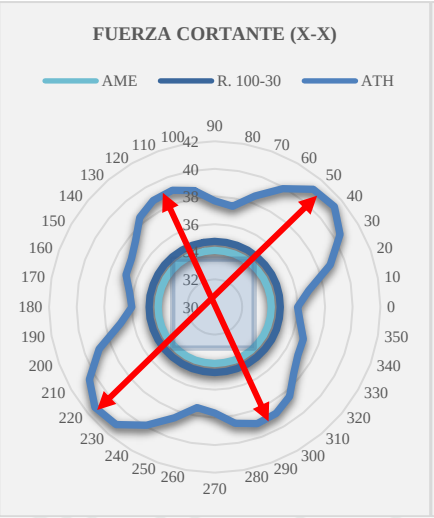

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

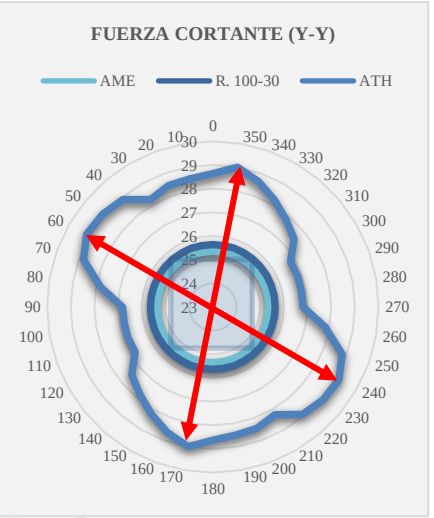

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

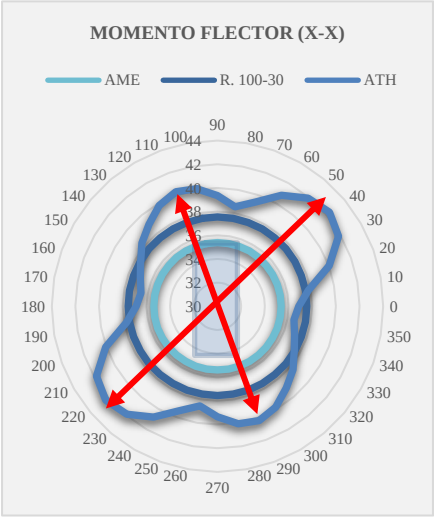

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

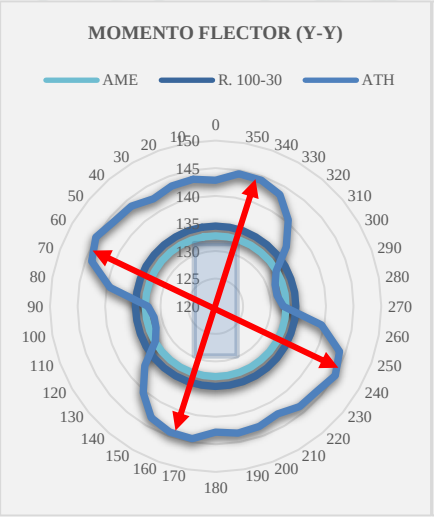

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

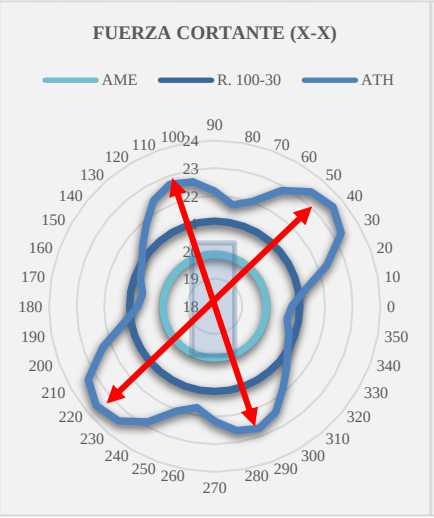

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

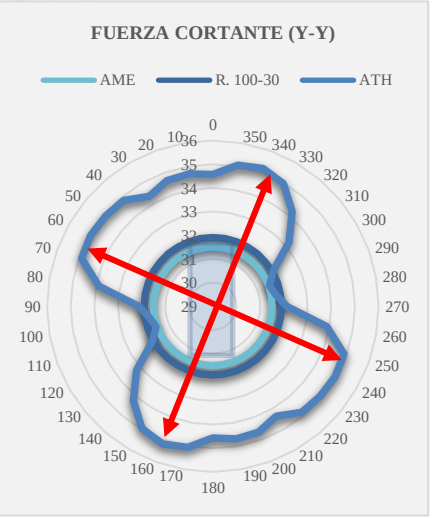

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

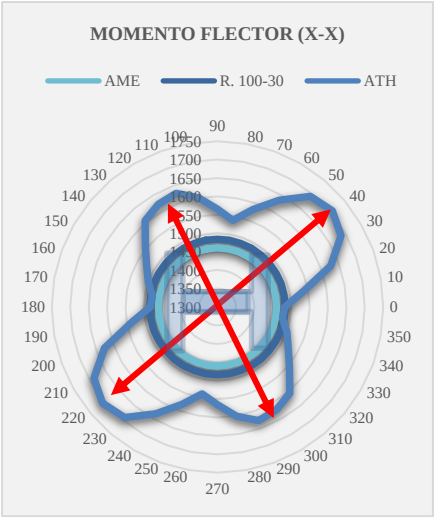

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

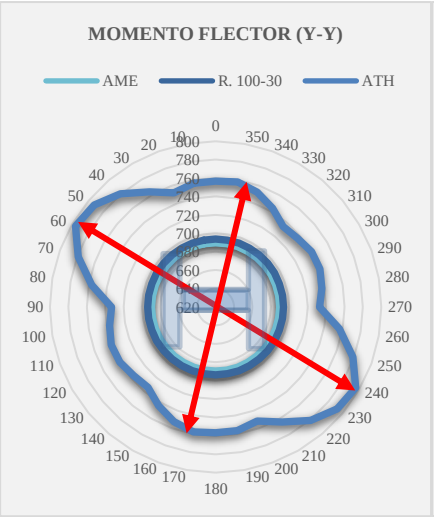

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

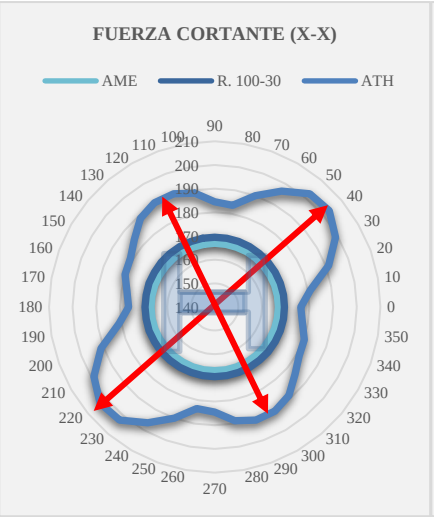

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

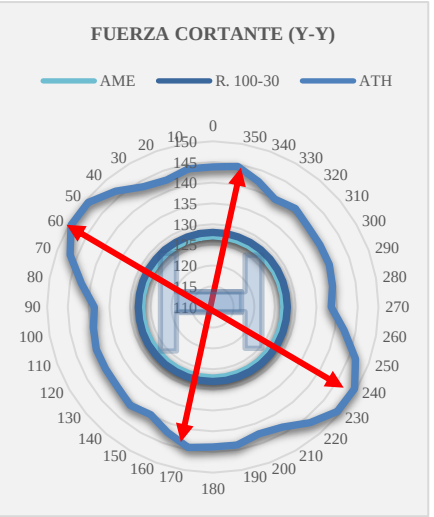

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AME
R. 100-30
ATH

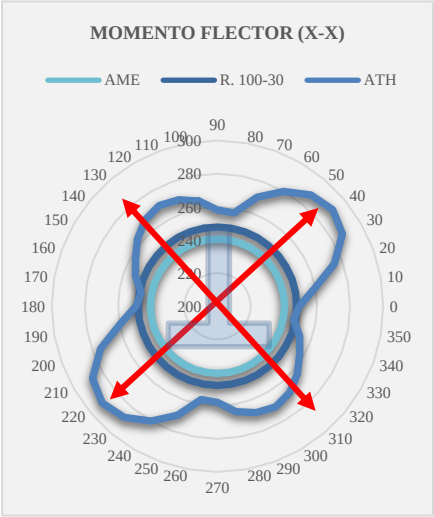

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R. 100-30
ATH

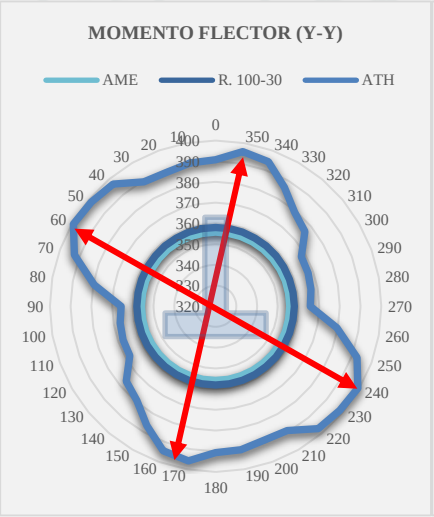

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ATH

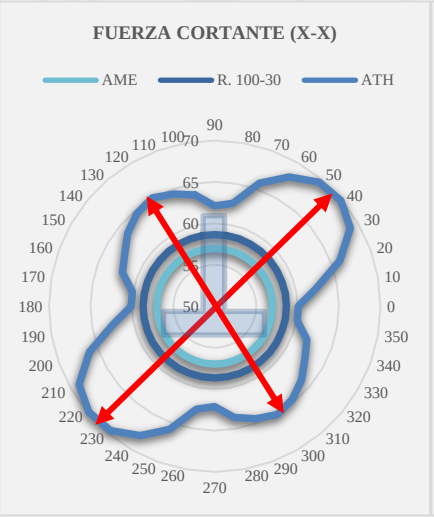

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R. 100-30
ATH

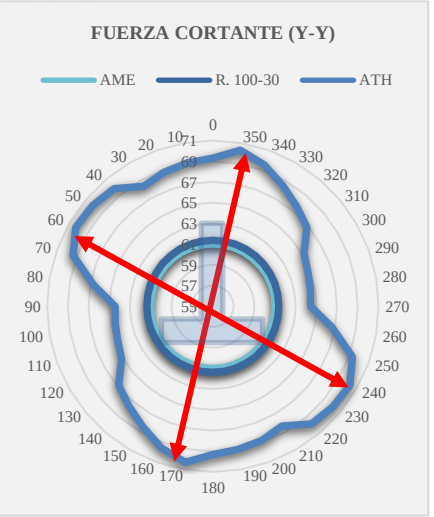

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R. 100-30
ATH

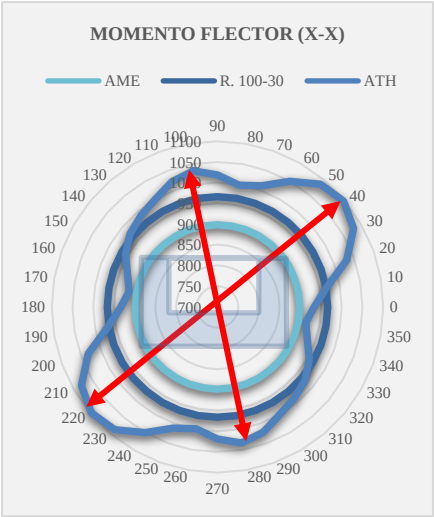

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AME
R. 100-30
ATH

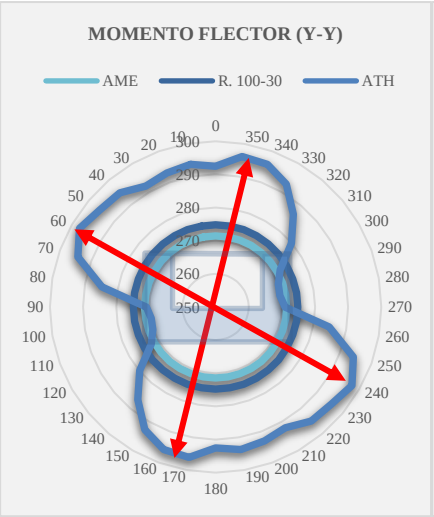

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R. 100-30
ATH

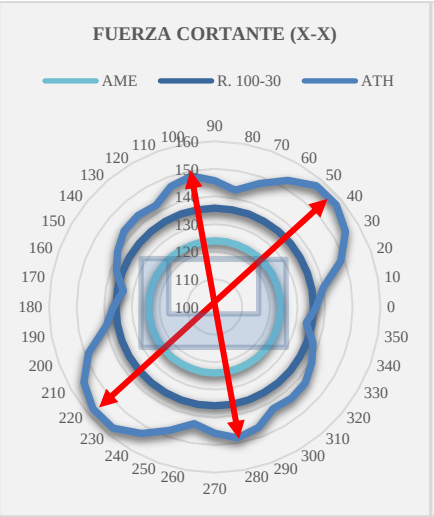

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

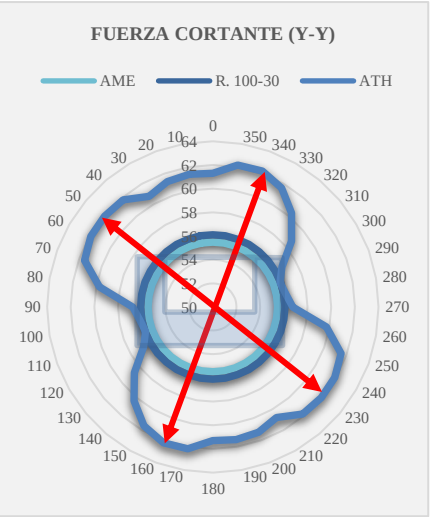

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

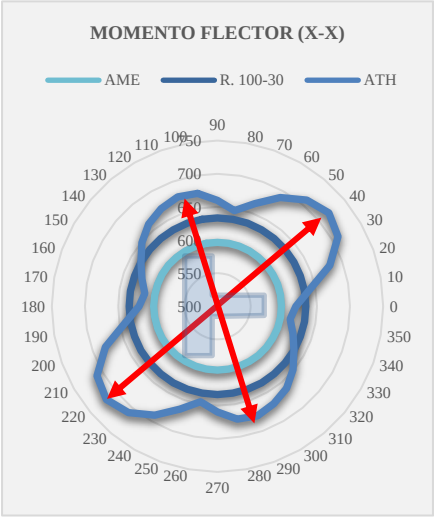

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R. 100-30
ATH

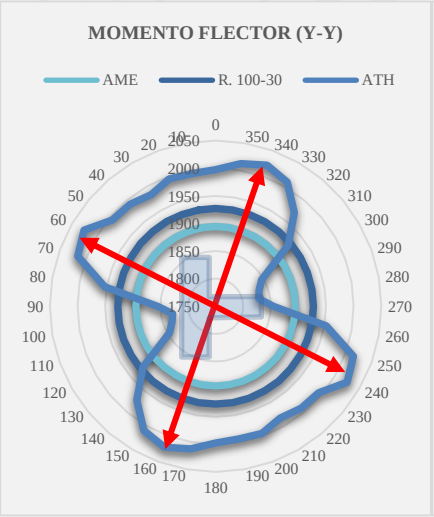

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R. 100-30
ATH

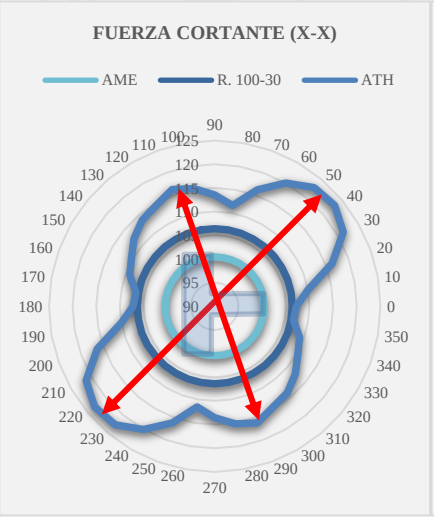

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

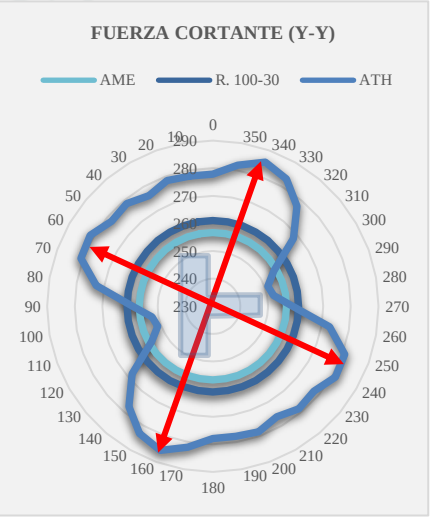

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

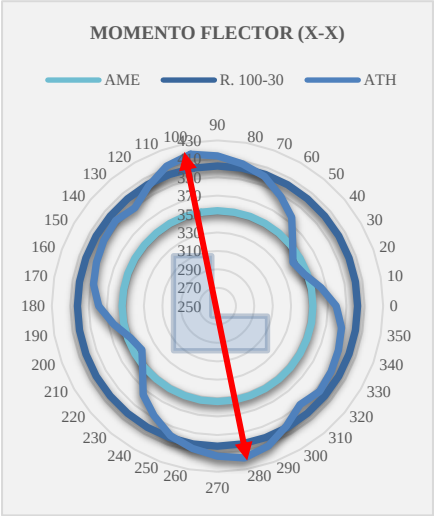

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

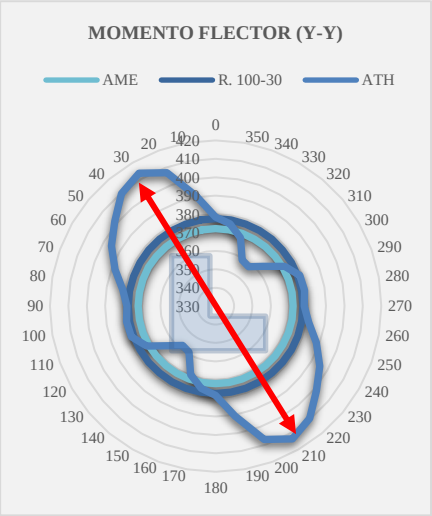

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AME
R. 100-30
ATH

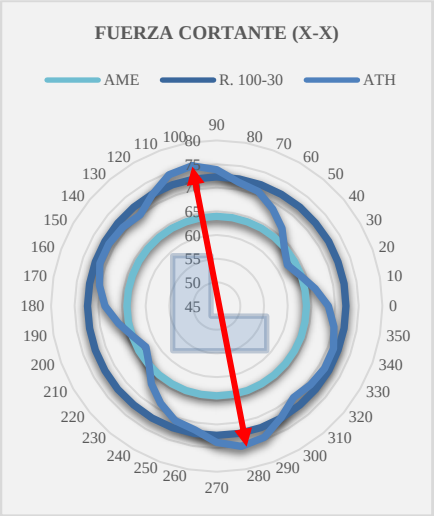

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R. 100-30
ATH

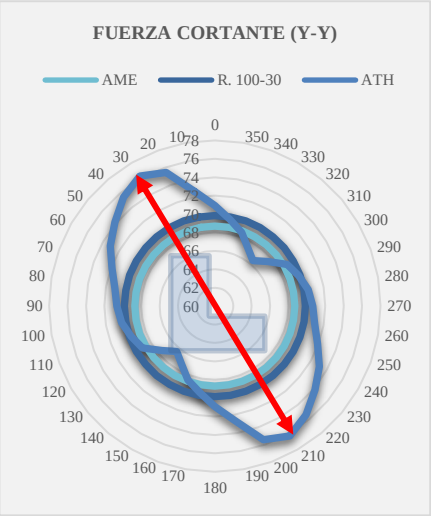

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

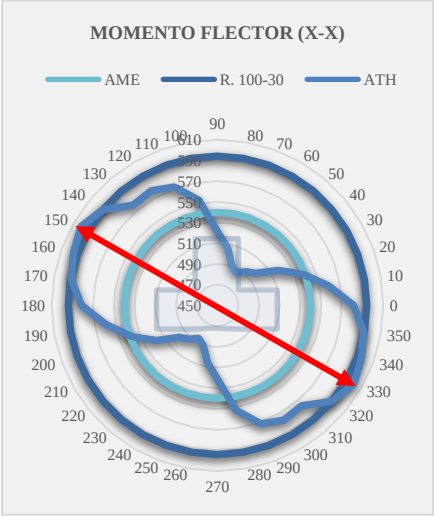
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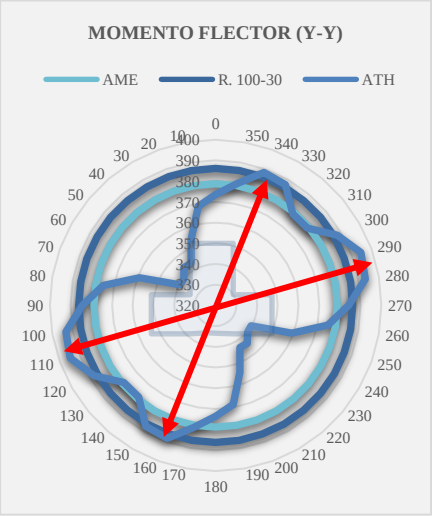


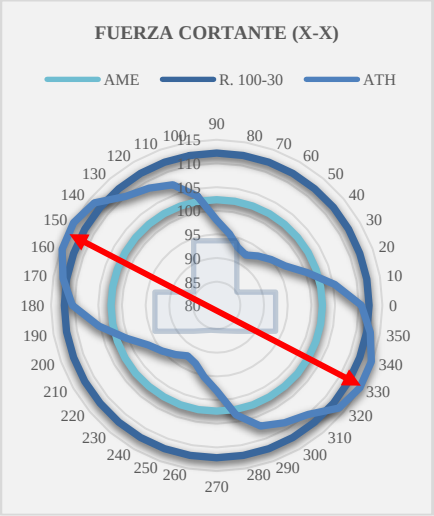


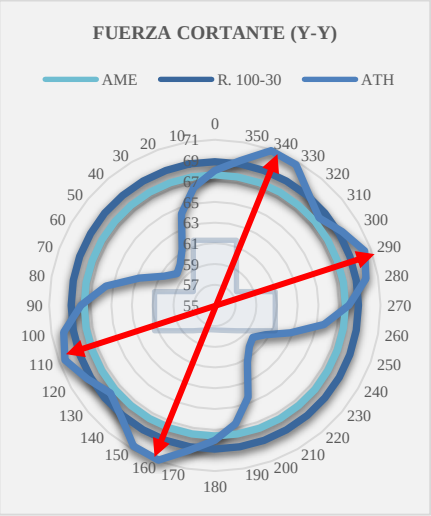


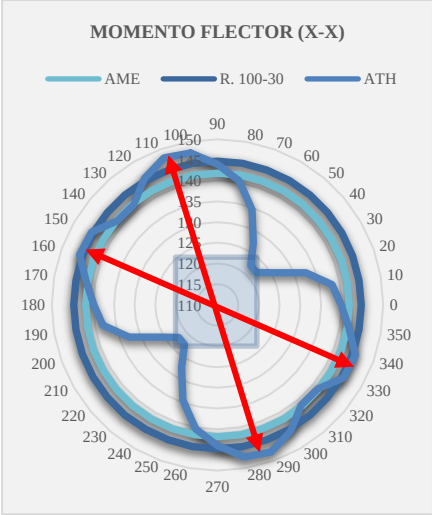


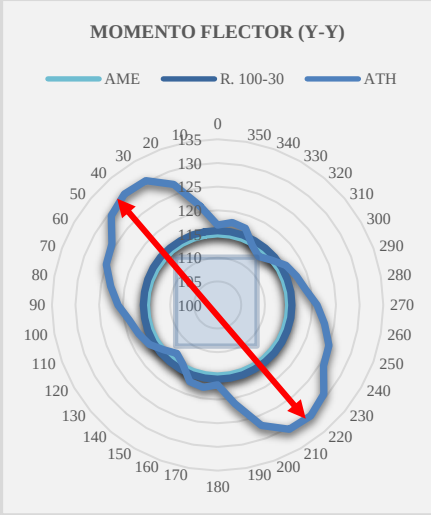


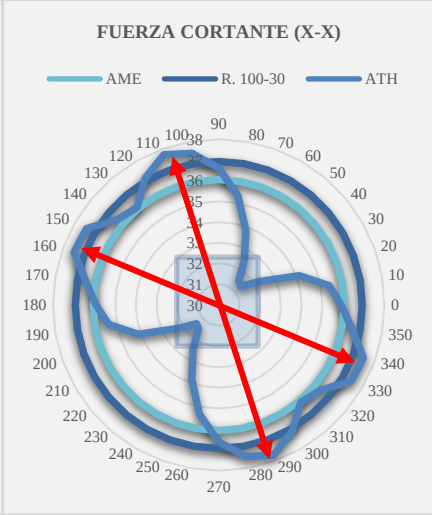


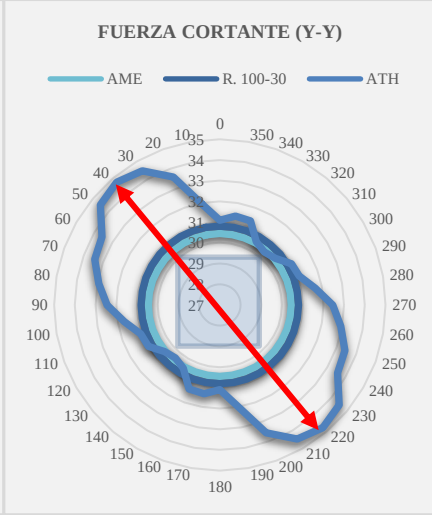


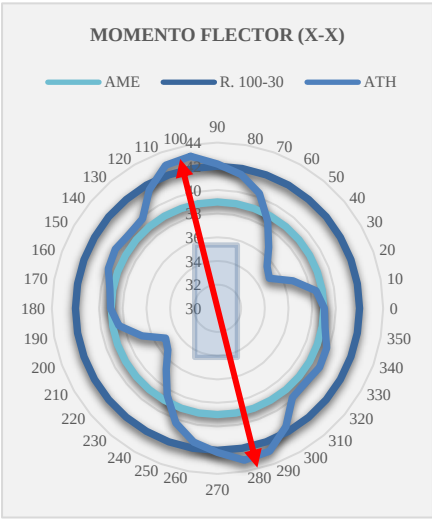


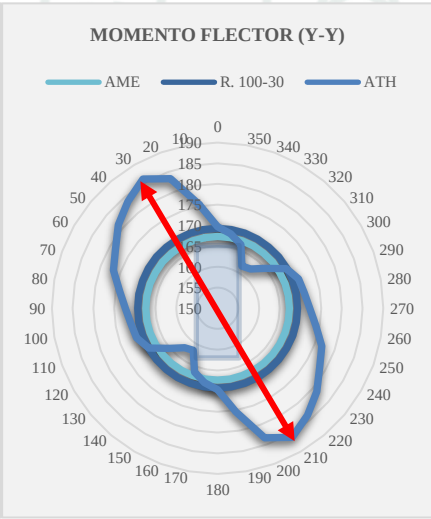

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

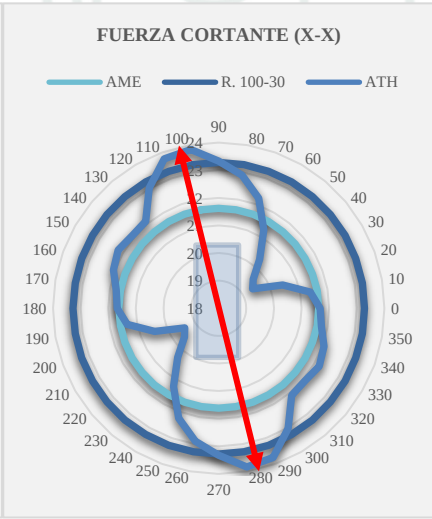

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

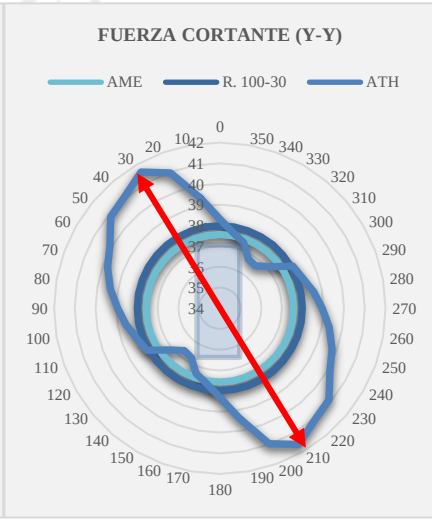

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

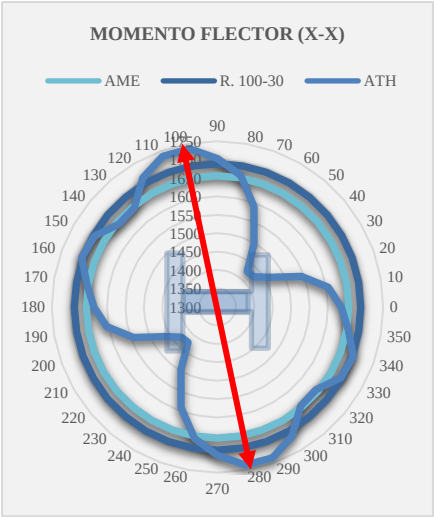

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

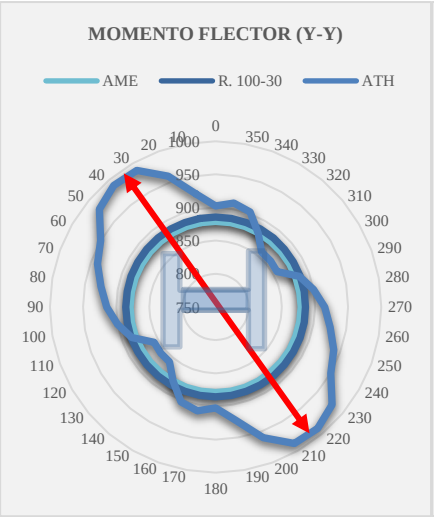

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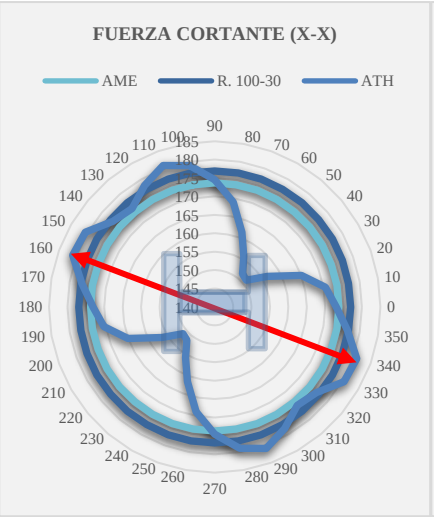

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

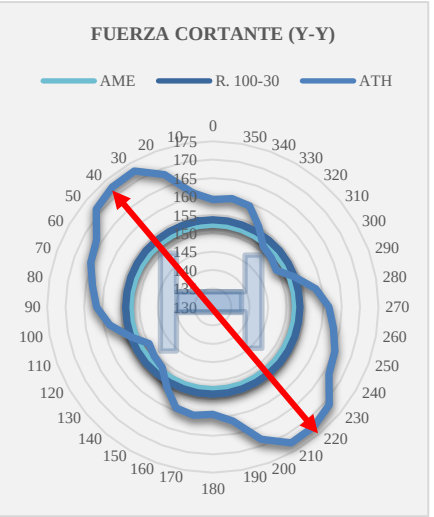

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R. 100-30
ATH

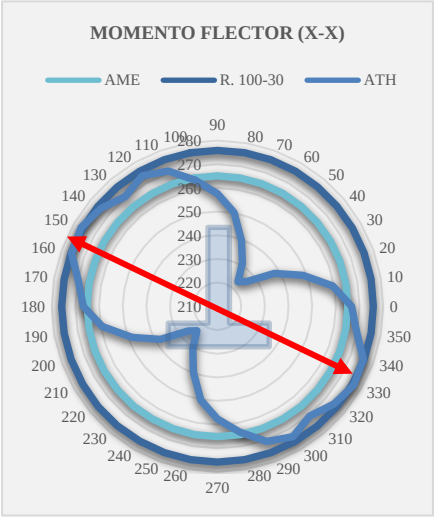

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R. 100-30
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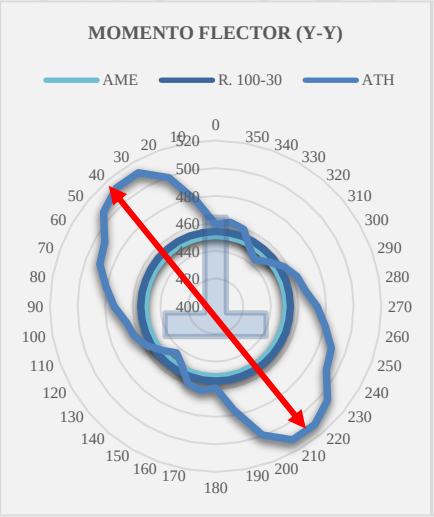

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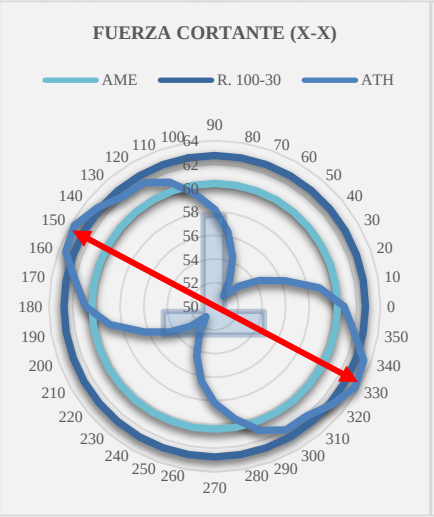

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R. 100-30
ATH

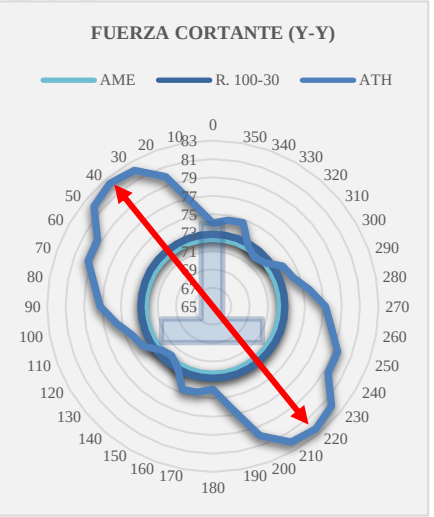

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R. 100-30
ATH

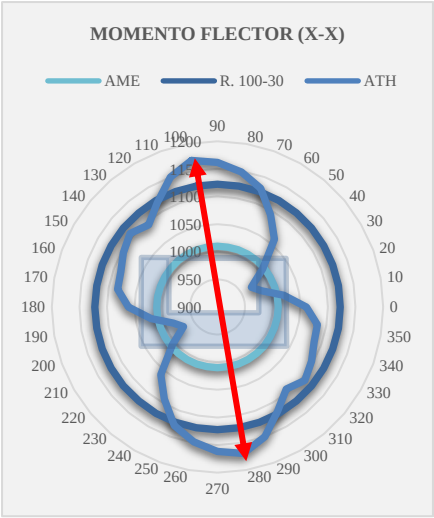

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

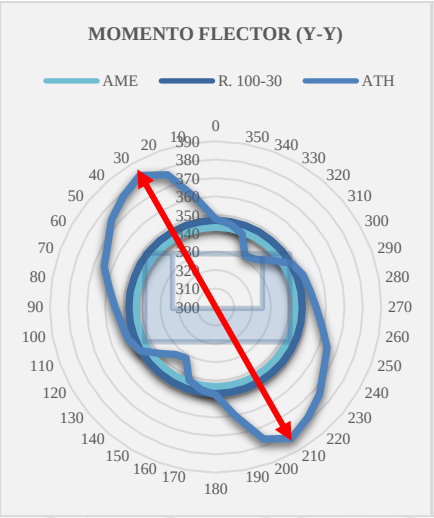

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R. 100-30
ATH

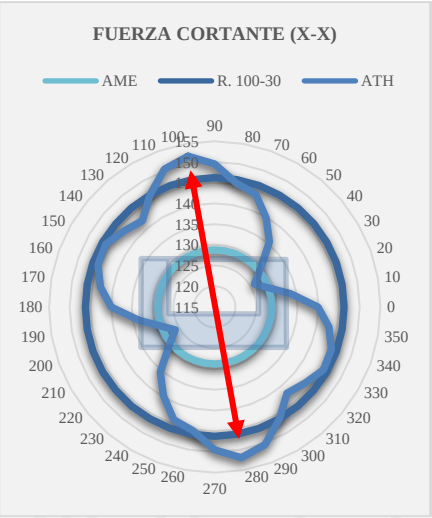

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

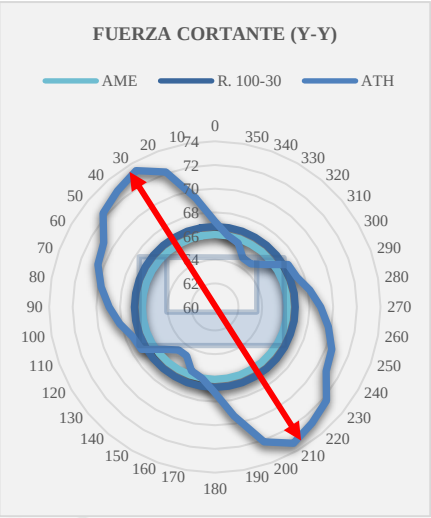

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R. 100-30
ATH

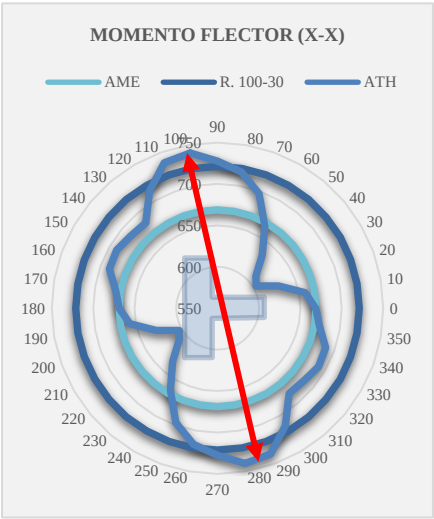

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R. 100-30
ATH

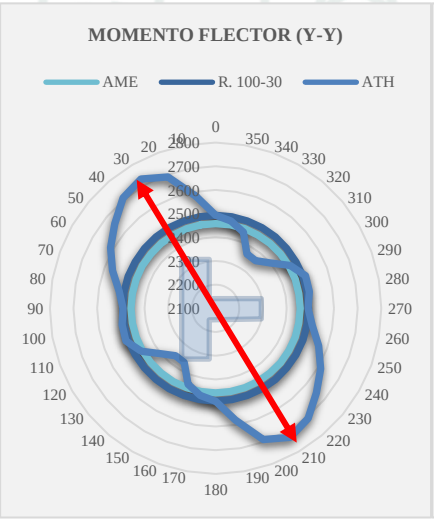

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R. 100-30
ATH

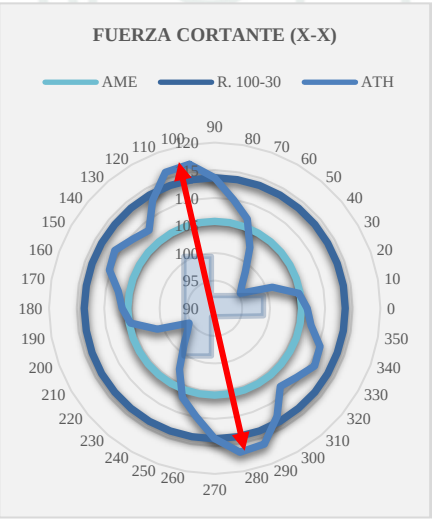

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R. 100-30
ATH

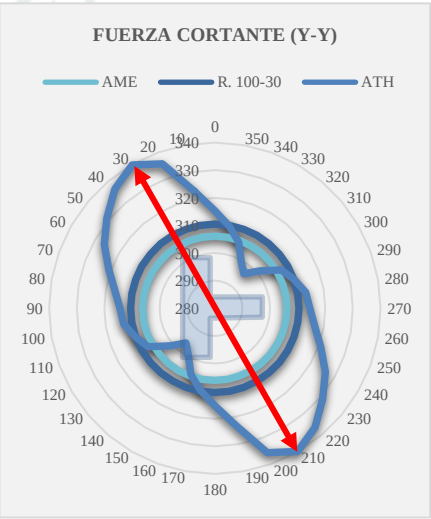

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

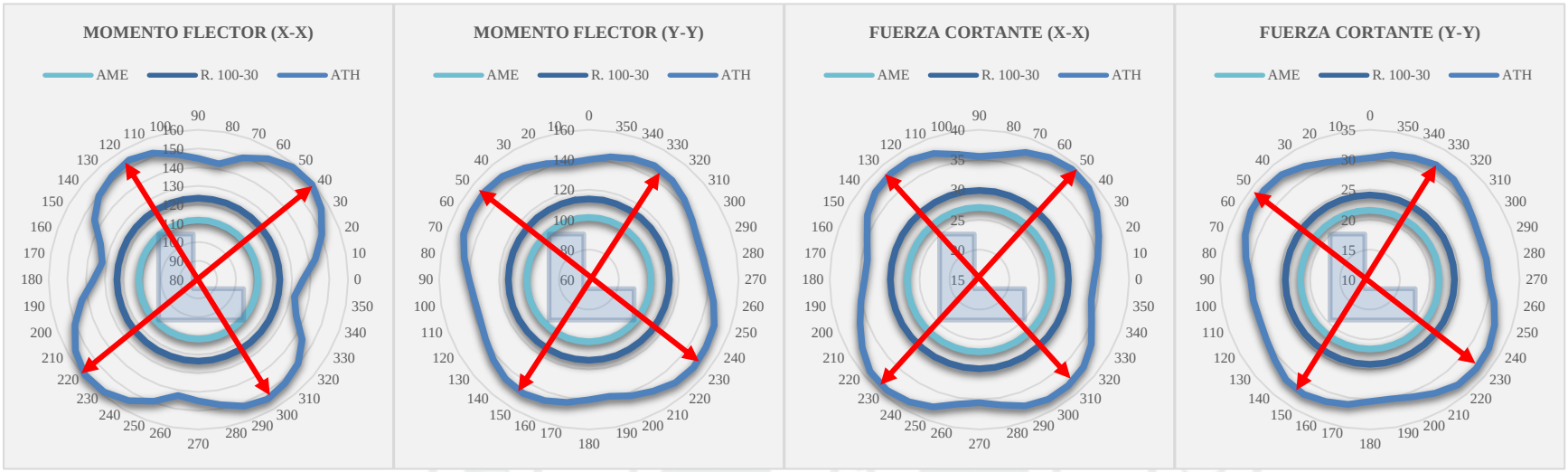

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

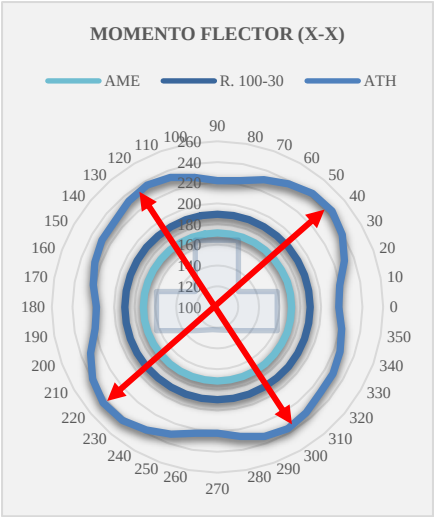

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

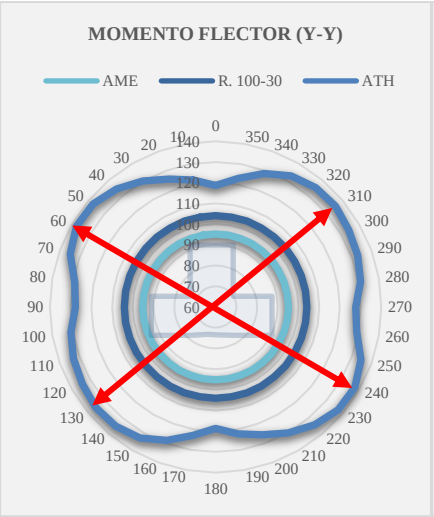

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

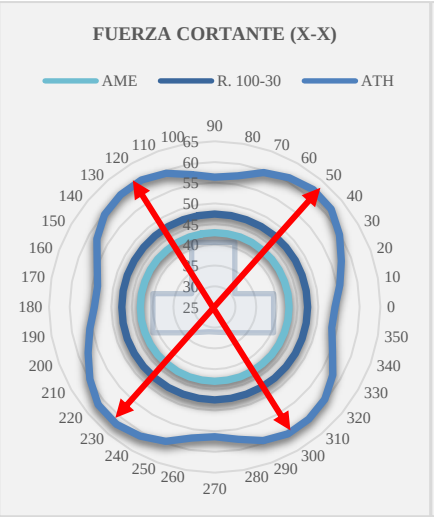
MODELO 11

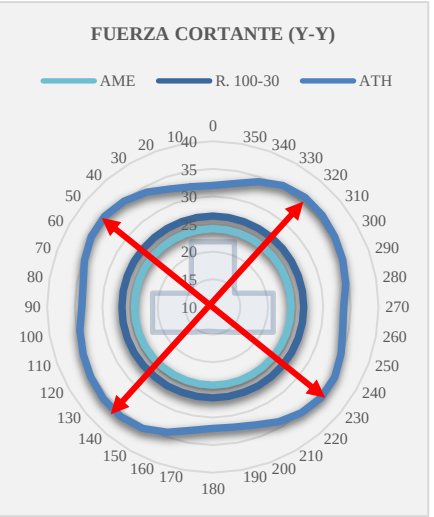
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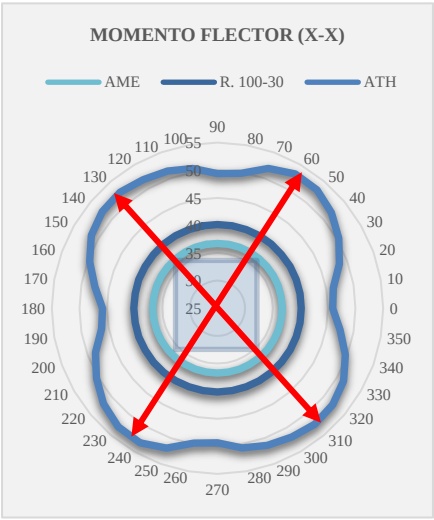


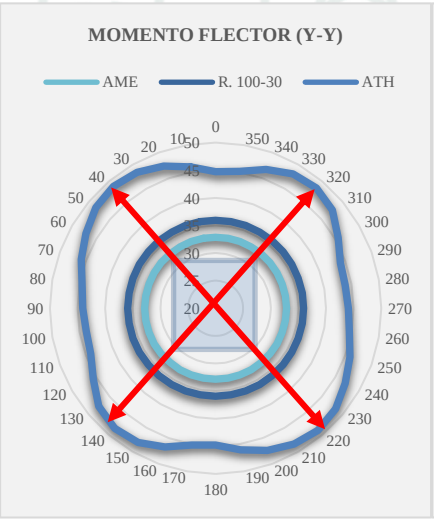

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

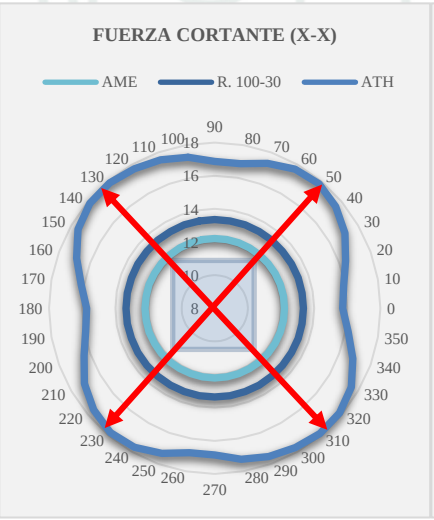

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

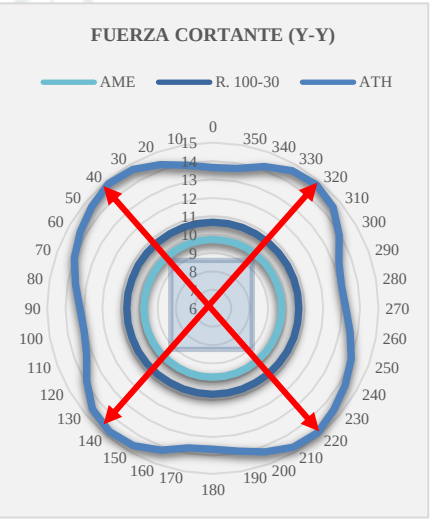

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

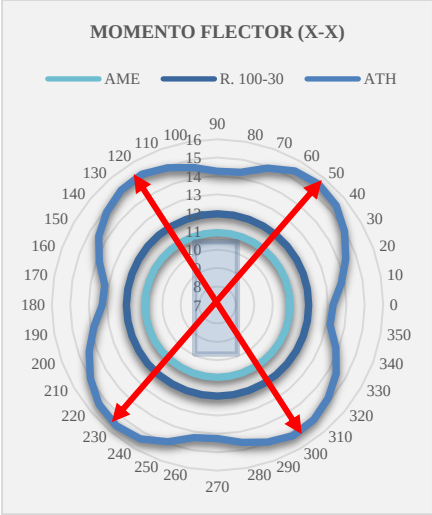

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

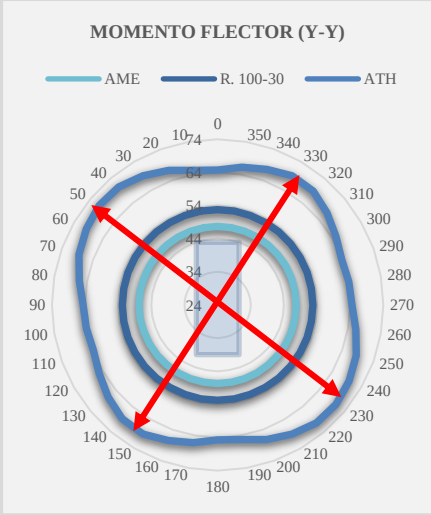

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

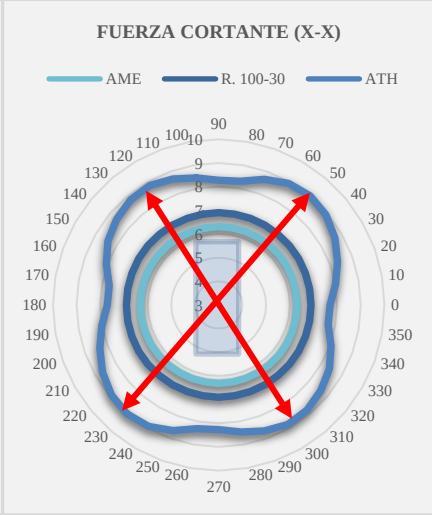

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

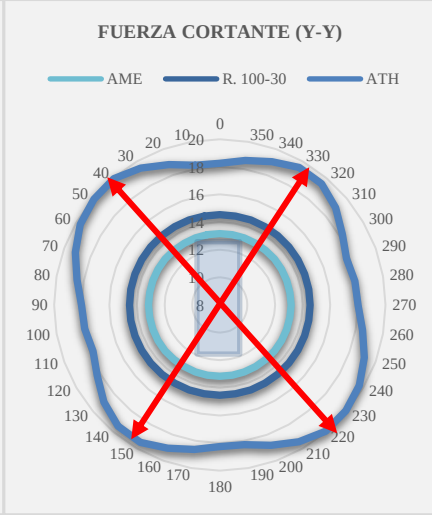

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

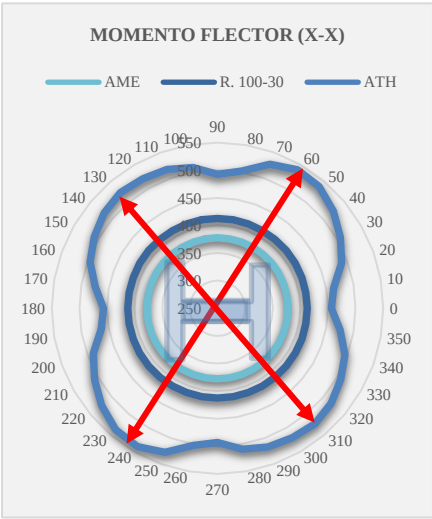

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

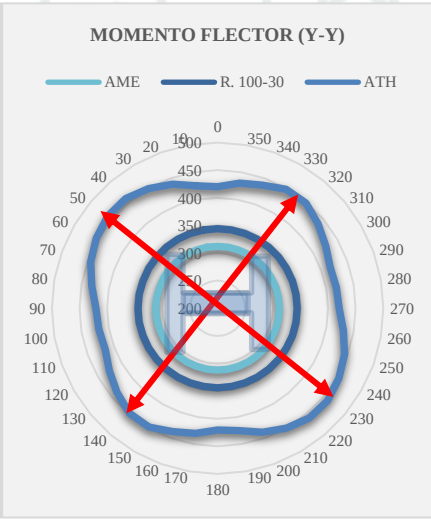

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

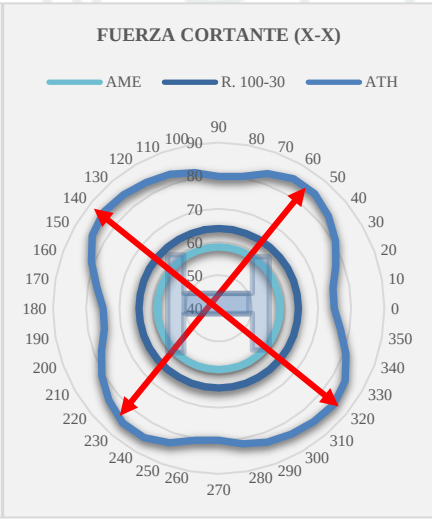

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

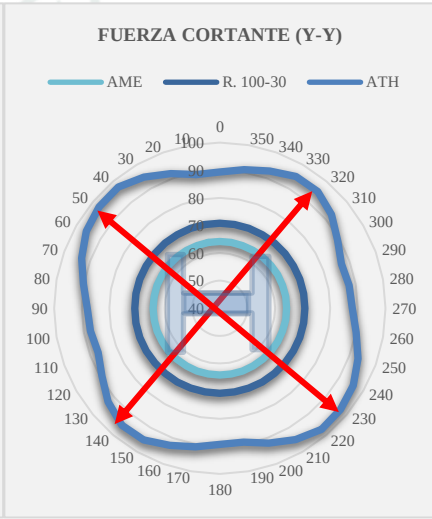

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

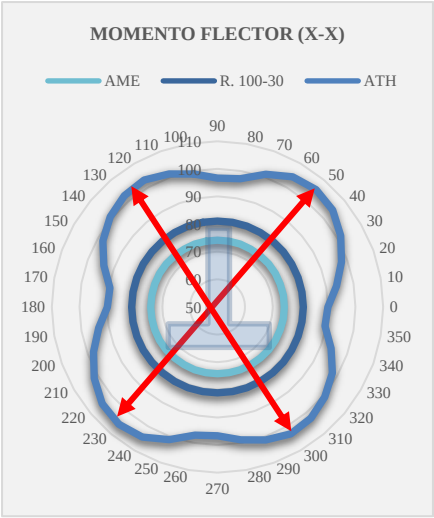

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

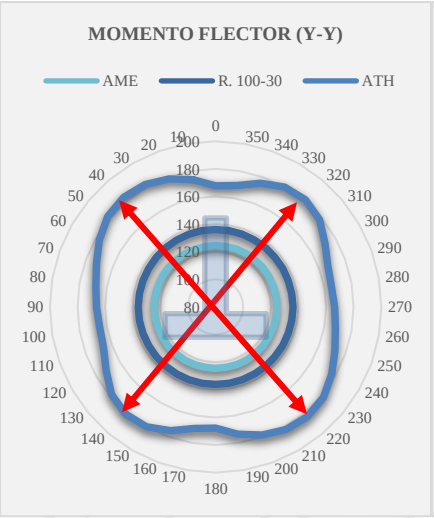

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

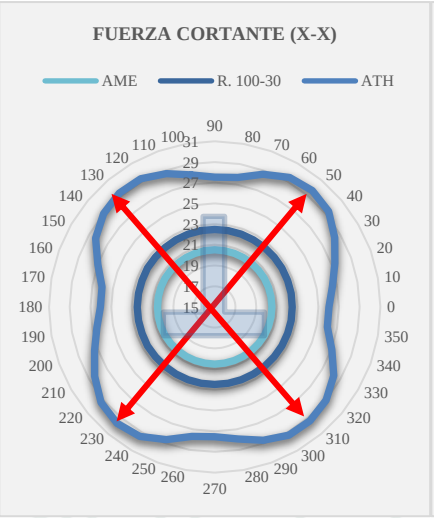

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

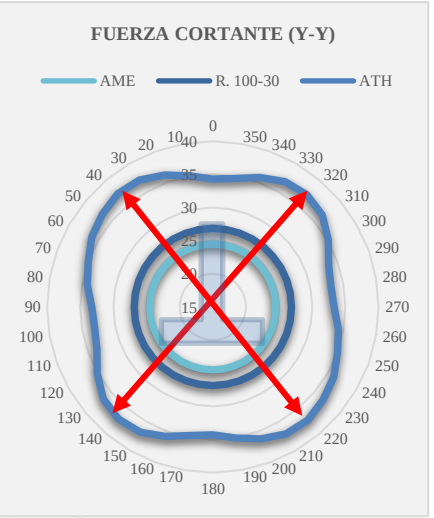

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

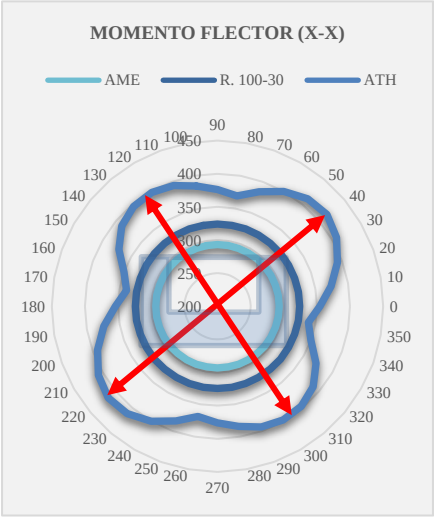

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

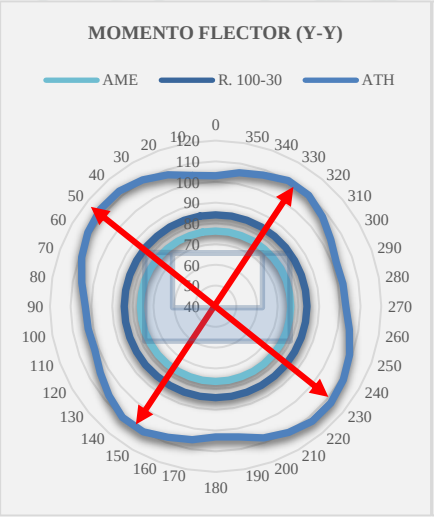

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

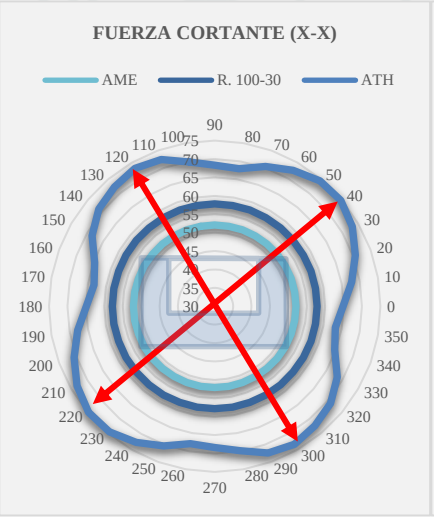

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

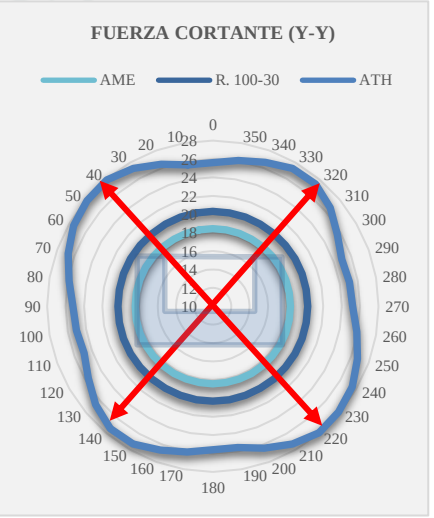

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

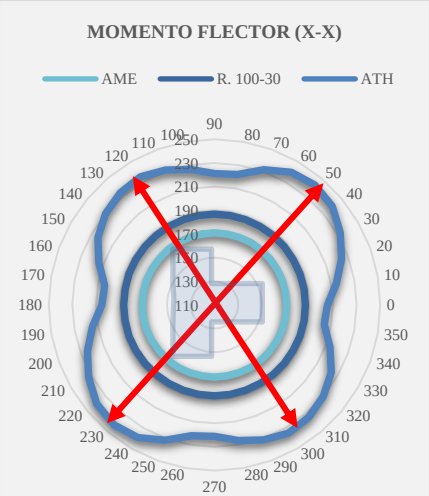

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

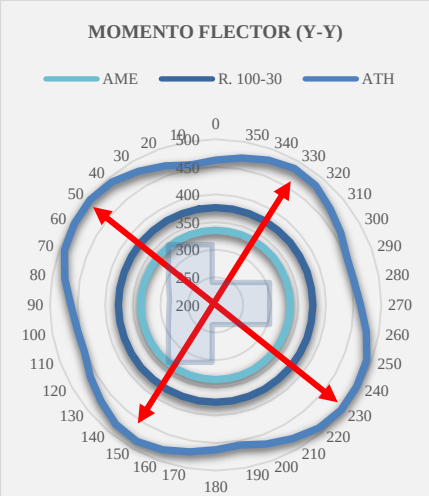

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

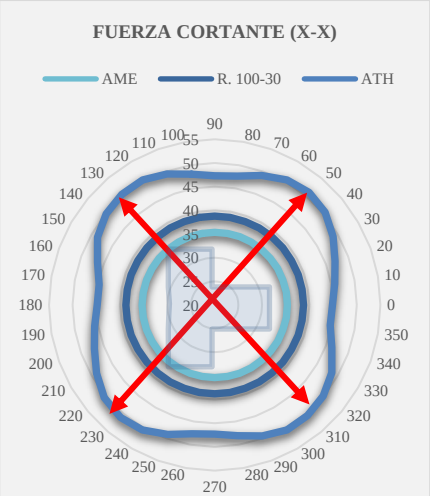

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

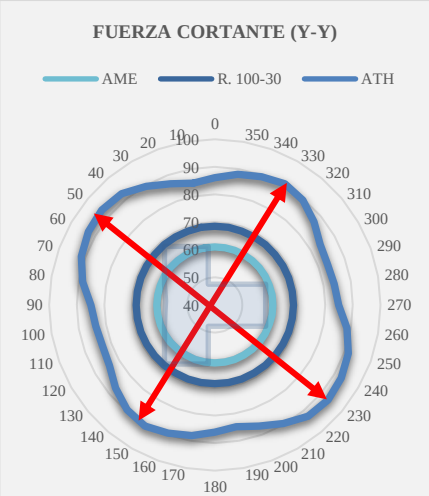

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

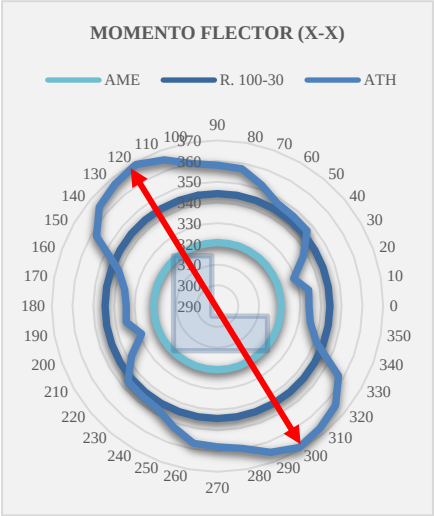

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

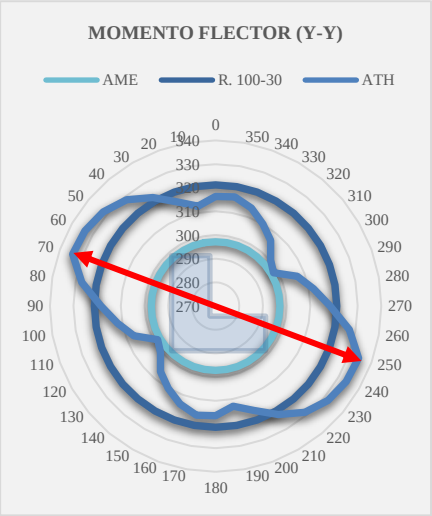

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

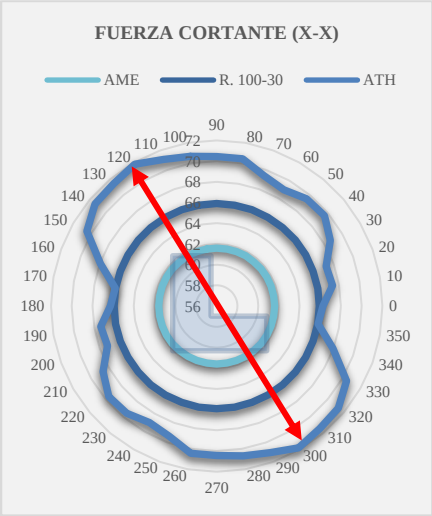

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

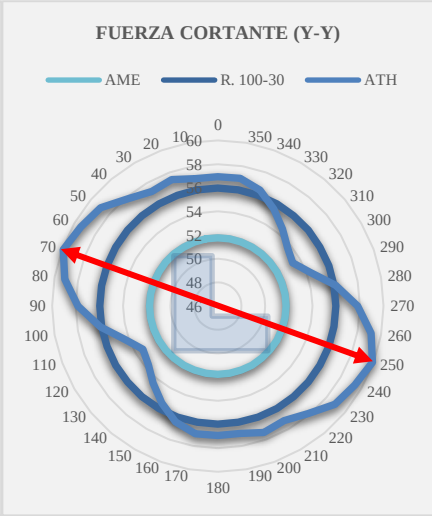

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

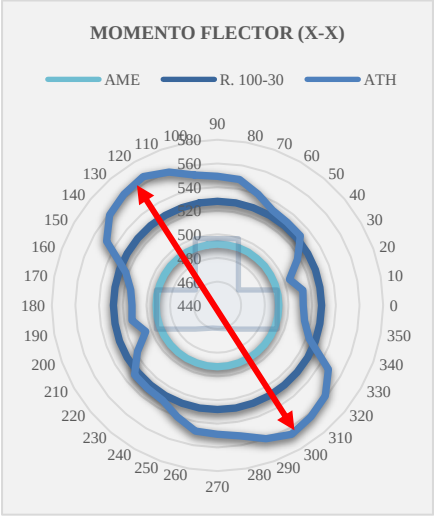
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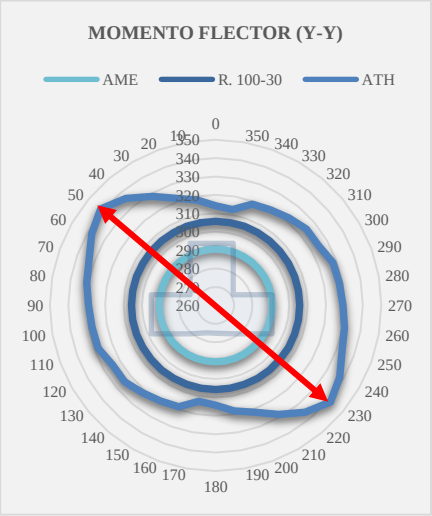

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

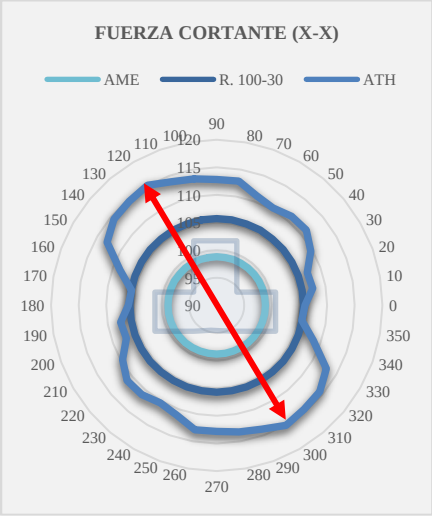

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

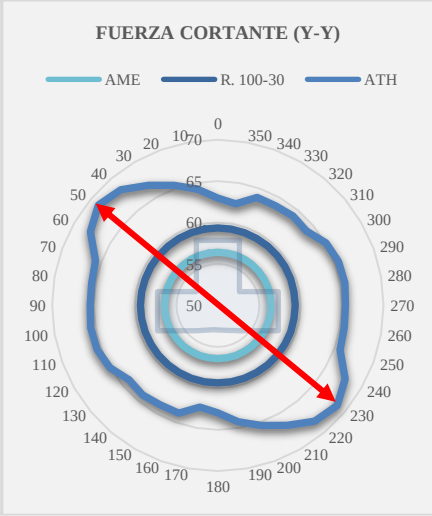

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

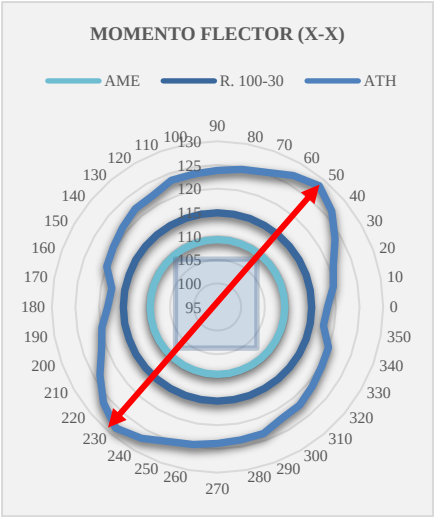

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

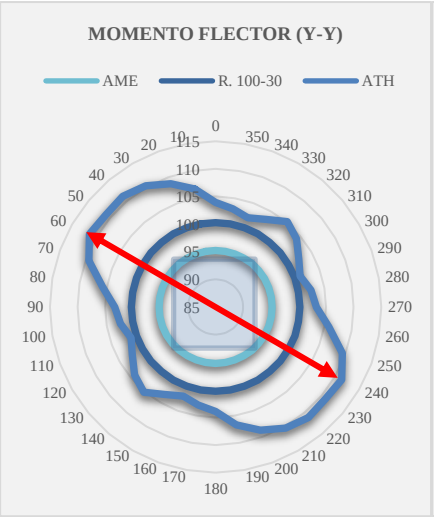

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

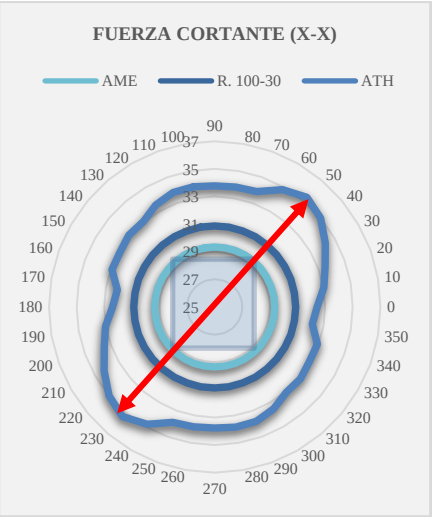

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

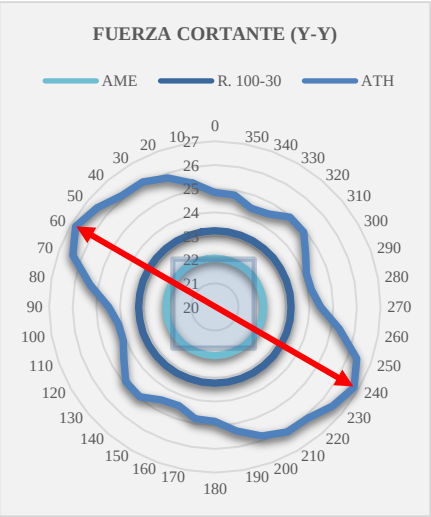

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

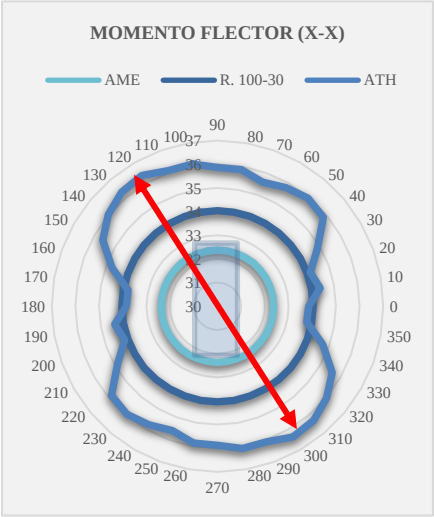

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

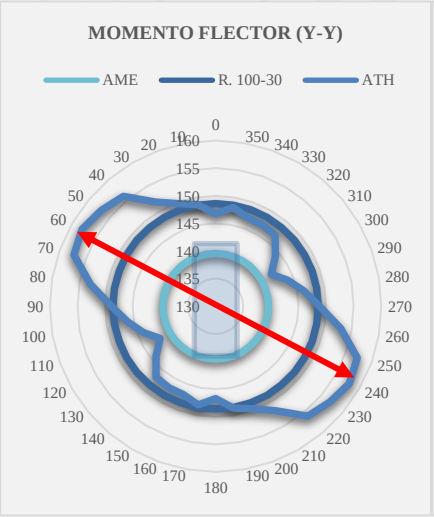

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

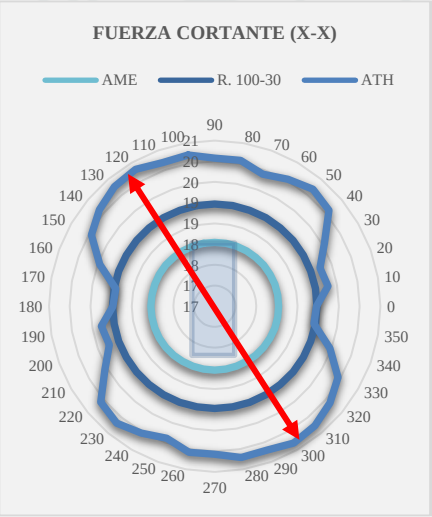

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

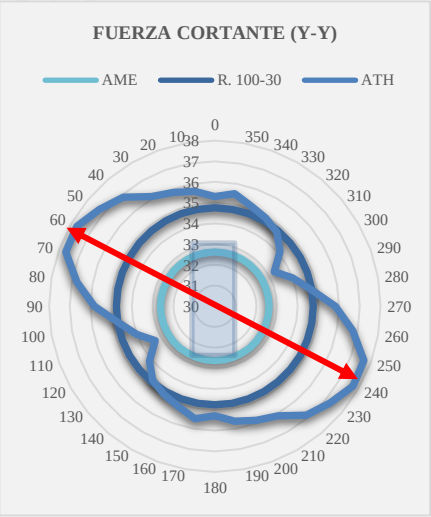

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

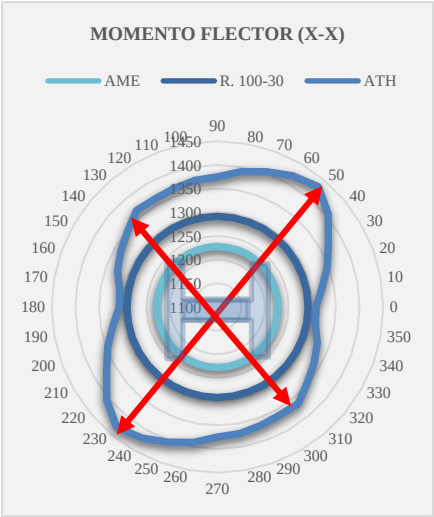

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

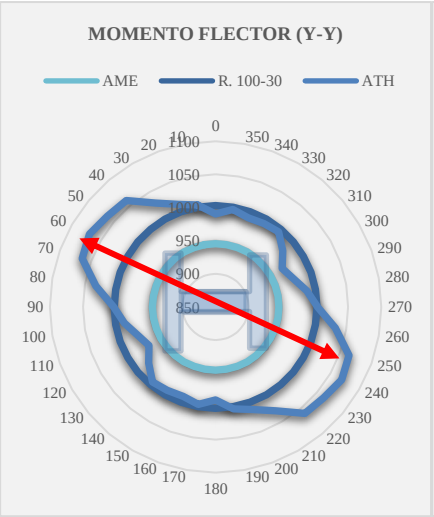

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

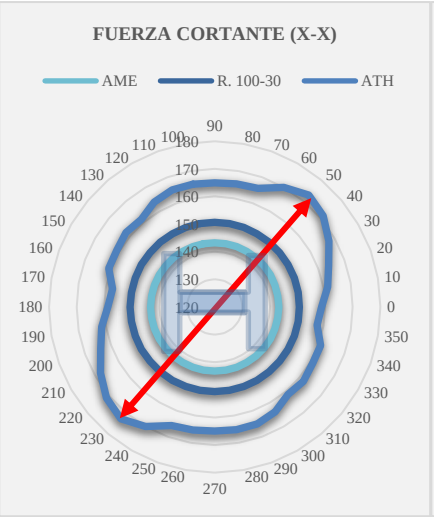

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

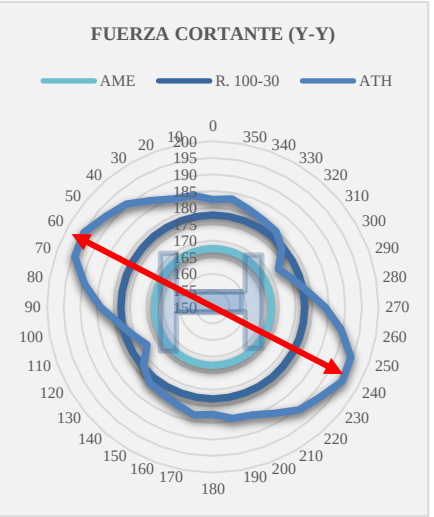

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

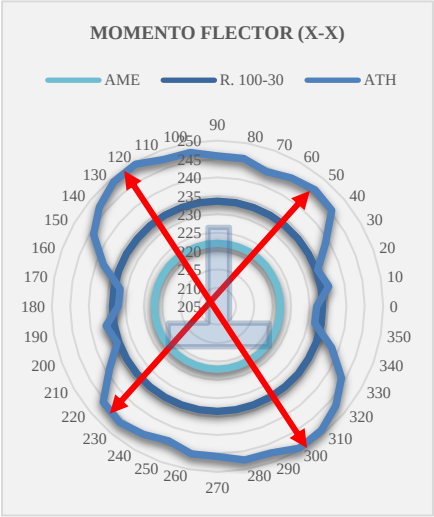

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

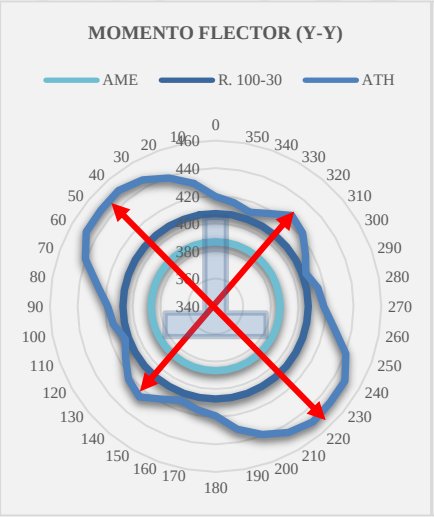

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

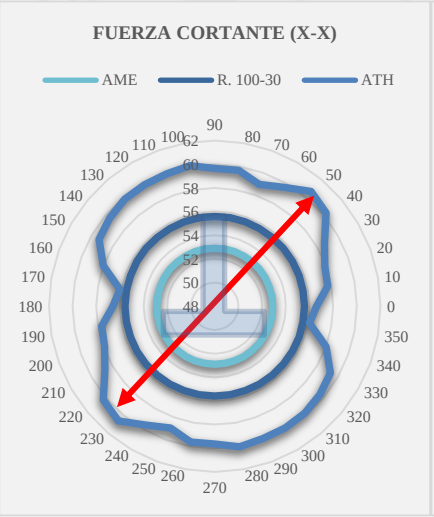

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

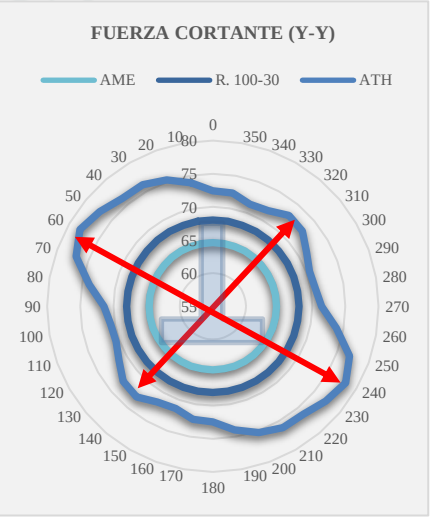

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

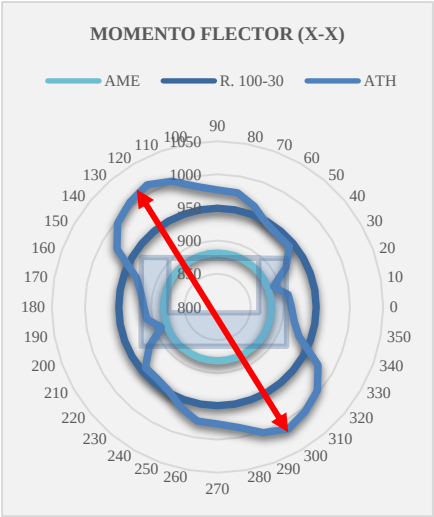

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

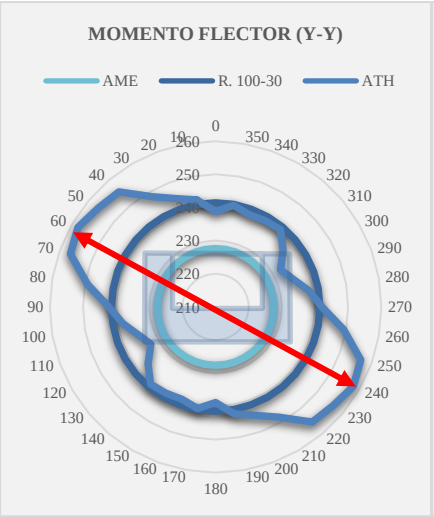

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

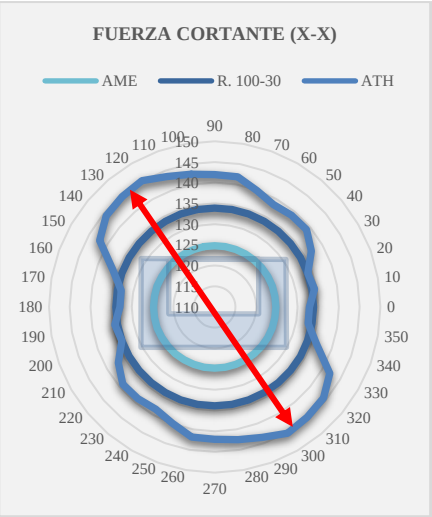

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

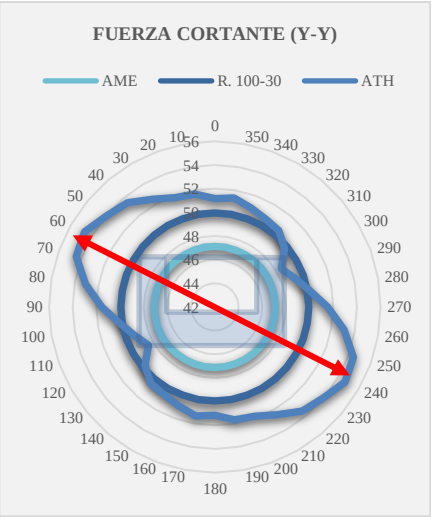

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

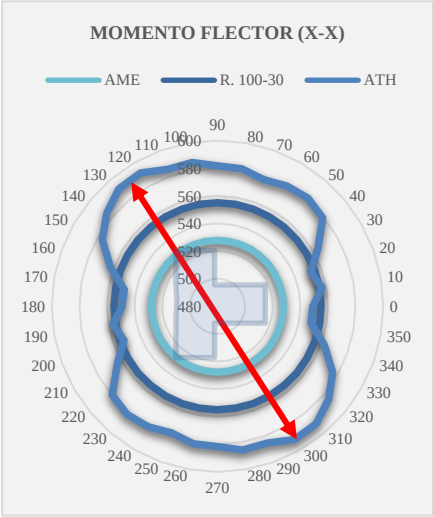

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

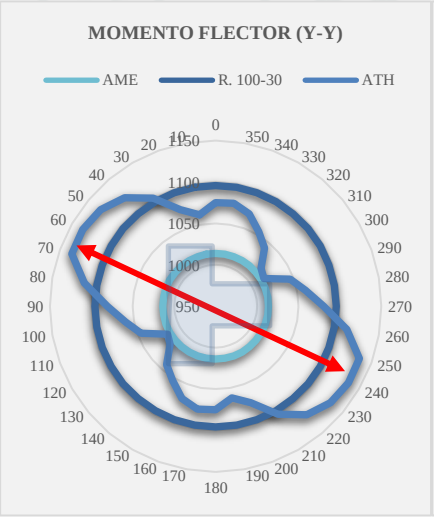

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

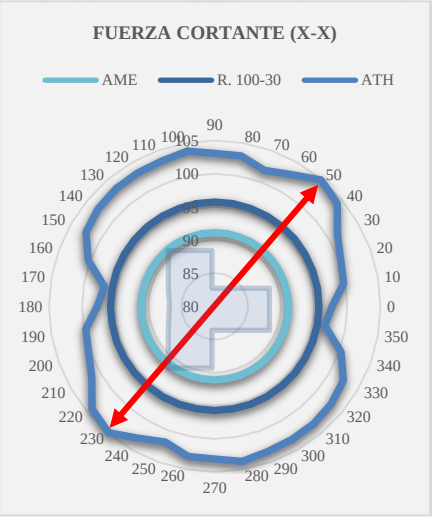

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

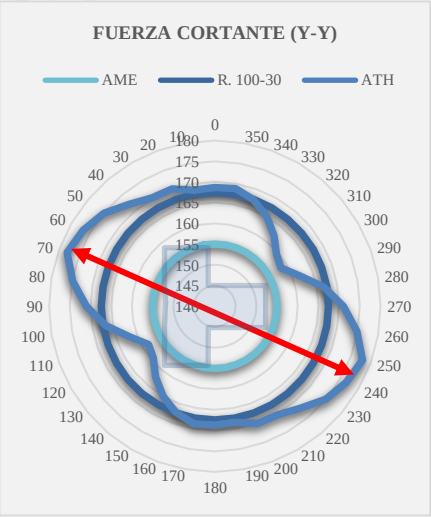

FUERZA CORTANTE (X-X)
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R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

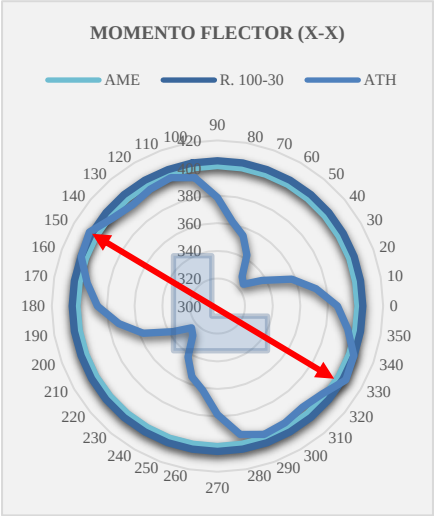

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

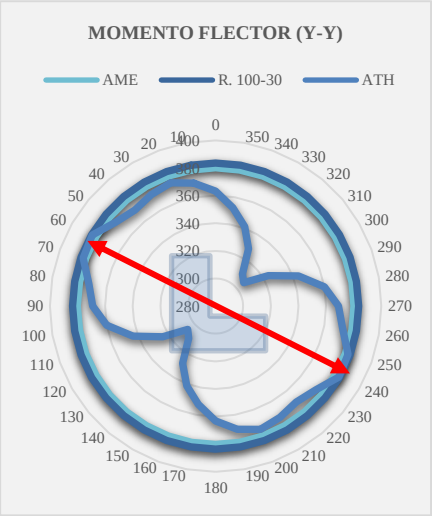

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

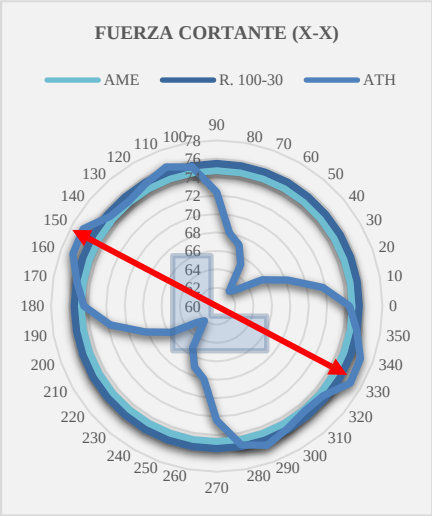

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R. 100-30
ATH

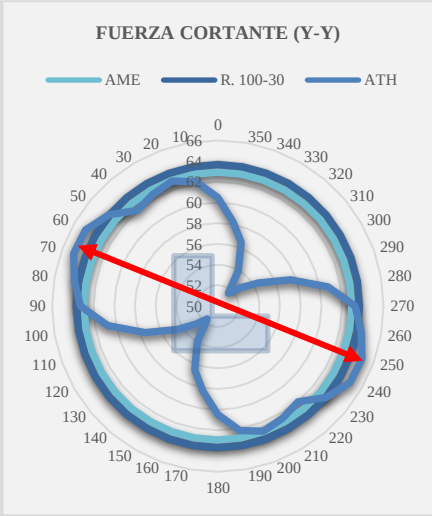

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

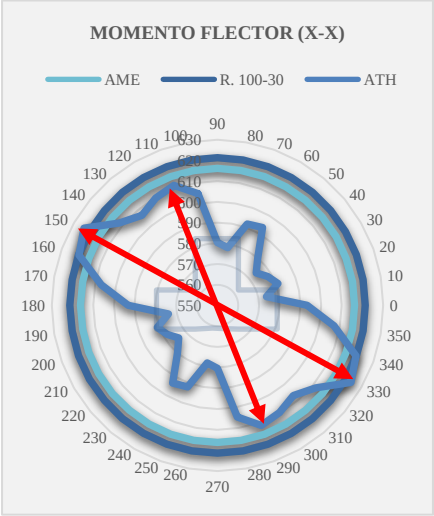
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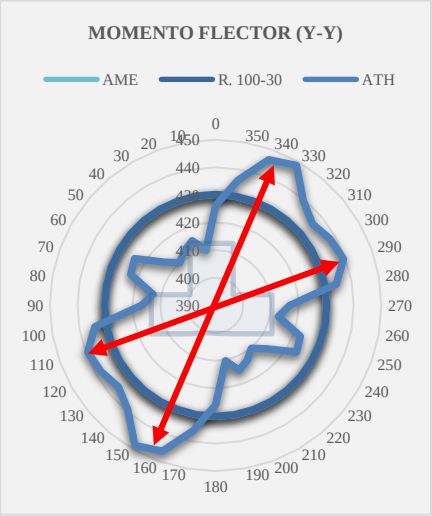


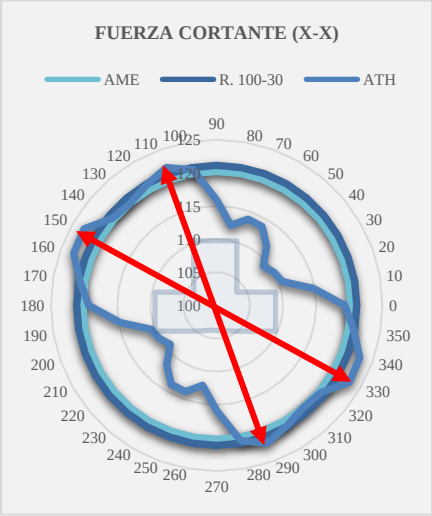


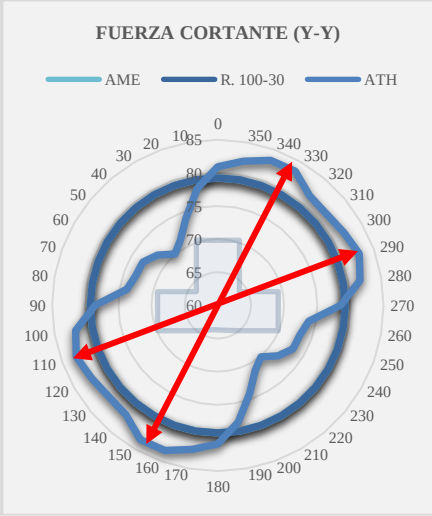


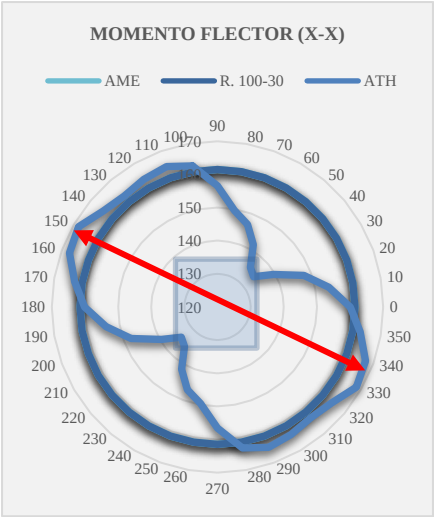


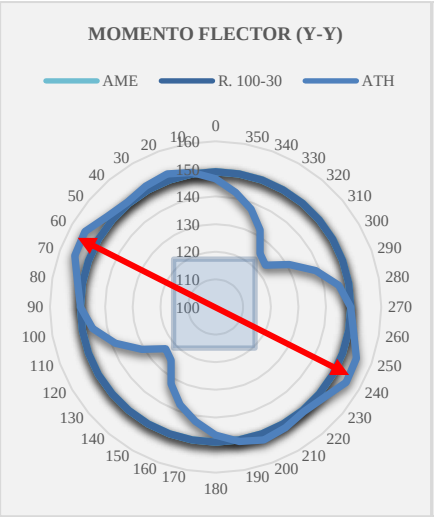


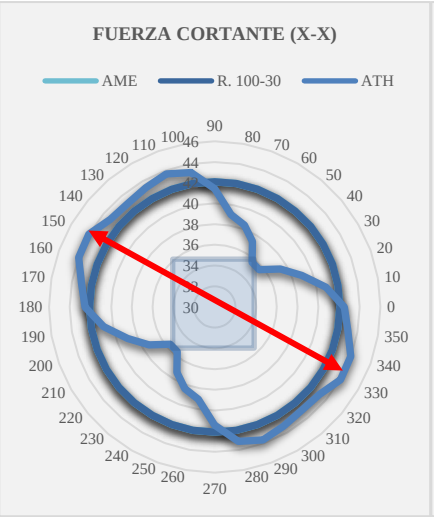


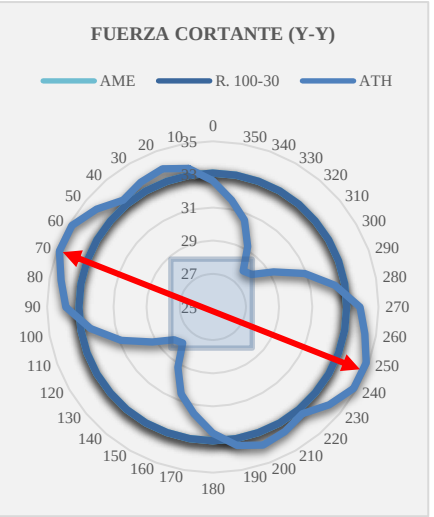


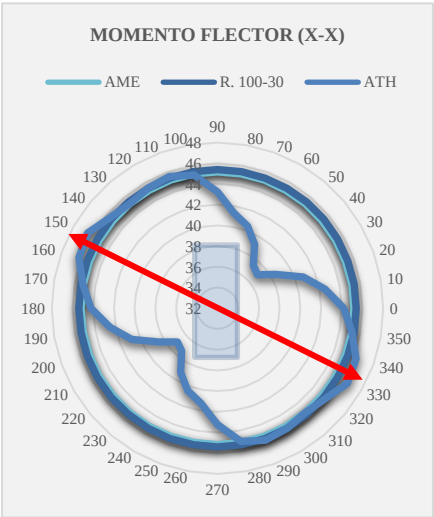


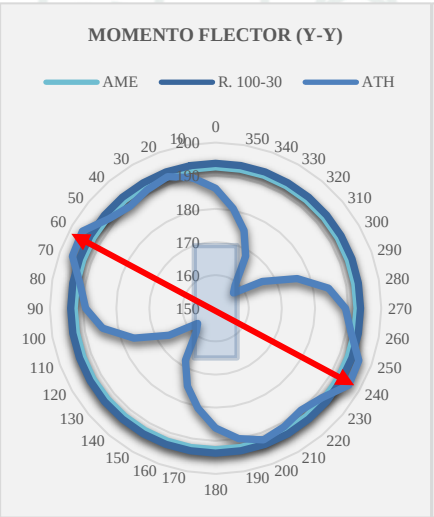

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

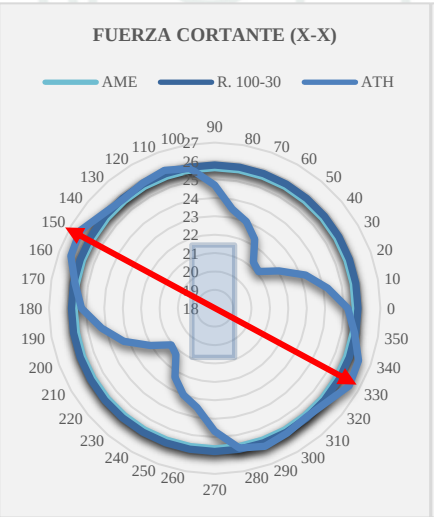

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

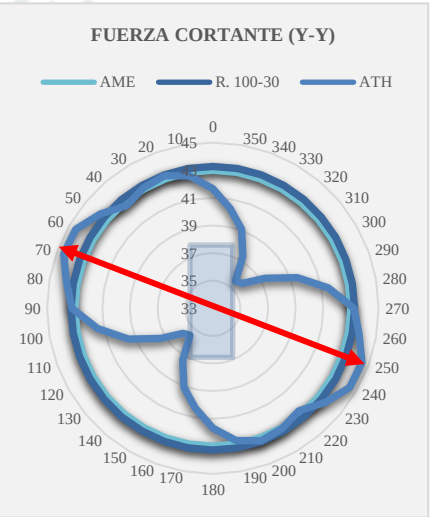

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

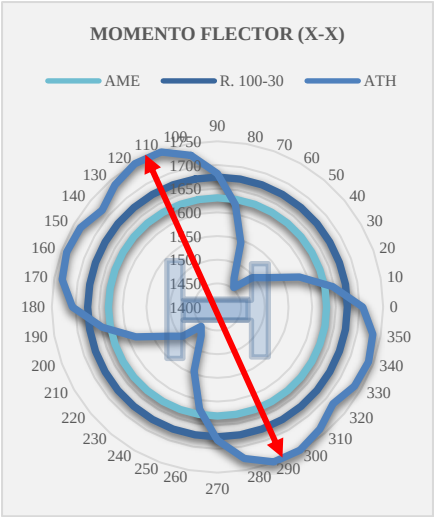

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

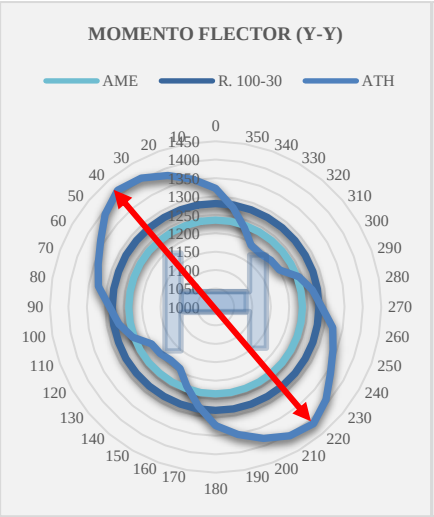

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

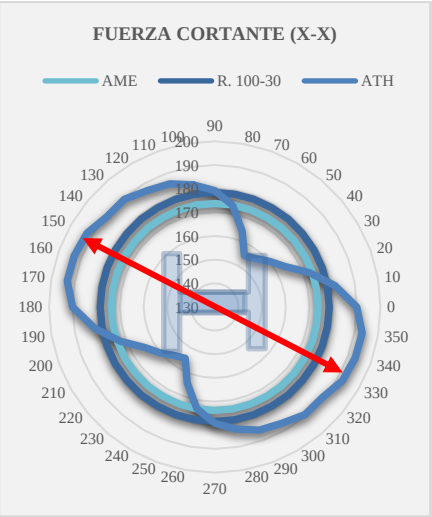

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

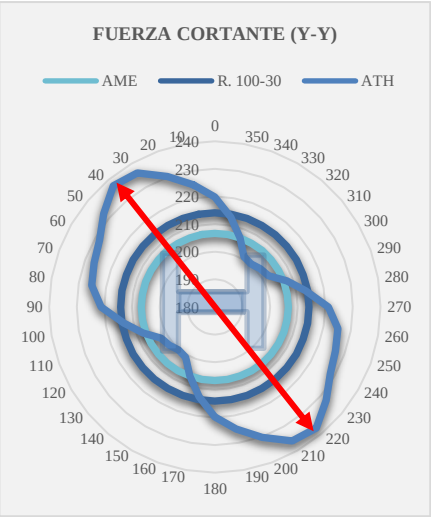

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

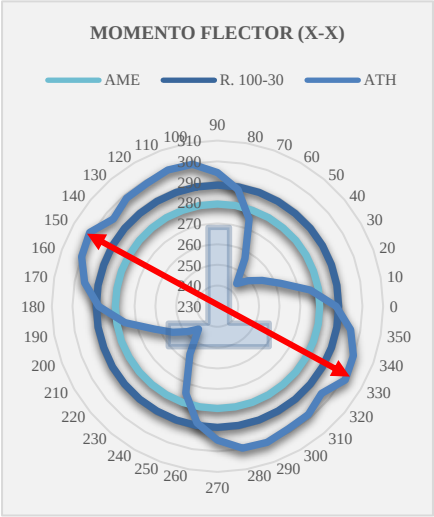

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

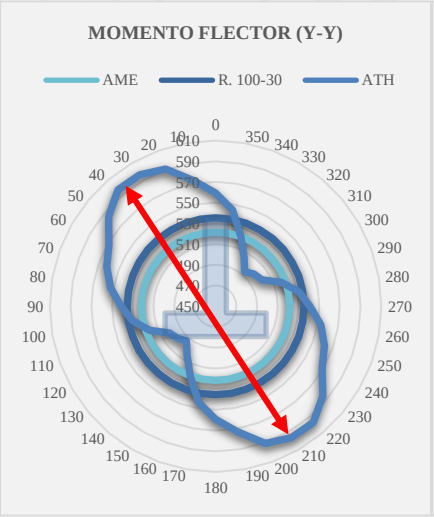

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

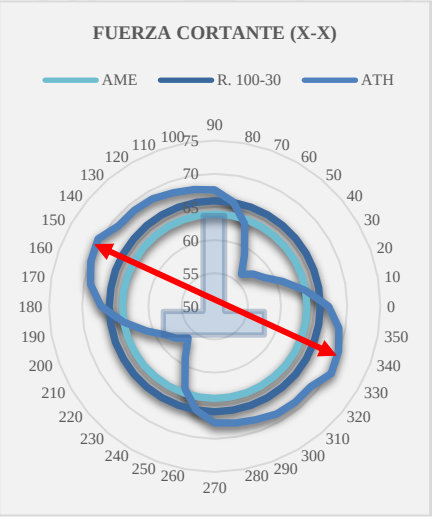

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

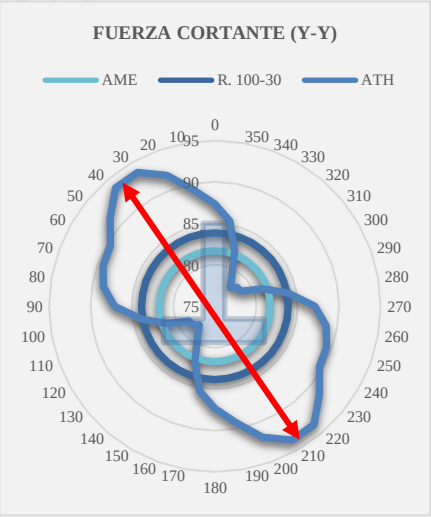

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

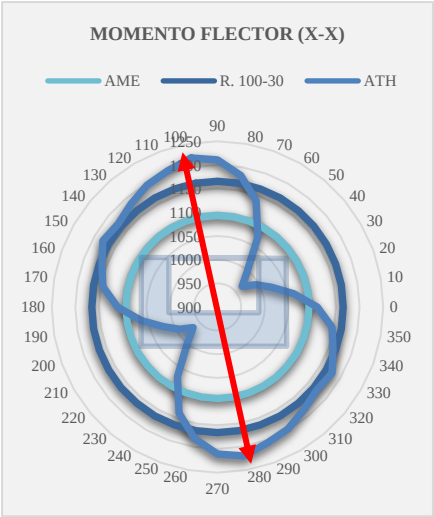

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

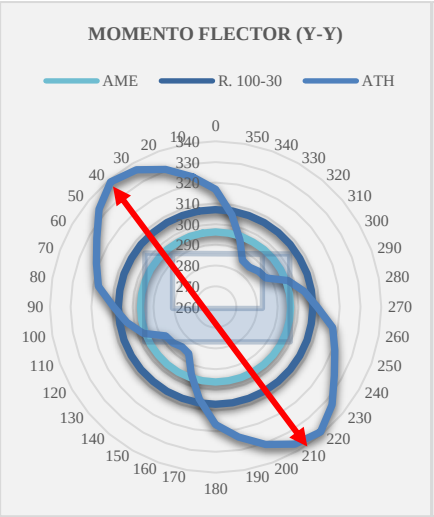

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

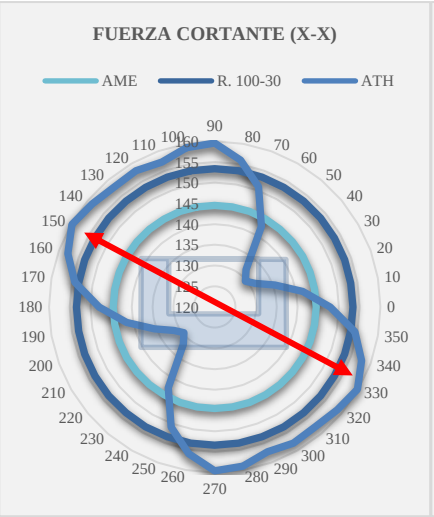

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

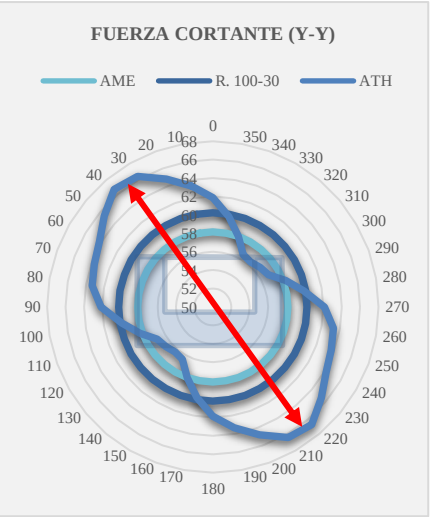

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

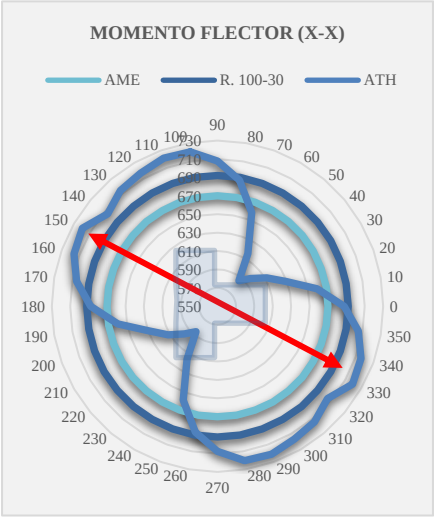

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

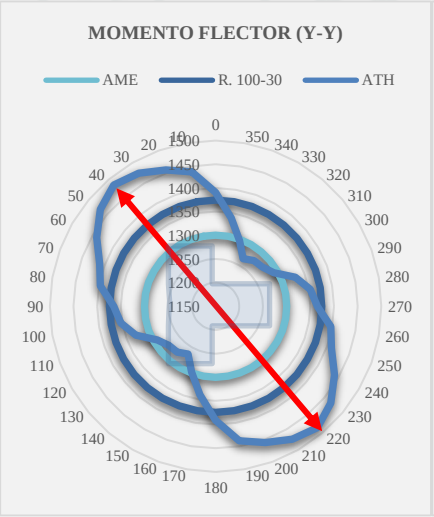

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R. 100-30
ATH

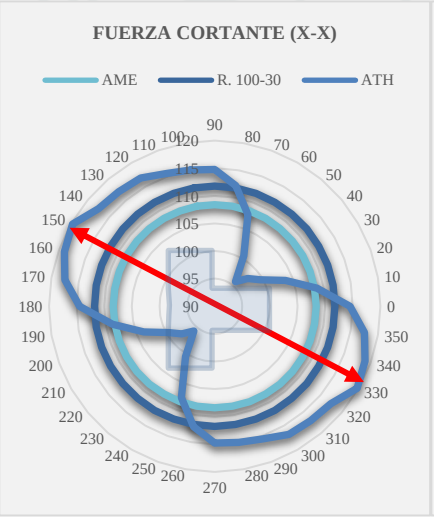

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

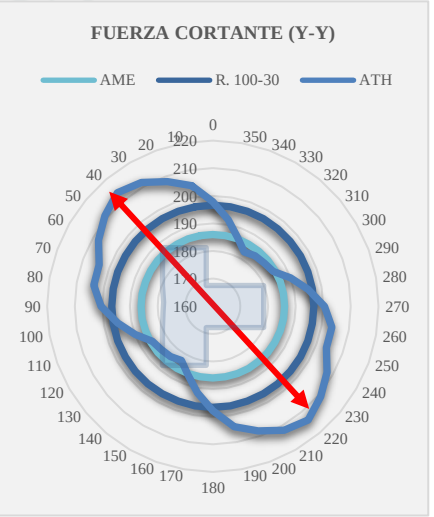

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

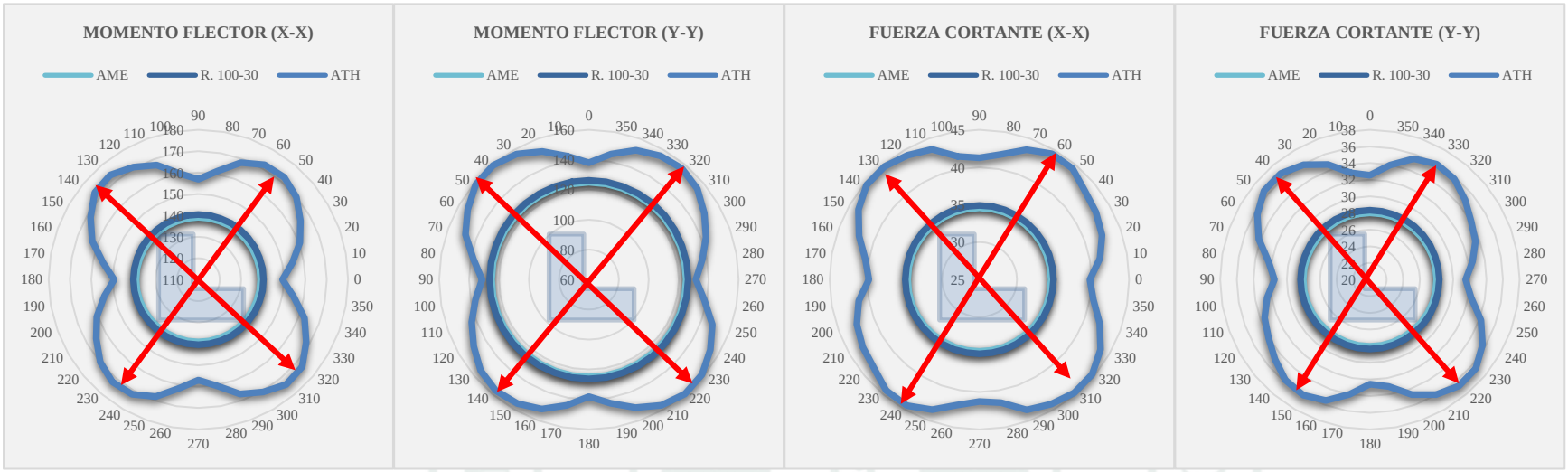

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

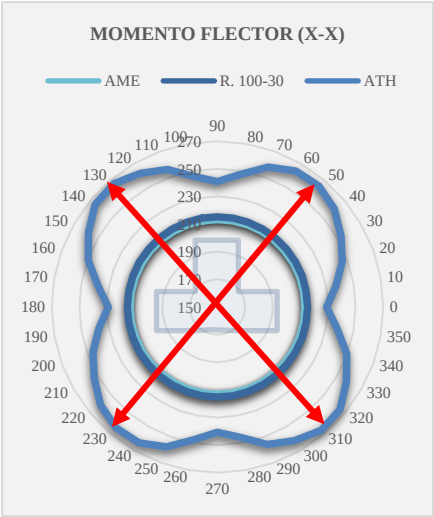

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

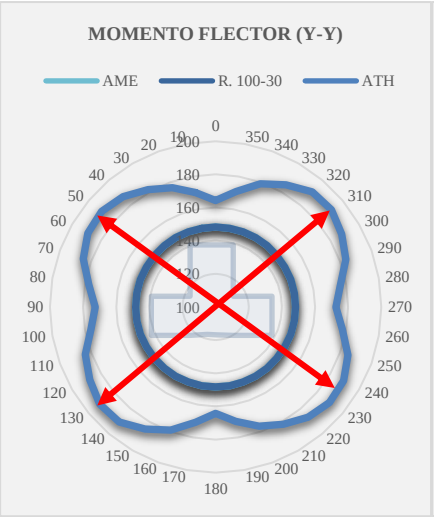

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

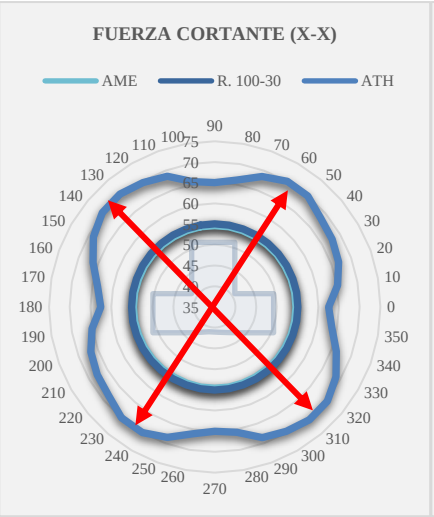
MODELO 12

Para 4 pisos:

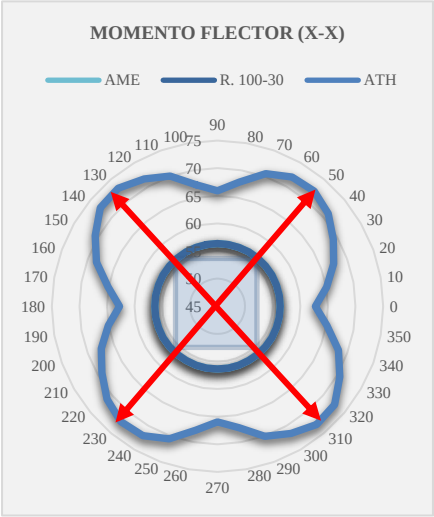


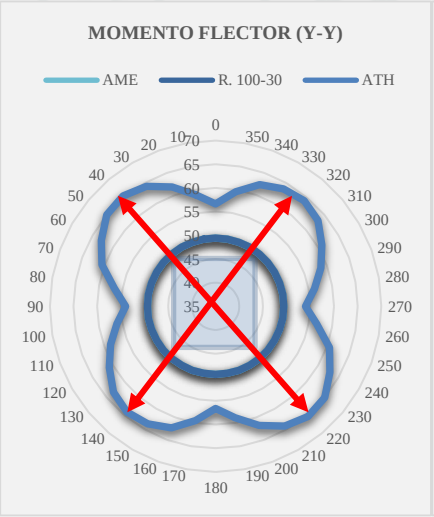

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

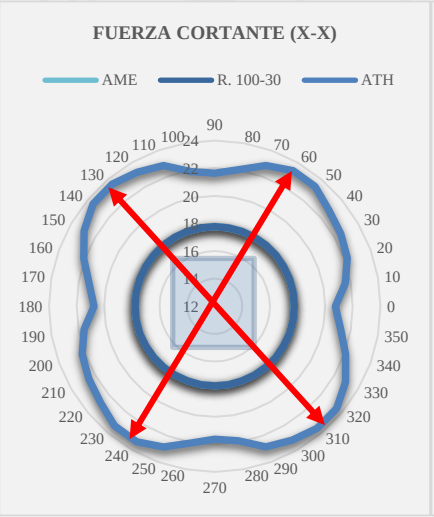

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

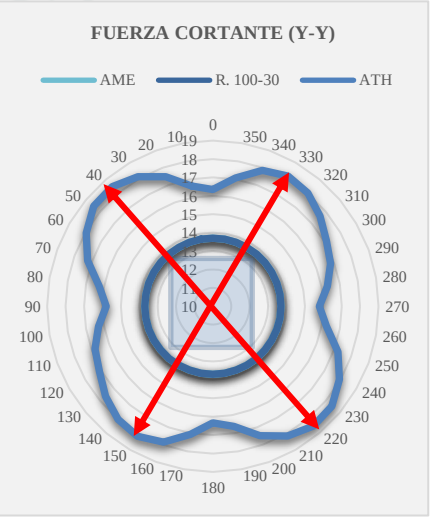

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

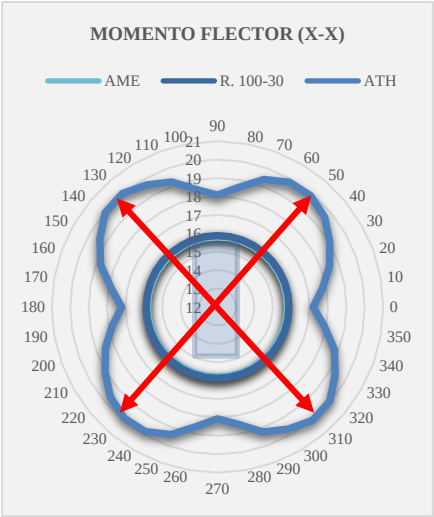

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

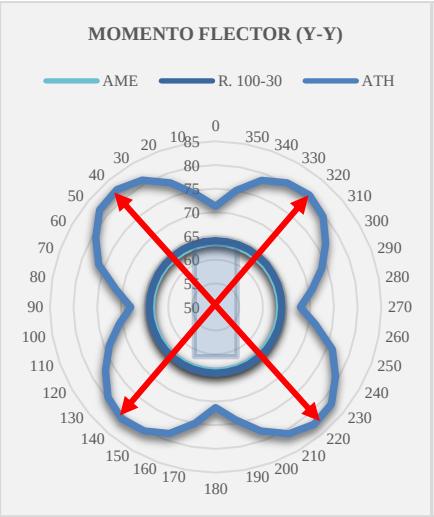

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

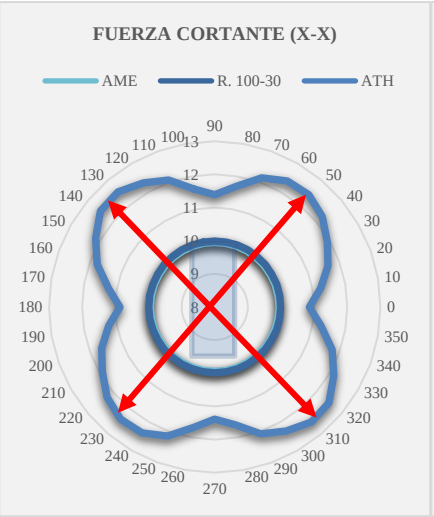

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

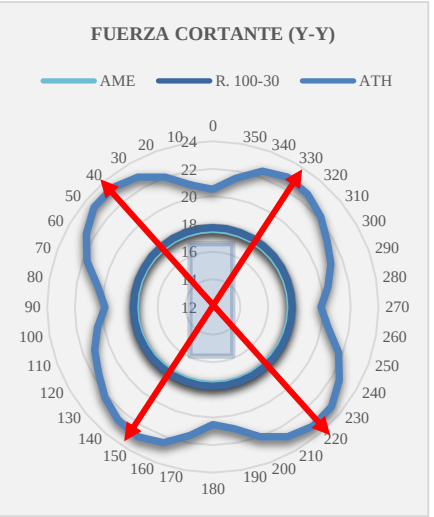

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

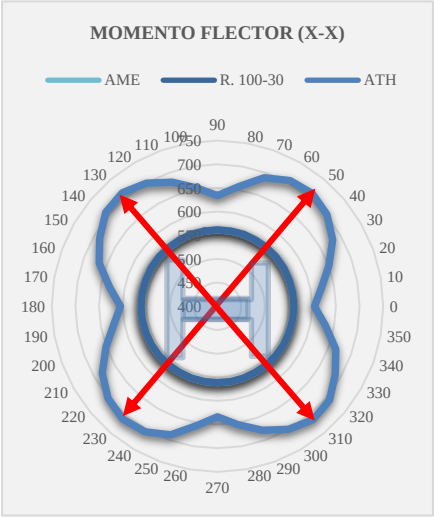

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

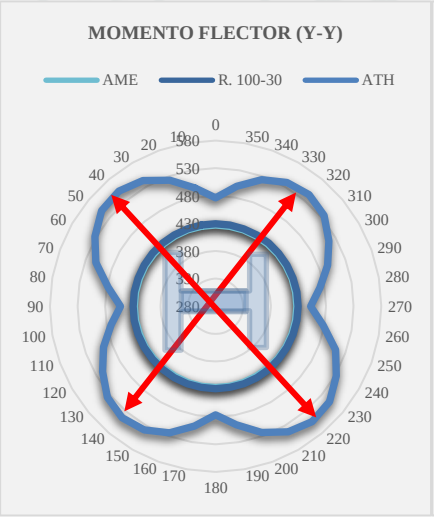

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

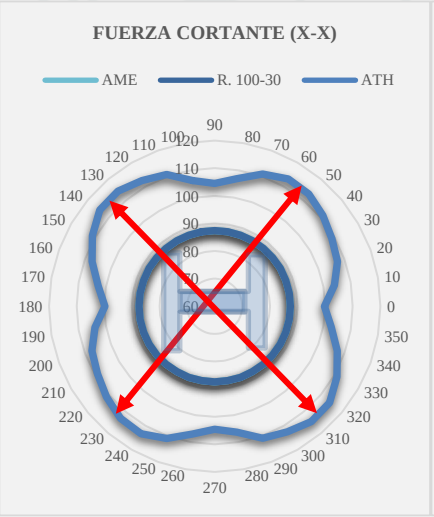

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

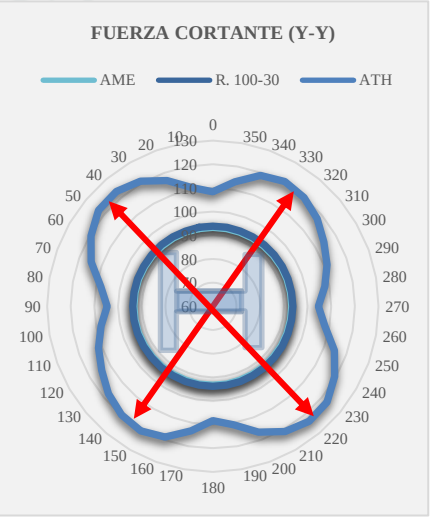

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ATH

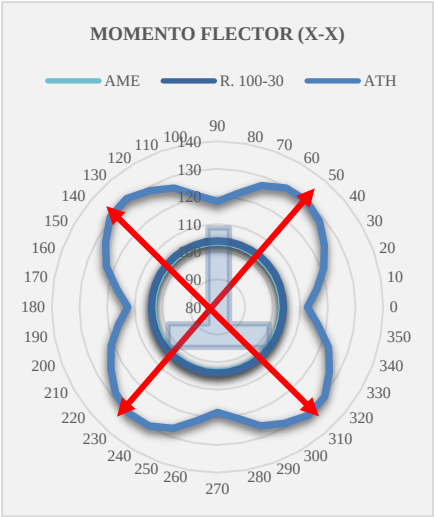

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R. 100-30
ATH

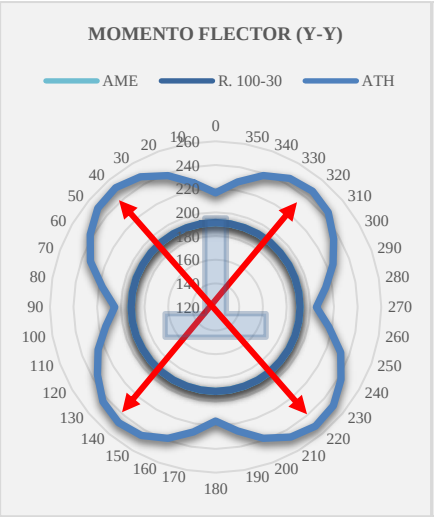

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

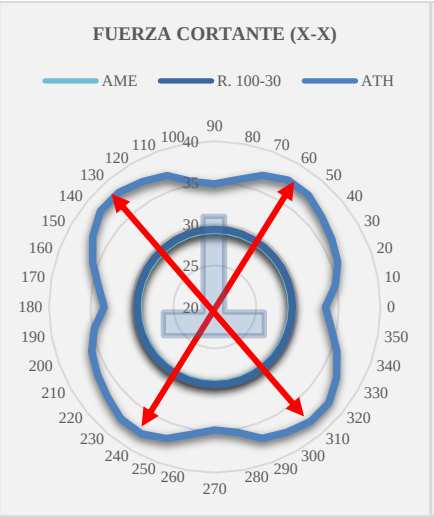

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R. 100-30
ATH

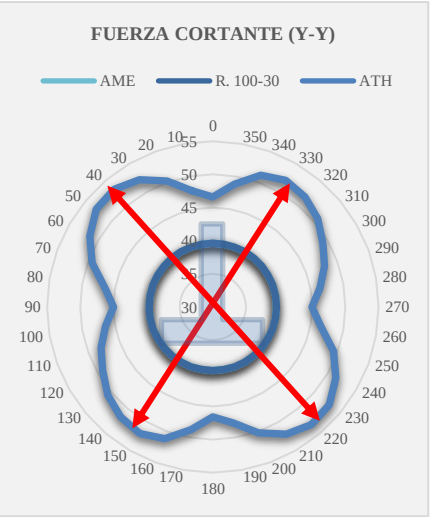

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

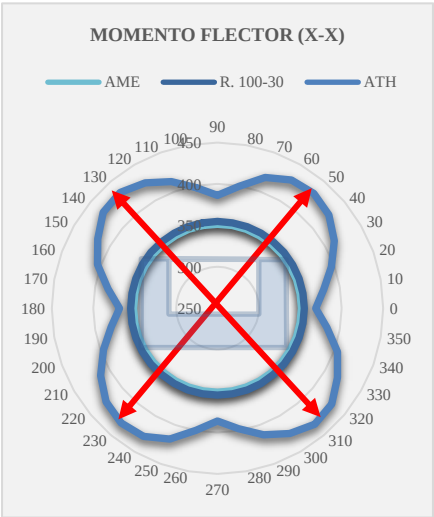

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

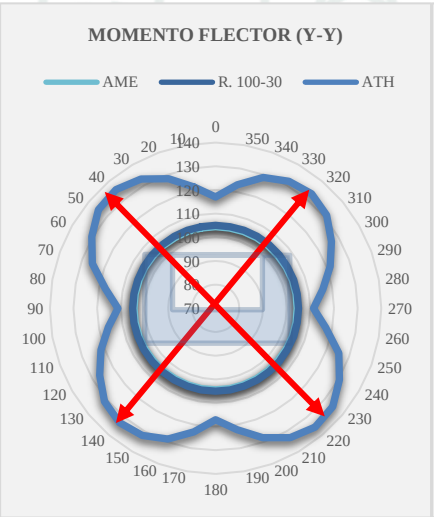

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R. 100-30
ATH

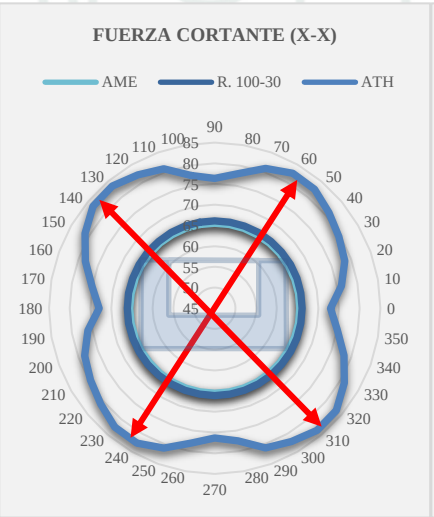

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R. 100-30
ATH

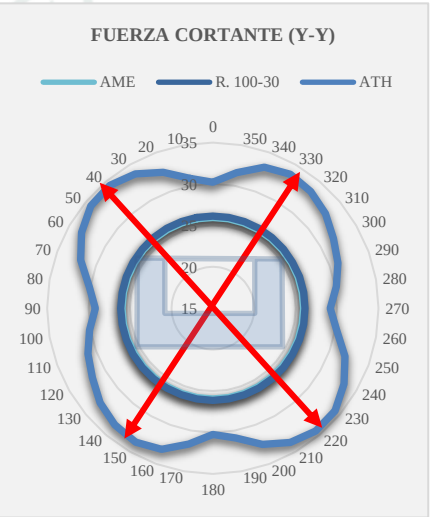

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

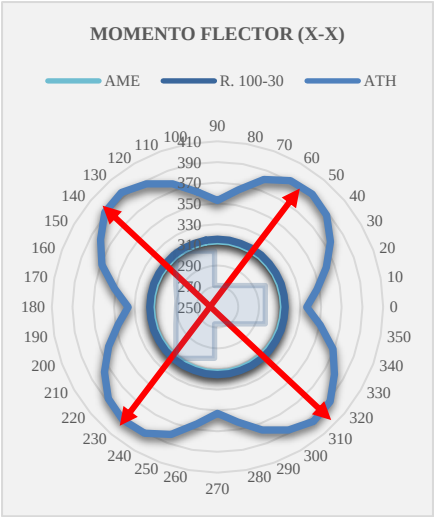

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

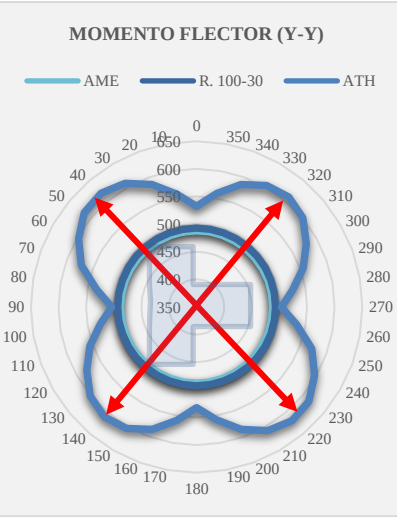

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

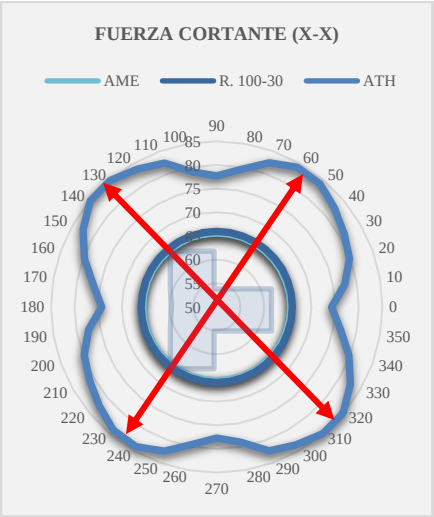

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

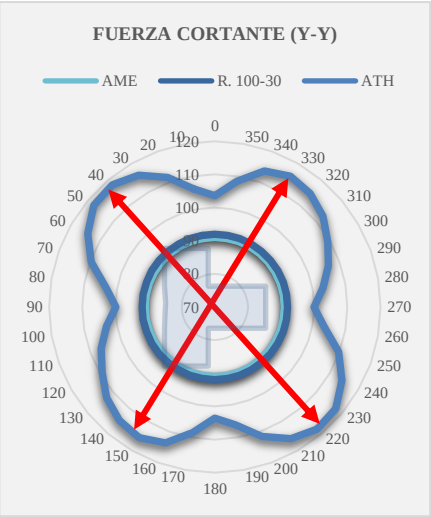

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

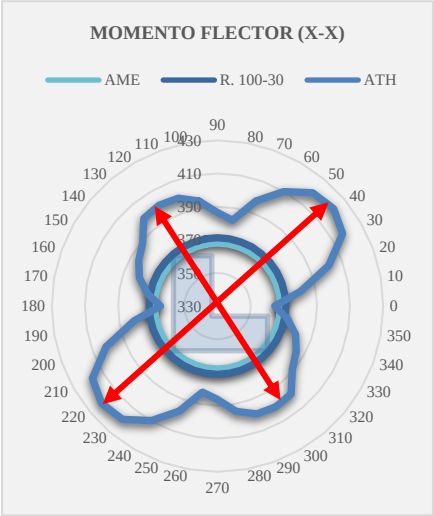

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

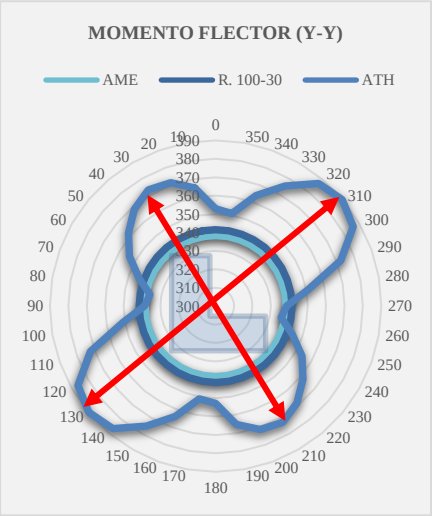

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

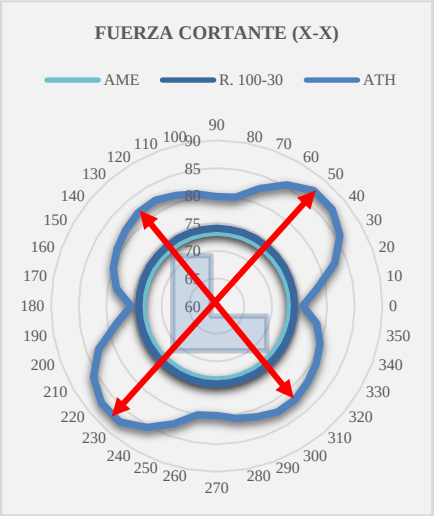

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

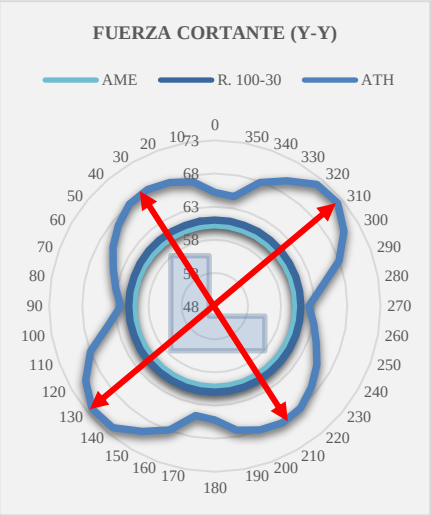

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

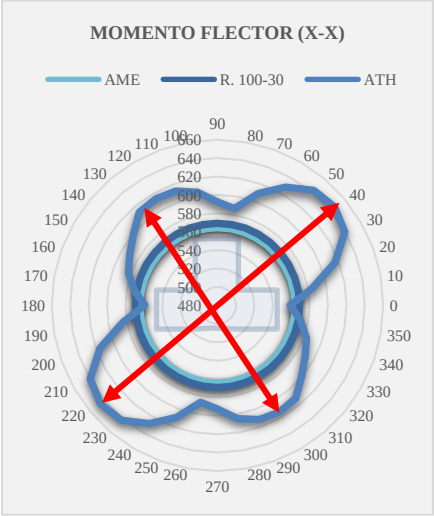
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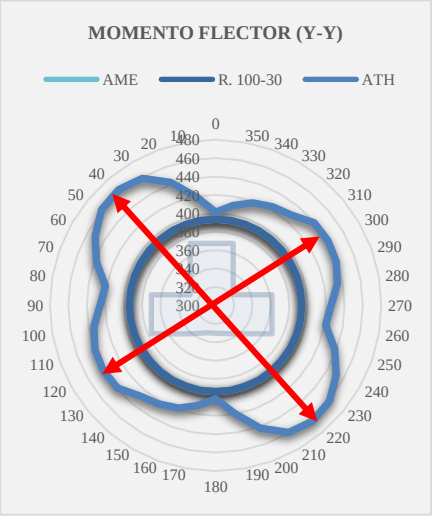

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

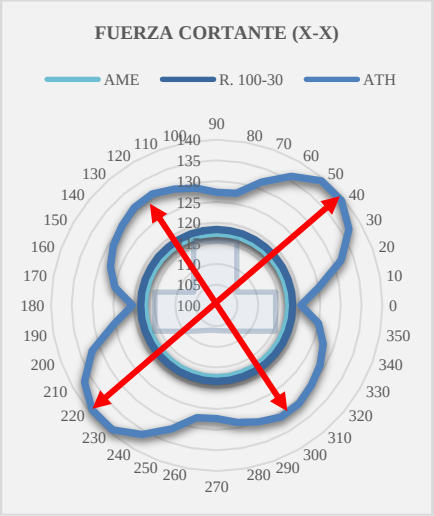

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH


FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

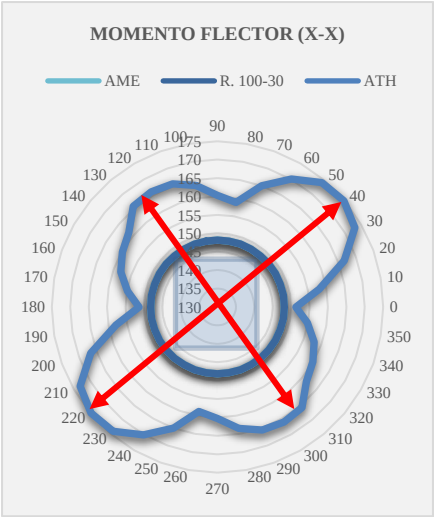

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R. 100-30
ATH

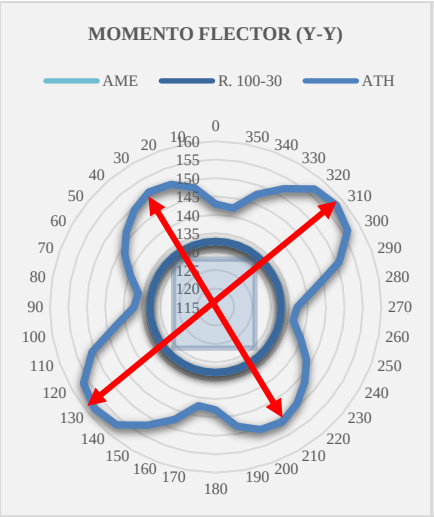

MOMENTO FLECTOR (X-X)
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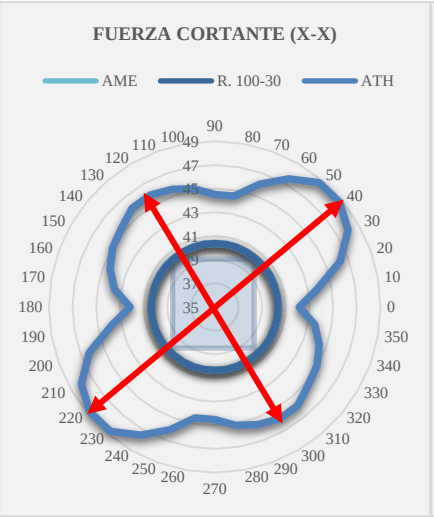

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ATH

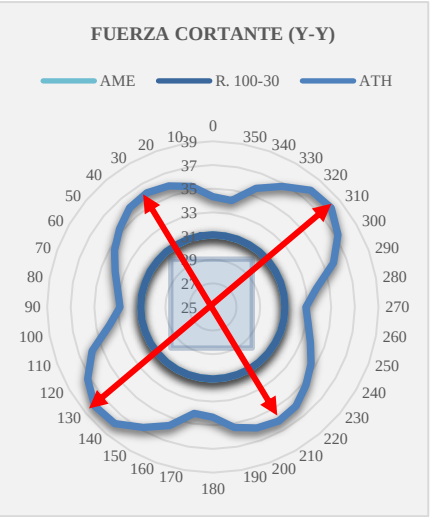

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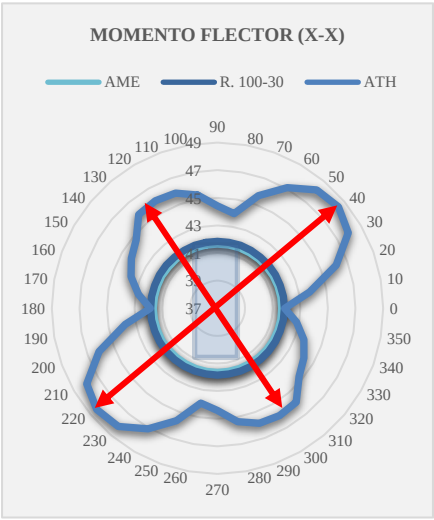

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ATH

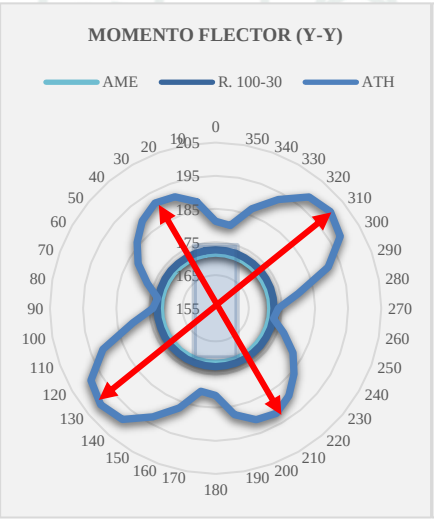

MOMENTO FLECTOR (X-X)
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ATH

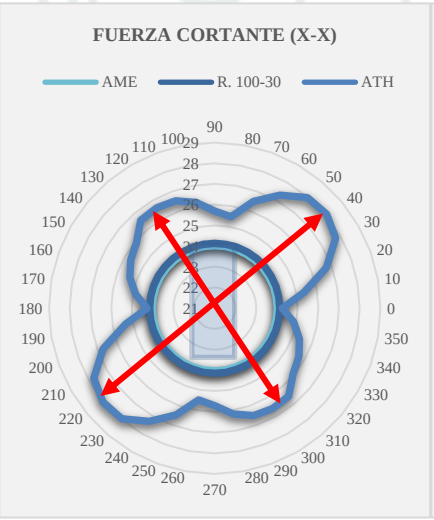

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ATH

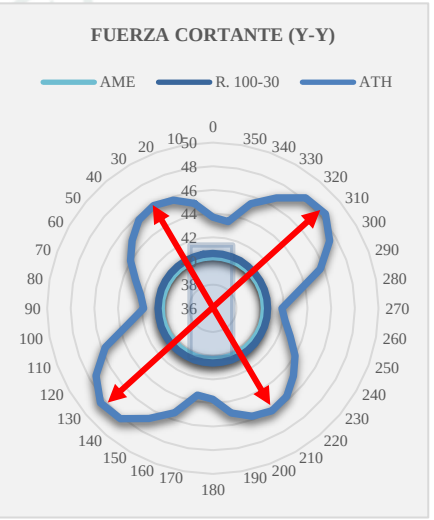

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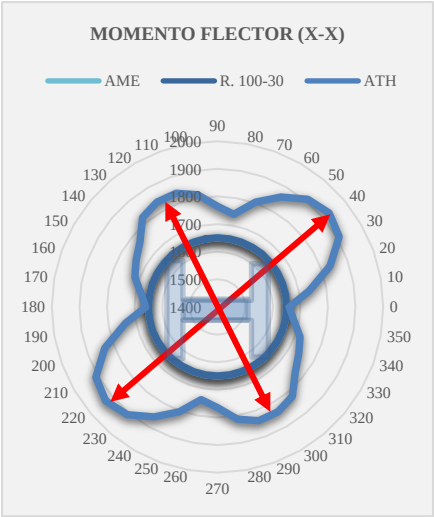

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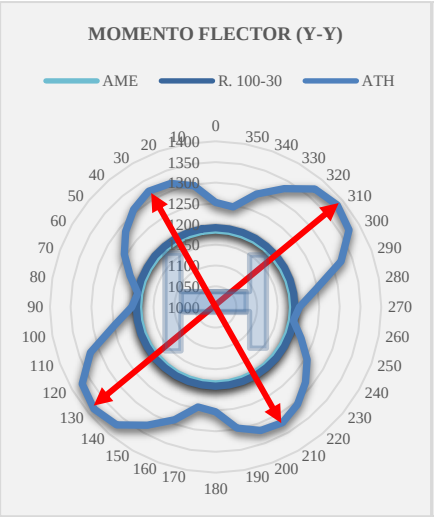

MOMENTO FLECTOR (X-X)
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ATH

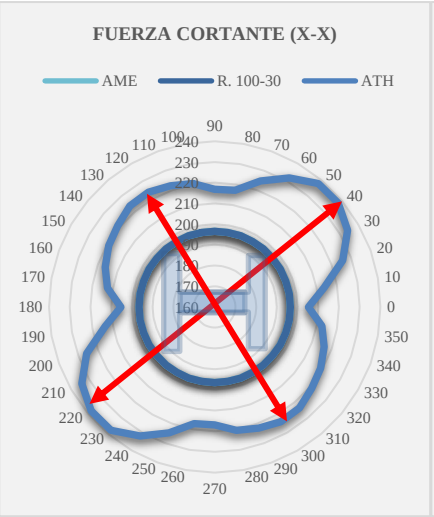

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

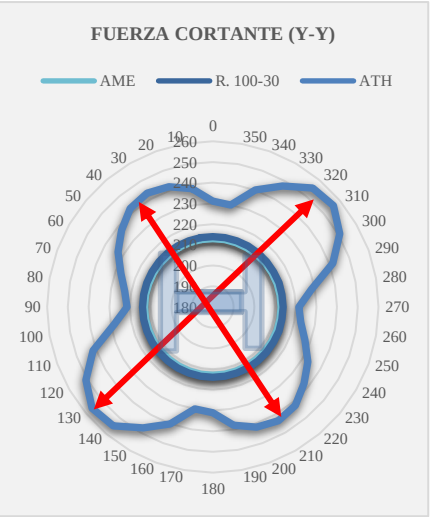

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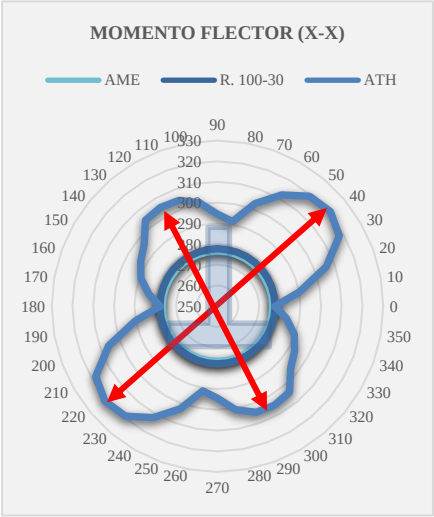

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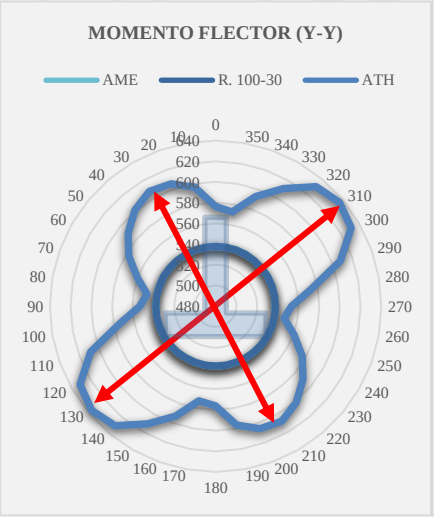

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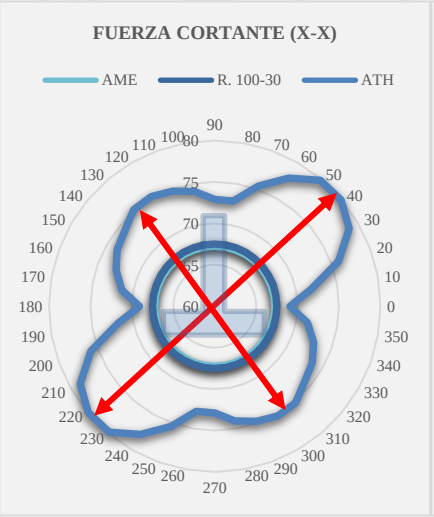

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R. 100-30
ATH

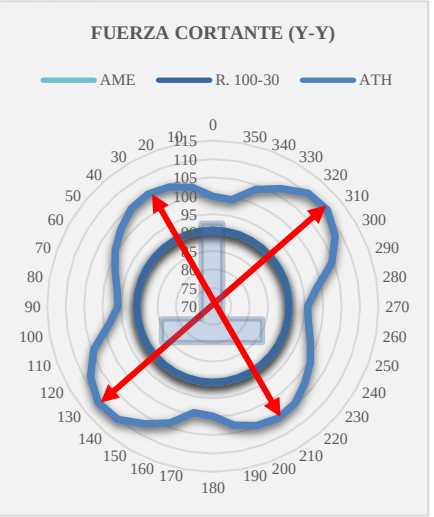

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R. 100-30
ATH

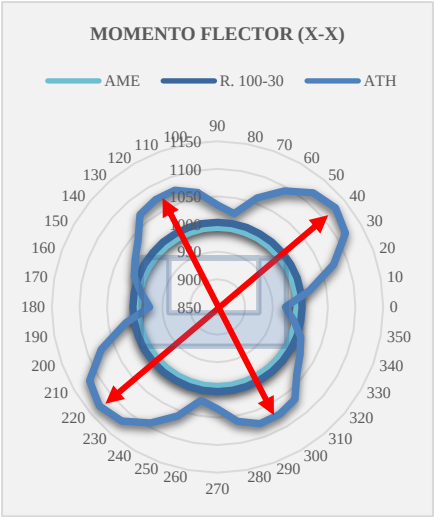

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R. 100-30
ATH

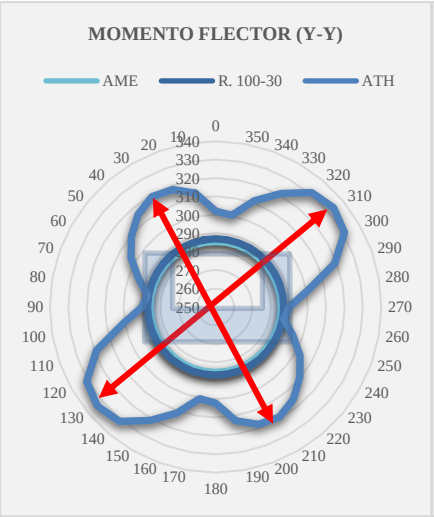

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

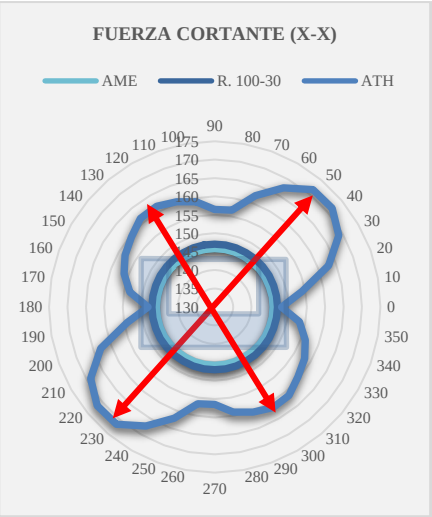

MOMENTO FLECTOR (Y-Y)
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R. 100-30
ATH

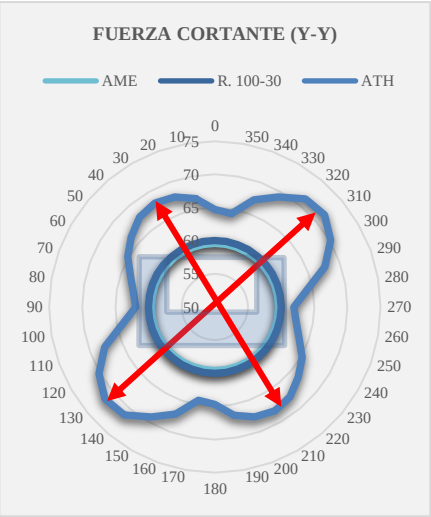

FUERZA CORTANTE (X-X)
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R. 100-30
ATH

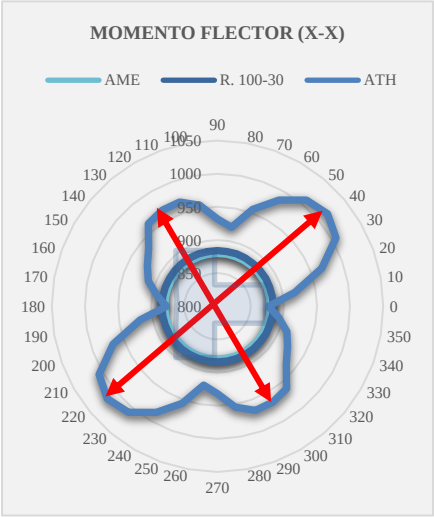

FUERZA CORTANTE (Y-Y)
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R. 100-30
ATH

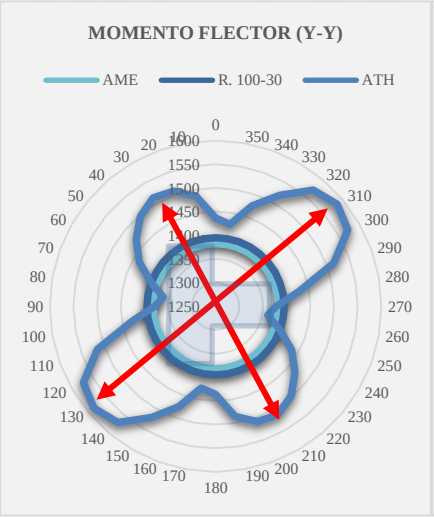

MOMENTO FLECTOR (X-X)
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R. 100-30
ATH

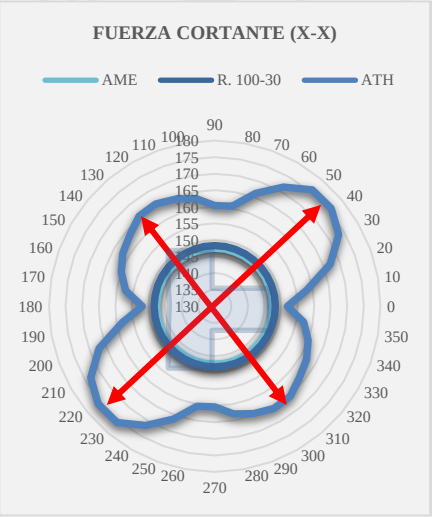

MOMENTO FLECTOR (Y-Y)
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ATH

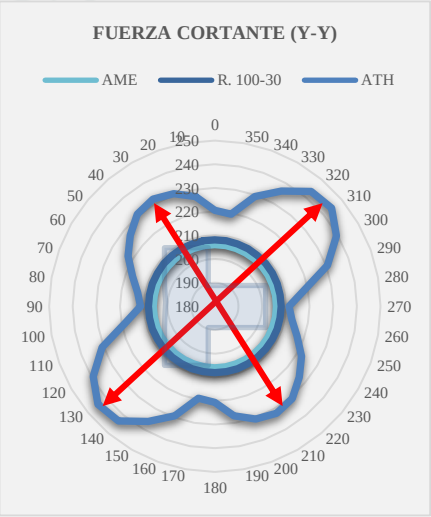

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

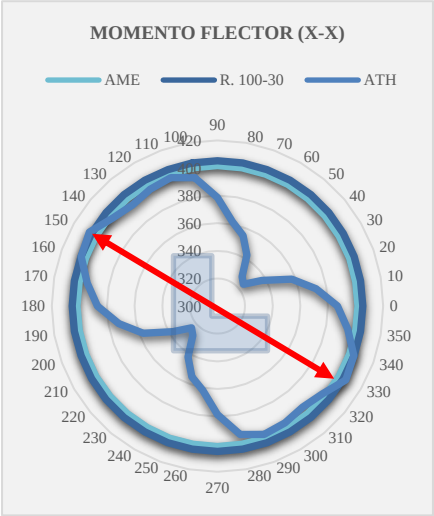

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

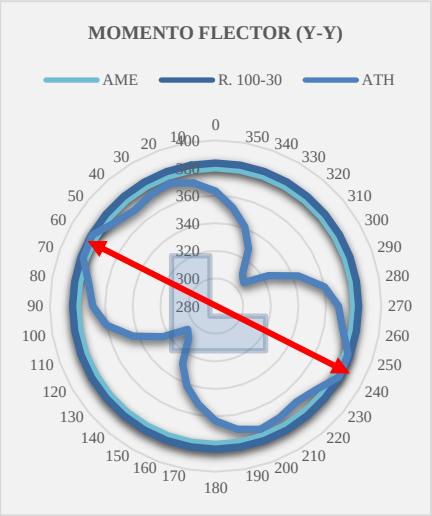

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

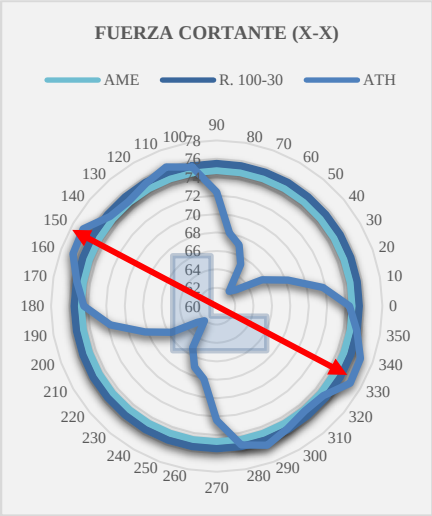

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

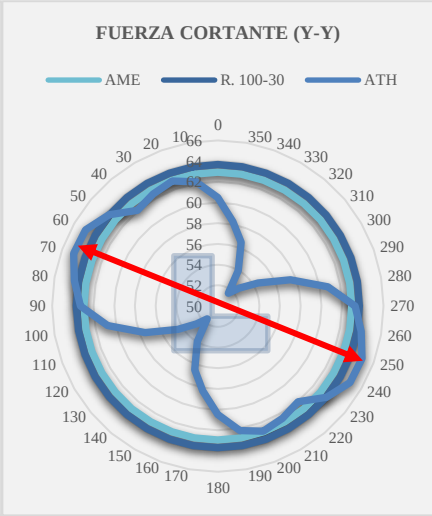

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

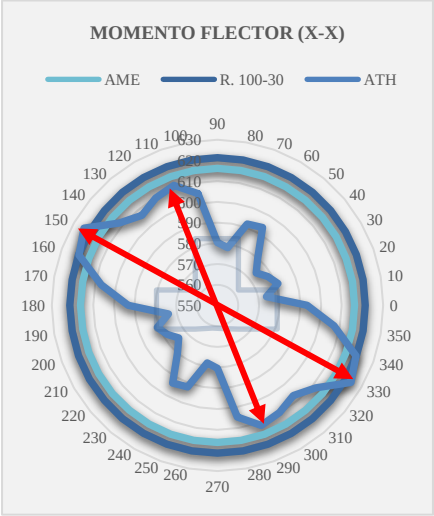
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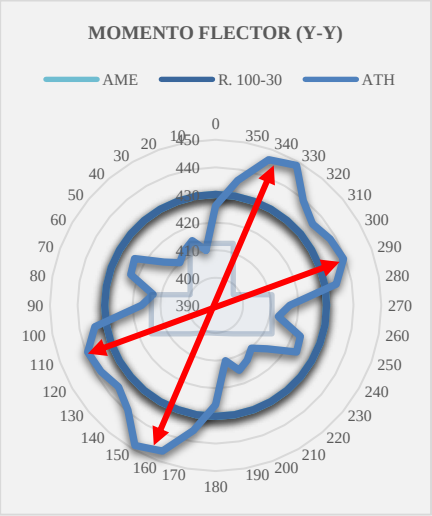


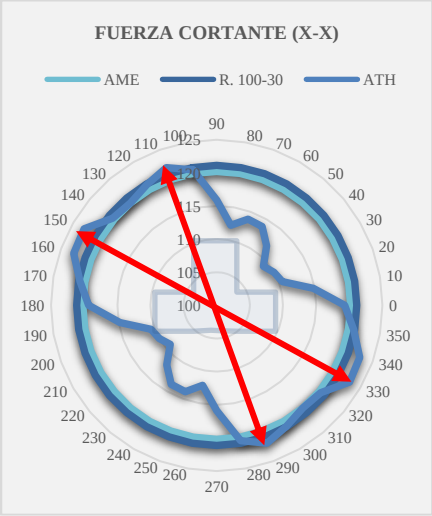


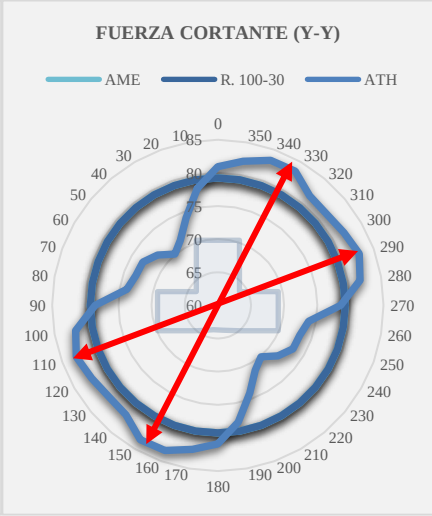


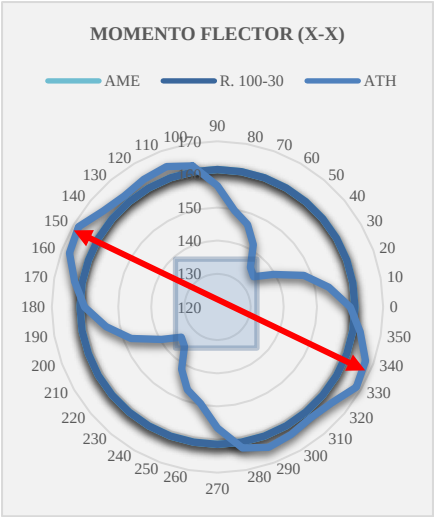


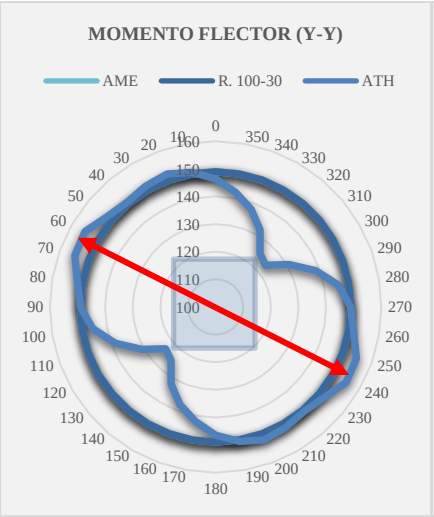


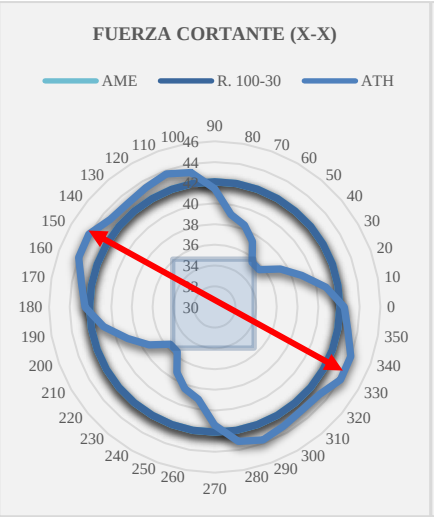


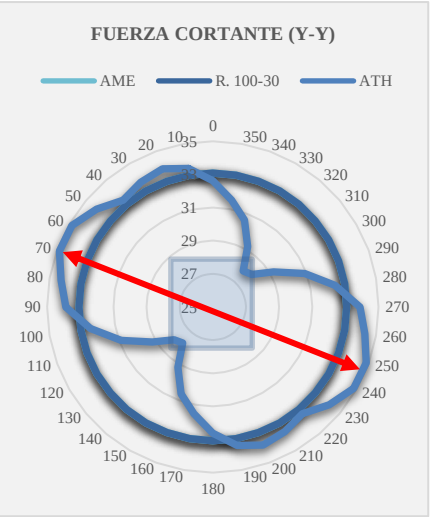


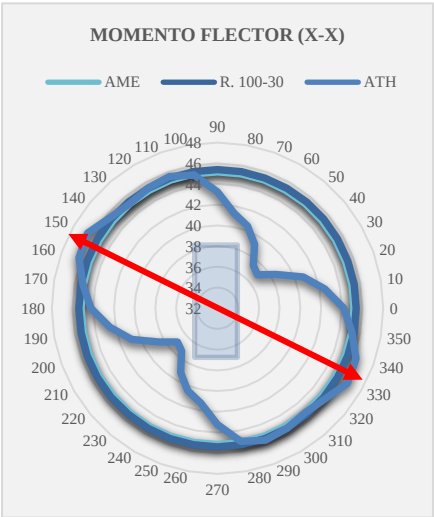


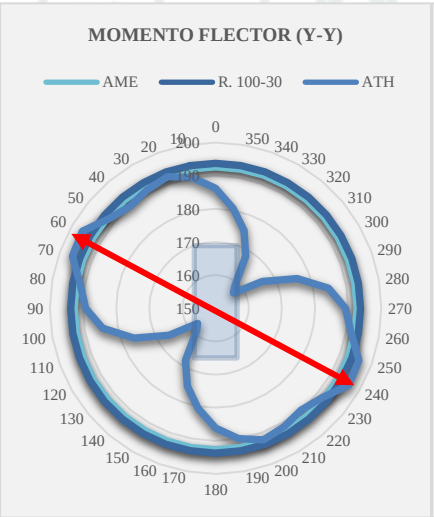

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

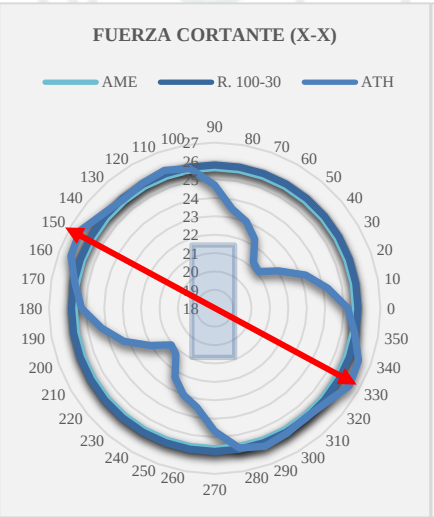

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

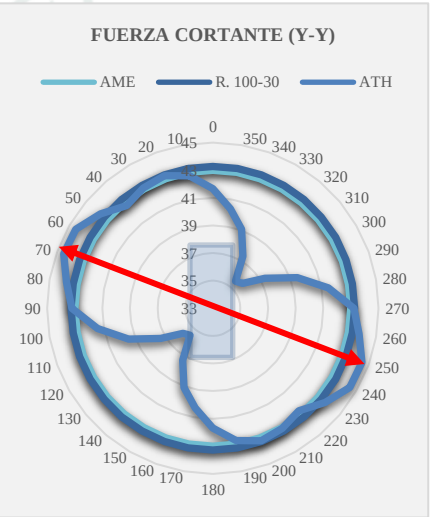

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

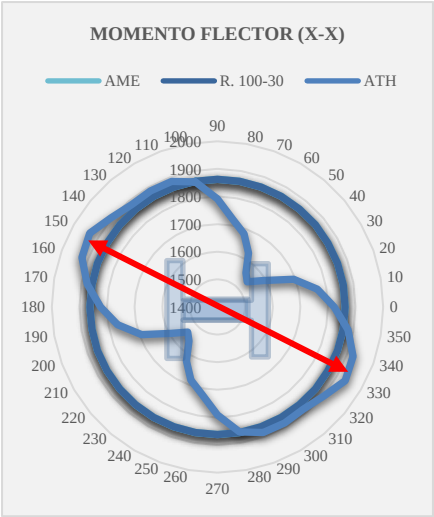

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

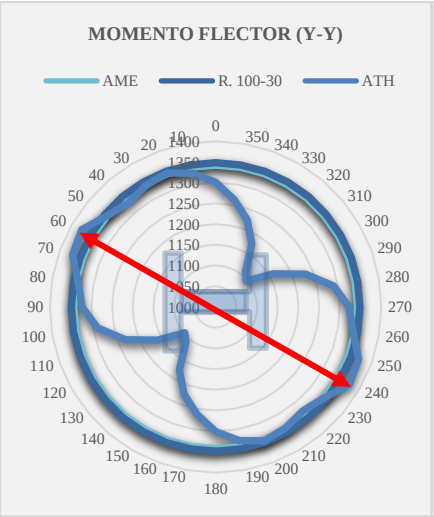

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

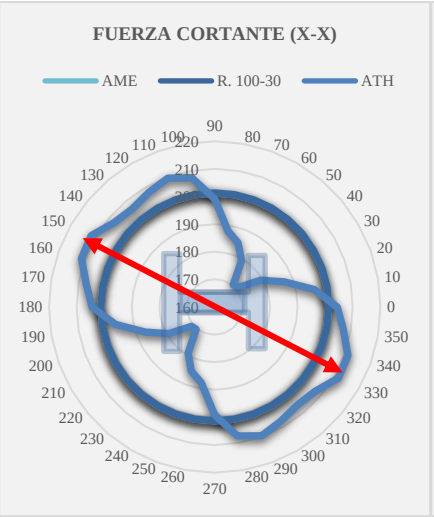

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

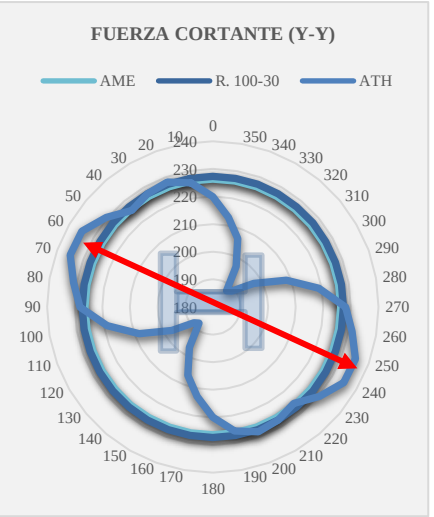

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

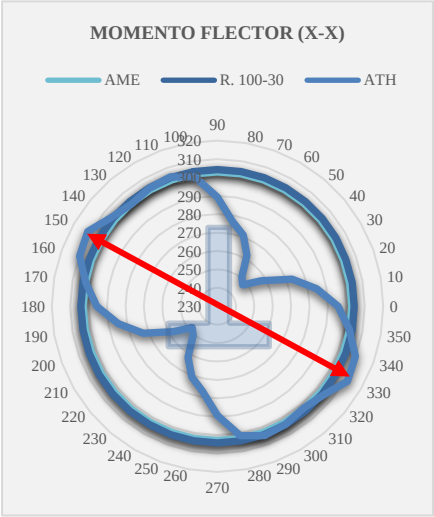

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

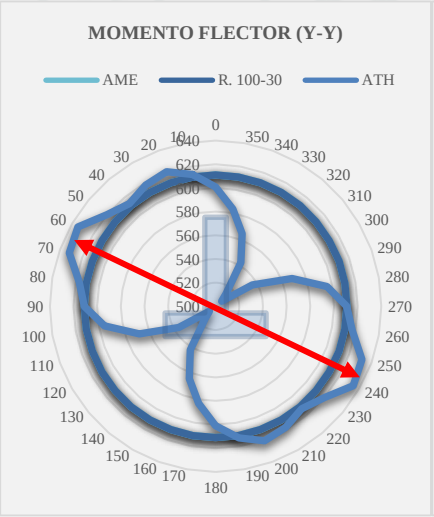

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

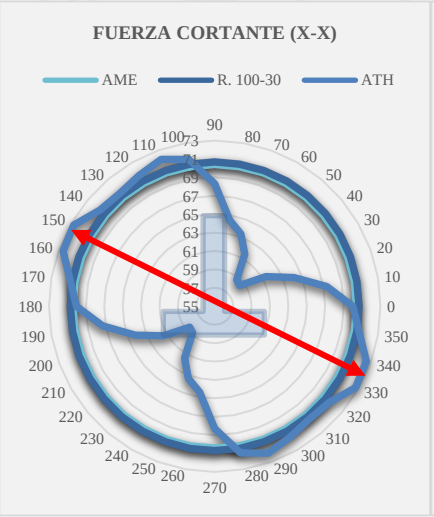

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

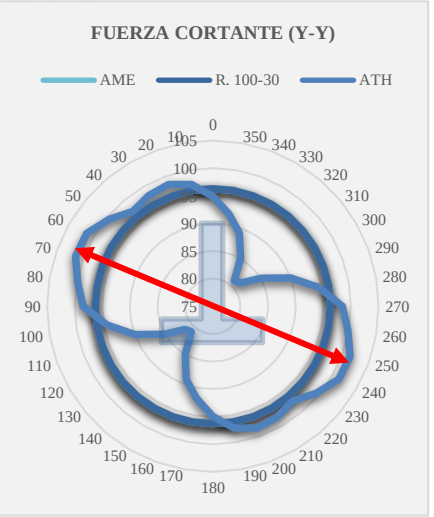

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

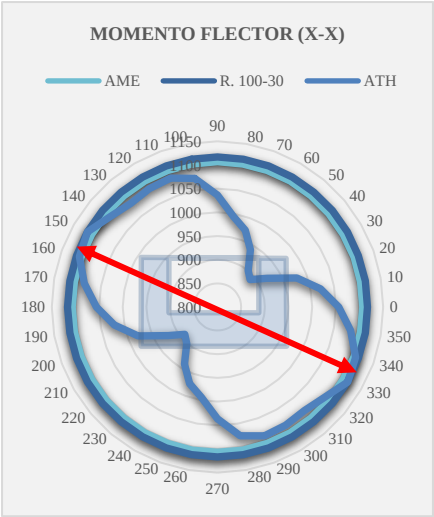

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

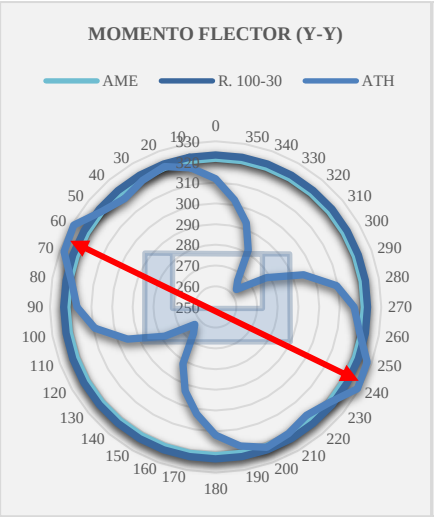

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

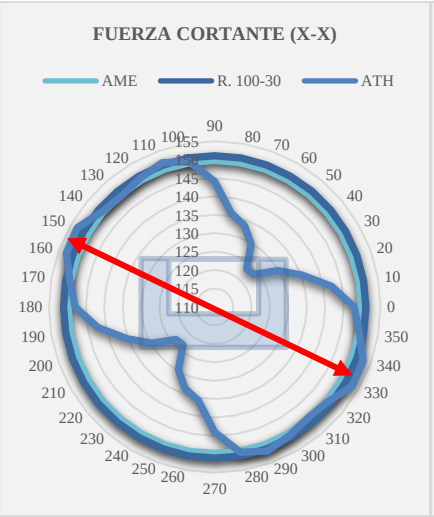

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

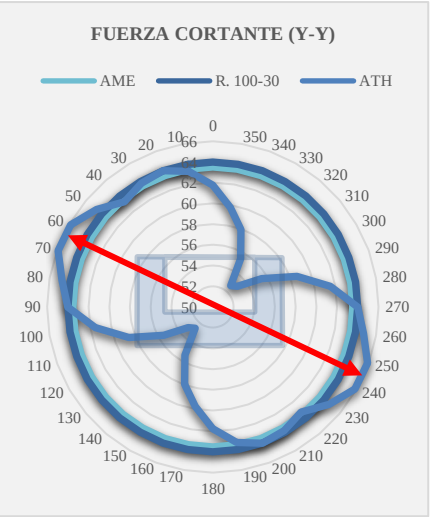

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH

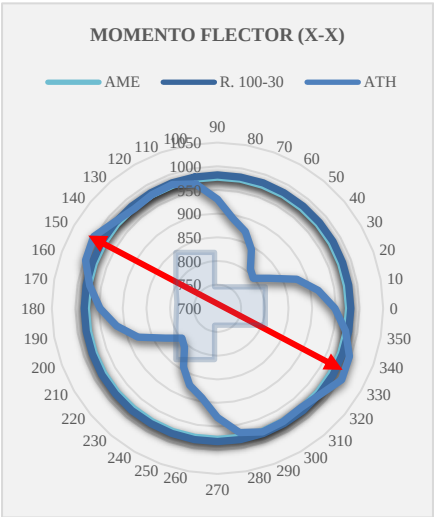

FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

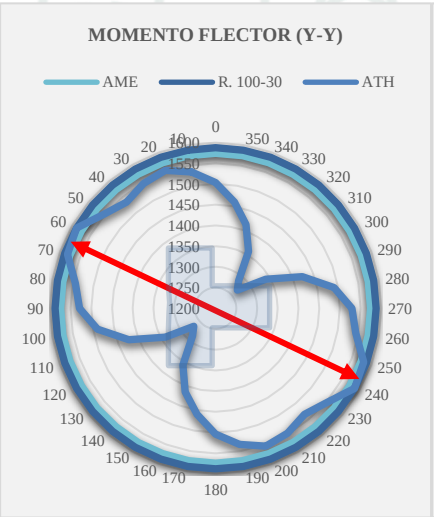

MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH

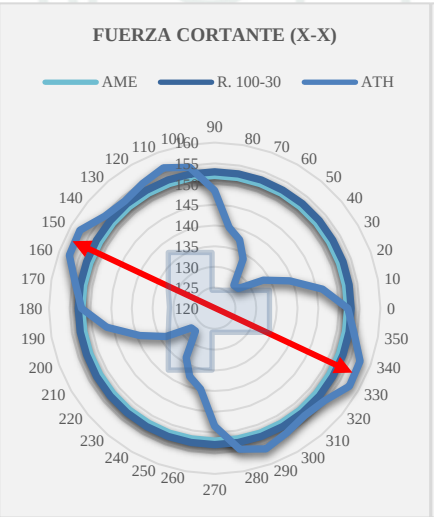

MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

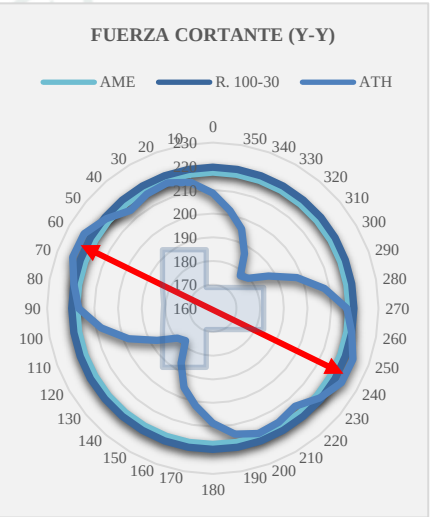

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH


MOMENTO FLECTOR (X-X)
AME
R. 100-30
ATH


MOMENTO FLECTOR (Y-Y)
AME
R. 100-30
ATH

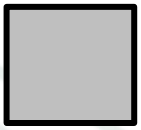
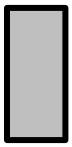

FUERZA CORTANTE (X-X)
AME
R. 100-30
ATH


FUERZA CORTANTE (Y-Y)
AME
R. 100-30
ATH

ANEXO F: TABLA DE ANGULOS DE INCIDENCIA EN COLUMNAS Y PLACAS

COLUMNAS:

Para 8 pisos:

COLUMNA			Tipo "L" 				Tipo "T" 				Cuadrada 				Rectangular 			
Modelo	**Momento/ Fuerza**	**Eje**	**ANGULO DE INCIDENCIA (GRADOS)**															
			I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**
1	Flexión	X-X	10	110	190	290	20	110	200	290	10	110	190	290	10	110	190	290
		Y-Y	20	110	200	290	20	110	200	290	20	110	200	290	20	110	200	290
	Cortante	X-X	*	110	*	290	20	110	200	290	20	110	200	290	10	110	190	290
		Y-Y	20	*	200	*	20	110	200	290	20	110	200	290	20	110	200	290
2	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	110	*	290
		Y-Y	20	100	200	280	*	100	*	280	20	100	200	280	20	100	200	280
	Cortante	X-X	*	110	*	290	*	110	*	290	*	110	*	290	*	110	*	290
		Y-Y	20	*	200	*	*	110	*	290	20	110	200	290	20	110	200	290
3	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	100	*	280
		Y-Y	20	*	200	*	*	100	*	280	20	*	200	*	20	*	200	*
	Cortante	X-X	*	110	*	290	*	110	*	290	*	110	*	290	*	110	*	290
		Y-Y	20	*	200	*	*	110	*	290	20	*	200	*	20	*	200	*
4	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	100	*	280
		Y-Y	30	130	210	310	*	100	*	280	30	130	210	310	30	130	210	310
	Cortante	X-X	*	130	*	310	*	130	*	310	*	120	*	300	*	120	*	300
		Y-Y	30	130	210	310	*	110	*	290	30	130	210	310	30	130	210	310
5	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	100	*	280
		Y-Y	40	140	220	320	*	100	*	280	40	140	220	320	40	140	220	320
	Cortante	X-X	*	120	*	300	*	120	*	300	*	120	*	300	*	100	*	280
		Y-Y	50	140	230	320	*	120	*	300	40	140	220	320	40	140	220	320
6	Flexión	X-X	10	100	190	280	40	140	220	320	50	110	230	290	*	100	*	280
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320
	Cortante	X-X	10	100	190	280	40	100	220	280	50	110	230	290	10	110	190	290
		Y-Y	40	140	220	320	40	130	220	310	40	140	220	320	40	140	220	320
7	Flexión	X-X	10	110	190	290	10	110	190	290	20	110	200	290	10	110	190	290
		Y-Y	10	110	190	290	10	110	190	290	10	140	190	320	10	140	190	320
	Cortante	X-X	10	100	190	280	40	100	220	280	20	110	200	290	10	110	190	290
		Y-Y	40	140	220	320	40	110	220	290	40	140	220	320	40	140	220	320
8	Flexión	X-X	10	110	190	290	20	110	200	290	20	110	200	290	10	110	190	290
		Y-Y	20	110	200	290	10	110	190	290	10	110	190	290	20	110	200	290
	Cortante	X-X	10	110	190	290	20	110	200	290	20	110	200	290	10	110	190	290
		Y-Y	20	*	200	*	20	110	200	290	20	110	200	290	20	110	200	290
9	Flexión	X-X	*	120	*	300	30	120	210	300					30	110	210	290
		Y-Y	30	*	210	*	30	120	210	300					30	120	210	300
	Cortante	X-X	*	90	*	270	10	90	190	270					20	*	200	*
		Y-Y	0	*	180	*	10	90	190	270					0	90	180	270
10	Flexión	X-X	40	100	220	280	40	130	220	310	40	110	220	290	40	110	220	290
		Y-Y	60	160	240	340	40	110	220	290	60	170	240	350	60	170	240	350
	Cortante	X-X	40	100	220	280	40	130	220	310	40	110	220	290	40	110	220	290
		Y-Y	60	160	240	340	40	110	220	290	60	170	240	350	60	160	240	340

11	Flexión	X-X	*	120	*	300	*	120	*	300	50	*	230	*	*	120	*	300
		Y-Y	70	*	250	*	50	*	230	*	60	*	240	*	60	*	240	*
	Cortante	X-X	*	120	*	300	*	120	*	300	50	*	230	*	*	120	*	300
		Y-Y	70	*	250	*	50	*	230	*	60	*	240	*	60	*	240	*
12	Flexión	X-X	40	120	220	300	40	120	220	300	40	120	220	300	40	120	220	300
		Y-Y	30	130	210	310	40	120	220	300	30	130	210	310	30	130	210	310
	Cortante	X-X	50	120	230	300	40	120	220	300	40	120	220	300	40	120	220	300
		Y-Y	30	130	210	310	50	120	230	300	30	130	210	310	30	130	210	310

(*): No existe un valor pico para considerar un ángulo de incidencia critico

Para 12 pisos:

COLUMNA			**Tipo "L"**				**Tipo "T"**				**Cuadrada**				**Rectangular**			
Modelo	**Momento/ Fuerza**	**Eje**	**ANGULO DE INCIDENCIA (GRADOS)**															
			I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**
1	Flexión	X-X	100	150	280	330	20	60	200	240	100	150	280	330	100	150	280	330
		Y-Y	20	60	200	240	20	60	200	240	20	60	200	240	20	60	200	240
	Cortante	X-X	0	150	180	330	0	150	180	330	0	100	180	280	100	150	280	330
		Y-Y	60	100	240	280	0	100	180	280	60	*	240	*	60	*	240	*
2	Flexión	X-X	20	170	200	350	60	*	240	*	20	170	200	350	20	170	200	350
		Y-Y	60	*	240	*	60	*	240	*	60	*	240	*	60	*	240	*
	Cortante	X-X	0	*	180	*	0	60	180	240	*	170	*	350	10	170	190	350
		Y-Y	60	*	240	*	0	60	180	240	60	*	240	*	60	*	240	*
3	Flexión	X-X	20	170	200	350	20	70	200	250	20	170	200	350	20	170	200	350
		Y-Y	20	70	200	250	20	70	200	250	20	70	200	250	20	70	200	250
	Cortante	X-X	0	*	180	*	20	70	200	250	*	170	*	350	*	170	*	350
		Y-Y	70	*	250	*	20	70	200	250	70	*	250	*	70	*	250	*
4	Flexión	X-X	20	170	200	350	20	70	200	250	20	110	200	290	20	110	200	290
		Y-Y	20	70	200	250	20	70	200	250	20	70	200	250	20	70	200	250
	Cortante	X-X	20	170	200	350	20	170	200	350	20	170	200	350	20	170	200	350
		Y-Y	20	70	200	250	20	170	200	350	20	70	200	250	20	70	200	250
5	Flexión	X-X	20	110	200	290	30	170	210	350	20	170	200	350	20	170	200	350
		Y-Y	30	130	210	310	20	170	200	350	30	130	210	310	30	130	210	310
	Cortante	X-X	20	170	200	350	20	40	200	220	20	170	200	350	20	170	200	350
		Y-Y	40	120	220	300	20	170	200	350	40	130	220	310	40	130	220	310
6	Flexión	X-X	0	100	180	280	40	100	220	280	0	110	180	290	0	90	180	270
		Y-Y	40	100	220	280	30	100	210	280	80	100	260	280	40	100	220	280
	Cortante	X-X	10	90	190	270	10	100	190	280	10	90	190	270	0	90	180	270
		Y-Y	70	100	250	280	10	100	190	280	40	100	220	280	40	100	220	280
7	Flexión	X-X	100	160	280	340	70	160	250	340	110	160	290	340	100	160	280	340
		Y-Y	40	70	220	250	20	70	200	250	70	*	250	*	70	*	250	*
	Cortante	X-X	10	100	190	280	0	110	180	290	0	110	180	290	110	160	290	340
		Y-Y	70	110	250	290	10	110	190	290	40	100	220	280	40	100	220	280
8	Flexión	X-X	100	150	280	330	60	150	240	330	100	150	280	330	100	160	280	340
		Y-Y	60	*	240	*	20	150	200	330	20	60	200	240	60	*	240	*
	Cortante	X-X	0	100	180	280	0	100	180	280	0	100	180	280	110	160	290	340
		Y-Y	70	100	250	280	0	100	180	280	*	100	*	280	70	*	250	*
9	Flexión	X-X	*	130	*	310	40	130	220	310					40	130	220	310
		Y-Y	40	*	220	*	40	130	220	310					40	130	220	310

	Cortante	X-X	*	130	*	310	40	130	220	310					60	*	240	*
		Y-Y	40	*	220	*	40	130	220	310					40	130	220	310
10	Flexión	X-X	*	100	*	280	*	150	*	330	110	160	290	340	*	100	*	280
		Y-Y	30	*	210	*	110	160	290	340	40	*	220	*	30	*	210	*
	Cortante	X-X	*	100	*	280	*	150	*	330	110	160	290	340	*	100	*	280
		Y-Y	30	*	210	*	110	160	290	340	40	*	220	*	30	*	210	*
11	Flexión	X-X	100	150	280	330	40	100	220	280	*	160	*	340	*	150	*	330
		Y-Y	40	*	220	*	120	160	300	340	30	*	210	*	40	*	220	*
	Cortante	X-X	90	150	270	330	90	150	270	330	*	170	*	350	*	150	*	330
		Y-Y	40	*	220	*	*	170	*	350	30	*	210	*	40	*	220	*
12	Flexión	X-X	*	150	*	330	110	150	290	330	*	150	*	330	*	150	*	330
		Y-Y	60	*	240	*	110	150	290	330	60	*	240	*	60	*	240	*
	Cortante	X-X	*	150	*	330	110	150	290	330	*	150	*	330	*	150	*	330
		Y-Y	70	*	250	*	110	150	290	330	70	*	250	*	70	*	250	*

(*): No existe un valor pico para considerar un ángulo de incidencia critico

PLACAS:

Para 4 pisos:

COLUMNA			Tipo "H"				Tipo "T" o Rect. Interior				Tipo "C"				Tipo "T" o Rect. Exterior				Tipo "L"							
Modelo	**Momento/ Fuerza**	**Eje**	**ANGULO DE INCIDENCIA (GRADOS)**																							
			I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**I**	**II**	**II**	**III**	**III**	**IV**	**IV**
1	Flexión	X-X	50	140	230	320	50	140	230	320	50	140	230	320					20	70	110	160	200	250	290	340
		Y-Y	40	130	220	310	40	130	220	310	40	130	220	310					30	70	110	150	210	250	290	330
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320					20	70	120	160	200	250	300	340
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310					30	70	110	140	210	250	290	320
2	Flexión	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
		Y-Y	50	140	230	320	50	140	230	320	50	140	230	320	50	140	230	320								
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
		Y-Y	60	130	240	310	60	130	240	310	60	130	240	310	60	130	240	310								
3	Flexión	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310	50	130	230	310								
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310	50	130	230	310								
4	Flexión	X-X	40	130	220	310	40	140	220	320	40	130	220	310	40	140	220	320								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
5	Flexión	X-X	40	130	220	310	40	140	220	320	40	130	220	310	40	140	220	320								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
		Y-Y	50	140	230	320	50	140	230	320	50	140	230	320	40	140	220	320								
6	Flexión	X-X	50	140	230	320	50	140	230	320	50	130	230	310					0	*	90	*	180	*	270	*
		Y-Y	40	130	220	310	40	130	220	310	40	130	220	310					30	60	120	150	210	240	300	330
	Cortante	X-X	40	140	220	320	40	140	220	320	50	140	230	320					10	70	110	*	190	250	290	*

		Y-Y	40	130	220	310	40	130	220	310	40	130	220	310					30	60	120	150	210	240	300	330
7	Flexión	X-X	50	140	230	320	50	140	230	320	50	140	230	320					0	*	100	*	180	*	280	*
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310					30	60	*	150	210	240	*	330
	Cortante	X-X	50	140	230	320	40	140	220	320	40	140	220	320					10	70	110	*	190	250	290	*
		Y-Y	40	130	220	310	40	130	220	310	40	130	220	310					30	60	*	140	210	240	*	320
8	Flexión	X-X	50	140	230	320	50	140	230	320	50	140	230	320					20	70	100	*	200	250	280	*
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310					30	60	110	150	210	240	290	330
	Cortante	X-X	40	140	220	320	40	140	220	320	40	140	220	320					20	60	120	*	200	240	300	180
		Y-Y	50	130	230	310	50	130	230	310	50	130	230	310					30	50	110	140	210	230	290	320
9	Flexión	X-X													40	130	220	310								
		Y-Y													40	130	220	310								
	Cortante	X-X													40	120	220	300								
		Y-Y													40	130	220	310								
10	Flexión	X-X	40	130	220	310	40	130	220	310	40	130	220	310	40	130	220	310								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	150	220	330								
	Cortante	X-X	40	130	220	310	40	130	220	310	40	140	220	320	40	130	220	310								
		Y-Y	40	140	220	320	40	140	220	320	40	150	220	330	40	150	220	330								
11	Flexión	X-X	60	130	240	310	50	120	230	300	40	120	220	300	50	120	230	300								
		Y-Y	50	140	230	320	40	140	220	320	50	150	230	330	50	150	230	330								
	Cortante	X-X	50	140	230	320	50	130	230	310	40	120	220	300	50	130	230	310								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	50	150	230	330								
12	Flexión	X-X	50	130	230	310	50	130	230	310	50	130	230	310	50	130	230	310								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
	Cortante	X-X	60	130	240	310	60	130	240	310	60	130	240	310	60	130	240	310								
		Y-Y	40	150	220	330	40	150	220	330	40	150	220	330	40	150	220	330								

(*): No existe un valor pico para considerar un ángulo de incidencia critico

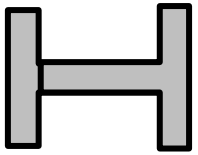
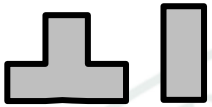
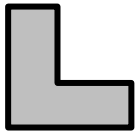
Para 8 pisos:

COLUMNA			Tipo "H"				Tipo "T" o Rect. Interior				Tipo "C"				Tipo "T" o Rect. Exterior				Tipo "L"							
Modelo	**Momento/ Fuerza**	**Eje**	**ANGULO DE INCIDENCIA (GRADOS)**																							
			I	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**I**	**II**	**II**	**III**	**III**	**IV**	**IV**
1	Flexión	X-X	*	110	*	290	10	110	190	290	10	110	190	290					*	70	150	*	*	250	330	*
		Y-Y	20	110	200	290	20	110	200	290	20	110	200	290					0	*	*	*	180	*	*	*
	Cortante	X-X	20	110	200	290	20	110	200	290	20	110	200	290					*	80	140	*	*	260	320	*
		Y-Y	20	110	200	290	20	110	200	290	20	110	200	290					10	*	*	*	190	*	*	*
2	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	100	*	280								
		Y-Y	20	100	200	280	20	100	200	280	20	100	200	280	20	100	200	280								
	Cortante	X-X	*	110	*	290	*	100	*	280	*	110	*	290	*	110	*	290								
		Y-Y	20	110	200	290	20	110	200	290	20	110	200	290	20	110	200	290								
3	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	100	*	280								
		Y-Y	20	*	200	*	20	*	200	*	20	*	200	*	20	*	200	*								
	Cortante	X-X	*	110	*	290	*	100	*	280	*	110	*	290	*	100	*	280								
		Y-Y	20	*	200	*	20	*	200	*	20	*	200	*	20	*	200	*								
4	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	100	*	280								
		Y-Y	30	130	210	310	30	130	210	310	30	130	210	310	30	130	210	310								
	Cortante	X-X	*	130	*	310	*	100	*	280	*	130	*	310	*	120	*	300								
		Y-Y	30	130	210	310	30	130	210	310	30	130	210	310	30	130	210	310								
5	Flexión	X-X	*	100	*	280	*	100	*	280	*	100	*	280	*	100	*	280								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
	Cortante	X-X	*	130	*	310	*	100	*	280	*	130	*	310	*	100	*	280								
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320	40	140	220	320								
6	Flexión	X-X	10	110	190	290	20	100	200	280	*	100	*	280					*	70	150	*	*	250	330	*
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320					*	60	*	170	*	240	*	350
	Cortante	X-X	50	100	230	280	10	100	190	280	*	100	*	280					*	80	140	*	*	260	320	*
		Y-Y	40	140	220	320	40	140	220	320	40	140	220	320					20	60	130	*	200	240	310	*
7	Flexión	X-X	20	110	200	290	10	110	190	290	10	110	190	290					*	60	150	*	*	240	330	*

		Y-Y	10	140	190	320	10	140	190	320	10	140	190	320					*	60	120	170	*	240	300	350
	Cortante	X-X	20	110	200	290	10	110	190	290	10	110	190	290					*	70	140	*	*	250	320	*
		Y-Y	40	140	220	320	40	130	220	310	40	140	220	320					0	60	130	*	180	240	310	*
8	Flexión	X-X	20	110	200	290	10	110	190	290	10	110	190	290					*	70	150	*	*	250	330	*
		Y-Y	20	110	200	290	10	110	190	290	20	110	200	290					0	*	*	*	180	*	*	*
	Cortante	X-X	20	110	200	290	20	110	200	290	10	110	190	290					*	80	140	*	*	260	320	*
		Y-Y	20	140	200	320	20	*	200	*	20	140	200	320					0	*	*	*	180	*	*	*
9	Flexión	X-X													30	120	210	300								
		Y-Y													30	110	210	290								
	Cortante	X-X													30	*	210	*								
		Y-Y													10	90	190	270								
10	Flexión	X-X	40	110	220	290	40	120	220	300	40	100	220	280	40	110	220	290								
		Y-Y	60	170	240	350	60	170	240	350	60	170	240	350	60	160	240	340								
	Cortante	X-X	40	120	220	300	40	120	220	300	40	100	220	280	40	110	220	290								
		Y-Y	60	170	240	350	60	170	240	350	50	160	230	340	60	160	240	340								
11	Flexión	X-X	50	130	230	310	50	120	230	300	*	120	*	300	*	120	*	300								
		Y-Y	60	*	240	*	40	140	220	320	60	*	240	*	60	*	240	*								
	Cortante	X-X	50	*	230	*	50	*	230	*	*	120	*	300	50	*	230	*								
		Y-Y	60	*	240	*	60	140	240	320	60	*	240	*	70	*	250	*								
12	Flexión	X-X	40	110	220	290	40	120	220	300	40	110	220	290	40	110	220	290								
		Y-Y	30	130	210	310	30	130	210	310	30	130	210	310	30	130	210	310								
	Cortante	X-X	40	120	220	300	40	120	220	300	40	120	220	300	40	120	220	300								
		Y-Y	30	130	210	310	30	130	210	310	30	130	210	310	30	130	210	310								

(*): No existe un valor pico para considerar un ángulo de incidencia critico

Para 12 pisos:

COLUMNA	Tipo "H"	Tipo "T" o Rect. Interior	Tipo "C"	Tipo "T" o Rect. Exterior	Tipo "L"
					

Modelo	Momento/ Fuerza	Eje	ANGULO DE INCIDENCIA (GRADOS)																							
			I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	I	II	II	III	III	IV	IV
1	Flexión	X-X	110	150	290	330	100	150	280	330	110	150	290	330					*	80	110	150	*	260	290	330
		Y-Y	20	60	200	240	20	60	200	240	20	60	200	240					0	40	80	*	180	220	260	*
	Cortante	X-X	100	150	280	330	100	150	280	330	100	150	280	330					0	20	80	130	180	200	260	310
		Y-Y	*	60	*	240	60	*	240	*	60	*	240	*					20	40	70	110	200	220	250	290
2	Flexión	X-X	110	160	290	340	20	160	200	340	110	160	290	340	20	170	200	350								
		Y-Y	60	*	240	*	60	*	240	*	60	*	240	*	60	*	240	*								
	Cortante	X-X	*	170	*	350	20	160	200	340	*	170	*	350	*	170	*	350								
		Y-Y	60	*	240	*	60	*	240	*	60	*	240	*	60	*	240	*								
3	Flexión	X-X	110	160	290	340	20	160	200	340	110	160	290	340	20	170	200	350								
		Y-Y	20	70	200	250	20	70	200	250	20	70	200	250	20	70	200	250								
	Cortante	X-X	0	*	180	*	20	160	200	340	0	*	180	*	20	170	200	350								
		Y-Y	20	70	200	250	20	70	200	250	70	*	250	*	20	70	200	250								
4	Flexión	X-X	20	110	200	290	20	170	200	350	20	110	200	290	20	170	200	350								
		Y-Y	20	70	200	250	20	70	200	250	20	70	200	250	20	70	200	250								
	Cortante	X-X	20	170	200	350	20	160	200	340	20	170	200	350	20	170	200	350								
		Y-Y	20	70	200	250	20	70	200	250	20	70	200	250	20	170	200	350								
5	Flexión	X-X	20	110	200	290	20	170	200	350	20	110	200	290	20	170	200	350								
		Y-Y	30	130	210	310	30	130	210	310	30	130	210	310	30	130	210	310								
	Cortante	X-X	20	170	200	350	20	170	200	350	20	170	200	350	20	170	200	350								
		Y-Y	40	130	220	310	40	120	220	300	40	120	220	300	40	120	220	300								
6	Flexión	X-X	0	110	180	290	0	100	180	280	0	100	180	280					20	40	80	150	200	220	260	330
		Y-Y	30	100	210	280	30	100	210	280	30	100	210	280					50	90	120	170	230	270	300	350
	Cortante	X-X	10	100	190	280	10	100	190	280	10	100	190	280					*	40	90	160	*	220	270	340
		Y-Y	40	110	220	290	40	100	220	280	40	100	220	280					30	60	90	120	210	240	270	300
7	Flexión	X-X	110	160	290	340	100	160	280	340	100	160	280	340					20	40	80	150	200	220	260	330

		Y-Y	20	70	200	250	20	70	200	250	40	70	220	250					20	50	90	120	200	230	270	300
	Cortante	X-X	10	110	190	290	0	100	180	280	0	100	180	280					*	30	90	160	*	210	270	340
		Y-Y	40	100	220	280	40	100	220	280	40	100	220	280					30	60	90	120	210	240	270	300
8	Flexión	X-X	110	150	290	330	100	150	280	330	100	150	280	330					10	80	110	140	190	260	290	320
		Y-Y	20	60	200	240	20	60	200	240	20	60	200	240					0	20	50	80	180	200	230	260
	Cortante	X-X	0	100	180	280	0	100	180	280	0	100	180	280					0	90	120	160	180	270	300	340
		Y-Y	70	100	250	280	70	100	250	280	70	100	250	280					20	50	90	110	200	230	270	290
9	Flexión	X-X													40	*	220	*								
		Y-Y													40	130	220	310								
	Cortante	X-X													40	*	220	*								
		Y-Y													40	130	220	310								
10	Flexión	X-X	*	100	*	280	*	150	*	330	*	100	*	280	*	100	*	280								
		Y-Y	40	*	220	*	40	*	220	*	30	*	210	*	30	*	210	*								
	Cortante	X-X	*	160	*	340	*	150	*	330	*	100	*	280	*	100	*	280								
		Y-Y	40	*	220	*	40	*	220	*	30	*	210	*	30	*	210	*								
11	Flexión	X-X	*	120	*	300	*	150	*	330	*	100	*	280	*	110	*	290								
		Y-Y	40	*	220	*	40	*	220	*	40	*	220	*	40	*	220	*								
	Cortante	X-X	*	170	*	350	*	150	*	330	*	150	*	330	*	150	*	330								
		Y-Y	40	*	220	*	30	*	210	*	40	*	220	*	40	*	220	*								
12	Flexión	X-X	*	150	*	330	*	150	*	330	*	150	*	330	*	150	*	330								
		Y-Y	60	*	240	*	60	*	240	*	60	*	240	*	60	*	240	*								
	Cortante	X-X	*	150	*	330	*	150	*	330	*	150	*	330	*	150	*	330								
		Y-Y	70	*	250	*	70	*	250	*	70	*	250	*	70	*	250	*								

(*): No existe un valor pico para considerar un ángulo de incidencia critico