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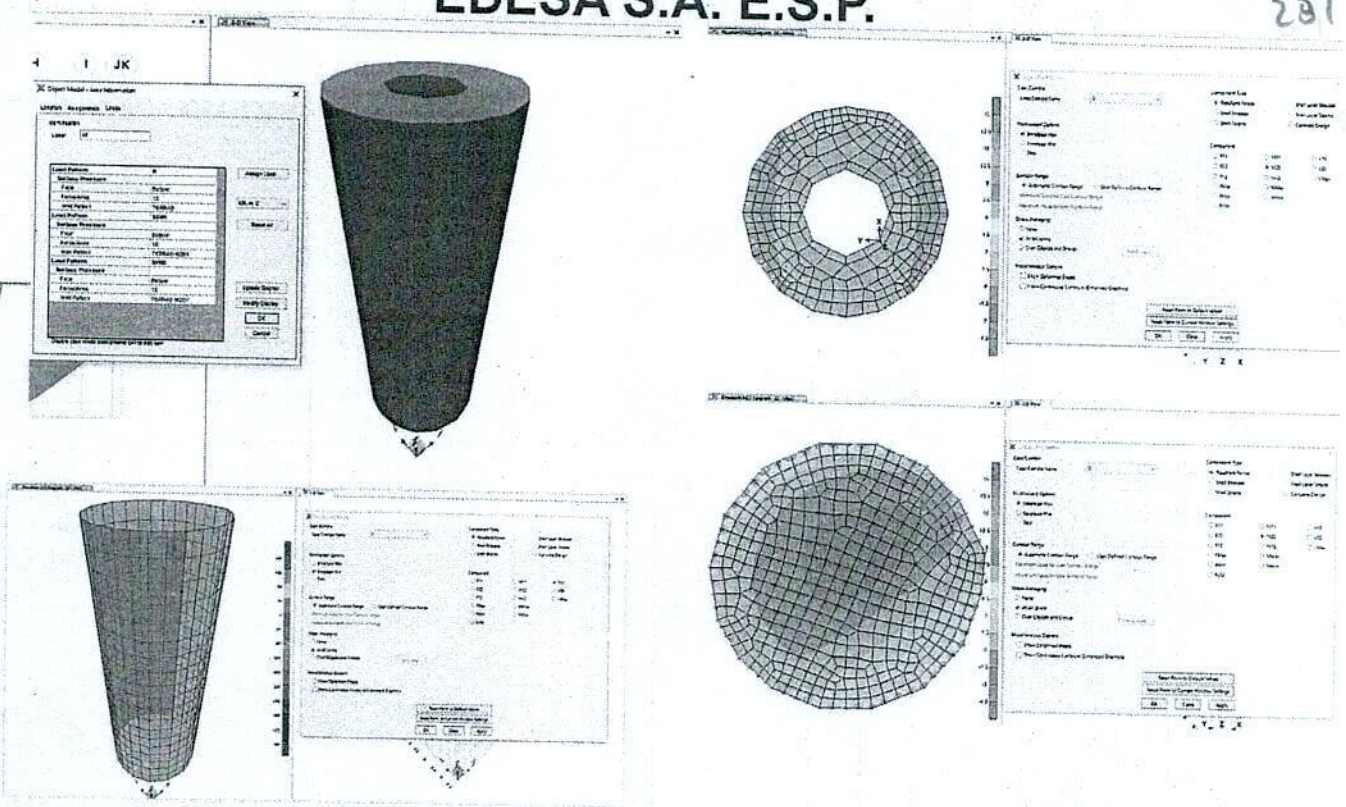

ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN, AMPLIACIÓN Y OPTIMIZACIÓN DE OBRAS DE REDES E INFRAESTRUCTURA DE AGUA POTABLE Y SANEAMIENTO BÁSICO EN LOS MUNICIPIOS DEL DEPARTAMENTO DEL META

CONTRATO No. 081 DE 2023.

SUBPROYECTO: ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN DE LA RED DE ACUEDUCTO, ALCANTARILLADO SANITARIO Y ALCANTARILLADO PLUVIAL SECTOR EL PARAÍSO DEL MUNICIPIO DE GRANADA, META.

INFORME DE DISEÑO ESTRUCTURAL
POZO DE INSPECCIÓN DE 1.20M HASTA 3M SIN CÁMARA DE CAÍDA

AQ-148-GRA3D-DES_POZO_1.20_3M_SIN_CC-V1

Julio de 2024

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PROYECTO:		
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DIRECTOR DE PROYECTO: Mauricio Cruz Gómez	**CLIENTE:** EDESA S.A. E.S.P.	**CONTRATO No:** 081 de 2023

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CUADRO DE CONTROL

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1	Emisión del documento

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SISTEMA DE GESTIÓN DE CALIDAD DE AQUADATOS	
VERSIÓN DE LA PLANTILLA	FECHA DE VIGENCIA DE LA PLANTILLA
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1 INTRODUCCIÓN

Diseño y calculo estructural de un pozo de inspección de diámetro interno 1.20 metros hasta tres metros de profundidad sin cámara de caída en concreto reforzado, localizado en la zona de expansión de la urbanización del Paraíso del casco urbano del municipio de Granada – Dpto. del Meta zona de amenaza sísmica Alta con los siguientes parámetros sísmicos.

Perfil de Suelo=D (verificar estudio de suelos)
Aa= 0.20
Av=0.25
Fa=1.15
Fv=1.80
I=1.50 (Coeficiente de Importancia)

El sistema estructural utilizado para resistir tanto las cargas verticales y laterales consiste en una sección rectangular en planta conformada por muros de perímetro (muros de concreto reforzado), estos a su vez funcionan monolíticamente con una placa superior y una inferior apoyada directamente sobre el terreno, la cual le trasmite las presiones dentro de la capacidad admisible según estudio de suelos.

Se siguieron los lineamientos de los Títulos A, B, C y D de la Norma Colombiana de Diseño y Construcción SismoResistente NSR-10 (sus decretos reglamentarios 926 del 19 de marzo de 2010, 2525 del 13 de Julio de 2010, 092 del 17 de enero de 2011, 340 del 13 de febrero de 2012 y 945 del 05 de junio de 2017) y AIS 180-13 Recomendaciones para requisitos sísmicos de Estructuras diferentes de edificaciones.

2 MATERIALES Y COEFICIENTES DE SEGURIDAD

MATERIALES

Concretos:

- Concreto de limpieza: f´c=11MPa.
- Concreto para Muros y losas f´c=28Mpa.

Aceros:

- Acero para barras de refuerzo $\phi \geq 3/8''$ fy=420MPa.
- Acero para barras de refuerzo $\phi \leq 3/8''$ fy=240MPa.

Módulo de elasticidad para el concreto: E =24,870MPa.
Módulo de elasticidad para el acero: E = 200,000MPa.

COEFICIENTES DE SEGURIDAD PARA DISEÑO DE CONCRETO

- Secciones controladas por tracción $\phi = 0.90$
- Secciones controladas por compresión
  - Elementos con refuerzo en espiral según C.10.9.3 $\phi = 0.75$
  - Otros elementos reforzados $\phi = 0.65$
- Cortante y torsión $\phi = 0.75$
- Aplastamiento en el concreto (excepto para anclajes de postensado y modelos puntal – tensor) $\phi = 0.65$

COEFICIENTES DE SEGURIDAD PARA DISEÑO DE ACERO

- Fluencia por tensión sobre el área bruta $\phi t = 0.90$
- Rotura por tensión sobre el área neta $\phi t = 0.75$
- Rotura por cortante sobre el área neta efectiva $\phi t = 0.75$
- Flexión $\phi b = 0.90$
- Cortante $\phi v = 0.75$
- Torsión $\phi t = 0.75$

3 CASOS DE CARGA

La estructura se diseñará para resistir las cargas que estarán presentes a lo largo de su vida útil, para esto se considera 1 caso:

1) Estructura considerando el empuje lateral del terreno.

3.1 CARGAS

D = Carga muerta.
L = Carga viva.
H = Carga estática por empuje de tierras.
SX (Tierras) = Fuerzas sismicas por tierras en X
SY (Tierras) = Fuerzas sismicas por tierras en Y

4 PARÁMETROS SÍSMICOS Y DATOS GEOTECNICOS

MUNICIPIO: GRANADA - META

ZONA DE AMENAZA SÍSMICA: ALTA

COEFICIENTE DE IMPORTANCIA: I=1.50

Aa = 0.20 (Coeficiente de aceleración pico efectiva)

Av = 0.25 (Coeficiente de velocidad pico efectiva)

Fa = 1.15 (Coeficiente de aceleracion periodos cortos)

Fv = 1.80 (Coeficiente de aceleración periodos intermedios)

Perfil de Suelo: D

σ = 120 kN/m2 (Presión admisible)

ϕ suelo = 33 (Angulo de fricción)

γ = 19.96 kN/m^3 (Peso unitario del terreno) (promedio)

5 EVALUACIÓN DE CARGAS

5.1 CÁLCULO DE PRESIÓN DE TIERRAS

CÁLCULO DE PRESION DE TIERRAS

PROPIEDADES DE LOS MATERIALES/DATOS INICIALES

f'c=	28000	kN/m2	
fy=	420000	kN/m2	
ϕsuelo=	33	°	(Angulo de friccion del terreno)
Ka=	0.295		
γ=	19.96	kN/m3	
Es=sobrecarga=	3.00	kN/m2	(Sobrecarga)
Aa=	0.35		(Aceleracion pico del terreno)
K=	3.39		(Coeficiente de presion pasiva)
Kv=	0.00		(Coeficiente de aceleracion sismica vertical)
Kh=	0.175		(Coeficiente de aceleracion sismica horizontal)
δ=	16.50	°	(Angulo de friccion en la interfase entre muro y relleno)
i=	10.00	°	(Angulo de la pendiente del relleno)
β=	0.00	°	(Inclinacion de la superficie del terreno detras de la cara del muro)
θ=	9.93	°	(Inclinacion del muro respecto a la horizontal)
KAE=	0.46		(Coeficiente sismico de presion activa)

PROPIEDADES GEOMETRICAS

H expuesta del muro a tierras (Crítica)=	5.08	m
Espesor losa fondo =	0.60	m
H Libre Muro (Crítica)=	4.48	m
Espesor Muro=	0.45	m

EMPUJES Y MOMENTOS

Empuje Estatico			
Ea=	75.93	kN	
Mvol1=	128.57	kN-m	
Empuje Por Sobrecarga			
hs=	0.15		
Es=	4.49	kN	
Mvol2=	11.41	kN-m	
Empuje Dinamico - (Mononobe Okabe)			
h Muro=	4.48	m	
e muro=	0.20	m	
i=	10	0.1745	rad
δ=	16.5	0.2880	rad
Ø=	33	0.576	rad
Aa=	0.35		
Kh=	0.18		
Kv=	0.00		
θ=	9.93	0.1732	rad
β=	0.00	0.0000	rad
Cos2(Ø-θ-β)=	0.85		
Cos(δ+β+θ)=	0.90		
Sen(Ø+δ)=	0.76		
Sen(Ø-θ-i)=	0.23		
Cos(i-β)=	0.98		
Cos(θ)=	0.99		
Cos2(β)=	1.00		

$$\sqrt{\frac{Sen(phi+delta)*Sen(Ø-θ-i)}{Cos(δ+β+θ)*Cos(i-β)}} = 0.442$$

Ψ=	2.08
KAE=	0.462
EAE=	118.91
ΔEe=	42.98 **kN**
Mvol3=	145.55 **kN-m**

ANALISIS DE CARGAS

E suelo=	59.05	kN
M suelo=	88.18	kN-m
E sobrecarga=	3.96	kN
M sobrecarga=	8.88	kN-m
E dinamico=	33.43	kN
M dinamico=	99.74	kN-m
Σ Empujes=	**96.44**	kN

MÁXIMA PRESIÓN ESTÁTICA DE TIERRAS			DATOS PARA ETABS	
h max (m)	Pw (kN/m2)	Ew (kN/m)	C=	-5.88
5.08	29.89	75.9	D=	29.89

MÁXIMA PRESIÓN DINÁMICA DE TIERRAS			DATOS PARA ETABS	
h max (m)	Pw (kN/m2)	Ew (kN/m)	C=	-3.33
5.08	16.92	42.98	D=	16.92

pw = Presión de tierras

Ew = Fuerza resultante

γt =	19.96	kN/m3
Ka=	0.295	
KAE=	0.462	Coeficiente de empuje TOTAL (Dinámico + Estático)
KAE - Ka=	0.167	Coeficiente de empuje dinámico

6 COMBINACIONES DE CARGA

COMBINACIONES DE CARGA BÁSICAS PARA DISEÑO DE ELEMENTOS

	D	L	F	H	S.X (HD)	S.Y. (HD)
COMB1	1.40					
COMB2	1.20	+ 1.60		+ 1.60		
COMB3	1.20	+ 1.00				
COMB4	1.20	+ 1.00		+ 1.60	+ 1.00	
COMB5	1.20	+ 1.00		+ 1.60		+ 1.00
COMB6	0.90			+ 1.60		
COMB7	0.90			+ 1.60	+ 1.00	
COMB8	0.90			+ 1.60		+ 1.00

D	=	*Carga Muerta*
L	=	*Carga Viva*
H	=	*Carga estatica de Tierras*
F	=	*Carga estatica de Fluido*
S.X. (HD)	=	*Fuerzas Sismicas por Tierras en X*
S.Y. (HD)	=	*Fuerzas Sismicas por Tierras en Y*

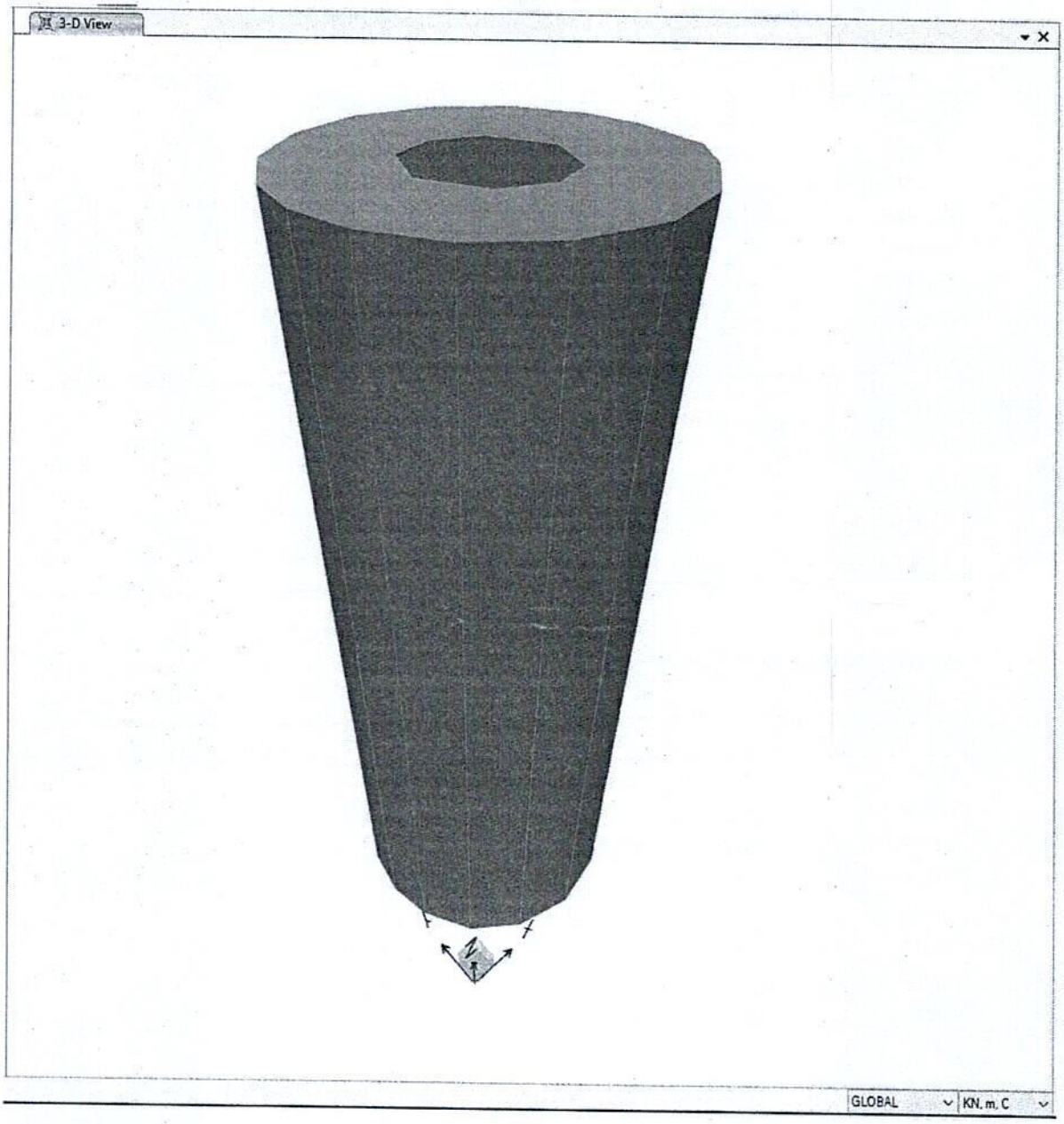
COMBINACIONES DE CARGA DE SERVICIO

	D	L	F	H	S.X (HD)	S.Y. (HD)
SERV1	1.00	+ 1.00		+ 1.00		
SERV2	1.00			+ 1.00		
SERV3	1.00	0.75				
SERV4	1.00			+ 1.00	+ 0.70	
SERV5	1.00			+ 1.00		+ 0.70
SERV6	1.00	+ 0.75		+ 1.00		
SERV7	1.00	+ 0.75		+ 1.00	+ 0.53	
SERV8	1.00	+ 0.75		+ 1.00		+ 0.53
SERV9	0.60			+ 1.00		
SERV10	0.60			+ 1.00	+ 0.70	
SERV11	0.60			+ 1.00		+ 0.70

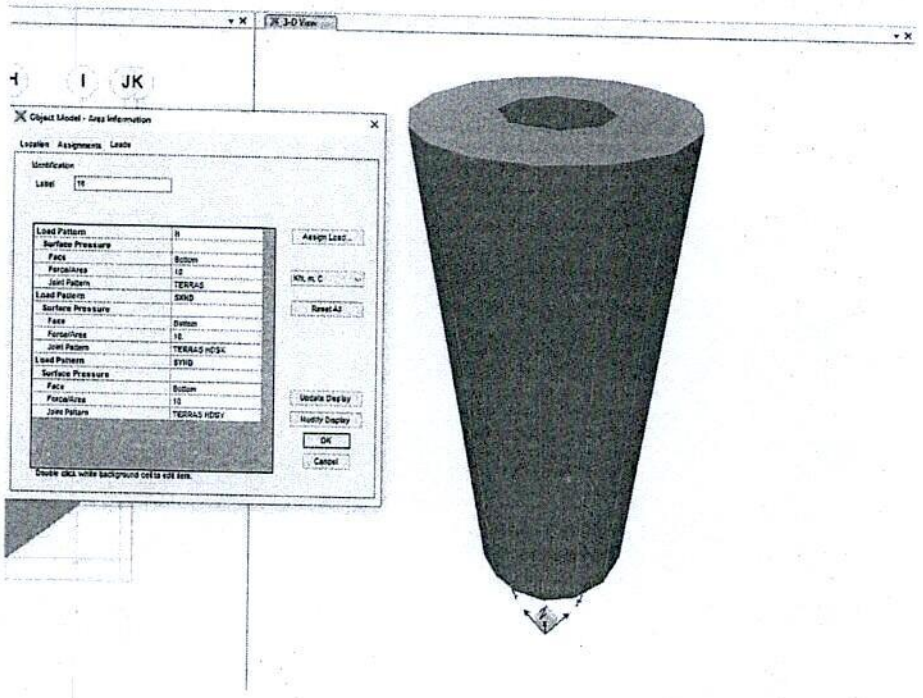
D	=	*Carga Muerta*
L	=	*Carga Viva*
H	=	*Carga estatica de Tierras*
F	=	*Carga estatica de Fluido*
S.X. (HD)	=	*Fuerzas Sismicas por Tierras en X*
S.Y. (HD)	=	*Fuerzas Sismicas por Tierras en Y*

7 MODELO MATEMÁTICO

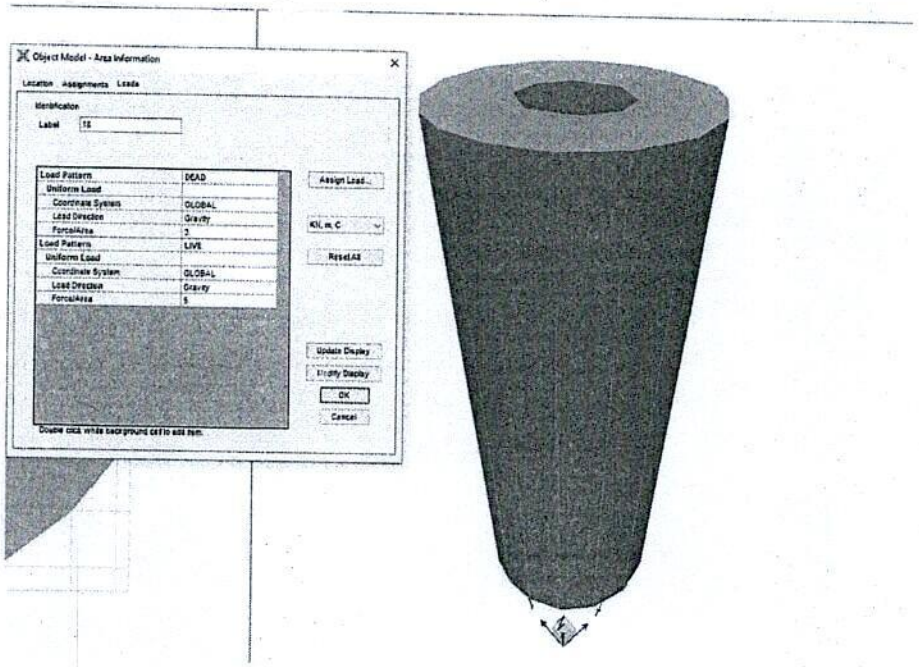
(Los datos de entrada y de salida del modelo matemático se encuentran al final del documento)



7.1 VISTA 3D



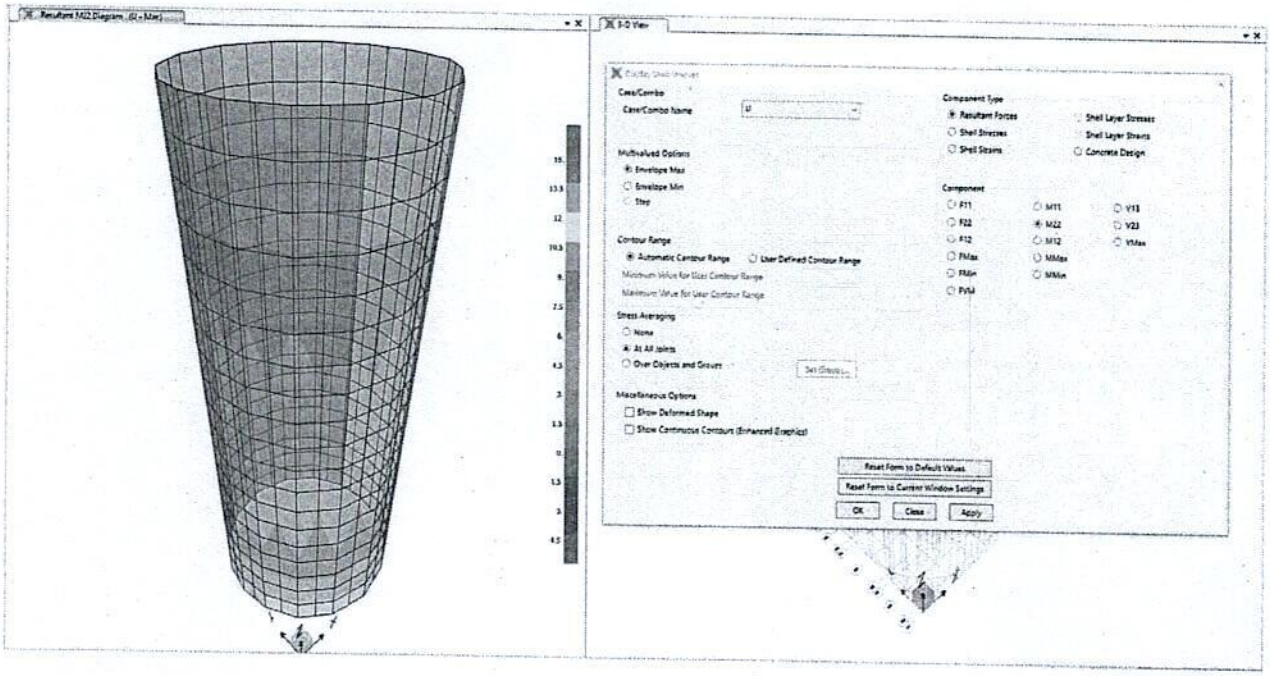
7.2 CARGAS DE TIERRAS APLICADAS A MUROS



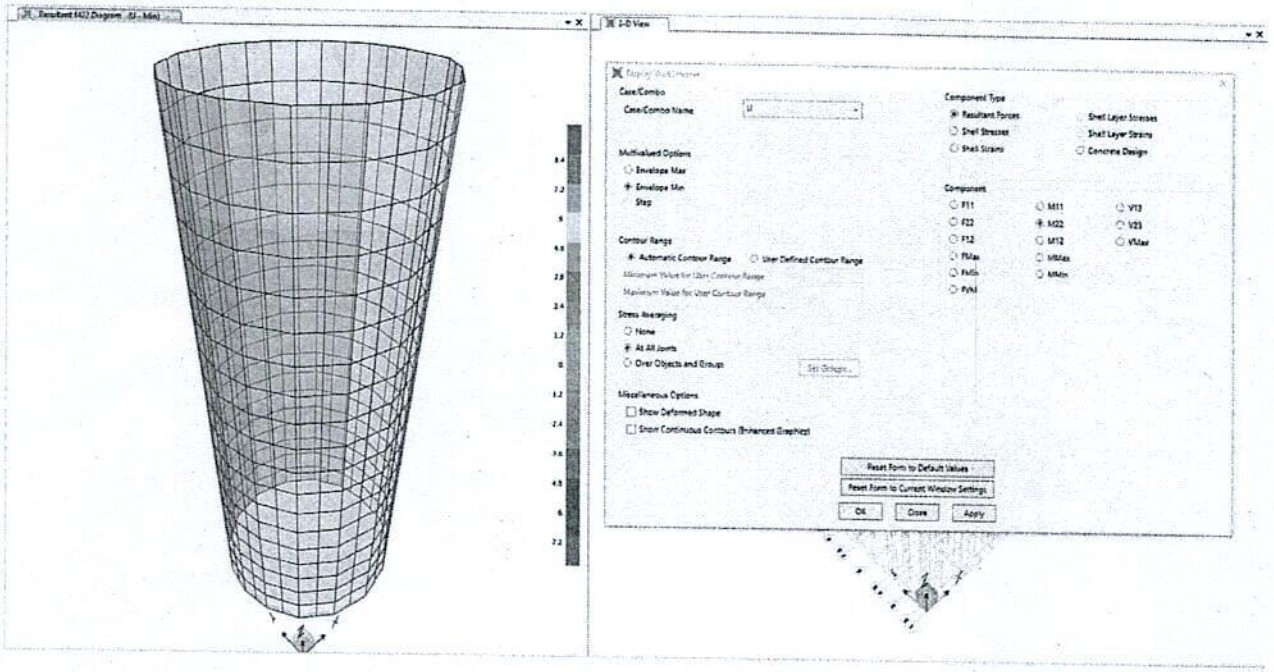
7.3 CARGAS APLICADAS SOBRE LOSAS

8 DISEÑO DE MUROS

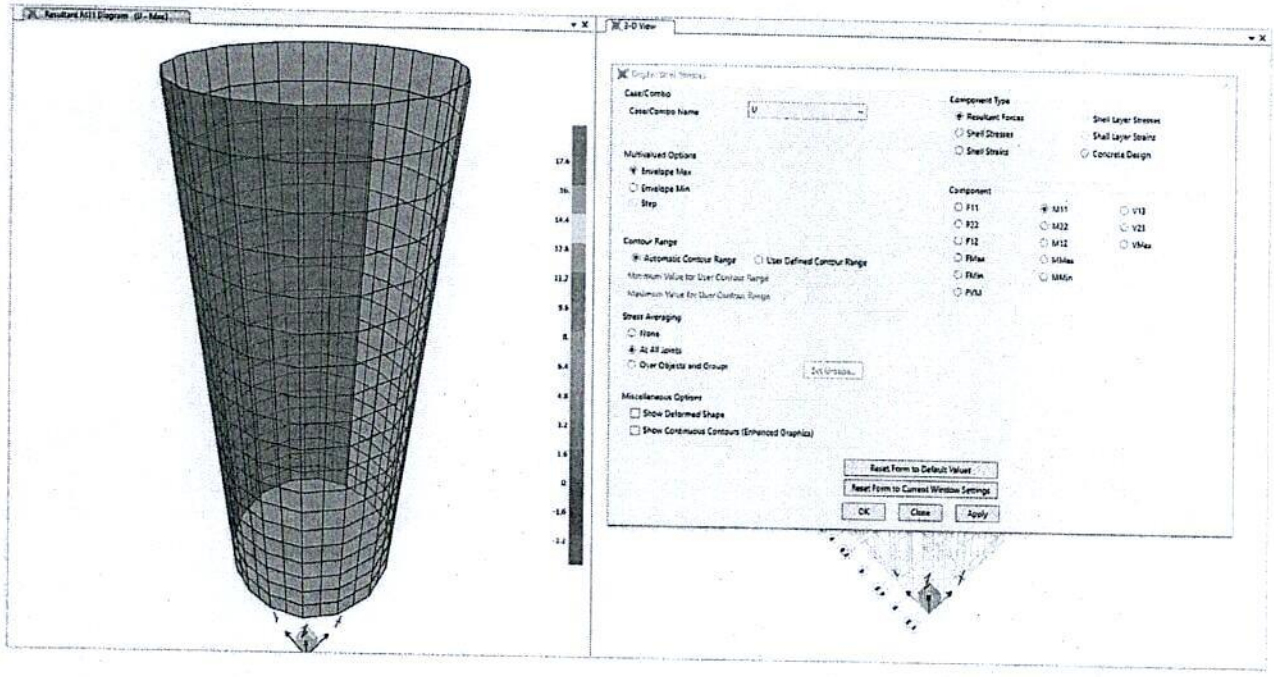
8.1 MURO TIPICO



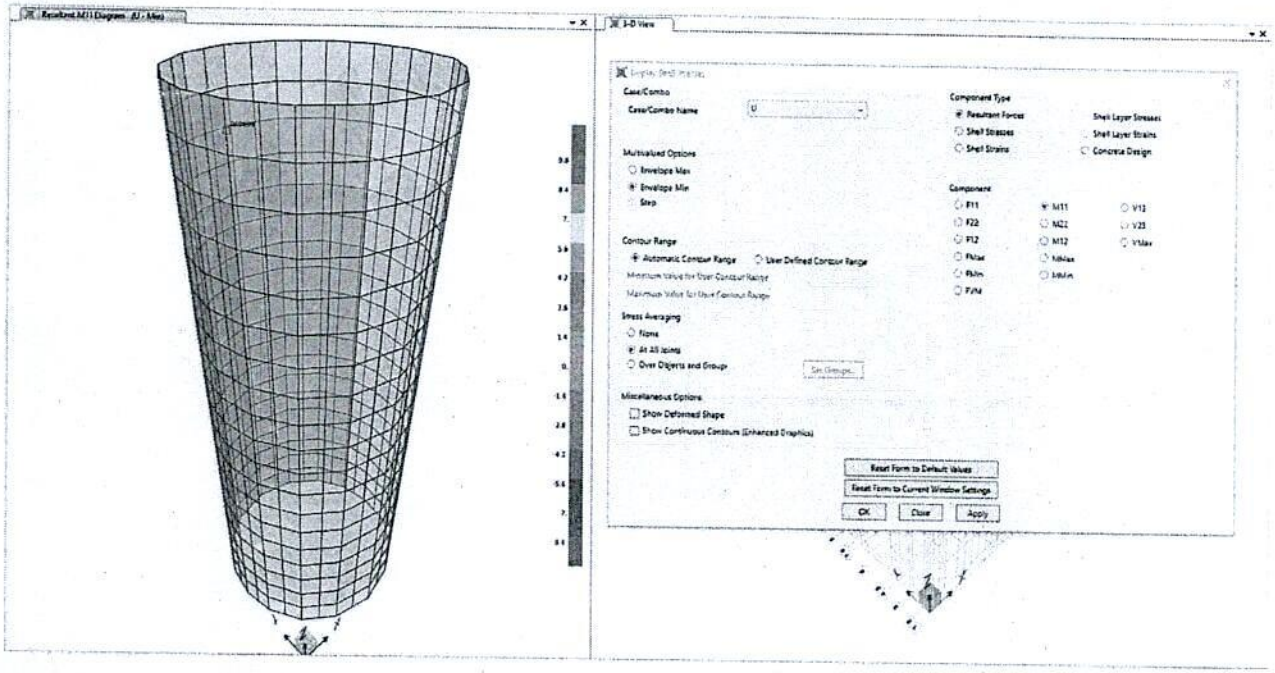
MOMENTOS (M22) MAX. COMB. ENVOLVENTE



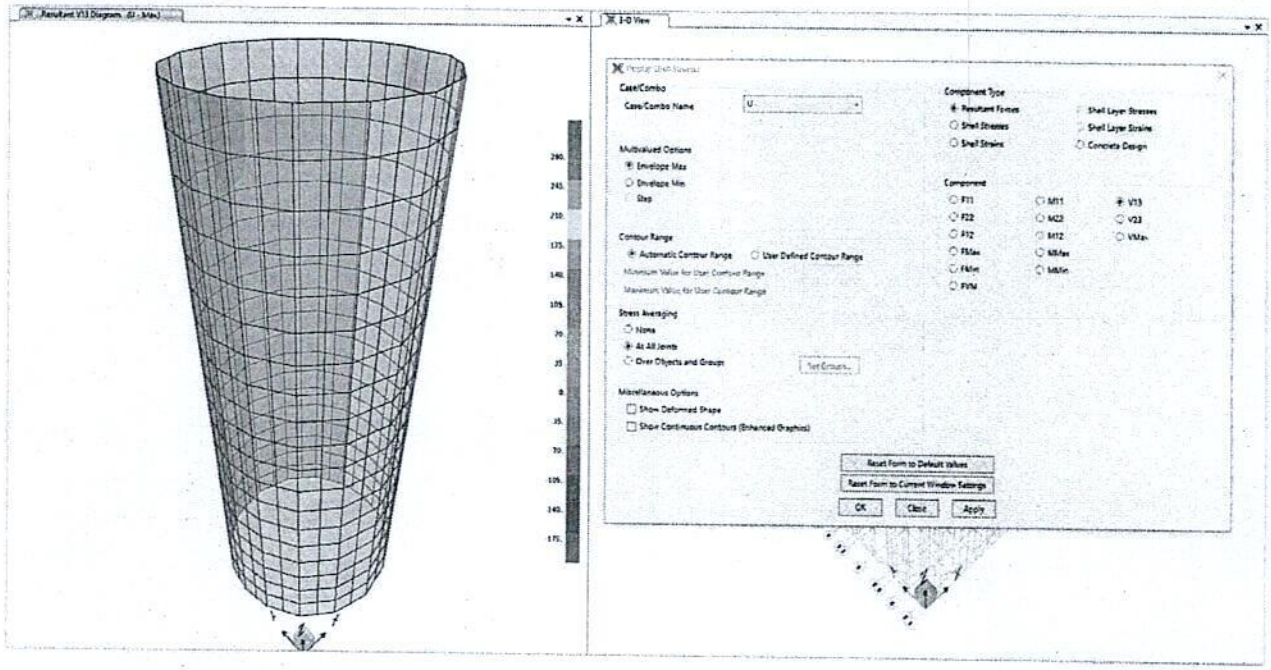
MOMENTOS (M22) MIN. COMB. ENVOLVENTE



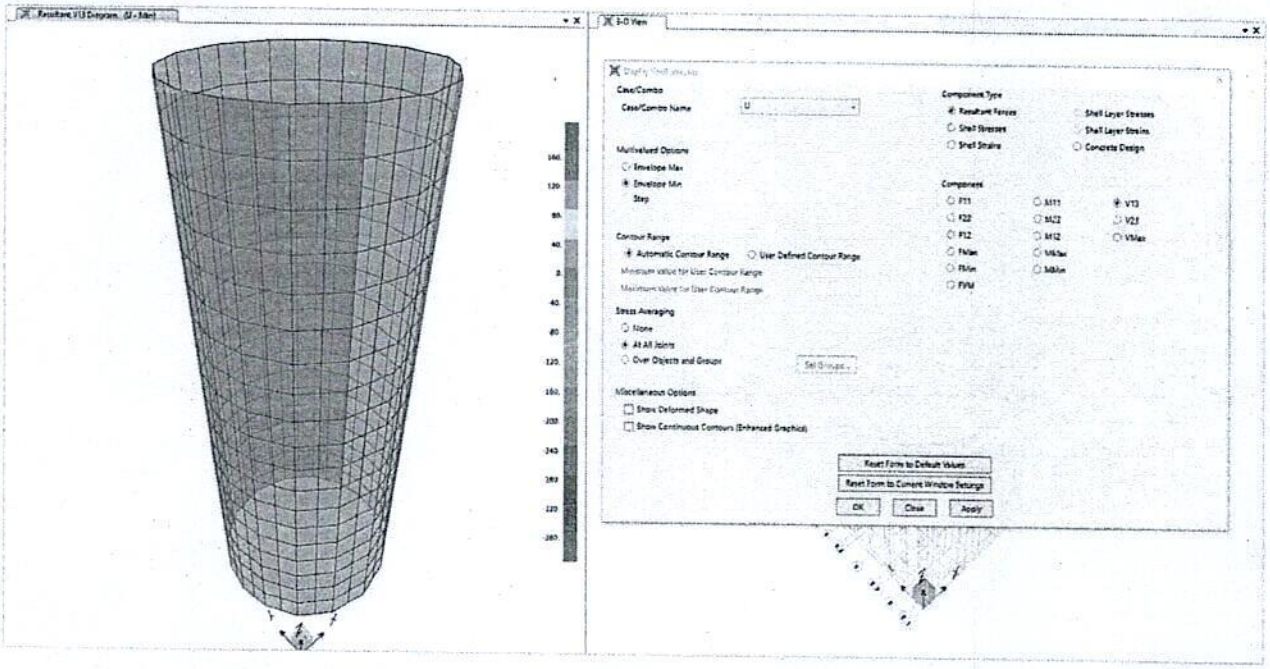
MOMENTOS (M11) MAX. COMB. ENVOLVENTE



MOMENTOS (M11) MIN. COMB. ENVOLVENTE



CORTANTES (V13) MAX ABS. COMB. ENVOLVENTE



CORTANTES (V23) MAX. ABS. COMB. ENVOLVENTE

RESUMEN DE SOLICITACIONES DEL MODELADO MUROS

MUROS TIPO e=20cm

MOMENTOS	Momento 22 Ref. vertical (KN.m)		Momento 11 Ref. Horizontal (KN.m)	
COMB.	Interior (-)	Exterior (+)	Interior (-)	Exterior (+)
U	2.40	7.40	0.60	1.00
U (Sin E)	2.20	7.23	0.50	0.80
S (Sin E)	1.90	5.80	0.40	0.70

CORTANTES		
COMB.	V13 MAX ABS	V23 MAX ABS
U	7.00	30.00

FACTOR DE DURABILIDAD AMBIENTAL (MUROS)(REF. VERTICAL INTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Muro
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	2 kN.m	(Momento de servicio)
Mu =	2 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0016	(Cuantía de acero para Mu)
As =	169mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	750mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.148$$

$$j = 1 - \frac{k}{3} = 0.95052$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 112.71 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{55.5\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{45.3\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	56	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**113 MPa**	**<**	**120 MPa**	**OK**

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**750mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.15789$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \quad = \mathbf{2.90}$$

FACTOR DE DURABILIDAD AMBIENTAL (MUROS)(REF. VERTICAL EXTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Muro
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	5.8 kN.m	(Momento de servicio)
Mu =	7.2 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0043	(Cuantía de acero para Mu)
As =	452mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	280mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.231$$

$$j = 1 - \frac{k}{3} = 0.92304$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 132.27 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{137.7\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{112.3\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	138	<	250.0	
fs, max def =	138 MPa				

fs < fs,max	**=**	**132 MPa**	**<**	**138 MPa**	**OK**

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**280mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$$\gamma = \frac{Mu}{Ms} = 1.24655 \qquad \Phi = 0.9$$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \quad = \quad \mathbf{2.29}$$

FACTOR DE DURABILIDAD AMBIENTAL (MUROS) (REF. HORIZONTAL INTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Muro
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	0.4 kN.m	(Momento de servicio)
Mu =	0.5 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0003	(Cuantía de acero para Mu)
As =	36mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	3500mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.072$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.97609$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 107.83 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{12.1} \ \mathbf{MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{9.8} \ \mathbf{MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	12	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**108 MPa**	**<**	**120 MPa**	**OK**

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**3500mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.25$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.80$$

FACTOR DE DURABILIDAD AMBIENTAL (MUROS) (REF. HORIZONTAL EXTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Muro
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	0.7 kN.m	(Momento de servicio)
Mu =	0.8 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0006	(Cuantía de acero para Mu)
As =	63mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	2000mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.094$$

$$j = 1 - \frac{k}{3} = 0.96874$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 108.65 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{21.1\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{17.2\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	21	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**109 MPa**	**<**	**120 MPa**	**OK**

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**2000mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.14286$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 3.04$$

DISEÑO DE MUROS DE CONCRETO REFORZADO

DISEÑO DE MUROS

F'C = 28.0 MPa
Fy = 420 MPa
E = 24870.1 Mpa

Recubrimiento interior: 0.075 m
Recubrimiento exterior: 0.075 m

b = 1.00 e = 0.20

d (interior)= 0.11 m
d (exterior)= 0.11 m

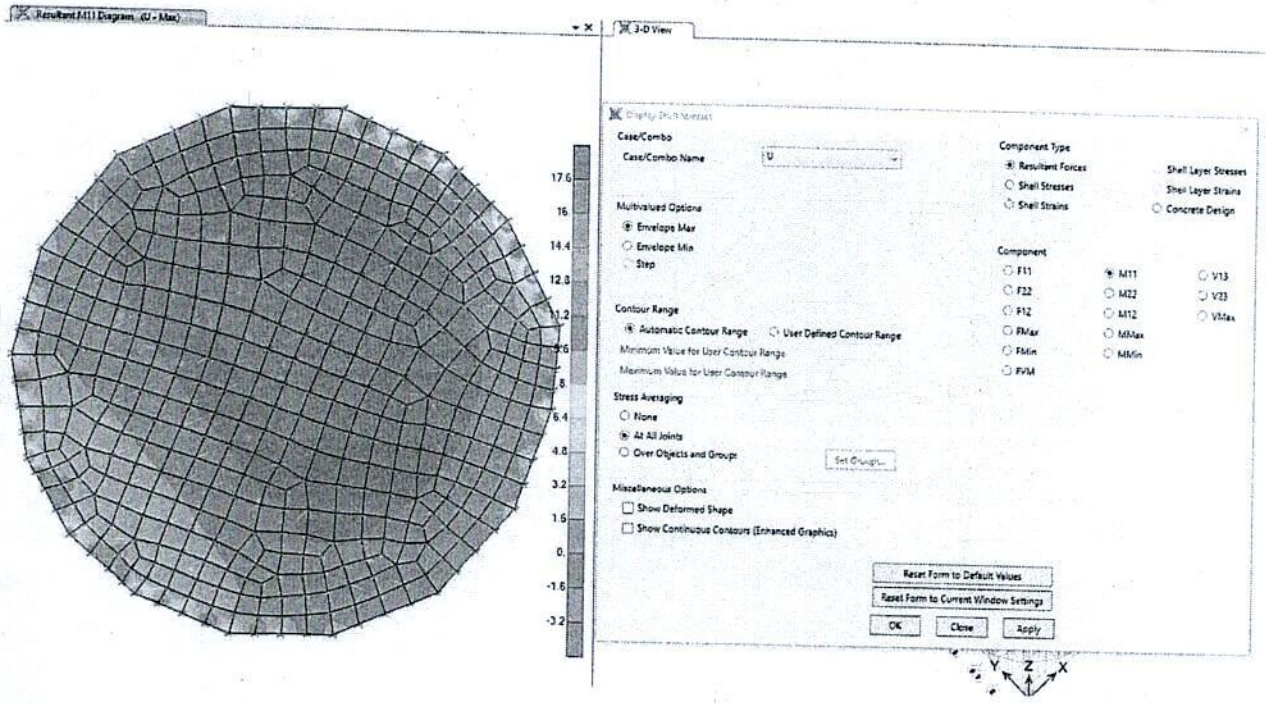
DISEÑO A FLEXIÓN

	Refuerzo vertical			Refuerzo Transversal		
	Interior		**Exterior**	**Interior**		**Exterior**
Mu (Sin E) =	1.9		5.8	0.4		0.7
Sd =	2.90		2.29	2.80		3.04
Mu (Sin E) * Sd=	**5.50**		**13.30**	**1.12**		**2.13**
Mu =	2.40		7.40	0.60		1.00
Mdef =	**5.50**		**13.30**	**1.12**		**2.13**
K =	499.151		1206.0	101.7		193.3
Ro=	0.0013		0.0033	0.0003		0.0005
Ro (Fisuración)=	0.0016		0.0043	0.0003		0.0006
Rmin=	0.0030		0.0030	0.0030		0.0030
As (cm2) =	1.69		4.52	0.36		0.63
As (min) =	1.58		1.58	1.58		1.58
As (Def) =	1.69		4.52	1.58		1.58
Refuerzo =	#4		#4	#4		#4
Separación Req.	Cda./0.76		Cda./0.29	Cda./0.82		Cda./0.82
Separación Def.	**Cda./0.20**		**Cda./0.20**	**Cda./0.20**		**Cda./0.20**

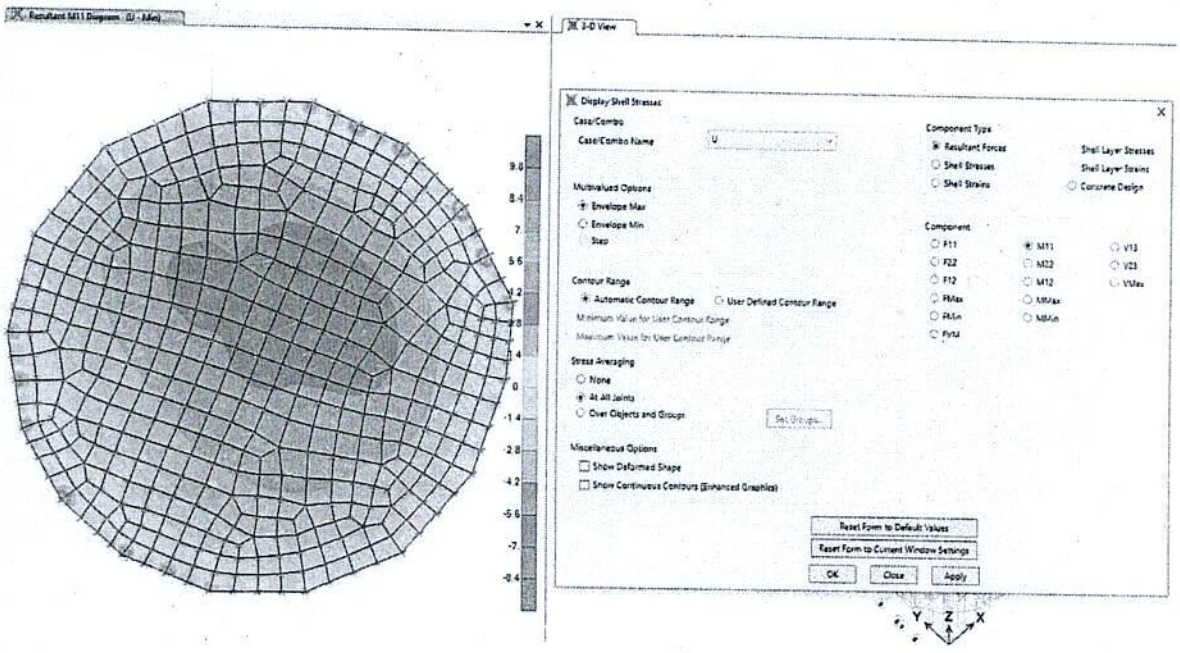
DISEÑO A CORTANTE

Vu (KN/m)=	**30.00**
VC (KN/m)=	94.45
θVN (KN/m2) =	70.8
Vu < θVc	OK

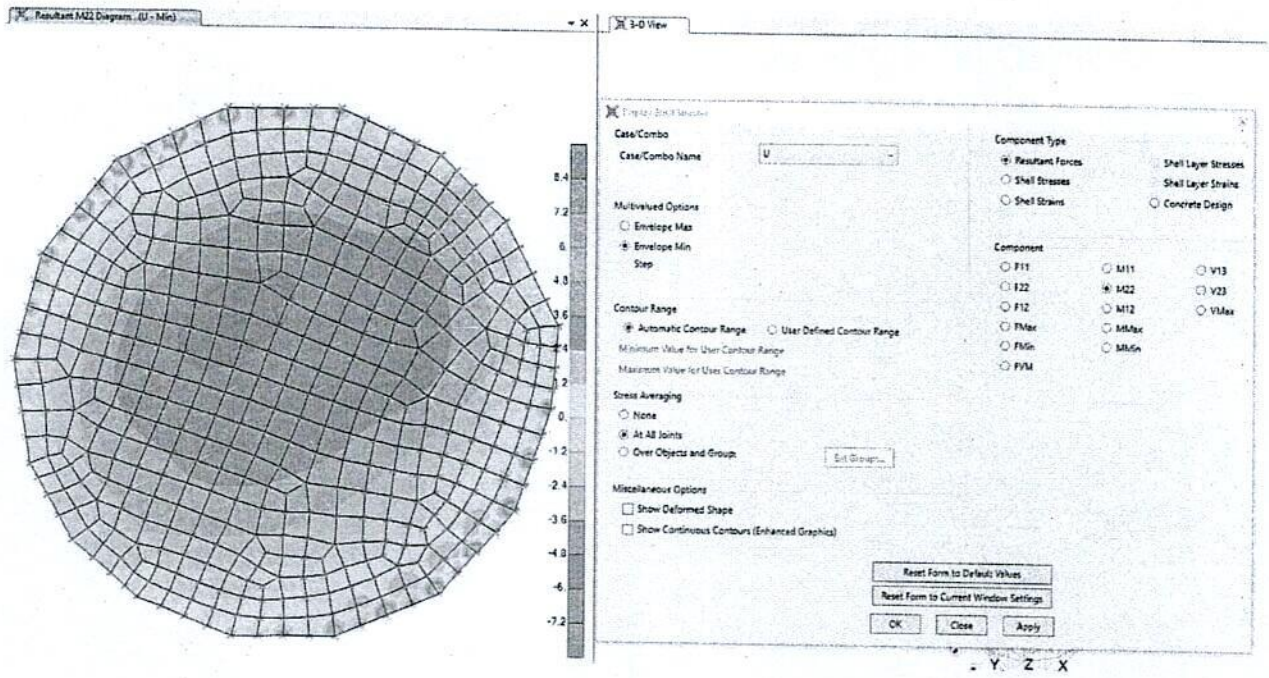
9 DISEÑO DE LOSA INFERIOR e=20cm



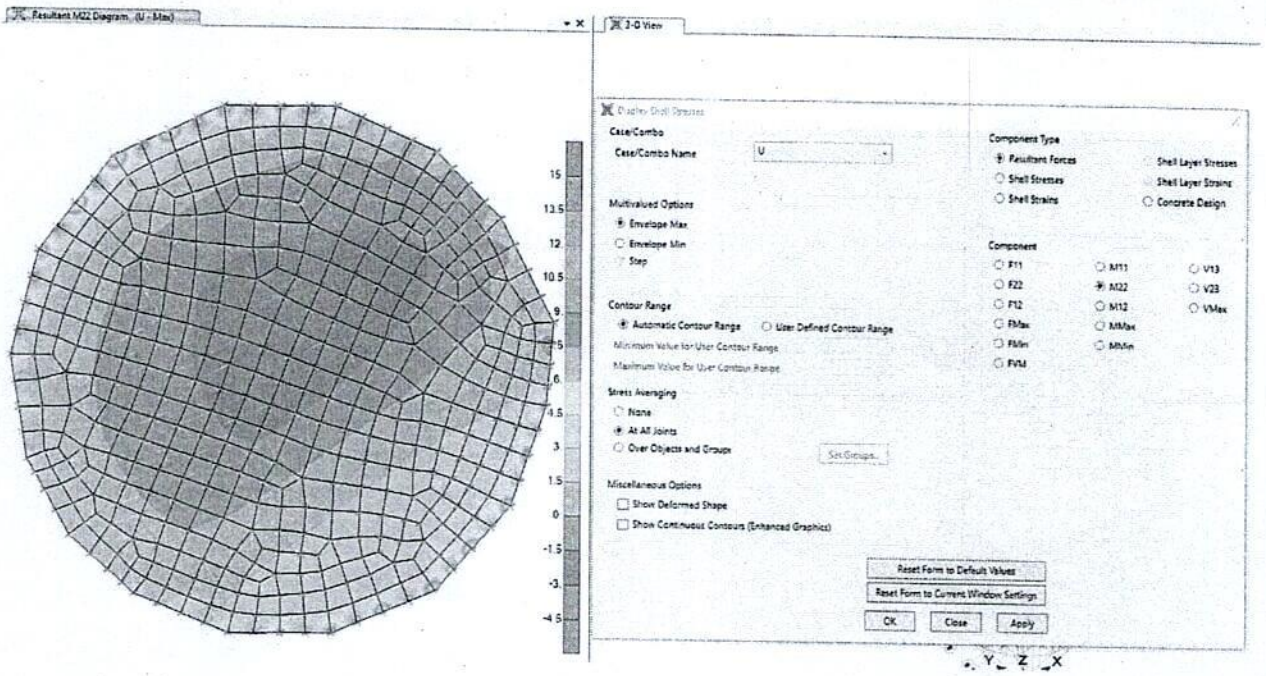
MOMENTOS (M11) MIN. COMB. ENVOLVENTE



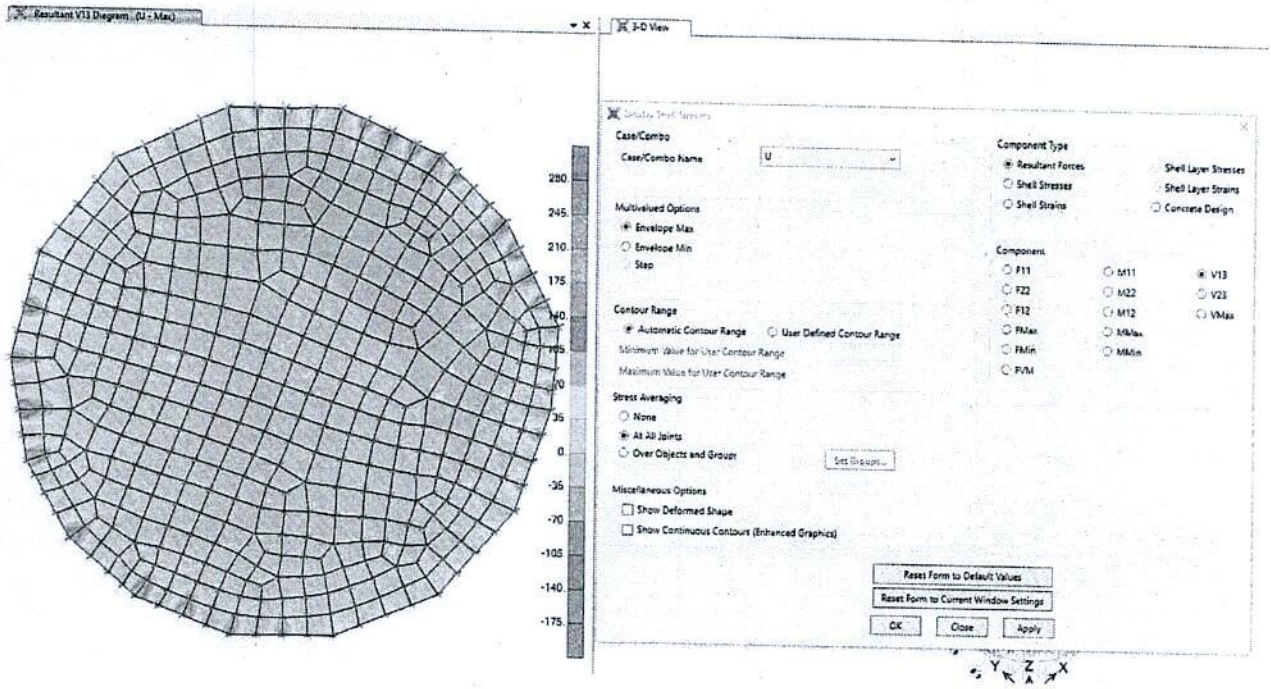
MOMENTOS (M11) MAX. COMB. ENVOLVENTE



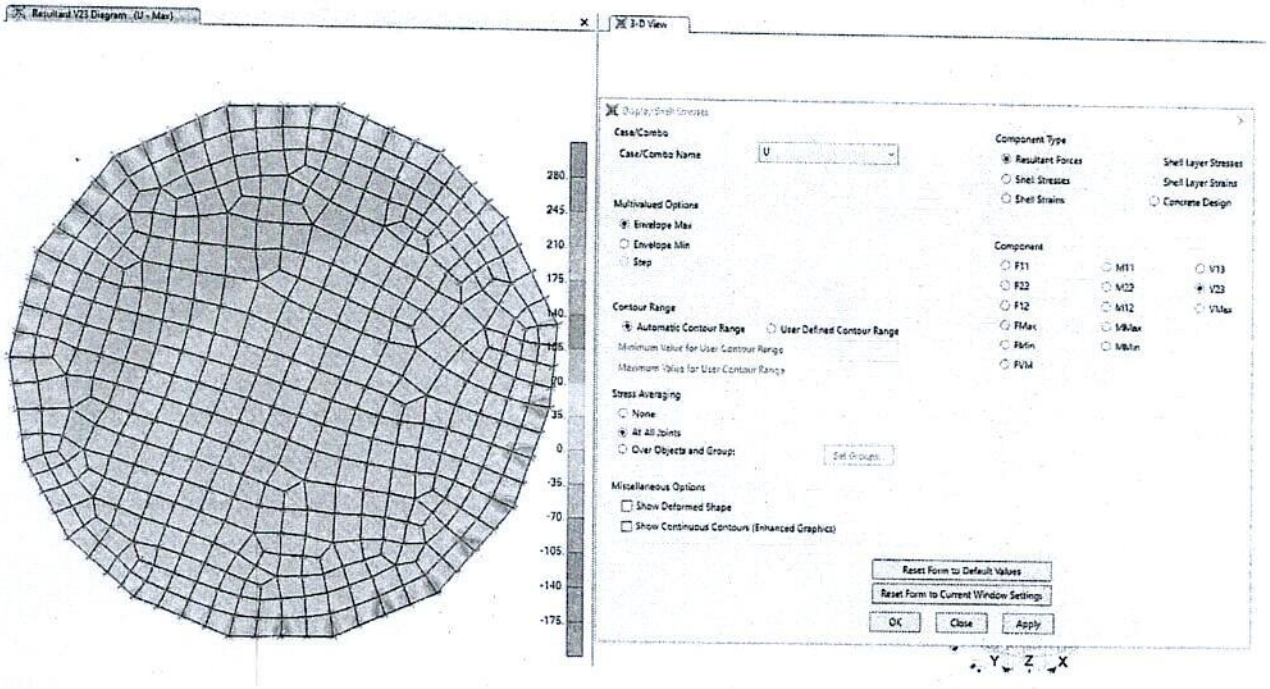
MOMENTOS (M22) MIN. COMB. ENVOLVENTE



MOMENTOS (M22) MAX. COMB. ENVOLVENTE



CORTANTES (V13) MAX. ABS. COMB. ENVOLVENTE



CORTANTES (V23) MAX. ABS. COMB. ENVOLVENTE

RESUMEN DE SOLICITACIONES DEL MODELADO EN LOSAS

LOSA				
MOMENTOS	Momento 22 Ref. Y (KN.m)		Momento 11 Ref. X (KN.m)	
COMB.	**ARRIBA (22-)**	**ABAJO (22+)**	**ARRIBA (11-)**	**ABAJO (11+)**
U	6.8	15.2	8	17.5
U (Sin E)	5.7	12.8	6.6	14.6
S (Sin E)	4.6	10.3	5	11.6

CORTANTES		
COMB.	**V13 MAX ABS**	**V23 MAX ABS**
U	70	65

FACTOR DE DURABILIDAD AMBIENTAL (REF X ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	5.0 kN.m	(Momento de servicio)
Mu =	6.6 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0040	(Cuantía de acero para Mu)
As =	422mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	300mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.224$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.92532$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 121.87 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{129.9} \ \mathbf{MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{106.0} \ \mathbf{MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs = 140 MPa Tracción directa en exposición ambiental Normal
fs = 120 MPa Tracción directa en exposición ambiental Severa

120 MPa < 130 < 250.0

fs, max def = 130 MPa

fs < fs,max = 122 MPa < 130 MPa **OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.32$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.35$$

FACTOR DE DURABILIDAD AMBIENTAL (REF X ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	11.6 kN.m	(Momento de servicio)
Mu =	14.6 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0063	(Cuantía de acero para Mu)
As =	667mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	190mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.273$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.90915$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 182.26 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{185.6 MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{151.4 MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs = 140 MPa Tracción directa en exposición ambiental Normal
fs = 120 MPa Tracción directa en exposición ambiental Severa

120 MPa < 186 < 250.0

fs, max def = 186 MPa

fs < fs,max = 182 MPa < 186 MPa **OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.25862$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 1.65$$

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	4.6 kN.m	(Momento de servicio)
Mu =	5.7 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0037	(Cuantía de acero para Mu)
As =	390mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	325mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.216$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.9279$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 121.13 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{121.3 MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{98.9 MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	121	<	250.0	
fs, max def =	121 MPa				

fs < fs,max = 121 MPa < 121 MPa OK

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.23913$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.52$$

300

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms = 10.3 kN.m (Momento de servicio)
Mu = 12.8 kN.m (Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0059	(Cuantía de acero para Mu)
As =	618mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	205mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.264$$

$$j = 1 - \frac{k}{3} = 0.91202$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 174.06 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{175.8\ MPa}$$
en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{143.5\ MPa}$$
En zonas con exposición severa

B = 1.35
4*(50 + db / 2)^2 = 15625

fs = 140 MPa Tracción directa en exposición ambiental Normal
fs = 120 MPa Tracción directa en exposición ambiental Severa

120 MPa < 176 < 250.0

fs, max def = 176 MPa

fs < fs,max = 174 MPa < 176 MPa OK

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.24272$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 1.75$$

DISEÑO DE LOSAS

DISEÑO DE LOSA

F'C = 28.0 MPa
Fy = 420 MPa
E = 24870.1 Mpa

Recubrimiento interior: 0.075 m
Recubrimiento exterior: 0.075 m

b = 1.00 e = 0.20

d (interior)= 0.11 m
d (exterior)= 0.11 m

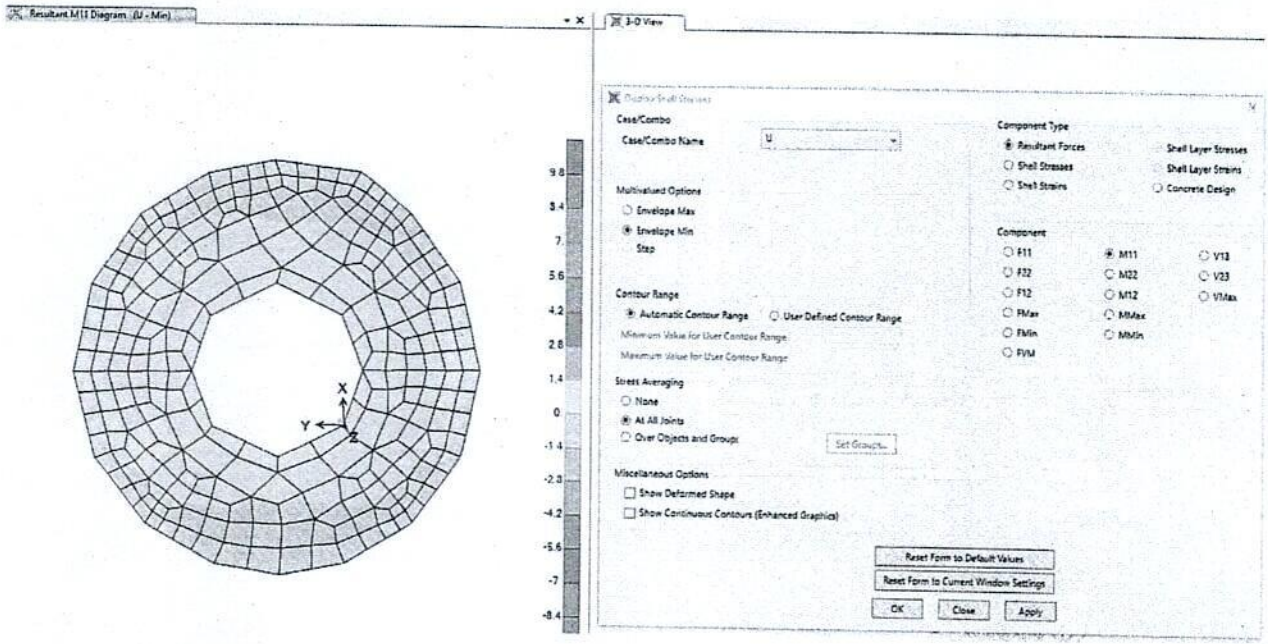
DISEÑO A FLEXIÓN

	Refuerzo Y			Refuerzo X		
	ARRIBA		**ABAJO**	**ARRIBA**		**ABAJO**
Mu (Sin E) =	5.70		12.80	6.60		14.60
Sd =	2.52		1.75	2.35		1.65
Mu (Sin E) * Sd=	**14.35**		**22.37**	**15.51**		**24.06**
Mu =	6.80		15.20	8.00		17.50
Mdef =	**14.35**		**22.37**	**15.51**		**24.06**
K =	1302.015		2028.8	1406.60		2182.1
Ro=	0.0036		0.0056	0.0039		0.0061
Ro (Fisuración)=	0.0037		0.0059	0.0040		0.0063
Rmin=	0.0025		0.0025	0.0025		0.0025
As (cm2) =	3.90		6.18	4.22		6.67
As (min) =	2.63		2.63	2.63		2.63
As (Def) =	3.90		6.18	4.22		6.67
Refuerzo =	#4		#4	#4		#4
Separación Req.	Cda./0.33		Cda./0.21	Cda./0.31		Cda./0.19
Separación Def.	**Cda./0.20**		**Cda./0.20**	**Cda./0.20**		**Cda./0.20**

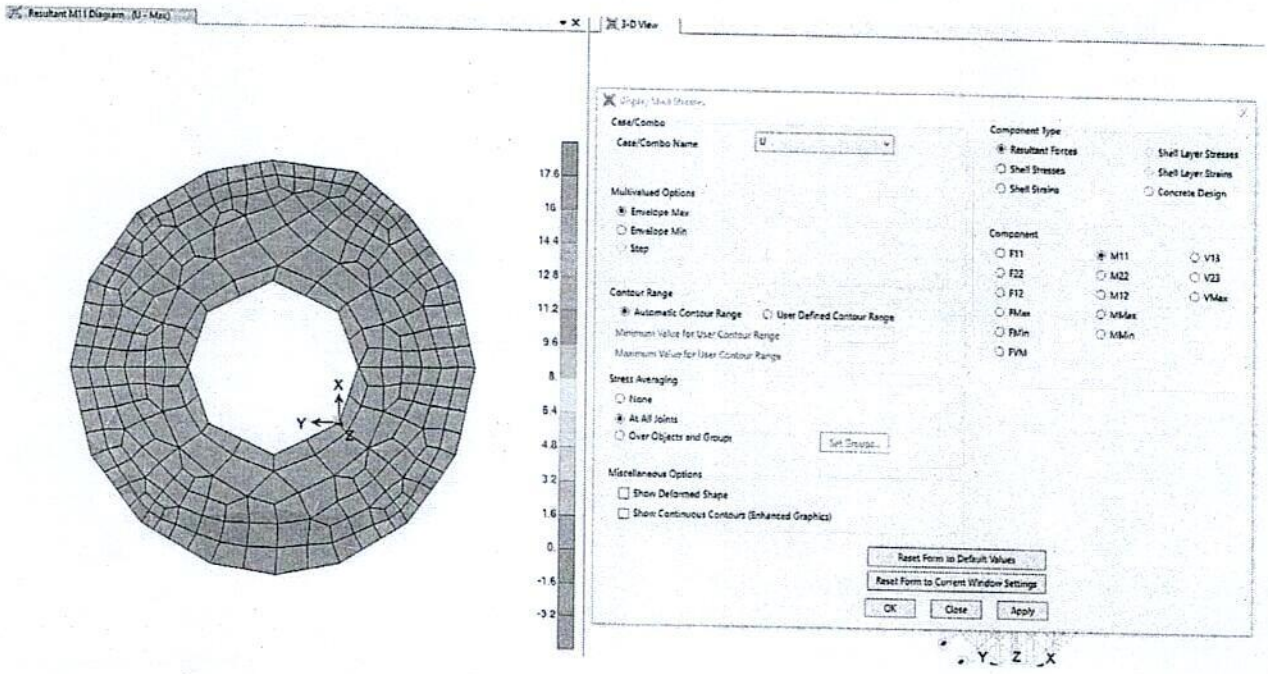
DISEÑO A CORTANTE

Vu (KN/m)=	**70.00**
VC (KN/m)=	94.45
θVN (KN/m) =	70.8
Vu < θVc	OK

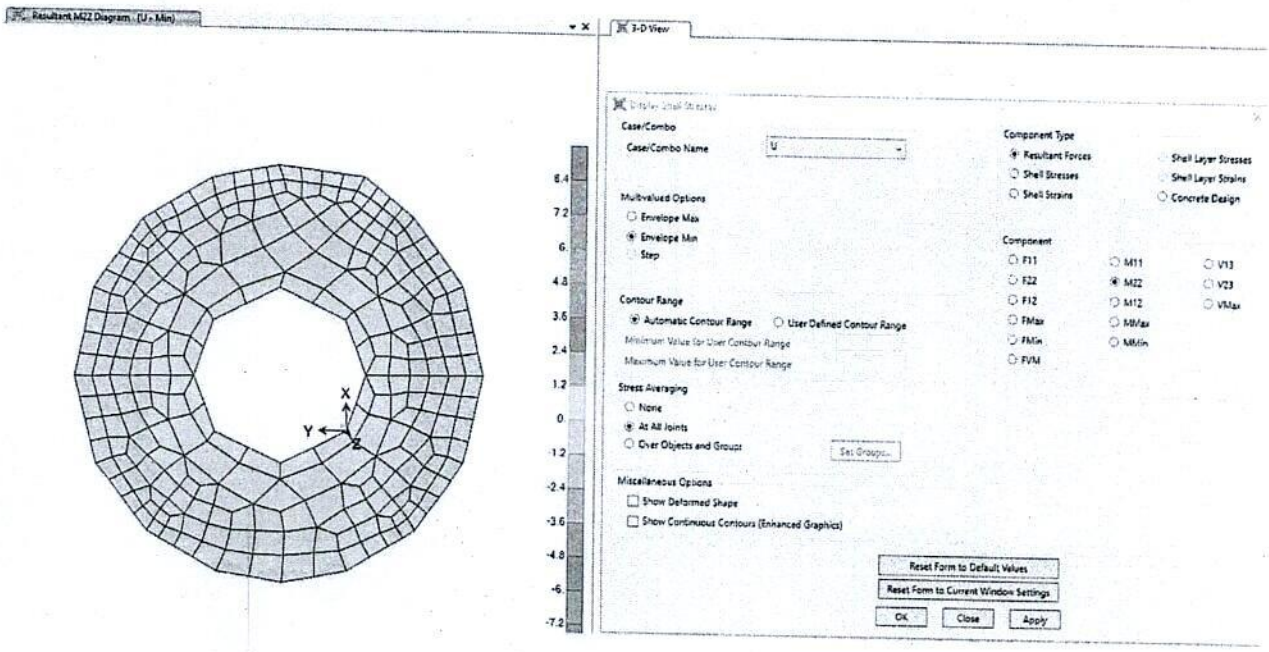
10 DISEÑO DE LOSA SUPERIOR e=20cm



MOMENTOS (M11) MIN. COMB. ENVOLVENTE



MOMENTOS (M11) MAX. COMB. ENVOLVENTE



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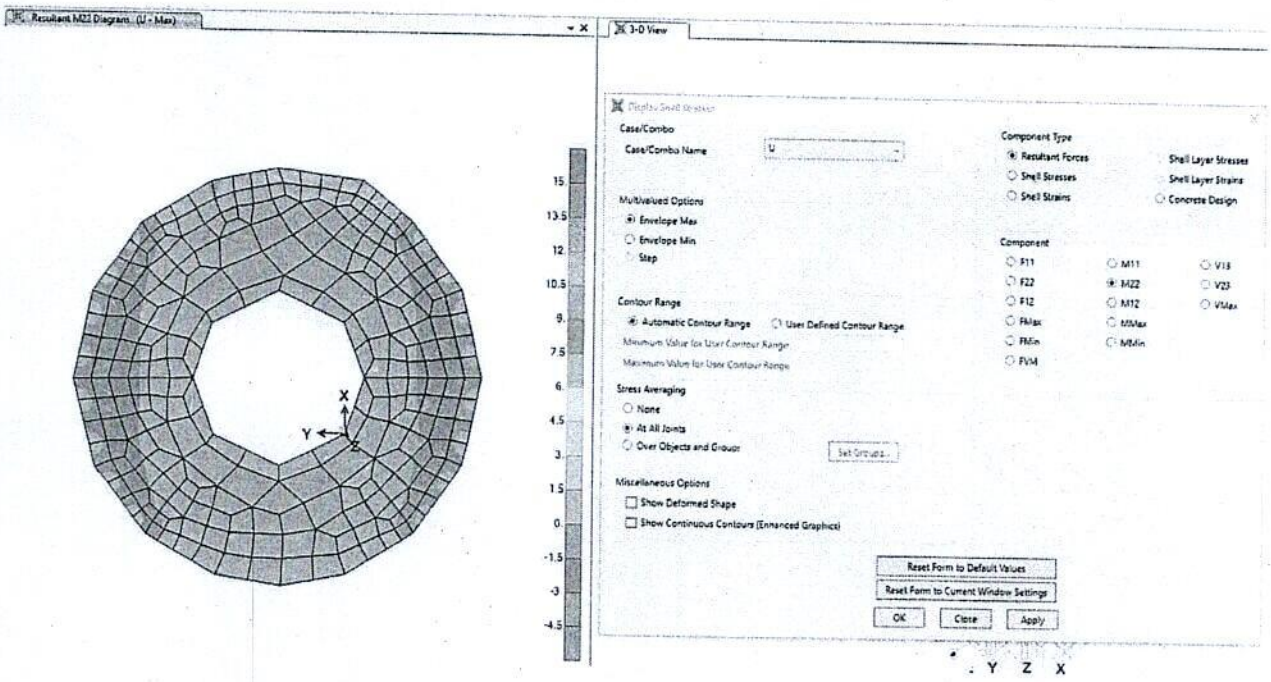
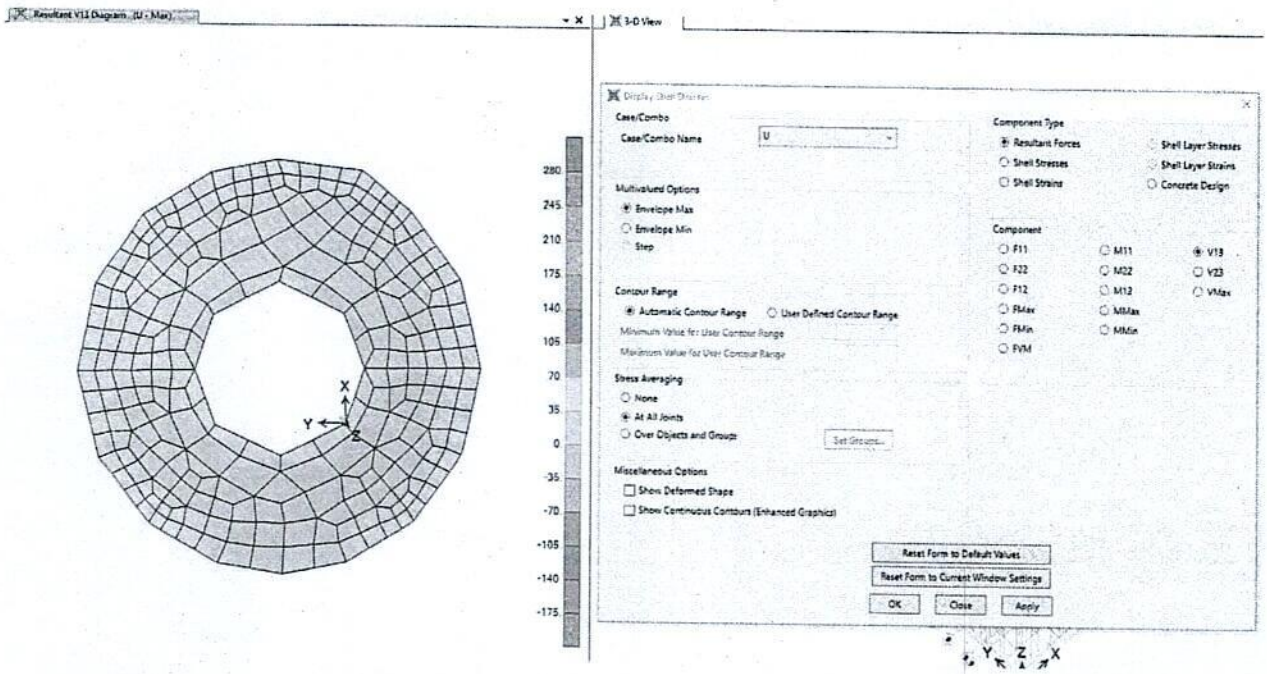
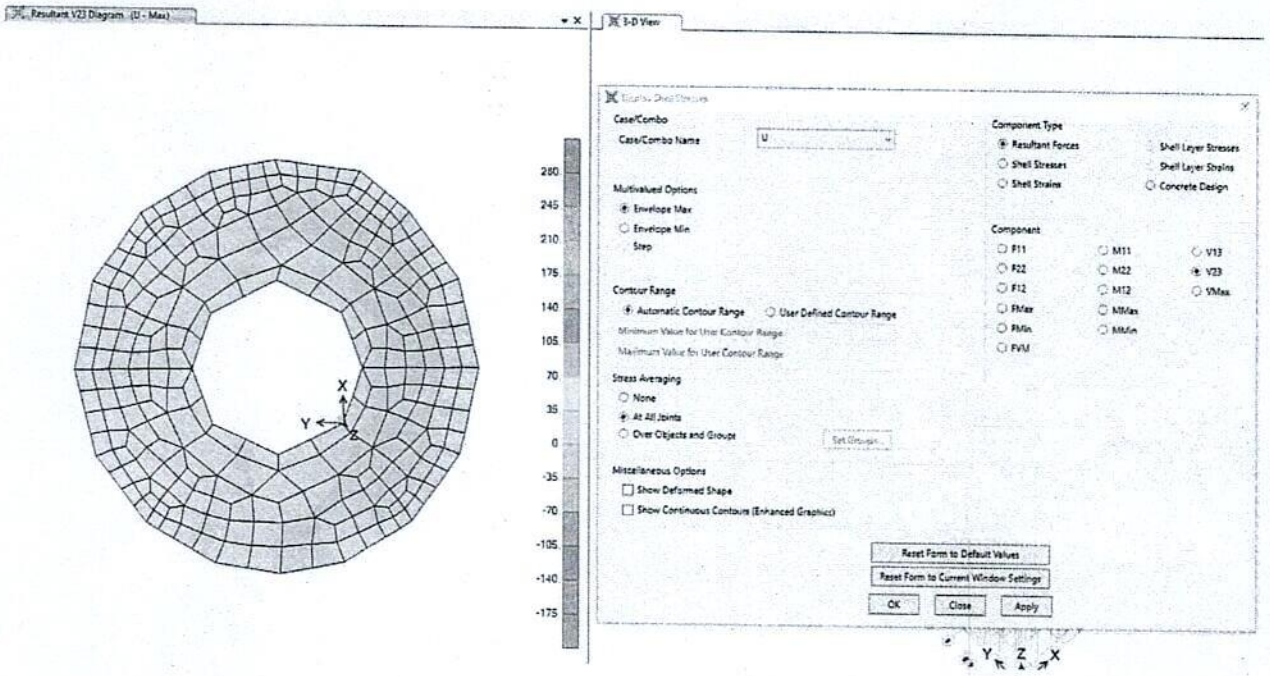


MOMENTOS (M22) MAX. COMB. ENVOLVENTE



CORTANTES (V13) MAX. ABS. COMB. ENVOLVENTE



CORTANTES (V23) MAX. ABS. COMB. ENVOLVENTE

RESUMEN DE SOLICITACIONES DEL MODELADO EN LOSAS

LOSA				
MOMENTOS	Momento 22 Ref. Y (KN.m)		Momento 11 Ref. X (KN.m)	
COMB.	**ARRIBA (22-)**	**ABAJO (22+)**	**ARRIBA (11-)**	**ABAJO (11+)**
U	2.6	1.12	3.2	1
U (Sin E)	2.6	1.12	3.2	0.9
S (Sin E)	1.9	0.82	2.4	0.8

CORTANTES		
COMB.	**V13 MAX ABS**	**V23 MAX ABS**
U	41	50

FACTOR DE DURABILIDAD AMBIENTAL (REF X ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms = 2.4 kN.m (Momento de servicio)
Mu = 3.2 kN.m (Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0020	(Cuantía de acero para Mu)
As =	211mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	600mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.164$$

$$j = 1 - \frac{k}{3} = 0.9452$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 114.54 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{68.9\ MPa}$$
en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{56.2\ MPa}$$
En zonas con exposición severa

B = 1.35
4*(50 + db / 2)^2 = 15625

fs = 140 MPa Tracción directa en exposición ambiental Normal
fs = 120 MPa Tracción directa en exposición ambiental Severa
120 MPa < 69 < 250.0
fs, max def = 120 MPa

fs < fs,max = 115 MPa < 120 MPa **OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.33333$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.48$$

FACTOR DE DURABILIDAD AMBIENTAL (REF X ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	0.8 kN.m	(Momento de servicio)
Mu =	0.9 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0007	(Cuantía de acero para Mu)
As =	70mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	1800mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.099$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.96714$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 111.94 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{23.4 MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{19.1 MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	23	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**112 MPa**	**<**	**120 MPa**	**OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.125$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 3.00$$

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	1.9 kN.m	(Momento de servicio)
Mu =	2.6 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0016	(Cuantía de acero para Mu)
As =	169mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	750mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.148$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.95052$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 112.71 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{55.5 MPa}$$
en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{45.3 MPa}$$
En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	56	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**113 MPa**	**<**	**120 MPa**	**OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.36842$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \quad = \quad 2.45$$

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

fc =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	0.8 kN.m	(Momento de servicio)
Mu =	1.1 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0007	(Cuantía de acero para Mu)
As =	70mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	1800mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.099$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.96714$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 114.74 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{23.4 MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{19.1 MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	23	<	250.0	
fs, max def =	120 MPa				

fs < fs,max = 115 MPa < 120 MPa **OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.36585$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.41$$

DISEÑO DE LOSAS

DISEÑO DE LOSA

F'C = 28.0 MPa
Fy = 420 MPa
E = 24870.1 Mpa

Recubrimiento interior: 0.075 m
Recubrimiento exterior: 0.075 m

b = 1.00 e = 0.20

d (interior)= 0.11 m
d (exterior)= 0.11 m

DISEÑO A FLEXIÓN

	Refuerzo Y			Refuerzo X		
	ARRIBA		ABAJO	ARRIBA		ABAJO
Mu (Sin E) =	2.60		1.12	3.20		0.90
Sd =	2.45		2.41	2.48		3.00
Mu (Sin E) * Sd=	**6.37**		**2.70**	**7.92**		**2.70**
Mu =	2.60		1.12	3.20		1.00
Mdef =	**6.37**		**2.70**	**7.92**		**2.70**
K =	577.965		245.0	718.41		245.0
Ro=	0.0016		0.0007	0.0019		0.0007
Ro (Fisuración)=	0.0016		0.0007	0.0020		0.0007
Rmin=	0.0025		0.0025	0.0025		0.0025
As (cm2) =	1.69		0.70	2.11		0.70
As (min) =	2.63		2.63	2.63		2.63
As (Def) =	2.63		2.63	2.63		2.63
Refuerzo =	#4		#4	#4		#4
Separación Req.	Cda./0.49		Cda./0.49	Cda./0.49		Cda./0.49
Separación Def.	**Cda./0.20**		**Cda./0.20**	**Cda./0.20**		**Cda./0.20**

DISEÑO A CORTANTE

Vu (KN/m)=	**50.00**
VC (KN/m)=	94.45
θVN (KN/m) =	70.8
Vu < θVc	OK

11 DATOS DE ENTRADA

Table: Area Auto Mesh Assignments

Area Auto Mesh Assignments, Part 1 of 2

Area	MeshType	MeshGroup	Max1 m	Max2 m	LocalEdge
1	Maximum Size	ALL	0.2	0.2	No
2	Maximum Size	ALL	0.2	0.2	No
3	Maximum Size	ALL	0.2	0.2	No
4	Maximum Size	ALL	0.2	0.2	No
5	Maximum Size	ALL	0.2	0.2	No
6	Maximum Size	ALL	0.2	0.2	No
7	Maximum Size	ALL	0.2	0.2	No
8	Maximum Size	ALL	0.2	0.2	No
9	Maximum Size	ALL	0.2	0.2	No
10	Maximum Size	ALL	0.2	0.2	No
11	Maximum Size	ALL	0.2	0.2	No
12	Maximum Size	ALL	0.2	0.2	No
13	Maximum Size	ALL	0.2	0.2	No
14	Maximum Size	ALL	0.2	0.2	No
15	Maximum Size	ALL	0.2	0.2	No
16	Maximum Size	ALL	0.2	0.2	No

Table: Area Auto Mesh Assignments

Area Auto Mesh Assignments, Part 2 of 2

Area	LocalFace	SuppEdge	SuppFace	SubMesh
1	No	No	No	No
2	No	No	No	No
3	No	No	No	No
4	No	No	No	No
5	No	No	No	No
6	No	No	No	No
7	No	No	No	No
8	No	No	No	No
9	No	No	No	No
10	No	No	No	No
11	No	No	No	No
12	No	No	No	No
13	No	No	No	No
14	No	No	No	No
15	No	No	No	No
16	No	No	No	No

Table: Area Loads - Surface Pressure

Area Loads - Surface Pressure

Area	LoadPat	Face	Pressure KN/m2	JtPattern
1	H	Bottom	10.	TIERRAS
1	SXHD	Bottom	10.	TIERRAS HDSX
2	H	Bottom	10.	TIERRAS
2	SXHD	Bottom	10.	TIERRAS HDSX
2	SYHD	Bottom	10.	TIERRAS HDSY
3	H	Bottom	10.	TIERRAS
3	SYHD	Bottom	10.	TIERRAS HDSY
4	H	Bottom	10.	TIERRAS
4	SYHD	Bottom	10.	TIERRAS HDSY
5	H	Bottom	10.	TIERRAS
5	SYHD	Bottom	10.	TIERRAS HDSY
6	H	Bottom	10.	TIERRAS
6	SYHD	Bottom	10.	TIERRAS HDSY
7	H	Bottom	10.	TIERRAS
8	H	Bottom	10.	TIERRAS
9	H	Bottom	10.	TIERRAS
10	H	Bottom	10.	TIERRAS
11	H	Bottom	10.	TIERRAS
11	SXHD	Bottom	10.	TIERRAS HDSX

Area Loads - Surface Pressure

Area	LoadPat	Face	Pressure KN/m2	JtPattern
12	H	Bottom	10.	TIERRAS
12	SXHD	Bottom	10.	TIERRAS HDSX
13	H	Bottom	10.	TIERRAS
13	SXHD	Bottom	10.	TIERRAS HDSX
14	H	Bottom	10.	TIERRAS
14	SXHD	Bottom	10.	TIERRAS HDSX
14	SYHD	Bottom	10.	TIERRAS HDSY
15	H	Bottom	10.	TIERRAS
15	SXHD	Bottom	10.	TIERRAS HDSX
15	SYHD	Bottom	10.	TIERRAS HDSY
16	H	Bottom	10.	TIERRAS
16	SXHD	Bottom	10.	TIERRAS HDSX
16	SYHD	Bottom	10.	TIERRAS HDSY

Table: Area Loads - Uniform

Area Loads - Uniform

Area	LoadPat	CoordSys	Dir	UnifLoad KN/m2
18	DEAD	GLOBAL	Gravity	3.
18	LIVE	GLOBAL	Gravity	5.
19	DEAD	GLOBAL	Gravity	3.
19	LIVE	GLOBAL	Gravity	5.

Table: Area Section Assignments

Area Section Assignments

Area	Section	MatProp
1	M20	Default
2	M20	Default
3	M20	Default
4	M20	Default
5	M20	Default
6	M20	Default
7	M20	Default
8	M20	Default
9	M20	Default
10	M20	Default
11	M20	Default
12	M20	Default
13	M20	Default
14	M20	Default
15	M20	Default
16	M20	Default
17	L20	Default
18	L20	Default
19	L20	Default

Table: Area Section Properties

Area Section Properties, Part 1 of 5

Section	Material	MatAngle Degrees	AreaType	Type	DrillDOF	Thickness m
L20	4000Psi	0.	Shell	Shell-Thin	Yes	0.2
L25	4000Psi	0.	Shell	Shell-Thin	Yes	0.25
L30	4000Psi	0.	Shell	Shell-Thin	Yes	0.3
L35	4000Psi	0.	Shell	Shell-Thin	Yes	0.35
M20	4000Psi	0.	Shell	Shell-Thin	Yes	0.2
M25	4000Psi	0.	Shell	Shell-Thin	Yes	0.25
M30	4000Psi	0.	Shell	Shell-Thin	Yes	0.3
M35	4000Psi	0.	Shell	Shell-Thin	Yes	0.35

Area Section Properties, Part 2 of 5

Section	BendThick m	Arc Degrees	InComp	CoordSys	Color	TotalWt KN
L20	0.2				Cyan	13.34
L25	0.25				12615808	0.
L30	0.3				5421631	0.
L35	0.35				16744576	0.
M20	0.2				Gray8Dark	76.88
M25	0.25				12615680	0.
M30	0.3				4227327	0.
M35	0.35				16744448	0.

Table: Area Section Properties

Area Section Properties, Part 3 of 5

Section	TotalMass KN-s2/m	F11Mod	F22Mod	F12Mod	M11Mod	M22Mod
L20	1.36	1.	1.	1.	1.	1.
L25	0.	1.	1.	1.	1.	1.
L30	0.	1.	1.	1.	1.	1.
L35	0.	1.	1.	1.	1.	1.
M20	7.84	1.	1.	1.	1.	1.
M25	0.	1.	1.	1.	1.	1.
M30	0.	1.	1.	1.	1.	1.
M35	0.	1.	1.	1.	1.	1.

Table: Area Section Properties

Area Section Properties, Part 4 of 5

Section	M12Mod	V13Mod	V23Mod	MMod	WMod	GUID
L20	1.	1.	1.	1.	1.	
L25	1.	1.	1.	1.	1.	
L30	1.	1.	1.	1.	1.	
L35	1.	1.	1.	1.	1.	
M20	1.	1.	1.	1.	1.	
M25	1.	1.	1.	1.	1.	
M30	1.	1.	1.	1.	1.	
M35	1.	1.	1.	1.	1.	

Table: Area Section Properties

Area Section Properties, Part 5 of 5

Section	Notes
L20	Added 1/05/2018 12:05:29 a. m.
L25	Added 1/05/2018 1:50:59 a. m.
L30	Added 1/05/2018 12:05:54 a. m.
L35	Added 1/05/2018 12:31:22 a. m.
M20	Added 1/05/2018 12:06:29 a. m.
M25	Added 1/05/2018 12:07:38 a. m.
M30	Added 1/05/2018 12:07:49 a. m.
M35	Added 1/05/2018 12:31:45 a. m.

Table: Area Spring Assignments

Area Spring Assignments, Part 1 of 2

Area	Type	Stiffness KN/m/m2	SimpleType	Face	Dir1Type
17	Simple	50000.	Tension and Compression	Bottom	Normal To Face

Area Spring Assignments, Part 1 of 2

Area	Type	Stiffness KN/m/m2	SimpleType	Face	Dir1Type
17	Simple	80000.	Tension and Compression	Bottom	Object Axes
17	Simple	80000.	Tension and Compression	Bottom	Object Axes

Table: Area Spring Assignments

Area Spring Assignments, Part 2 of 2

Area	Face	Dir1Type	Dir	NormalDir
17	Bottom	Normal To Face		Inward
17	Bottom	Object Axes	1	
17	Bottom	Object Axes	2	

Table: Case - Static 1 - Load Assignments

Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
DEAD	Load pattern	DEAD	1.
LIVE	Load pattern	LIVE	1.
H	Load pattern	H	1.
SXHD	Load pattern	SXHD	1.
SYHD	Load pattern	SYHD	1.

Table: Combination Definitions

Combination Definitions, Part 1 of 4

ComboName	ComboType	AutoDesign	CaseType	CaseName	ScaleFactor
COMB1	Linear Add	No	Linear Static	DEAD	1.4
COMB2	Linear Add	No	Linear Static	DEAD	1.2
COMB2			Linear Static	LIVE	1.6
COMB2			Linear Static	H	1.6
COMB3	Linear Add	No	Linear Static	DEAD	1.2
COMB3			Linear Static	LIVE	1.
COMB4	Linear Add	No	Linear Static	DEAD	1.2
COMB4			Linear Static	LIVE	1.
COMB4			Linear Static	H	1.6
COMB4			Linear Static	SXHD	1.
COMB5	Linear Add	No	Linear Static	DEAD	1.2
COMB5			Linear Static	LIVE	1.
COMB5			Linear Static	H	1.6
COMB5			Linear Static	SYHD	1.
COMB6	Linear Add	No	Linear Static	DEAD	0.9
COMB6			Linear Static	H	1.6
COMB7	Linear Add	No	Linear Static	DEAD	0.9
COMB7			Linear Static	H	1.6
COMB7			Linear Static	SXHD	1.
COMB8	Linear Add	No	Linear Static	DEAD	0.9
COMB8			Linear Static	H	1.6
COMB8			Linear Static	SYHD	1.
SERV1	Linear Add	No	Linear Static	DEAD	1.
SERV1			Linear Static	LIVE	1.
SERV1			Linear Static	H	1.
SERV2	Linear Add	No	Linear Static	DEAD	1.
SERV2			Linear Static	H	1.
SERV3	Linear Add	No	Linear Static	DEAD	1.
SERV3			Linear Static	LIVE	0.75
SERV4	Linear Add	No	Linear Static	DEAD	1.
SERV4			Linear Static	H	1.
SERV4			Linear Static	SXHD	0.7
SERV5	Linear Add	No	Linear Static	DEAD	1.
SERV5			Linear Static	H	1.

Combination Definitions, Part 1 of 4

ComboName	ComboType	AutoDesign	CaseType	CaseName	ScaleFactor
SERV5			Linear Static	SYHD	0.7
SERV6	Linear Add	No	Linear Static	DEAD	1.
SERV6			Linear Static	LIVE	0.75
SERV6			Linear Static	H	1.
SERV7	Linear Add	No	Linear Static	DEAD	1.
SERV7			Linear Static	LIVE	0.75
SERV7			Linear Static	H	1.
SERV7			Linear Static	SXHD	0.53
SERV8	Linear Add	No	Linear Static	DEAD	1.
SERV8			Linear Static	LIVE	0.75
SERV8			Linear Static	H	1.
SERV8			Linear Static	SYHD	0.53
SERV9	Linear Add	No	Linear Static	DEAD	0.6
SERV9			Linear Static	H	1.
SERV10	Linear Add	No	Linear Static	DEAD	0.6
SERV10			Linear Static	H	1.
SERV10			Linear Static	SXHD	0.7
SERV11	Linear Add	No	Linear Static	DEAD	0.6
SERV11			Linear Static	H	1.
SERV11			Linear Static	SYHD	0.7
U	Envelope	No	Response Combo	COMB1	1.
U			Response Combo	COMB2	1.
U			Response Combo	COMB3	1.
U			Response Combo	COMB4	1.
U			Response Combo	COMB5	1.
U			Response Combo	COMB6	1.
U			Response Combo	COMB7	1.
U			Response Combo	COMB8	1.
U (SIN E)	Envelope	No	Response Combo	COMB1	1.
U (SIN E)			Response Combo	COMB2	1.
U (SIN E)			Response Combo	COMB3	1.
U (SIN E)			Response Combo	COMB8	1.
S (SIN E)	Envelope	No	Response Combo	SERV1	1.
S (SIN E)			Response Combo	SERV2	1.
S (SIN E)			Response Combo	SERV3	1.
S (SIN E)			Response Combo	SERV8	1.
S (SIN E)			Response Combo	SERV9	1.

Table: Combination Definitions

Combination Definitions, Part 2 of 4

ComboName	CaseName	SteelDesign	ConcDesign	AlumDesign
COMB1	DEAD	None	None	None
COMB2	DEAD	None	None	None
COMB2	LIVE			
COMB2	H			
COMB3	DEAD	None	None	None
COMB3	LIVE			
COMB4	DEAD	None	None	None
COMB4	LIVE			
COMB4	H			
COMB4	SXHD			
COMB5	DEAD	None	None	None
COMB5	LIVE			
COMB5	H			
COMB5	SYHD			
COMB6	DEAD	None	None	None
COMB6	H			
COMB7	DEAD	None	None	None
COMB7	H			
COMB7	SXHD			
COMB8	DEAD	None	None	None
COMB8	H			
COMB8	SYHD			
SERV1	DEAD	None	None	None
SERV1	LIVE			
SERV1	H			
SERV2	DEAD	None	None	None
SERV2	H			
SERV3	DEAD	None	None	None

Combination Definitions, Part 2 of 4

ComboName	CaseName	SteelDesign	ConcDesign	AlumDesign
SERV3	LIVE			
SERV4	DEAD	None	None	None
SERV4	H			
SERV4	SXHD			
SERV5	DEAD	None	None	None
SERV5	H			
SERV5	SYHD			
SERV6	DEAD	None	None	None
SERV6	LIVE			
SERV6	H			
SERV7	DEAD	None	None	None
SERV7	LIVE			
SERV7	H			
SERV7	SXHD			
SERV8	DEAD	None	None	None
SERV8	LIVE			
SERV8	H			
SERV8	SYHD			
SERV9	DEAD	None	None	None
SERV9	H			
SERV10	DEAD	None	None	None
SERV10	H			
SERV10	SXHD			
SERV11	DEAD	None	None	None
SERV11	H			
SERV11	SYHD			
U	COMB1	None	None	None
U	COMB2			
U	COMB3			
U	COMB4			
U	COMB5			
U	COMB6			
U	COMB7			
U	COMB8			
U (SIN E)	COMB1	None	None	None
U (SIN E)	COMB2			
U (SIN E)	COMB3			
U (SIN E)	COMB6			
S (SIN E)	SERV1	None	None	None
S (SIN E)	SERV2			
S (SIN E)	SERV3			
S (SIN E)	SERV6			
S (SIN E)	SERV9			

Table: Combination Definitions

Combination Definitions, Part 3 of 4

ComboName	AlumDesign	ColdDesign	GUID
COMB1	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB2	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB2			
COMB2			
COMB3	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB3			
COMB4	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB4			
COMB4			
COMB4			
COMB5	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB5			
COMB5			
COMB5			
COMB6	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB6			

Combination Definitions, Part 3 of 4

ComboName	AlumDesign	ColdDesign	GUID
COMB7	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB7			
COMB7			
COMB8	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB8			
COMB8			
SERV1	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV1			
SERV1			
SERV2	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV2			
SERV3	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV3			
SERV4	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV4			
SERV4			
SERV5	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV5			
SERV5			
SERV6	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV6			
SERV6			
SERV7	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV7			
SERV7			
SERV7			
SERV8	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV8			
SERV8			
SERV8			
SERV9	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV9			
SERV10	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV10			
SERV10			
SERV11	None	None	04170669-8486-4f2c-965c-448abc553a34
SERV11			
SERV11			
U	None	None	5de89b2b-aa56-447d-9cb8-ef4c16329b75
U			
U			
U			
U			
U			
U			
U			
U (SIN E)	None	None	5de89b2b-aa56-447d-9cb8-ef4c16329b75
U (SIN E)			
U (SIN E)			
U (SIN E)			
S (SIN E)	None	None	2384b6aa-8563-4233-8f71-c3dad258567a
S (SIN E)			
S (SIN E)			
S (SIN E)			
S (SIN E)			

Table: Combination Definitions

Combination Definitions, Part 4 of 4

ComboName	AlumDesign	Notes
COMB1	None	
COMB2	None	
COMB2		
COMB2		
COMB3	None	
COMB3		
COMB4	None	
COMB4		
COMB4		
COMB4		
COMB5	None	
COMB5		
COMB5		
COMB5		
COMB6	None	
COMB6		
COMB7	None	
COMB7		
COMB7		
COMB8	None	
COMB8		
COMB8		
SERV1	None	
SERV1		
SERV1		
SERV2	None	
SERV2		
SERV3	None	
SERV3		
SERV4	None	
SERV4		
SERV4		
SERV5	None	
SERV5		
SERV5		
SERV6	None	
SERV6		
SERV6		
SERV7	None	
SERV7		
SERV7		
SERV7		
SERV8	None	
SERV8		
SERV8		
SERV8		
SERV9	None	
SERV9		
SERV10	None	
SERV10		
SERV10		
SERV11	None	
SERV11		
SERV11		
U	None	
U		
U		
U		
U		
U		
U		
U		
U (SIN E)	None	
U (SIN E)		
U (SIN E)		
U (SIN E)		
S (SIN E)	None	
S (SIN E)		
S (SIN E)		
S (SIN E)		
S (SIN E)		

Table: Load Case Definitions

Table: Load Case Definitions

Load Case Definitions, Part 1 of 3

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesTypeOpt
DEAD	LinStatic	Zero				Prog Det
MODAL	LinModal	Zero				Prog Det
LIVE	LinStatic	Zero				Prog Det
H	LinStatic	Zero				Prog Det
SXHD	LinStatic	Zero				Prog Det
SYHD	LinStatic	Zero				Prog Det

Table: Load Case Definitions

Load Case Definitions, Part 2 of 3

Case	DesignType	DesActOpt	DesignAct	AutoType	RunCase	CaseStatus
DEAD	Dead	Prog Det	Non-Composite	None	Yes	Finished
MODAL	Other	Prog Det	Other	None	Yes	Finished
LIVE	Live	Prog Det	Short-Term Composite	None	Yes	Finished
H	Other	Prog Det	Other	None	Yes	Finished
SXHD	Other	Prog Det	Other	None	Yes	Finished
SYHD	Other	Prog Det	Other	None	Yes	Finished

Table: Load Case Definitions

Load Case Definitions, Part 3 of 3

Case	GUID	Notes
DEAD	36c11ee1-3052-4225-b5bd-faf725a891c1	
MODAL	0f4b0a9c-6172-4b8b-8d40-2600910c370b	
LIVE	ed29532b-3ac2-47f3-90d8-d52b9f8a2922	
H	c2de1063-eef3-4a6a-ad15-1a0620c60e4a	
SXHD	ff499036-cb0c-4751-95a4-42ff32e61f2a	
SYHD	dbdd4243-cfd7-4075-a6cd-c1f950818d51	

Table: Load Pattern Definitions

Load Pattern Definitions, Part 1 of 2

LoadPat	DesignType	SelfWtMult	AutoLoad	GUID
DEAD	Dead	1.		9d14ec55-efd1-4c2b-bae6-922025277a16
LIVE	Live	0.		f17c766e-579a-419a-b2d8-55586354ac54
H	Other	0.		821ee04d-79d5-40dc-9923-05ad6f231084
SXHD	Other	0.		cc74b4cc-cb51-4afe-5718-8e292406cb15
SYHD	Other	0.		b37caeef-722e-4dda-a6e3-a7b586fa4215

Table: Load Pattern Definitions

Load Pattern Definitions, Part 2 of 2

LoadPat	Notes

Table: Load Pattern Definitions

Load Pattern Definitions, Part 2 of 2

LoadPat	Notes
DEAD	
LIVE	
H	
SXHD	
SYHD	

Table: Material Properties 01 - General

Material Properties 01 - General, Part 1 of 2

Material	Type	SymType	TempDepend	Color	GUID
4000Psi	Concrete	Isotropic	No	Green	
A416Gr270	Tendon	Uniaxial	No	Cyan	
A992Fy50	Steel	Isotropic	No	Blue	

Table: Material Properties 01 - General

Material Properties 01 - General, Part 2 of 2

Material	Notes
4000Psi	Customary f'c 4000 psi 1/05/2018 12:00:20 a. m.
A416Gr270	ASTM A416 Grade 270 1/05/2018 12:54:42 a. m.
A992Fy50	ASTM A992 Grade 50 1/05/2018 12:00:20 a. m.

Table: Material Properties 03b - Concrete Data

Material Properties 03b - Concrete Data, Part 1 of 2

Material	Fc KN/m2	eFc KN/m2	LtWtConc	SSCurveOpt	SSHysType	SFc
4000Psi	27579.03	27579.03	No	Mander	Takeda	0.002219

Table: Material Properties 03b - Concrete Data

Material Properties 03b - Concrete Data, Part 2 of 2

Material	SCap	FinalSlope	FAngle Degrees	DAngle Degrees
4000Psi	0.005	-0.1	0.	0.

Table: Solid Property Definitions

Solid Property Definitions, Part 1 of 3

SolidProp	Material	MatAngleA Degrees	MatAngleB Degrees	MatAngleC Degrees	InComp
Solid1	4000Psi	0.	0.	0.	Yes

Table: Solid Property Definitions

Solid Property Definitions, Part 2 of 3

SolidProp	Color	GUID	Notes	TotalWt KN

Table: Solid Property Definitions

Solid Property Definitions, Part 2 of 3

SolidProp	Color	GUID	Notes	TotalWt KN
Solid1	Magenta			0.

Table: Solid Property Definitions

Solid Property Definitions, Part 3 of 3

SolidProp	TotalMass KN-s2/m
Solid1	0.

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Table: Element Forces - Área Shells

Element Forces - Area Shells, Part 1 of 10

Area	AreaElem	ShellType	Joint	OutputCase	CaseType	StepType
16	16-1	Shell-Thin	21	U	Combination	Max
16	16-1	Shell-Thin	~553	U	Combination	Max
16	16-1	Shell-Thin	~589	U	Combination	Max
16	16-1	Shell-Thin	~590	U	Combination	Max
16	16-1	Shell-Thin	21	U	Combination	Min
16	16-1	Shell-Thin	~553	U	Combination	Min
16	16-1	Shell-Thin	~589	U	Combination	Min
16	16-1	Shell-Thin	~590	U	Combination	Min
16	16-2	Shell-Thin	~590	U	Combination	Max
16	16-2	Shell-Thin	~589	U	Combination	Max
16	16-2	Shell-Thin	~57	U	Combination	Max
16	16-2	Shell-Thin	8	U	Combination	Max
16	16-2	Shell-Thin	~590	U	Combination	Min
16	16-2	Shell-Thin	~589	U	Combination	Min
16	16-2	Shell-Thin	~57	U	Combination	Min
16	16-2	Shell-Thin	8	U	Combination	Min
16	16-3	Shell-Thin	~553	U	Combination	Max
16	16-3	Shell-Thin	~555	U	Combination	Max
16	16-3	Shell-Thin	~591	U	Combination	Max
16	16-3	Shell-Thin	~589	U	Combination	Max
16	16-3	Shell-Thin	~553	U	Combination	Min
16	16-3	Shell-Thin	~555	U	Combination	Min
16	16-3	Shell-Thin	~591	U	Combination	Min
16	16-3	Shell-Thin	~589	U	Combination	Min
16	16-4	Shell-Thin	~589	U	Combination	Max
16	16-4	Shell-Thin	~591	U	Combination	Max
16	16-4	Shell-Thin	~61	U	Combination	Max
16	16-4	Shell-Thin	~57	U	Combination	Max
16	16-4	Shell-Thin	~589	U	Combination	Min
16	16-4	Shell-Thin	~591	U	Combination	Min
16	16-4	Shell-Thin	~61	U	Combination	Min
16	16-4	Shell-Thin	~57	U	Combination	Min
16	16-5	Shell-Thin	~555	U	Combination	Max
16	16-5	Shell-Thin	~557	U	Combination	Max
16	16-5	Shell-Thin	~592	U	Combination	Max
16	16-5	Shell-Thin	~591	U	Combination	Max
16	16-5	Shell-Thin	~555	U	Combination	Min
16	16-5	Shell-Thin	~557	U	Combination	Min
16	16-5	Shell-Thin	~592	U	Combination	Min
16	16-5	Shell-Thin	~591	U	Combination	Min
16	16-6	Shell-Thin	~591	U	Combination	Max
16	16-6	Shell-Thin	~592	U	Combination	Max
16	16-6	Shell-Thin	~64	U	Combination	Max
16	16-6	Shell-Thin	~61	U	Combination	Max
16	16-6	Shell-Thin	~591	U	Combination	Min
16	16-6	Shell-Thin	~592	U	Combination	Min
16	16-6	Shell-Thin	~64	U	Combination	Min
16	16-6	Shell-Thin	~61	U	Combination	Min
16	16-7	Shell-Thin	~557	U	Combination	Max
16	16-7	Shell-Thin	~559	U	Combination	Max
16	16-7	Shell-Thin	~593	U	Combination	Max
16	16-7	Shell-Thin	~592	U	Combination	Max
16	16-7	Shell-Thin	~557	U	Combination	Min
16	16-7	Shell-Thin	~559	U	Combination	Min

16	16-7	Shell-Thin	~593	U	Combination	Min
16	16-7	Shell-Thin	~592	U	Combination	Min
16	16-8	Shell-Thin	~592	U	Combination	Max
16	16-8	Shell-Thin	~593	U	Combination	Max
16	16-8	Shell-Thin	~67	U	Combination	Max
16	16-8	Shell-Thin	~64	U	Combination	Max
16	16-8	Shell-Thin	~592	U	Combination	Min
16	16-8	Shell-Thin	~593	U	Combination	Min
16	16-8	Shell-Thin	~67	U	Combination	Min
16	16-8	Shell-Thin	~64	U	Combination	Min
16	16-9	Shell-Thin	~559	U	Combination	Max
16	16-9	Shell-Thin	~561	U	Combination	Max
16	16-9	Shell-Thin	~594	U	Combination	Max
16	16-9	Shell-Thin	~593	U	Combination	Max
16	16-9	Shell-Thin	~559	U	Combination	Min
16	16-9	Shell-Thin	~561	U	Combination	Min
16	16-9	Shell-Thin	~594	U	Combination	Min
16	16-9	Shell-Thin	~593	U	Combination	Min
16	16-10	Shell-Thin	~593	U	Combination	Max
16	16-10	Shell-Thin	~594	U	Combination	Max
16	16-10	Shell-Thin	~70	U	Combination	Max
16	16-10	Shell-Thin	~67	U	Combination	Max
16	16-10	Shell-Thin	~593	U	Combination	Min
16	16-10	Shell-Thin	~594	U	Combination	Min
16	16-10	Shell-Thin	~70	U	Combination	Min
16	16-10	Shell-Thin	~67	U	Combination	Min
16	16-11	Shell-Thin	~561	U	Combination	Max
16	16-11	Shell-Thin	~563	U	Combination	Max
16	16-11	Shell-Thin	~595	U	Combination	Max
16	16-11	Shell-Thin	~594	U	Combination	Max
16	16-11	Shell-Thin	~561	U	Combination	Min
16	16-11	Shell-Thin	~563	U	Combination	Min
16	16-11	Shell-Thin	~595	U	Combination	Min
16	16-11	Shell-Thin	~594	U	Combination	Min
16	16-12	Shell-Thin	~594	U	Combination	Max
16	16-12	Shell-Thin	~595	U	Combination	Max
16	16-12	Shell-Thin	~73	U	Combination	Max
16	16-12	Shell-Thin	~70	U	Combination	Max
16	16-12	Shell-Thin	~594	U	Combination	Min
16	16-12	Shell-Thin	~595	U	Combination	Min
16	16-12	Shell-Thin	~73	U	Combination	Min
16	16-12	Shell-Thin	~70	U	Combination	Min
16	16-13	Shell-Thin	~563	U	Combination	Max
16	16-13	Shell-Thin	~565	U	Combination	Max
16	16-13	Shell-Thin	~596	U	Combination	Max
16	16-13	Shell-Thin	~595	U	Combination	Max
16	16-13	Shell-Thin	~563	U	Combination	Min
16	16-13	Shell-Thin	~565	U	Combination	Min
16	16-13	Shell-Thin	~596	U	Combination	Min
16	16-13	Shell-Thin	~595	U	Combination	Min
16	16-14	Shell-Thin	~595	U	Combination	Max
16	16-14	Shell-Thin	~596	U	Combination	Max
16	16-14	Shell-Thin	~76	U	Combination	Max
16	16-14	Shell-Thin	~73	U	Combination	Max
16	16-14	Shell-Thin	~595	U	Combination	Min
16	16-14	Shell-Thin	~596	U	Combination	Min
16	16-14	Shell-Thin	~76	U	Combination	Min
16	16-14	Shell-Thin	~73	U	Combination	Min
16	16-15	Shell-Thin	~565	U	Combination	Max
16	16-15	Shell-Thin	~567	U	Combination	Max
16	16-15	Shell-Thin	~597	U	Combination	Max
16	16-15	Shell-Thin	~596	U	Combination	Max
16	16-15	Shell-Thin	~565	U	Combination	Min
16	16-15	Shell-Thin	~567	U	Combination	Min
16	16-15	Shell-Thin	~597	U	Combination	Min
16	16-15	Shell-Thin	~596	U	Combination	Min
16	16-16	Shell-Thin	~596	U	Combination	Max

16	16-16	Shell-Thin	~597	U	Combination	Max
16	16-16	Shell-Thin	~79	U	Combination	Max
16	16-16	Shell-Thin	~76	U	Combination	Max
16	16-16	Shell-Thin	~596	U	Combination	Min
16	16-16	Shell-Thin	~597	U	Combination	Min
16	16-16	Shell-Thin	~79	U	Combination	Min
16	16-16	Shell-Thin	~76	U	Combination	Min
16	16-17	Shell-Thin	~567	U	Combination	Max
16	16-17	Shell-Thin	~569	U	Combination	Max
16	16-17	Shell-Thin	~598	U	Combination	Max
16	16-17	Shell-Thin	~597	U	Combination	Max
16	16-17	Shell-Thin	~567	U	Combination	Min
16	16-17	Shell-Thin	~569	U	Combination	Min
16	16-17	Shell-Thin	~598	U	Combination	Min
16	16-17	Shell-Thin	~597	U	Combination	Min
16	16-18	Shell-Thin	~597	U	Combination	Max
16	16-18	Shell-Thin	~598	U	Combination	Max
16	16-18	Shell-Thin	~82	U	Combination	Max
16	16-18	Shell-Thin	~79	U	Combination	Max
16	16-18	Shell-Thin	~597	U	Combination	Min
16	16-18	Shell-Thin	~598	U	Combination	Min
16	16-18	Shell-Thin	~82	U	Combination	Min
16	16-18	Shell-Thin	~79	U	Combination	Min
16	16-19	Shell-Thin	~598	U	Combination	Max
16	16-19	Shell-Thin	~569	U	Combination	Min
16	16-19	Shell-Thin	~571	U	Combination	Min
16	16-19	Shell-Thin	~599	U	Combination	Min
16	16-19	Shell-Thin	~598	U	Combination	Min
16	16-20	Shell-Thin	~598	U	Combination	Max
16	16-20	Shell-Thin	~599	U	Combination	Max
16	16-20	Shell-Thin	~85	U	Combination	Max
16	16-20	Shell-Thin	~82	U	Combination	Max
16	16-20	Shell-Thin	~598	U	Combination	Min
16	16-20	Shell-Thin	~599	U	Combination	Min
16	16-20	Shell-Thin	~85	U	Combination	Min
16	16-20	Shell-Thin	~82	U	Combination	Min
16	16-21	Shell-Thin	~571	U	Combination	Max
16	16-21	Shell-Thin	~573	U	Combination	Max
16	16-21	Shell-Thin	~600	U	Combination	Max
16	16-21	Shell-Thin	~599	U	Combination	Max
16	16-21	Shell-Thin	~571	U	Combination	Min
16	16-21	Shell-Thin	~573	U	Combination	Min
16	16-21	Shell-Thin	~600	U	Combination	Min
16	16-21	Shell-Thin	~599	U	Combination	Min
16	16-22	Shell-Thin	~599	U	Combination	Max
16	16-22	Shell-Thin	~600	U	Combination	Max
16	16-22	Shell-Thin	~88	U	Combination	Max
16	16-22	Shell-Thin	~85	U	Combination	Max
16	16-22	Shell-Thin	~599	U	Combination	Min
16	16-22	Shell-Thin	~600	U	Combination	Min
16	16-22	Shell-Thin	~88	U	Combination	Min
16	16-22	Shell-Thin	~85	U	Combination	Min
16	16-23	Shell-Thin	~573	U	Combination	Max
16	16-23	Shell-Thin	~575	U	Combination	Max
16	16-23	Shell-Thin	~601	U	Combination	Max
16	16-23	Shell-Thin	~600	U	Combination	Max
16	16-23	Shell-Thin	~573	U	Combination	Min
16	16-23	Shell-Thin	~575	U	Combination	Min
16	16-23	Shell-Thin	~601	U	Combination	Min
16	16-23	Shell-Thin	~600	U	Combination	Min
16	16-24	Shell-Thin	~600	U	Combination	Max
16	16-24	Shell-Thin	~601	U	Combination	Max
16	16-24	Shell-Thin	~91	U	Combination	Max
16	16-24	Shell-Thin	~88	U	Combination	Max
16	16-24	Shell-Thin	~600	U	Combination	Min
16	16-24	Shell-Thin	~601	U	Combination	Min

16	16-24	Shell-Thin	~91	U	Combination	Min
16	16-24	Shell-Thin	~88	U	Combination	Min
16	16-25	Shell-Thin	~575	U	Combination	Max
16	16-25	Shell-Thin	~577	U	Combination	Max
16	16-25	Shell-Thin	~602	U	Combination	Max
16	16-25	Shell-Thin	~601	U	Combination	Max
16	16-25	Shell-Thin	~575	U	Combination	Min
16	16-25	Shell-Thin	~577	U	Combination	Min
16	16-25	Shell-Thin	~602	U	Combination	Min
16	16-25	Shell-Thin	~601	U	Combination	Min
16	16-26	Shell-Thin	~601	U	Combination	Max
16	16-26	Shell-Thin	~602	U	Combination	Max
16	16-26	Shell-Thin	~94	U	Combination	Max
16	16-26	Shell-Thin	~91	U	Combination	Max
16	16-26	Shell-Thin	~601	U	Combination	Min
16	16-26	Shell-Thin	~602	U	Combination	Min
16	16-26	Shell-Thin	~94	U	Combination	Min
16	16-26	Shell-Thin	~91	U	Combination	Min
16	16-27	Shell-Thin	~577	U	Combination	Max
16	16-27	Shell-Thin	~579	U	Combination	Max
16	16-27	Shell-Thin	~603	U	Combination	Max
16	16-27	Shell-Thin	~602	U	Combination	Max
16	16-27	Shell-Thin	~577	U	Combination	Min
16	16-27	Shell-Thin	~579	U	Combination	Min
16	16-27	Shell-Thin	~603	U	Combination	Min
16	16-27	Shell-Thin	~602	U	Combination	Min
16	16-28	Shell-Thin	~602	U	Combination	Max
16	16-28	Shell-Thin	~602	U	Combination	Min
16	16-28	Shell-Thin	~603	U	Combination	Min
16	16-28	Shell-Thin	~97	U	Combination	Min
16	16-28	Shell-Thin	~94	U	Combination	Min
16	16-29	Shell-Thin	~579	U	Combination	Max
16	16-29	Shell-Thin	~581	U	Combination	Max
16	16-29	Shell-Thin	~604	U	Combination	Max
16	16-29	Shell-Thin	~603	U	Combination	Max
16	16-29	Shell-Thin	~579	U	Combination	Min
16	16-29	Shell-Thin	~581	U	Combination	Min
16	16-29	Shell-Thin	~604	U	Combination	Min
16	16-29	Shell-Thin	~603	U	Combination	Min
16	16-30	Shell-Thin	~603	U	Combination	Max
16	16-30	Shell-Thin	~604	U	Combination	Max
16	16-30	Shell-Thin	~100	U	Combination	Max
16	16-30	Shell-Thin	~97	U	Combination	Max
16	16-30	Shell-Thin	~603	U	Combination	Min
16	16-30	Shell-Thin	~604	U	Combination	Min
16	16-30	Shell-Thin	~100	U	Combination	Min
16	16-30	Shell-Thin	~97	U	Combination	Min
16	16-31	Shell-Thin	~581	U	Combination	Max
16	16-31	Shell-Thin	~583	U	Combination	Max
16	16-31	Shell-Thin	~605	U	Combination	Max
16	16-31	Shell-Thin	~604	U	Combination	Max
16	16-31	Shell-Thin	~581	U	Combination	Min
16	16-31	Shell-Thin	~583	U	Combination	Min
16	16-31	Shell-Thin	~605	U	Combination	Min
16	16-31	Shell-Thin	~604	U	Combination	Min
16	16-32	Shell-Thin	~604	U	Combination	Max
16	16-32	Shell-Thin	~605	U	Combination	Max
16	16-32	Shell-Thin	~103	U	Combination	Max
16	16-32	Shell-Thin	~100	U	Combination	Max
16	16-32	Shell-Thin	~604	U	Combination	Min
16	16-32	Shell-Thin	~605	U	Combination	Min
16	16-32	Shell-Thin	~103	U	Combination	Min
16	16-32	Shell-Thin	~100	U	Combination	Min
16	16-33	Shell-Thin	~583	U	Combination	Max
16	16-33	Shell-Thin	~585	U	Combination	Max
16	16-33	Shell-Thin	~606	U	Combination	Max

16	16-33	Shell-Thin	~605	U	Combination	Max
16	16-33	Shell-Thin	~583	U	Combination	Min
16	16-33	Shell-Thin	~585	U	Combination	Min
16	16-33	Shell-Thin	~606	U	Combination	Min
16	16-33	Shell-Thin	~605	U	Combination	Min
16	16-34	Shell-Thin	~605	U	Combination	Max
16	16-34	Shell-Thin	~606	U	Combination	Max
16	16-34	Shell-Thin	~106	U	Combination	Max
16	16-34	Shell-Thin	~103	U	Combination	Max
16	16-34	Shell-Thin	~605	U	Combination	Min
16	16-34	Shell-Thin	~606	U	Combination	Min
16	16-34	Shell-Thin	~106	U	Combination	Min
16	16-34	Shell-Thin	~103	U	Combination	Min
16	16-35	Shell-Thin	~585	U	Combination	Max
16	16-35	Shell-Thin	~587	U	Combination	Max
16	16-35	Shell-Thin	~607	U	Combination	Max
16	16-35	Shell-Thin	~606	U	Combination	Max
16	16-35	Shell-Thin	~585	U	Combination	Min
16	16-35	Shell-Thin	~587	U	Combination	Min
16	16-35	Shell-Thin	~607	U	Combination	Min
16	16-35	Shell-Thin	~606	U	Combination	Min
16	16-36	Shell-Thin	~606	U	Combination	Max
16	16-36	Shell-Thin	~607	U	Combination	Max
16	16-36	Shell-Thin	~109	U	Combination	Max
16	16-36	Shell-Thin	~106	U	Combination	Max
16	16-36	Shell-Thin	~606	U	Combination	Min
16	16-36	Shell-Thin	~607	U	Combination	Min
16	16-36	Shell-Thin	~109	U	Combination	Min
16	16-36	Shell-Thin	~106	U	Combination	Min
16	16-37	Shell-Thin	~587	U	Combination	Max
16	16-37	Shell-Thin	53	U	Combination	Max
16	16-37	Shell-Thin	~587	U	Combination	Min
16	16-37	Shell-Thin	53	U	Combination	Min
16	16-37	Shell-Thin	~608	U	Combination	Min
16	16-37	Shell-Thin	~607	U	Combination	Min
16	16-38	Shell-Thin	~607	U	Combination	Max
16	16-38	Shell-Thin	~608	U	Combination	Max
16	16-38	Shell-Thin	41	U	Combination	Max
16	16-38	Shell-Thin	~109	U	Combination	Max
16	16-38	Shell-Thin	~607	U	Combination	Min
16	16-38	Shell-Thin	~608	U	Combination	Min
16	16-38	Shell-Thin	41	U	Combination	Min
16	16-38	Shell-Thin	~109	U	Combination	Min

Table: Element Forces - Área Shells

Element Forces - Area Shells, Part 2 of 10

Area	AreaElem	Joint	OutputCase	StepType	F11	F22
16	16-1	21	U	Max	3.89	5.41
16	16-1	~553	U	Max	15.66	3.86
16	16-1	~589	U	Max	12.23	-1.81
16	16-1	~590	U	Max	3.08	2.877E-02
16	16-1	21	U	Min	-16.44	-21.39
16	16-1	~553	U	Min	-5.29	-15.94
16	16-1	~589	U	Min	-7.46	-32.85
16	16-1	~590	U	Min	-19.65	-38.55
16	16-2	~590	U	Max	5.24	0.46
16	16-2	~589	U	Max	12.45	-1.89
16	16-2	~57	U	Max	15.9	7.55
16	16-2	8	U	Max	7.13	9.9
16	16-2	~590	U	Min	-19.72	-38.57
16	16-2	~589	U	Min	-6.68	-32.81
16	16-2	~57	U	Min	-5.8	-15.78
16	16-2	8	U	Min	-16.49	-21.31
16	16-3	~553	U	Max	13.87	2.629E-02
16	16-3	~555	U	Max	14.86	-2.35
16	16-3	~591	U	Max	14.25	-0.21
16	16-3	~589	U	Max	13.26	2.3
16	16-3	~553	U	Min	-6.19	-24.69
16	16-3	~555	U	Min	-18.74	-24.58
16	16-3	~591	U	Min	-18.45	-27.54
16	16-3	~589	U	Min	-6.58	-27.74
16	16-4	~589	U	Max	13.47	2.22
16	16-4	~591	U	Max	14.34	-0.49
16	16-4	~61	U	Max	15.14	0.99
16	16-4	~57	U	Max	14.27	3.7
16	16-4	~589	U	Min	-5.79	-27.7
16	16-4	~591	U	Min	-19.24	-27.52
16	16-4	~61	U	Min	-18.94	-23.71
16	16-4	~57	U	Min	-6.64	-23.7
16	16-5	~555	U	Max	15.	-2.63
16	16-5	~557	U	Max	7.83	-3.98
16	16-5	~592	U	Max	7.75	-1.49
16	16-5	~591	U	Max	14.92	-7.380E-02
16	16-5	~555	U	Min	-18.73	-23.81
16	16-5	~557	U	Min	-25.84	-25.24
16	16-5	~592	U	Min	-24.99	-25.64
16	16-5	~591	U	Min	-18.28	-24.2
16	16-6	~591	U	Max	15.01	-0.36
16	16-6	~592	U	Max	7.74	-1.77
16	16-6	~64	U	Max	7.96	-1.28
16	16-6	~61	U	Max	15.23	0.13
16	16-6	~591	U	Min	-19.21	-24.19
16	16-6	~592	U	Min	-26.26	-25.64
16	16-6	~64	U	Min	-26.16	-24.53
16	16-6	~61	U	Min	-19.12	-23.07
16	16-7	~557	U	Max	8.27	-4.54
16	16-7	~559	U	Max	2.06	-4.81
16	16-7	~593	U	Max	2.23	-2.92
16	16-7	~592	U	Max	8.45	-2.64
16	16-7	~557	U	Min	-25.82	-23.01
16	16-7	~559	U	Min	-27.25	-24.25
16	16-7	~593	U	Min	-26.56	-23.38
16	16-7	~592	U	Min	-25.13	-22.14
16	16-8	~592	U	Max	8.44	-2.91

16	16-8	~593	U	Max	2.26	-3.15
16	16-8	~67	U	Max	2.13	-2.61
16	16-8	~64	U	Max	8.31	-2.37
16	16-8	~592	U	Min	-26.49	-22.14
16	16-8	~593	U	Min	-27.68	-23.37
16	16-8	~67	U	Min	-27.58	-24.01
16	16-8	~64	U	Min	-26.38	-22.77
16	16-9	~559	U	Max	2.53	-5.6
16	16-9	~561	U	Max	-0.45	-5.29
16	16-9	~594	U	Max	-0.32	-4.27
16	16-9	~593	U	Max	2.68	-4.61
16	16-9	~559	U	Min	-27.37	-21.9
16	16-9	~561	U	Min	-25.79	-22.5
16	16-9	~594	U	Min	-25.28	-21.74
16	16-9	~593	U	Min	-26.9	-21.13
16	16-10	~593	U	Max	2.71	-4.84
16	16-10	~594	U	Max	-0.35	-4.46
16	16-10	~70	U	Max	-0.48	-3.64
16	16-10	~67	U	Max	2.57	-4.02
16	16-10	~593	U	Min	-28.02	-21.13
16	16-10	~594	U	Min	-26.2	-21.75
16	16-10	~70	U	Min	-26.08	-22.45
16	16-10	~67	U	Min	-27.86	-21.83
16	16-11	~561	U	Max	-0.12	-6.33
16	16-11	~563	U	Max	-0.95	-5.83
16	16-11	~595	U	Max	-0.89	-5.42
16	16-11	~594	U	Max	-4.727E-02	-5.94
16	16-11	~561	U	Min	-25.85	-20.58
16	16-11	~563	U	Min	-23.45	-20.76
16	16-11	~595	U	Min	-23.15	-20.39
16	16-11	~594	U	Min	-25.55	-20.2
16	16-12	~594	U	Max	-8.303E-02	-6.12
16	16-12	~595	U	Max	-0.89	-5.56
16	16-12	~73	U	Max	-0.97	-4.59
16	16-12	~70	U	Max	-0.16	-5.16
16	16-12	~594	U	Min	-26.47	-20.21
16	16-12	~595	U	Min	-23.87	-20.39
16	16-12	~73	U	Min	-23.7	-20.84
16	16-12	~70	U	Min	-26.3	-20.66
16	16-13	~563	U	Max	-0.68	-6.84
16	16-13	~565	U	Max	-0.68	-6.35
16	16-13	~596	U	Max	-0.67	-6.19
16	16-13	~595	U	Max	-0.67	-6.7
16	16-13	~563	U	Min	-23.56	-19.21
16	16-13	~565	U	Min	-21.	-19.21
16	16-13	~596	U	Min	-20.79	-19.16
16	16-13	~595	U	Min	-23.35	-19.16
16	16-14	~595	U	Max	-0.68	-6.85
16	16-14	~596	U	Max	-0.68	-6.32
16	16-14	~76	U	Max	-0.71	-5.47
16	16-14	~73	U	Max	-0.71	-6.01
16	16-14	~595	U	Min	-24.08	-19.16
16	16-14	~596	U	Min	-21.4	-19.16
16	16-14	~76	U	Min	-21.24	-19.33
16	16-14	~73	U	Min	-23.92	-19.36
16	16-15	~565	U	Max	-0.45	-7.2
16	16-15	~567	U	Max	-0.34	-6.78
16	16-15	~597	U	Max	-0.36	-6.71
16	16-15	~596	U	Max	-0.46	-7.15
16	16-15	~565	U	Min	-21.07	-17.86
16	16-15	~567	U	Min	-18.84	-17.84
16	16-15	~597	U	Min	-18.7	-17.92
16	16-15	~596	U	Min	-20.93	-18.07
16	16-16	~596	U	Max	-0.47	-7.27
16	16-16	~597	U	Max	-0.35	-6.81

16	16-16	~596	U	Min	-21.54	-18.07
16	16-16	~597	U	Min	-19.22	-17.92
16	16-16	~79	U	Min	-19.09	-17.97
16	16-16	~76	U	Min	-21.41	-18.19
16	16-17	~567	U	Max	-0.12	-7.4
16	16-17	~569	U	Max	-0.13	-7.03
16	16-17	~598	U	Max	-0.16	-6.97
16	16-17	~597	U	Max	-0.14	-7.35
16	16-17	~567	U	Min	-18.89	-16.71
16	16-17	~569	U	Min	-16.99	-16.55
16	16-17	~598	U	Min	-16.88	-16.66
16	16-17	~597	U	Min	-18.78	-16.92
16	16-18	~597	U	Max	-0.14	-7.46
16	16-18	~598	U	Max	-0.15	-7.06
16	16-18	~82	U	Max	-0.15	-6.61
16	16-18	~79	U	Max	-0.14	-7.
16	16-18	~597	U	Min	-19.29	-16.92
16	16-18	~598	U	Min	-17.32	-16.66
16	16-18	~82	U	Min	-17.23	-16.76
16	16-18	~79	U	Min	-19.2	-17.02
16	16-19	~569	U	Max	0.1	-7.43
16	16-19	~571	U	Max	-7.896E-02	-7.09
16	16-19	~599	U	Max	-9.645E-02	-7.05
16	16-19	~598	U	Max	8.336E-02	-7.4
16	16-19	~569	U	Min	-17.01	-15.6
16	16-19	~571	U	Min	-15.3	-15.37
16	16-19	~599	U	Min	-15.21	-15.54
16	16-19	~598	U	Min	-16.92	-15.77
16	16-20	~598	U	Max	8.804E-02	-7.49
16	16-20	~599	U	Max	-8.877E-02	-7.13
16	16-20	~85	U	Max	-9.279E-02	-6.83
16	16-20	~82	U	Max	8.363E-02	-7.19
16	16-20	~598	U	Min	-17.37	-15.76
16	16-20	~599	U	Min	-15.59	-15.54
16	16-20	~85	U	Min	-15.54	-15.64
16	16-20	~82	U	Min	-17.31	-15.86
16	16-21	~571	U	Max	0.17	-7.31
16	16-21	~573	U	Max	-0.11	-6.99
16	16-21	~600	U	Max	-0.13	-6.95
16	16-21	~599	U	Max	0.16	-7.28
16	16-21	~571	U	Min	-15.3	-14.49
16	16-21	~573	U	Min	-13.68	-14.28
16	16-21	~600	U	Min	-13.61	-14.42
16	16-21	~599	U	Min	-15.23	-14.62
16	16-22	~599	U	Max	0.17	-7.36
16	16-22	~600	U	Max	-0.12	-7.02
16	16-22	~88	U	Max	-0.13	-6.84
16	16-22	~85	U	Max	0.16	-7.18
16	16-22	~599	U	Min	-15.62	-14.62
16	16-22	~600	U	Min	-13.94	-14.41
16	16-22	~88	U	Min	-13.91	-14.51
16	16-22	~85	U	Min	-15.58	-14.71
16	16-23	~573	U	Max	0.15	-7.05
16	16-23	~575	U	Max	-0.18	-6.73
16	16-23	~601	U	Max	-0.19	-6.71
16	16-23	~600	U	Max	0.14	-7.03
16	16-23	~573	U	Min	-13.64	-13.38
16	16-23	~575	U	Min	-12.08	-13.19
16	16-23	~601	U	Min	-12.03	-13.28
16	16-23	~600	U	Min	-13.59	-13.48
16	16-24	~600	U	Max	0.15	-7.1
16	16-24	~601	U	Max	-0.18	-6.76
16	16-24	~91	U	Max	-0.19	-6.66
16	16-24	~88	U	Max	0.14	-7.
16	16-24	~600	U	Min	-13.91	-13.48

16	16-24	~601	U	Min	-12.31	-13.28
16	16-24	~91	U	Min	-12.29	-13.37
16	16-24	~88	U	Min	-13.9	-13.57
16	16-25	~575	U	Max	8.561E-02	-6.66
16	16-25	~577	U	Max	-0.22	-6.34
16	16-25	~575	U	Min	-12.	-12.29
16	16-25	~577	U	Min	-10.44	-12.08
16	16-25	~602	U	Min	-10.4	-12.14
16	16-25	~601	U	Min	-11.96	-12.34
16	16-26	~601	U	Max	8.981E-02	-6.7
16	16-26	~602	U	Max	-0.22	-6.37
16	16-26	~94	U	Max	-0.23	-6.33
16	16-26	~91	U	Max	7.914E-02	-6.67
16	16-26	~601	U	Min	-12.23	-12.34
16	16-26	~602	U	Min	-10.63	-12.13
16	16-26	~94	U	Min	-10.63	-12.24
16	16-26	~91	U	Min	-12.23	-12.44
16	16-27	~577	U	Max	3.841E-02	-6.18
16	16-27	~579	U	Max	-0.14	-5.85
16	16-27	~603	U	Max	-0.13	-5.81
16	16-27	~602	U	Max	4.271E-02	-6.15
16	16-27	~577	U	Min	-10.35	-11.22
16	16-27	~579	U	Min	-8.65	-10.98
16	16-27	~603	U	Min	-8.61	-10.96
16	16-27	~602	U	Min	-10.31	-11.21
16	16-28	~602	U	Max	5.106E-02	-6.19
16	16-28	~603	U	Max	-0.12	-5.85
16	16-28	~97	U	Max	-0.14	-5.87
16	16-28	~94	U	Max	3.457E-02	-6.22
16	16-28	~602	U	Min	-10.54	-11.2
16	16-28	~603	U	Min	-8.79	-10.96
16	16-28	~97	U	Min	-8.81	-11.1
16	16-28	~94	U	Min	-10.55	-11.35
16	16-29	~579	U	Max	0.1	-5.61
16	16-29	~581	U	Max	0.29	-5.24
16	16-29	~604	U	Max	0.31	-5.19
16	16-29	~603	U	Max	0.12	-5.56
16	16-29	~579	U	Min	-8.55	-10.18
16	16-29	~581	U	Min	-6.69	-9.85
16	16-29	~604	U	Min	-6.66	-9.76
16	16-29	~603	U	Min	-8.52	-10.09
16	16-30	~603	U	Max	0.12	-5.6
16	16-30	~604	U	Max	0.33	-5.21
16	16-30	~100	U	Max	0.3	-5.29
16	16-30	~97	U	Max	0.1	-5.67
16	16-30	~603	U	Min	-8.71	-10.09
16	16-30	~604	U	Min	-6.8	-9.75
16	16-30	~100	U	Min	-6.81	-9.96
16	16-30	~97	U	Min	-8.72	-10.29
16	16-31	~581	U	Max	0.5	-4.95
16	16-31	~583	U	Max	1.19	-4.53
16	16-31	~605	U	Max	1.21	-4.49
16	16-31	~604	U	Max	0.51	-4.91
16	16-31	~581	U	Min	-6.62	-9.1
16	16-31	~583	U	Min	-4.52	-8.65
16	16-31	~605	U	Min	-4.5	-8.59
16	16-31	~604	U	Min	-6.6	-9.04
16	16-32	~604	U	Max	0.53	-4.93
16	16-32	~605	U	Max	1.22	-4.51
16	16-32	~103	U	Max	1.19	-4.6
16	16-32	~100	U	Max	0.5	-5.03
16	16-32	~604	U	Min	-6.74	-9.03
16	16-32	~605	U	Min	-4.6	-8.59
16	16-32	~103	U	Min	-4.62	-8.78

16	16-32	~100	U	Min	-6.76	-9.23
16	16-33	~583	U	Max	1.41	-4.14
16	16-33	~585	U	Max	2.17	-3.72
16	16-33	~606	U	Max	2.13	-3.82
16	16-33	~605	U	Max	1.37	-4.25
16	16-33	~583	U	Min	-4.44	-7.82
16	16-33	~585	U	Min	-2.31	-7.36
16	16-33	~606	U	Min	-2.32	-7.62
16	16-33	~605	U	Min	-4.45	-8.08
16	16-34	~605	U	Max	1.39	-4.24
16	16-34	~606	U	Max	2.32	-3.82
16	16-34	~106	U	Max	2.32	-3.82
16	16-34	~103	U	Max	1.39	-4.27
16	16-34	~605	U	Min	-4.55	-8.08
16	16-34	~606	U	Min	-2.3	-7.57
16	16-34	~106	U	Min	-2.3	-7.57
16	16-34	~103	U	Min	-4.56	-8.07
16	16-35	~585	U	Max	2.49	-3.01
16	16-35	~587	U	Max	2.21	-2.72
16	16-35	~607	U	Max	1.95	-3.38
16	16-35	~606	U	Max	2.24	-3.67
16	16-35	~585	U	Min	-2.17	-5.91
16	16-35	~587	U	Min	-0.62	-5.71
16	16-35	~607	U	Min	-0.75	-7.3
16	16-35	~606	U	Min	-2.3	-7.5
16	16-36	~606	U	Max	2.43	-3.65
16	16-36	~607	U	Max	1.84	-3.4
16	16-36	~109	U	Max	1.99	-3.02
16	16-36	~106	U	Max	2.57	-3.28
16	16-36	~606	U	Min	-2.27	-7.45
16	16-36	~607	U	Min	-0.83	-7.32
16	16-36	~109	U	Min	-0.75	-6.4
16	16-36	~106	U	Min	-2.2	-6.53
16	16-37	~587	U	Max	2.39	-2.26
16	16-37	53	U	Max	-1.33	-2.47
16	16-37	~608	U	Max	-1.52	-3.43
16	16-37	~607	U	Max	2.05	-3.17
16	16-37	~587	U	Min	-0.52	-5.04
16	16-37	53	U	Min	-3.16	-6.01
16	16-37	~608	U	Min	-3.59	-8.15
16	16-37	~607	U	Min	-0.72	-7.18
16	16-38	~607	U	Max	1.94	-3.18
16	16-38	~608	U	Max	-1.67	-3.46
16	16-38	41	U	Max	-1.36	-1.89
16	16-38	~109	U	Max	2.53	-1.66
16	16-38	~607	U	Min	-0.8	-7.21
16	16-38	~608	U	Min	-3.93	-8.22
16	16-38	41	U	Min	-3.19	-4.54
16	16-38	~109	U	Min	-0.49	-3.53

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 3 of 10

Area	AreaElem	OutputCase	StepType	F22	F12	FMax
16	16-1	U	Max	5.41	4.47	0.
16	16-1	U	Max	3.86	10.32	0.
16	16-1	U	Max	-1.81	11.01	0.
16	16-1	U	Max	2.877E-02	5.17	0.
16	16-1	U	Min	-21.39	-9.98	0.
16	16-1	U	Min	-15.94	-11.26	0.
16	16-1	U	Min	-32.85	-13.1	0.
16	16-1	U	Min	-38.55	-11.83	0.
16	16-2	U	Max	0.46	8.41	0.
16	16-2	U	Max	-1.89	9.31	0.
16	16-2	U	Max	7.55	7.42	0.
16	16-2	U	Max	9.9	6.72	0.
16	16-2	U	Min	-38.57	-7.78	0.
16	16-2	U	Min	-32.81	-14.72	0.
16	16-2	U	Min	-15.78	-13.04	0.
16	16-2	U	Min	-21.31	-6.29	0.
16	16-3	U	Max	2.629E-02	9.52	0.
16	16-3	U	Max	-2.35	8.96	0.
16	16-3	U	Max	-0.21	9.67	0.
16	16-3	U	Max	2.3	10.22	0.
16	16-3	U	Min	-24.69	-9.87	0.
16	16-3	U	Min	-24.58	-9.58	0.
16	16-3	U	Min	-27.54	-11.59	0.
16	16-3	U	Min	-27.74	-11.88	0.
16	16-4	U	Max	2.22	8.52	0.
16	16-4	U	Max	3.7	6.41	0.
16	16-4	U	Min	-27.7	-13.5	0.
16	16-4	U	Min	-27.52	-12.43	0.
16	16-4	U	Min	-23.71	-10.99	0.
16	16-4	U	Min	-23.7	-11.96	0.
16	16-5	U	Max	-2.63	8.68	0.
16	16-5	U	Max	-3.98	8.	0.
16	16-5	U	Max	-1.49	8.47	0.
16	16-5	U	Max	-7.380E-02	9.16	0.
16	16-5	U	Min	-23.81	-8.63	0.
16	16-5	U	Min	-25.24	-7.69	0.
16	16-5	U	Min	-25.64	-9.74	0.
16	16-5	U	Min	-24.2	-10.67	0.
16	16-6	U	Max	-0.36	7.87	0.
16	16-6	U	Max	-1.77	7.4	0.
16	16-6	U	Max	-1.28	5.4	0.
16	16-6	U	Max	0.13	5.87	0.
16	16-6	U	Min	-24.19	-11.51	0.
16	16-6	U	Min	-25.64	-10.63	0.
16	16-6	U	Min	-24.53	-9.7	0.
16	16-6	U	Min	-23.07	-10.58	0.
16	16-7	U	Max	-4.54	7.5	0.
16	16-7	U	Max	-4.81	6.82	0.
16	16-7	U	Max	-2.92	7.1	0.
16	16-7	U	Max	-2.64	7.78	0.
16	16-7	U	Min	-23.01	-7.	0.
16	16-7	U	Min	-24.25	-6.27	0.
16	16-7	U	Min	-23.38	-8.05	0.
16	16-7	U	Min	-22.14	-8.78	0.
16	16-8	U	Max	-2.91	6.7	0.

16	16-8	U	Max	-3.15	6.16	0.
16	16-8	U	Max	-2.61	4.43	0.
16	16-8	U	Max	-2.37	4.97	0.
16	16-8	U	Min	-22.14	-9.67	0.
16	16-8	U	Min	-23.37	-8.76	0.
16	16-8	U	Min	-24.01	-8.08	0.
16	16-8	U	Min	-22.77	-8.99	0.
16	16-9	U	Max	-5.6	6.29	0.
16	16-9	U	Max	-5.29	5.72	0.
16	16-9	U	Max	-4.27	5.98	0.
16	16-9	U	Max	-4.61	6.55	0.
16	16-9	U	Min	-21.9	-5.84	0.
16	16-9	U	Min	-22.5	-5.29	0.
16	16-9	U	Min	-21.74	-6.82	0.
16	16-9	U	Min	-21.13	-7.37	0.
16	16-10	U	Max	-4.84	5.62	0.
16	16-10	U	Max	-4.46	5.18	0.
16	16-10	U	Max	-3.64	3.69	0.
16	16-10	U	Max	-4.02	4.13	0.
16	16-10	U	Min	-21.13	-8.08	0.
16	16-10	U	Min	-21.75	-7.41	0.
16	16-10	U	Min	-22.45	-6.79	0.
16	16-10	U	Min	-21.83	-7.46	0.
16	16-11	U	Max	-6.33	5.27	0.
16	16-11	U	Max	-5.83	4.77	0.
16	16-11	U	Max	-5.42	5.	0.
16	16-11	U	Max	-5.94	5.5	0.
16	16-11	U	Min	-20.58	-5.01	0.
16	16-11	U	Min	-20.76	-4.57	0.
16	16-11	U	Min	-20.39	-5.83	0.
16	16-11	U	Min	-20.2	-6.27	0.
16	16-12	U	Max	-6.12	4.7	0.
16	16-12	U	Max	-5.56	4.35	0.
16	16-12	U	Max	-4.59	3.14	0.
16	16-12	U	Max	-5.16	3.49	0.
16	16-12	U	Min	-20.21	-6.86	0.
16	16-12	U	Min	-20.39	-6.32	0.
16	16-12	U	Min	-20.84	-5.78	0.
16	16-12	U	Min	-20.66	-6.32	0.
16	16-13	U	Max	-6.84	4.42	0.
16	16-15	U	Max	-6.71	3.53	0.
16	16-15	U	Max	-7.15	3.89	0.
16	16-15	U	Min	-17.86	-3.73	0.
16	16-15	U	Min	-17.84	-3.39	0.
16	16-15	U	Min	-17.92	-4.3	0.
16	16-15	U	Min	-18.07	-4.64	0.
16	16-16	U	Max	-7.27	3.33	0.
16	16-16	U	Max	-6.81	3.07	0.
16	16-16	U	Max	-6.15	2.23	0.
16	16-16	U	Max	-6.61	2.49	0.
16	16-16	U	Min	-18.07	-5.05	0.
16	16-16	U	Min	-17.92	-4.64	0.
16	16-16	U	Min	-17.97	-4.21	0.
16	16-16	U	Min	-18.19	-4.61	0.
16	16-17	U	Max	-7.4	3.09	0.
16	16-17	U	Max	-7.03	2.78	0.
16	16-17	U	Max	-6.97	2.92	0.
16	16-17	U	Max	-7.35	3.24	0.
16	16-17	U	Min	-16.71	-3.18	0.
16	16-17	U	Min	-16.55	-2.86	0.
16	16-17	U	Min	-16.66	-3.63	0.
16	16-17	U	Min	-16.92	-3.94	0.
16	16-18	U	Max	-7.46	2.77	0.
16	16-18	U	Max	-7.06	2.54	0.

16	16-18	U	Max	-6.61	1.85	0.
16	16-18	U	Max	-7.	2.08	0.
16	16-18	U	Min	-16.92	-4.28	0.
16	16-18	U	Min	-16.66	-3.91	0.
16	16-18	U	Min	-16.76	-3.53	0.
16	16-18	U	Min	-17.02	-3.91	0.
16	16-19	U	Max	-7.43	2.54	0.
16	16-19	U	Max	-7.09	2.26	0.
16	16-19	U	Max	-7.05	2.38	0.
16	16-19	U	Max	-7.4	2.66	0.
16	16-19	U	Min	-15.6	-2.66	0.
16	16-19	U	Min	-15.37	-2.36	0.
16	16-19	U	Min	-15.54	-3.	0.
16	16-19	U	Min	-15.77	-3.29	0.
16	16-20	U	Max	-7.49	2.28	0.
16	16-20	U	Max	-7.13	2.07	0.
16	16-20	U	Max	-6.83	1.5	0.
16	16-20	U	Max	-7.19	1.71	0.
16	16-20	U	Min	-15.76	-3.57	0.
16	16-20	U	Min	-15.54	-3.23	0.
16	16-20	U	Min	-15.64	-2.91	0.
16	16-20	U	Min	-15.86	-3.26	0.
16	16-21	U	Max	-7.31	2.05	0.
16	16-21	U	Max	-6.99	1.8	0.
16	16-21	U	Max	-6.95	1.89	0.
16	16-21	U	Max	-7.28	2.14	0.
16	16-21	U	Min	-14.49	-2.17	0.
16	16-21	U	Min	-14.28	-1.91	0.
16	16-21	U	Min	-14.42	-2.42	0.
16	16-21	U	Min	-14.62	-2.69	0.
16	16-22	U	Max	-7.36	1.83	0.
16	16-24	U	Max	-6.66	0.92	0.
16	16-24	U	Max	-7.	1.08	0.
16	16-24	U	Min	-13.48	-2.32	0.
16	16-24	U	Min	-13.28	-2.04	0.
16	16-24	U	Min	-13.37	-1.83	0.
16	16-24	U	Min	-13.57	-2.12	0.
16	16-25	U	Max	-6.66	1.22	0.
16	16-25	U	Max	-6.34	1.03	0.
16	16-25	U	Max	-6.32	1.08	0.
16	16-25	U	Max	-6.65	1.27	0.
16	16-25	U	Min	-12.29	-1.35	0.
16	16-25	U	Min	-12.08	-1.14	0.
16	16-25	U	Min	-12.14	-1.45	0.
16	16-25	U	Min	-12.34	-1.65	0.
16	16-26	U	Max	-6.7	1.09	0.
16	16-26	U	Max	-6.37	0.94	0.
16	16-26	U	Max	-6.33	0.68	0.
16	16-26	U	Max	-6.67	0.82	0.
16	16-26	U	Min	-12.34	-1.79	0.
16	16-26	U	Min	-12.13	-1.55	0.
16	16-26	U	Min	-12.24	-1.38	0.
16	16-26	U	Min	-12.44	-1.63	0.
16	16-27	U	Max	-6.18	0.88	0.
16	16-27	U	Max	-5.85	0.72	0.
16	16-27	U	Max	-5.81	0.76	0.
16	16-27	U	Max	-6.15	0.92	0.
16	16-27	U	Min	-11.22	-1.01	0.
16	16-27	U	Min	-10.98	-0.83	0.
16	16-27	U	Min	-10.96	-1.05	0.
16	16-27	U	Min	-11.21	-1.23	0.
16	16-28	U	Max	-6.19	0.79	0.
16	16-28	U	Max	-5.85	0.67	0.
16	16-28	U	Max	-5.87	0.48	0.

16	16-28	U	Max	-6.22	0.6	0.
16	16-28	U	Min	-11.2	-1.33	0.
16	16-28	U	Min	-10.96	-1.12	0.
16	16-28	U	Min	-11.1	-0.99	0.
16	16-28	U	Min	-11.35	-1.21	0.
16	16-29	U	Max	-5.61	0.6	0.
16	16-29	U	Max	-5.24	0.47	0.
16	16-29	U	Max	-5.19	0.5	0.
16	16-29	U	Max	-5.56	0.63	0.
16	16-29	U	Min	-10.18	-0.72	0.
16	16-29	U	Min	-9.85	-0.56	0.
16	16-29	U	Min	-9.76	-0.71	0.
16	16-29	U	Min	-10.09	-0.87	0.
16	16-30	U	Max	-5.6	0.54	0.
16	16-30	U	Max	-5.21	0.44	0.
16	16-30	U	Max	-5.29	0.32	0.
16	16-30	U	Max	-5.67	0.42	0.
16	16-30	U	Min	-10.09	-0.94	0.
16	16-30	U	Min	-9.75	-0.76	0.
16	16-30	U	Min	-9.96	-0.67	0.
16	16-30	U	Min	-10.29	-0.85	0.
16	16-31	U	Max	-4.95	0.39	0.

Element Forces - Área Shells, Part 3 of 10

Area	AreaElem	OutputCase	StepType	F22	F12	FMax
16	16-31	U	Max	-4.53	0.3	0.
16	16-31	U	Max	-4.49	0.31	0.
16	16-31	U	Max	-4.91	0.4	0.
16	16-31	U	Min	-9.1	-0.46	0.
16	16-31	U	Min	-8.65	-0.33	0.
16	16-31	U	Min	-8.59	-0.43	0.
16	16-31	U	Min	-9.04	-0.56	0.
16	16-32	U	Max	-4.93	0.34	0.
16	16-32	U	Max	-4.51	0.28	0.
16	16-32	U	Max	-4.6	0.19	0.
16	16-32	U	Max	-5.03	0.26	0.
16	16-32	U	Min	-9.03	-0.61	0.
16	16-32	U	Min	-8.59	-0.46	0.
16	16-32	U	Min	-8.78	-0.41	0.
16	16-32	U	Min	-9.23	-0.56	0.
16	16-33	U	Max	-4.14	0.26	0.
16	16-33	U	Max	-3.72	0.27	0.
16	16-33	U	Max	-3.82	0.26	0.
16	16-33	U	Max	-4.25	0.26	0.
16	16-33	U	Min	-7.82	-0.25	0.
16	16-33	U	Min	-7.36	-0.12	0.
16	16-33	U	Min	-7.62	-0.18	0.
16	16-33	U	Min	-8.08	-0.31	0.
16	16-34	U	Max	-4.24	0.22	0.
16	16-34	U	Max	-3.82	0.18	0.
16	16-34	U	Max	-3.82	0.11	0.
16	16-34	U	Max	-4.27	0.14	0.
16	16-34	U	Min	-8.08	-0.34	0.
16	16-34	U	Min	-7.57	-0.23	0.
16	16-34	U	Min	-7.57	-0.22	0.
16	16-34	U	Min	-8.07	-0.33	0.
16	16-35	U	Max	-3.01	0.37	0.
16	16-35	U	Max	-2.72	0.42	0.
16	16-35	U	Max	-3.38	0.35	0.
16	16-35	U	Max	-3.67	0.3	0.
16	16-35	U	Min	-5.91	2.614E-03	0.
16	16-35	U	Min	-5.71	9.656E-02	0.
16	16-35	U	Min	-7.3	3.423E-02	0.

16	16-35	U	Min	-7.5	-5.972E-02	0.
16	16-36	U	Max	-3.65	0.22	0.
16	16-36	U	Max	-3.4	0.13	0.
16	16-36	U	Max	-3.02	-3.623E-02	0.
16	16-36	U	Max	-3.28	2.333E-02	0.
16	16-36	U	Min	-7.45	-0.11	0.
16	16-36	U	Min	-7.32	-7.452E-02	0.
16	16-36	U	Min	-6.4	-0.25	0.
16	16-36	U	Min	-6.53	-0.25	0.
16	16-37	U	Max	-2.26	0.71	0.
16	16-37	U	Max	-2.47	0.81	0.
16	16-37	U	Max	-3.43	0.34	0.
16	16-37	U	Max	-3.17	0.25	0.
16	16-37	U	Min	-5.04	0.24	0.
16	16-37	U	Min	-6.01	0.33	0.
16	16-37	U	Min	-8.15	0.1	0.
16	16-37	U	Min	-7.18	1.960E-02	0.
16	16-38	U	Max	-3.18	3.010E-02	0.
16	16-38	U	Max	-3.46	-0.24	0.
16	16-38	U	Max	-1.89	-0.3	0.
16	16-38	U	Max	-1.66	-3.248E-02	0.
16	16-38	U	Min	-7.21	-8.957E-02	0.
16	16-38	U	Min	-8.22	-0.6	0.
16	16-38	U	Min	-4.54	-0.73	0.
16	16-38	U	Min	-3.53	-0.19	0.

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 4 of 10

Area	AreaElem	StepType	F22	FMax	FMin	FAngle
16	16-1	Max	5.41	0.	0.	0.
16	16-1	Max	3.86	0.	0.	0.
16	16-1	Max	-1.81	0.	0.	0.
16	16-1	Max	2.877E-02	0.	0.	0.
16	16-1	Min	-21.39	0.	0.	0.
16	16-1	Min	-15.94	0.	0.	0.
16	16-1	Min	-32.85	0.	0.	0.
16	16-1	Min	-38.55	0.	0.	0.
16	16-2	Max	0.46	0.	0.	0.
16	16-2	Max	-1.89	0.	0.	0.
16	16-2	Max	7.55	0.	0.	0.
16	16-2	Max	9.9	0.	0.	0.
16	16-2	Min	-38.57	0.	0.	0.
16	16-2	Min	-32.81	0.	0.	0.
16	16-2	Min	-15.78	0.	0.	0.
16	16-2	Min	-21.31	0.	0.	0.
16	16-3	Max	2.629E-02	0.	0.	0.
16	16-3	Max	-2.35	0.	0.	0.
16	16-3	Max	-0.21	0.	0.	0.
16	16-3	Max	2.3	0.	0.	0.
16	16-3	Min	-24.69	0.	0.	0.
16	16-3	Min	-24.58	0.	0.	0.
16	16-3	Min	-27.54	0.	0.	0.
16	16-3	Min	-27.74	0.	0.	0.
16	16-4	Max	2.22	0.	0.	0.
16	16-4	Max	-0.49	0.	0.	0.
16	16-4	Max	0.99	0.	0.	0.
16	16-4	Max	3.7	0.	0.	0.
16	16-4	Min	-27.7	0.	0.	0.
16	16-4	Min	-27.52	0.	0.	0.

16	16-4	Min	-23.71	0.	0.	0.
16	16-4	Min	-23.7	0.	0.	0.
16	16-5	Max	-2.63	0.	0.	0.
16	16-5	Max	-3.98	0.	0.	0.
16	16-5	Max	-1.49	0.	0.	0.
16	16-5	Max	-7.380E-02	0.	0.	0.
16	16-5	Min	-23.81	0.	0.	0.
16	16-5	Min	-25.24	0.	0.	0.
16	16-5	Min	-25.64	0.	0.	0.
16	16-5	Min	-24.2	0.	0.	0.
16	16-6	Max	-0.36	0.	0.	0.
16	16-6	Max	-1.77	0.	0.	0.
16	16-6	Max	-1.28	0.	0.	0.
16	16-6	Max	0.13	0.	0.	0.
16	16-6	Min	-24.19	0.	0.	0.
16	16-6	Min	-25.64	0.	0.	0.
16	16-6	Min	-24.53	0.	0.	0.
16	16-6	Min	-23.07	0.	0.	0.
16	16-7	Max	-4.54	0.	0.	0.
16	16-7	Max	-4.81	0.	0.	0.
16	16-7	Max	-2.92	0.	0.	0.
16	16-7	Max	-2.64	0.	0.	0.
16	16-7	Min	-23.01	0.	0.	0.
16	16-7	Min	-24.25	0.	0.	0.
16	16-7	Min	-23.38	0.	0.	0.
16	16-7	Min	-22.14	0.	0.	0.
16	16-8	Max	-2.91	0.	0.	0.
16	16-8	Max	-3.15	0.	0.	0.
16	16-8	Max	-2.61	0.	0.	0.
16	16-8	Max	-2.37	0.	0.	0.
16	16-8	Min	-22.14	0.	0.	0.
16	16-8	Min	-23.37	0.	0.	0.
16	16-8	Min	-24.01	0.	0.	0.
16	16-8	Min	-22.77	0.	0.	0.
16	16-9	Max	-5.6	0.	0.	0.
16	16-9	Max	-5.29	0.	0.	0.
16	16-9	Max	-4.27	0.	0.	0.
16	16-9	Max	-4.61	0.	0.	0.
16	16-9	Min	-21.9	0.	0.	0.
16	16-9	Min	-22.5	0.	0.	0.
16	16-11	Min	-20.2	0.	0.	0.
16	16-12	Max	-6.12	0.	0.	0.
16	16-12	Max	-5.56	0.	0.	0.
16	16-12	Max	-4.59	0.	0.	0.
16	16-12	Max	-5.16	0.	0.	0.
16	16-12	Min	-20.21	0.	0.	0.
16	16-12	Min	-20.39	0.	0.	0.
16	16-12	Min	-20.84	0.	0.	0.
16	16-12	Min	-20.66	0.	0.	0.
16	16-13	Max	-6.84	0.	0.	0.
16	16-13	Max	-6.35	0.	0.	0.
16	16-13	Max	-6.19	0.	0.	0.
16	16-13	Max	-6.7	0.	0.	0.
16	16-13	Min	-19.21	0.	0.	0.
16	16-13	Min	-19.21	0.	0.	0.
16	16-13	Min	-19.16	0.	0.	0.
16	16-13	Min	-19.16	0.	0.	0.
16	16-14	Max	-6.85	0.	0.	0.
16	16-14	Max	-6.32	0.	0.	0.
16	16-14	Max	-5.47	0.	0.	0.
16	16-14	Max	-6.01	0.	0.	0.
16	16-14	Min	-19.16	0.	0.	0.
16	16-14	Min	-19.16	0.	0.	0.
16	16-14	Min	-19.33	0.	0.	0.

16	16-14	Min	-19.36	0.	0.	0.
16	16-15	Max	-7.2	0.	0.	0.
16	16-15	Max	-6.78	0.	0.	0.
16	16-15	Max	-6.71	0.	0.	0.
16	16-15	Max	-7.15	0.	0.	0.
16	16-15	Min	-17.86	0.	0.	0.
16	16-15	Min	-17.84	0.	0.	0.
16	16-15	Min	-17.92	0.	0.	0.
16	16-15	Min	-18.07	0.	0.	0.
16	16-16	Max	-7.27	0.	0.	0.
16	16-16	Max	-6.81	0.	0.	0.
16	16-16	Max	-6.15	0.	0.	0.
16	16-16	Max	-6.61	0.	0.	0.
16	16-16	Min	-18.07	0.	0.	0.
16	16-16	Min	-17.92	0.	0.	0.
16	16-16	Min	-17.97	0.	0.	0.
16	16-16	Min	-18.19	0.	0.	0.
16	16-17	Max	-7.4	0.	0.	0.
16	16-17	Max	-7.03	0.	0.	0.
16	16-17	Max	-6.97	0.	0.	0.
16	16-17	Max	-7.35	0.	0.	0.
16	16-17	Min	-16.71	0.	0.	0.
16	16-17	Min	-16.55	0.	0.	0.
16	16-17	Min	-16.66	0.	0.	0.
16	16-17	Min	-16.92	0.	0.	0.
16	16-18	Max	-7.46	0.	0.	0.
16	16-18	Max	-7.06	0.	0.	0.
16	16-18	Max	-6.61	0.	0.	0.
16	16-18	Max	-7.	0.	0.	0.
16	16-18	Min	-16.92	0.	0.	0.
16	16-18	Min	-16.66	0.	0.	0.

16	16-20	Min	-15.86	0.	0.	0.
16	16-21	Max	-7.31	0.	0.	0.
16	16-21	Max	-6.99	0.	0.	0.
16	16-21	Max	-6.95	0.	0.	0.
16	16-21	Max	-7.28	0.	0.	0.
16	16-21	Min	-14.49	0.	0.	0.
16	16-21	Min	-14.28	0.	0.	0.
16	16-21	Min	-14.42	0.	0.	0.
16	16-21	Min	-14.62	0.	0.	0.
16	16-22	Max	-7.36	0.	0.	0.
16	16-22	Max	-7.02	0.	0.	0.
16	16-22	Max	-6.84	0.	0.	0.
16	16-22	Max	-7.18	0.	0.	0.
16	16-22	Min	-14.62	0.	0.	0.
16	16-22	Min	-14.41	0.	0.	0.
16	16-22	Min	-14.51	0.	0.	0.
16	16-22	Min	-14.71	0.	0.	0.
16	16-23	Max	-7.05	0.	0.	0.
16	16-23	Max	-6.73	0.	0.	0.
16	16-23	Max	-6.71	0.	0.	0.
16	16-23	Max	-7.03	0.	0.	0.
16	16-23	Min	-13.38	0.	0.	0.
16	16-23	Min	-13.19	0.	0.	0.
16	16-23	Min	-13.28	0.	0.	0.
16	16-23	Min	-13.48	0.	0.	0.
16	16-24	Max	-7.1	0.	0.	0.
16	16-24	Max	-6.76	0.	0.	0.
16	16-24	Max	-6.66	0.	0.	0.
16	16-24	Max	-7.	0.	0.	0.
16	16-24	Min	-13.48	0.	0.	0.
16	16-24	Min	-13.28	0.	0.	0.
16	16-24	Min	-13.37	0.	0.	0.
16	16-24	Min	-13.57	0.	0.	0.

16	16-25	Max	-6.66	0.	0.	0.
16	16-25	Max	-6.34	0.	0.	0.
16	16-25	Max	-6.32	0.	0.	0.
16	16-25	Max	-6.65	0.	0.	0.
16	16-25	Min	-12.29	0.	0.	0.
16	16-25	Min	-12.08	0.	0.	0.
16	16-25	Min	-12.14	0.	0.	0.
16	16-25	Min	-12.34	0.	0.	0.
16	16-26	Max	-6.7	0.	0.	0.
16	16-26	Max	-6.37	0.	0.	0.
16	16-26	Max	-6.33	0.	0.	0.
16	16-26	Max	-6.67	0.	0.	0.
16	16-26	Min	-12.34	0.	0.	0.
16	16-26	Min	-12.13	0.	0.	0.
16	16-26	Min	-12.24	0.	0.	0.
16	16-26	Min	-12.44	0.	0.	0.
16	16-27	Max	-6.18	0.	0.	0.
16	16-27	Max	-5.85	0.	0.	0.
16	16-27	Max	-5.81	0.	0.	0.
16	16-27	Max	-6.15	0.	0.	0.
16	16-27	Min	-11.22	0.	0.	0.
16	16-27	Min	-10.98	0.	0.	0.
16	16-29	Min	-10.09	0.	0.	0.
16	16-30	Max	-5.6	0.	0.	0.
16	16-30	Max	-5.21	0.	0.	0.
16	16-30	Max	-5.29	0.	0.	0.
16	16-30	Max	-5.67	0.	0.	0.
16	16-30	Min	-10.09	0.	0.	0.
16	16-30	Min	-9.75	0.	0.	0.
16	16-30	Min	-9.96	0.	0.	0.
16	16-30	Min	-10.29	0.	0.	0.
16	16-31	Max	-4.95	0.	0.	0.
16	16-31	Max	-4.53	0.	0.	0.
16	16-31	Max	-4.49	0.	0.	0.
16	16-31	Max	-4.91	0.	0.	0.
16	16-31	Min	-9.1	0.	0.	0.
16	16-31	Min	-8.65	0.	0.	0.
16	16-31	Min	-8.59	0.	0.	0.
16	16-31	Min	-9.04	0.	0.	0.
16	16-32	Max	-4.93	0.	0.	0.
16	16-32	Max	-4.51	0.	0.	0.
16	16-32	Max	-4.6	0.	0.	0.
16	16-32	Max	-5.03	0.	0.	0.
16	16-32	Min	-9.03	0.	0.	0.
16	16-32	Min	-8.59	0.	0.	0.
16	16-32	Min	-8.78	0.	0.	0.
16	16-32	Min	-9.23	0.	0.	0.
16	16-33	Max	-4.14	0.	0.	0.
16	16-33	Max	-3.72	0.	0.	0.
16	16-33	Max	-3.82	0.	0.	0.
16	16-33	Max	-4.25	0.	0.	0.
16	16-33	Min	-7.82	0.	0.	0.
16	16-33	Min	-7.36	0.	0.	0.
16	16-33	Min	-7.62	0.	0.	0.
16	16-33	Min	-8.08	0.	0.	0.
16	16-34	Max	-4.24	0.	0.	0.
16	16-34	Max	-3.82	0.	0.	0.
16	16-34	Max	-3.82	0.	0.	0.
16	16-34	Max	-4.27	0.	0.	0.
16	16-34	Min	-8.08	0.	0.	0.
16	16-34	Min	-7.57	0.	0.	0.
16	16-34	Min	-7.57	0.	0.	0.
16	16-34	Min	-8.07	0.	0.	0.
16	16-35	Max	-3.01	0.	0.	0.

16	16-35	Max	-2.72	0.	0.	0.
16	16-35	Max	-3.38	0.	0.	0.
16	16-35	Max	-3.67	0.	0.	0.
16	16-35	Min	-5.91	0.	0.	0.
16	16-35	Min	-5.71	0.	0.	0.
16	16-35	Min	-7.3	0.	0.	0.
16	16-35	Min	-7.5	0.	0.	0.
16	16-36	Max	-3.65	0.	0.	0.
16	16-36	Max	-3.4	0.	0.	0.
16	16-36	Max	-3.02	0.	0.	0.
16	16-36	Max	-3.28	0.	0.	0.
16	16-36	Min	-7.45	0.	0.	0.
16	16-36	Min	-7.32	0.	0.	0.
16	16-38	Min	-3.53	0.	0.	0.

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 5 of 10

Area	AreaElem	F22	FMax	FAngle	FVM	M11
16	16-1	5.41	0.	0.	0.	0.8677
16	16-1	3.86	0.	0.	0.	0.3473
16	16-1	-1.81	0.	0.	0.	0.4706
16	16-1	2.877E-02	0.	0.	0.	0.6828
16	16-1	-21.39	0.	0.	0.	0.4117
16	16-1	-15.94	0.	0.	0.	0.0552
16	16-1	-32.85	0.	0.	0.	-0.025
16	16-1	-38.55	0.	0.	0.	0.4065
16	16-2	0.46	0.	0.	0.	0.6947
16	16-2	-1.89	0.	0.	0.	0.4706
16	16-2	7.55	0.	0.	0.	0.2962
16	16-2	9.9	0.	0.	0.	0.8125
16	16-2	-38.57	0.	0.	0.	0.4104
16	16-2	-32.81	0.	0.	0.	-0.0255
16	16-2	-15.78	0.	0.	0.	-0.0022
16	16-2	-21.31	0.	0.	0.	0.3666
16	16-3	2.629E-02	0.	0.	0.	0.335
16	16-3	-2.35	0.	0.	0.	0.1247
16	16-3	-0.21	0.	0.	0.	0.2358
16	16-3	2.3	0.	0.	0.	0.4898
16	16-3	-24.69	0.	0.	0.	0.0389
16	16-3	-24.58	0.	0.	0.	-0.0377
16	16-3	-27.54	0.	0.	0.	-0.2725
16	16-3	-27.74	0.	0.	0.	-0.0233
16	16-4	2.22	0.	0.	0.	0.4898
16	16-4	-0.49	0.	0.	0.	0.2363
16	16-4	0.99	0.	0.	0.	0.088
16	16-4	3.7	0.	0.	0.	0.2747
16	16-4	-27.7	0.	0.	0.	-0.0238
16	16-4	-27.52	0.	0.	0.	-0.2717
16	16-4	-23.71	0.	0.	0.	-0.1145
16	16-4	-23.7	0.	0.	0.	0.0252
16	16-5	-2.63	0.	0.	0.	0.1221
16	16-5	-3.98	0.	0.	0.	0.0842
16	16-5	-1.49	0.	0.	0.	0.072
16	16-5	-7.380E-02	0.	0.	0.	0.2353
16	16-5	-23.81	0.	0.	0.	-0.0041
16	16-5	-25.24	0.	0.	0.	-0.0652
16	16-5	-25.64	0.	0.	0.	-0.3487
16	16-5	-24.2	0.	0.	0.	-0.2859

16	16-6	-0.36	0.	0.	0.	0.2358
16	16-6	-1.77	0.	0.	0.	0.0714
16	16-6	-1.28	0.	0.	0.	0.1225
16	16-6	0.13	0.	0.	0.	0.091
16	16-6	-24.19	0.	0.	0.	-0.2851
16	16-6	-25.64	0.	0.	0.	-0.3491
16	16-6	-24.53	0.	0.	0.	-0.1049
16	16-6	-23.07	0.	0.	0.	-0.0021
16	16-7	-4.54	0.	0.	0.	0.0855
16	16-7	-4.81	0.	0.	0.	0.1144
16	16-7	-2.92	0.	0.	0.	-2.073E-05
16	16-7	-2.64	0.	0.	0.	0.0726
16	16-7	-23.01	0.	0.	0.	-0.0647
16	16-7	-24.25	0.	0.	0.	-0.0546
16	16-7	-23.38	0.	0.	0.	-0.3441
16	16-7	-22.14	0.	0.	0.	-0.3588
16	16-8	-2.91	0.	0.	0.	0.072
16	16-8	-3.15	0.	0.	0.	-1.524E-05
16	16-8	-2.61	0.	0.	0.	0.1693
16	16-8	-2.37	0.	0.	0.	0.0878
16	16-8	-22.14	0.	0.	0.	-0.3592
16	16-8	-23.37	0.	0.	0.	-0.344
16	16-8	-24.01	0.	0.	0.	-0.0612
16	16-8	-22.77	0.	0.	0.	-0.0451
16	16-9	-5.6	0.	0.	0.	0.1059
16	16-9	-5.29	0.	0.	0.	0.13
16	16-9	-4.27	0.	0.	0.	-0.0119
16	16-9	-4.61	0.	0.	0.	-1.592E-04
16	16-9	-21.9	0.	0.	0.	-0.055
16	16-9	-22.5	0.	0.	0.	-0.0236
16	16-9	-21.74	0.	0.	0.	-0.3168
16	16-9	-21.13	0.	0.	0.	-0.3524
16	16-10	-4.84	0.	0.	0.	-1.542E-04
16	16-10	-4.46	0.	0.	0.	-0.012
16	16-10	-3.64	0.	0.	0.	0.1814
16	16-10	-4.02	0.	0.	0.	0.1396
16	16-10	-21.13	0.	0.	0.	-0.3524
16	16-10	-21.75	0.	0.	0.	-0.3168
16	16-10	-22.45	0.	0.	0.	-0.0324
16	16-10	-21.83	0.	0.	0.	-0.0303
16	16-11	-6.33	0.	0.	0.	0.1226
16	16-11	-5.83	0.	0.	0.	0.1258
16	16-11	-5.42	0.	0.	0.	-0.0058
16	16-11	-5.94	0.	0.	0.	-0.0122
16	16-11	-20.58	0.	0.	0.	-0.0225
16	16-11	-20.76	0.	0.	0.	-0.0029
16	16-11	-20.39	0.	0.	0.	-0.2855
16	16-11	-20.2	0.	0.	0.	-0.3237
16	16-12	-6.12	0.	0.	0.	-0.0122
16	16-12	-5.56	0.	0.	0.	-0.0058
16	16-12	-4.59	0.	0.	0.	0.173
16	16-12	-5.16	0.	0.	0.	0.1561
16	16-12	-20.21	0.	0.	0.	-0.3237
16	16-12	-20.39	0.	0.	0.	-0.2855
16	16-12	-20.84	0.	0.	0.	-0.0274
16	16-12	-20.66	0.	0.	0.	-0.004
16	16-13	-6.84	0.	0.	0.	0.1231
16	16-13	-6.35	0.	0.	0.	0.1161
16	16-13	-6.19	0.	0.	0.	0.0012
16	16-13	-6.7	0.	0.	0.	-0.0059
16	16-13	-19.21	0.	0.	0.	-0.0028
16	16-13	-19.21	0.	0.	0.	0.004
16	16-13	-19.16	0.	0.	0.	-0.2608
16	16-13	-19.16	0.	0.	0.	-0.291

16	16-14	-6.85	0.	0.	0.	-0.0059
16	16-14	-6.32	0.	0.	0.	0.0012
16	16-14	-5.47	0.	0.	0.	0.1525
16	16-14	-6.01	0.	0.	0.	0.1513
16	16-14	-19.16	0.	0.	0.	-0.291
16	16-14	-19.16	0.	0.	0.	-0.2607
16	16-14	-19.33	0.	0.	0.	-0.0311
16	16-14	-19.36	0.	0.	0.	0.0107
16	16-15	-7.2	0.	0.	0.	0.1156
16	16-15	-6.78	0.	0.	0.	0.104
16	16-15	-6.71	0.	0.	0.	0.0046
16	16-15	-7.15	0.	0.	0.	0.0012
16	16-15	-17.86	0.	0.	0.	0.0042
16	16-15	-17.84	0.	0.	0.	0.0041
16	16-15	-17.92	0.	0.	0.	-0.2417
16	16-15	-18.07	0.	0.	0.	-0.2654
16	16-16	-7.27	0.	0.	0.	0.0012
16	16-16	-6.81	0.	0.	0.	0.0046
16	16-16	-6.15	0.	0.	0.	0.1299
16	16-16	-6.61	0.	0.	0.	0.1342
16	16-16	-18.07	0.	0.	0.	-0.2653
16	16-16	-17.92	0.	0.	0.	-0.2417
16	16-16	-17.97	0.	0.	0.	-0.0354
16	16-16	-18.19	0.	0.	0.	0.0137
16	16-17	-7.4	0.	0.	0.	0.1032
16	16-17	-7.03	0.	0.	0.	0.0915
16	16-17	-6.97	0.	0.	0.	0.0046
16	16-17	-7.35	0.	0.	0.	0.0046
16	16-17	-16.71	0.	0.	0.	0.0039
16	16-17	-16.55	0.	0.	0.	0.0023
16	16-17	-16.66	0.	0.	0.	-0.2235
16	16-17	-16.92	0.	0.	0.	-0.2455
16	16-18	-7.46	0.	0.	0.	0.0046
16	16-18	-7.06	0.	0.	0.	0.0046
16	16-18	-6.61	0.	0.	0.	0.1099
16	16-18	-7.	0.	0.	0.	0.1145
16	16-18	-16.92	0.	0.	0.	-0.2455
16	16-18	-16.66	0.	0.	0.	-0.2234
16	16-18	-16.76	0.	0.	0.	-0.0371
16	16-18	-17.02	0.	0.	0.	0.0047
16	16-19	-7.43	0.	0.	0.	0.0906
16	16-19	-7.09	0.	0.	0.	0.0803
16	16-19	-7.05	0.	0.	0.	0.0033
16	16-19	-7.4	0.	0.	0.	0.0047
16	16-19	-15.6	0.	0.	0.	0.0022
16	16-19	-15.37	0.	0.	0.	9.339E-04
16	16-19	-15.54	0.	0.	0.	-0.2044
16	16-19	-15.77	0.	0.	0.	-0.2266
16	16-20	-7.49	0.	0.	0.	0.0047
16	16-20	-7.13	0.	0.	0.	0.0033
16	16-20	-6.83	0.	0.	0.	0.0936
16	16-20	-7.19	0.	0.	0.	0.0973
16	16-20	-15.76	0.	0.	0.	-0.2266
16	16-20	-15.54	0.	0.	0.	-0.2044
16	16-20	-15.64	0.	0.	0.	-0.0361
16	16-20	-15.86	0.	0.	0.	-0.0036
16	16-21	-7.31	0.	0.	0.	0.0794
16	16-21	-6.99	0.	0.	0.	0.0705
16	16-21	-6.95	0.	0.	0.	0.0017
16	16-21	-7.28	0.	0.	0.	0.0033
16	16-21	-14.49	0.	0.	0.	7.195E-04
16	16-21	-14.28	0.	0.	0.	2.846E-04
16	16-21	-14.42	0.	0.	0.	-0.1842
16	16-21	-14.62	0.	0.	0.	-0.2069

16	16-22	-7.36	0.	0.	0.	0.0033
16	16-22	-7.02	0.	0.	0.	0.0017
16	16-22	-6.84	0.	0.	0.	0.0801
16	16-22	-7.18	0.	0.	0.	0.0834
16	16-22	-14.62	0.	0.	0.	-0.2069
16	16-22	-14.41	0.	0.	0.	-0.1842
16	16-22	-14.51	0.	0.	0.	-0.0332
16	16-22	-14.71	0.	0.	0.	-0.0086
16	16-23	-7.05	0.	0.	0.	0.0696
16	16-23	-6.73	0.	0.	0.	0.0609
16	16-23	-6.71	0.	0.	0.	4.867E-05
16	16-23	-7.03	0.	0.	0.	0.0017
16	16-23	-13.38	0.	0.	0.	6.036E-05
16	16-23	-13.19	0.	0.	0.	-1.221E-04
16	16-23	-13.28	0.	0.	0.	-0.1636
16	16-23	-13.48	0.	0.	0.	-0.1862
16	16-24	-7.1	0.	0.	0.	0.0018
16	16-24	-6.76	0.	0.	0.	5.223E-05
16	16-24	-6.66	0.	0.	0.	0.0679
16	16-24	-7.	0.	0.	0.	0.0719
16	16-24	-13.48	0.	0.	0.	-0.1862
16	16-25	-6.32	0.	0.	0.	-0.0019
16	16-25	-6.65	0.	0.	0.	6.985E-05
16	16-25	-12.29	0.	0.	0.	-3.712E-04
16	16-25	-12.08	0.	0.	0.	-0.0016
16	16-25	-12.14	0.	0.	0.	-0.1436
16	16-25	-12.34	0.	0.	0.	-0.1651
16	16-26	-6.7	0.	0.	0.	7.340E-05
16	16-26	-6.37	0.	0.	0.	-0.0019
16	16-26	-6.33	0.	0.	0.	0.0556
16	16-26	-6.67	0.	0.	0.	0.0616
16	16-26	-12.34	0.	0.	0.	-0.1651
16	16-26	-12.13	0.	0.	0.	-0.1436
16	16-26	-12.24	0.	0.	0.	-0.0263
16	16-26	-12.44	0.	0.	0.	-0.0126
16	16-27	-6.18	0.	0.	0.	0.0504
16	16-27	-5.85	0.	0.	0.	0.0402
16	16-27	-5.81	0.	0.	0.	-0.0039
16	16-27	-6.15	0.	0.	0.	-0.0019
16	16-27	-11.22	0.	0.	0.	-0.0019
16	16-27	-10.98	0.	0.	0.	-0.0057
16	16-27	-10.96	0.	0.	0.	-0.1235
16	16-27	-11.21	0.	0.	0.	-0.1446
16	16-28	-6.19	0.	0.	0.	-0.0019
16	16-28	-5.85	0.	0.	0.	-0.0039
16	16-28	-5.87	0.	0.	0.	0.0434
16	16-28	-6.22	0.	0.	0.	0.0508
16	16-28	-11.2	0.	0.	0.	-0.1446
16	16-28	-10.96	0.	0.	0.	-0.1234
16	16-28	-11.1	0.	0.	0.	-0.0261
16	16-28	-11.35	0.	0.	0.	-0.0137
16	16-29	-5.61	0.	0.	0.	0.0395
16	16-29	-5.24	0.	0.	0.	0.0279
16	16-29	-5.19	0.	0.	0.	-0.0042
16	16-29	-5.56	0.	0.	0.	-0.0039
16	16-29	-10.18	0.	0.	0.	-0.006
16	16-29	-9.85	0.	0.	0.	-0.0126
16	16-29	-9.76	0.	0.	0.	-0.1008
16	16-29	-10.09	0.	0.	0.	-0.1241
16	16-30	-5.6	0.	0.	0.	-0.0039
16	16-30	-5.21	0.	0.	0.	-0.0043
16	16-30	-5.29	0.	0.	0.	0.0306
16	16-30	-5.67	0.	0.	0.	0.0399
16	16-30	-10.09	0.	0.	0.	-0.1241
16	16-30	-9.75	0.	0.	0.	-0.1009
16	16-30	-9.96	0.	0.	0.	-0.028

16	16-30	-10.29	0.	0.	0.	-0.0172
16	16-31	-4.95	0.	0.	0.	0.0273
16	16-31	-4.53	0.	0.	0.	0.0156
16	16-31	-4.49	0.	0.	0.	0.0013
16	16-31	-4.91	0.	0.	0.	-0.0042
16	16-31	-9.1	0.	0.	0.	-0.0128
16	16-31	-8.65	0.	0.	0.	-0.0196
16	16-31	-8.59	0.	0.	0.	-0.0712
16	16-31	-9.04	0.	0.	0.	-0.1012
16	16-32	-4.93	0.	0.	0.	-0.0042
16	16-32	-4.51	0.	0.	0.	0.0018
16	16-32	-4.6	0.	0.	0.	0.0194
16	16-32	-5.03	0.	0.	0.	0.0282
16	16-32	-9.03	0.	0.	0.	-0.1012
16	16-32	-8.59	0.	0.	0.	-0.0709
16	16-32	-8.78	0.	0.	0.	-0.0275
16	16-32	-9.23	0.	0.	0.	-0.0223
16	16-33	-4.14	0.	0.	0.	0.0151
16	16-33	-3.72	0.	0.	0.	0.0067
16	16-33	-3.82	0.	0.	0.	0.0259
16	16-33	-4.25	0.	0.	0.	0.0014
16	16-33	-7.82	0.	0.	0.	-0.0198
16	16-34	-3.82	0.	0.	0.	0.0196
16	16-34	-4.27	0.	0.	0.	0.0179
16	16-34	-8.08	0.	0.	0.	-0.0711
16	16-34	-7.57	0.	0.	0.	-0.0356
16	16-34	-7.57	0.	0.	0.	-0.0079
16	16-34	-8.07	0.	0.	0.	-0.0241
16	16-35	-3.01	0.	0.	0.	0.0076
16	16-35	-2.72	0.	0.	0.	0.0506
16	16-35	-3.38	0.	0.	0.	0.0793
16	16-35	-3.67	0.	0.	0.	0.0254
16	16-35	-5.91	0.	0.	0.	-0.0178
16	16-35	-5.71	0.	0.	0.	0.0215
16	16-35	-7.3	0.	0.	0.	0.0138
16	16-35	-7.5	0.	0.	0.	-0.0352
16	16-36	-3.65	0.	0.	0.	0.024
16	16-36	-3.4	0.	0.	0.	0.0825
16	16-36	-3.02	0.	0.	0.	0.0574
16	16-36	-3.28	0.	0.	0.	0.0181
16	16-36	-7.45	0.	0.	0.	-0.0359
16	16-36	-7.32	0.	0.	0.	0.0152
16	16-36	-6.4	0.	0.	0.	0.0173
16	16-36	-6.53	0.	0.	0.	-0.0065
16	16-37	-2.26	0.	0.	0.	0.0357
16	16-37	-2.47	0.	0.	0.	0.1092
16	16-37	-3.43	0.	0.	0.	0.1045
16	16-37	-3.17	0.	0.	0.	0.0804
16	16-37	-5.04	0.	0.	0.	0.0155
16	16-37	-6.01	0.	0.	0.	0.0461
16	16-37	-8.15	0.	0.	0.	0.0395
16	16-37	-7.18	0.	0.	0.	0.0142
16	16-38	-3.18	0.	0.	0.	0.0836
16	16-38	-3.46	0.	0.	0.	0.1005
16	16-38	-1.89	0.	0.	0.	0.1603
16	16-38	-1.66	0.	0.	0.	0.0618
16	16-38	-7.21	0.	0.	0.	0.0156
16	16-38	-8.22	0.	0.	0.	0.0379
16	16-38	-4.54	0.	0.	0.	0.0668
16	16-38	-3.53	0.	0.	0.	0.0198

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 6 of 10

Area	AreaElem	FMax	FAngle	M11	M22	M12
16	16-1	0.	0.	0.8677	3.2752	0.3296
16	16-1	0.	0.	0.3473	1.8157	0.1097
16	16-1	0.	0.	0.4706	1.6259	0.1308
16	16-1	0.	0.	0.6828	3.9179	0.3489
16	16-1	0.	0.	0.4117	1.4145	-0.1828
16	16-1	0.	0.	0.0552	0.0365	-0.1768
16	16-1	0.	0.	-0.025	0.043	-0.1632
16	16-2	0.	0.	0.4065	2.1639	-0.1674
16	16-2	0.	0.	0.6947	3.9183	0.2486
16	16-2	0.	0.	0.4706	1.6259	0.2574
16	16-2	0.	0.	0.2962	1.8476	0.2738
16	16-2	0.	0.	0.8125	3.165	0.2671
16	16-2	0.	0.	0.4104	2.1662	-0.248
16	16-2	0.	0.	-0.0255	0.0427	-0.0545
16	16-2	0.	0.	-0.0022	0.171	-0.0311
16	16-3	0.	0.	0.3666	1.354	-0.2266
16	16-3	0.	0.	0.335	1.7465	0.079
16	16-3	0.	0.	0.1247	0.3379	0.0331
16	16-3	0.	0.	0.2358	0.4349	0.0382
16	16-3	0.	0.	0.4898	1.7221	0.0899
16	16-3	0.	0.	0.0389	-0.0407	-0.0932
16	16-3	0.	0.	-0.0377	-0.6552	-0.0455
16	16-3	0.	0.	-0.2725	-0.4523	-0.0307
16	16-4	0.	0.	-0.0233	0.0365	-0.0784
16	16-4	0.	0.	0.4898	1.7221	0.1371
16	16-4	0.	0.	0.2363	0.435	0.0558
16	16-4	0.	0.	0.088	0.3866	0.0697
16	16-4	0.	0.	0.2747	1.7351	0.151
16	16-4	0.	0.	-0.0238	0.0363	-0.0302
16	16-4	0.	0.	-0.2717	-0.4522	-0.0142
16	16-4	0.	0.	-0.1145	-0.5846	-0.008
16	16-5	0.	0.	0.0252	-0.0491	-0.024
16	16-5	0.	0.	0.1221	0.3135	-0.0013
16	16-5	0.	0.	0.0842	-0.1426	-0.0187
16	16-5	0.	0.	0.072	-0.1196	-0.0079
16	16-5	0.	0.	0.2353	0.4325	0.0069
16	16-5	0.	0.	-0.0041	-0.5742	-0.0329
16	16-5	0.	0.	-0.0652	-0.6033	-0.0498
16	16-5	0.	0.	-0.3487	-0.456	-0.0378
16	16-6	0.	0.	-0.2859	-0.5192	-0.0218
16	16-6	0.	0.	0.2358	0.4326	0.0155
16	16-6	0.	0.	0.0714	-0.1197	0.0062
16	16-6	0.	0.	0.1225	-0.1262	0.0113
16	16-6	0.	0.	0.091	0.4002	0.0236
16	16-6	0.	0.	-0.2851	-0.5192	-0.0023
16	16-6	0.	0.	-0.3491	-0.4562	-0.0217
16	16-6	0.	0.	-0.1049	-0.6301	-0.0141
16	16-7	0.	0.	-0.0021	-0.549	4.764E-04
16	16-7	0.	0.	0.0855	-0.1406	-0.0098
16	16-7	0.	0.	0.1144	-0.0443	-0.0022
16	16-7	0.	0.	-2.073E-05	-0.1947	0.0014
16	16-7	0.	0.	0.0726	-0.1168	-0.0061
16	16-7	0.	0.	-0.0647	-0.5251	-0.0516
16	16-7	0.	0.	-0.0546	-0.4036	-0.0521
16	16-7	0.	0.	-0.3441	-0.2989	-0.0473

16	16-7	0.	0.	-0.3588	-0.5043	-0.0468
16	16-8	0.	0.	0.072	-0.1169	0.0043
16	16-8	0.	0.	-1.524E-05	-0.1947	0.0031
16	16-8	0.	0.	0.1693	-0.0789	0.0056
16	16-8	0.	0.	0.0878	-0.118	0.0069
16	16-8	0.	0.	-0.3592	-0.5045	-0.0313
16	16-8	0.	0.	-0.344	-0.2988	-0.0426
16	16-8	0.	0.	-0.0612	-0.466	-0.0379
16	16-8	0.	0.	-0.0451	-0.482	-0.0267
16	16-9	0.	0.	0.1059	-0.0291	-0.0015
16	16-9	0.	0.	0.13	0.0734	0.0023
16	16-9	0.	0.	-0.0119	-0.0865	0.0027
16	16-9	0.	0.	-1.592E-04	-0.1954	-0.0012
16	16-9	0.	0.	-0.055	-0.3298	-0.0424
16	16-9	0.	0.	-0.0236	-0.2133	-0.0357
16	16-9	0.	0.	-0.3168	-0.156	-0.0345
16	16-9	0.	0.	-0.3524	-0.3407	-0.0412
16	16-10	0.	0.	-1.542E-04	-0.1954	5.960E-04
16	16-10	0.	0.	-0.012	-0.0865	-0.0012
16	16-10	0.	0.	0.1814	0.0496	-2.581E-05
16	16-10	0.	0.	0.1396	-0.0172	0.0017
16	16-10	0.	0.	-0.3524	-0.3407	-0.037
16	16-10	0.	0.	-0.3168	-0.156	-0.0364
16	16-10	0.	0.	-0.0324	-0.2827	-0.0346
16	16-10	0.	0.	-0.0303	-0.2849	-0.0352
16	16-11	0.	0.	0.1226	0.0818	-2.811E-04
16	16-11	0.	0.	0.1258	0.1166	6.003E-04
16	16-11	0.	0.	-0.0058	-0.0245	-5.656E-06
16	16-11	0.	0.	-0.0122	-0.1155	-8.870E-04
16	16-11	0.	0.	-0.0225	-0.1562	-0.026
16	16-11	0.	0.	-0.0029	-0.1091	-0.0198
16	16-11	0.	0.	-0.2855	-0.0636	-0.0201
16	16-11	0.	0.	-0.3237	-0.1797	-0.0263
16	16-12	0.	0.	-0.0122	-0.1155	-0.0034
16	16-12	0.	0.	-0.0058	-0.0245	-0.004
16	16-12	0.	0.	0.173	0.0954	-0.0033
16	16-12	0.	0.	0.1561	0.0818	-0.0026

16	16-12	0.	0.	-0.3237	-0.1797	-0.0274
16	16-12	0.	0.	-0.2855	-0.0636	-0.0248
16	16-12	0.	0.	-0.0274	-0.1695	-0.0247
16	16-12	0.	0.	-0.004	-0.1367	-0.0273
16	16-13	0.	0.	0.1231	0.1248	-0.0016
16	16-13	0.	0.	0.1161	0.1131	3.496E-04
16	16-13	0.	0.	0.0012	-0.0045	-5.500E-04
16	16-13	0.	0.	-0.0059	-0.0475	-0.0025
16	16-13	0.	0.	-0.0028	-0.0639	-0.0128
16	16-13	0.	0.	0.004	-0.0687	-0.009
16	16-13	0.	0.	-0.2608	-0.03	-0.0099
16	16-13	0.	0.	-0.291	-0.0865	-0.0138
16	16-14	0.	0.	-0.0059	-0.0475	-0.0052
16	16-14	0.	0.	0.0012	-0.0045	-0.0049
16	16-14	0.	0.	0.1525	0.0908	-0.0042
16	16-14	0.	0.	0.1513	0.1209	-0.0047
16	16-14	0.	0.	-0.291	-0.0865	-0.0172
16	16-14	0.	0.	-0.2607	-0.03	-0.0151
16	16-14	0.	0.	-0.0311	-0.1202	-0.0161
16	16-14	0.	0.	0.0107	-0.0501	-0.0182
16	16-15	0.	0.	0.1156	0.1158	-0.0011
16	16-15	0.	0.	0.104	0.0948	5.687E-04
16	16-15	0.	0.	0.0046	0.0099	-5.212E-04
16	16-15	0.	0.	0.0012	-0.0046	-0.0022
16	16-15	0.	0.	0.0042	-0.0326	-0.0062
16	16-15	0.	0.	0.0041	-0.0633	-0.0051
16	16-15	0.	0.	-0.2417	-0.0325	-0.0047

16	16-15	0.	0.	-0.2654	-0.053	-0.0058
16	16-16	0.	0.	0.0012	-0.0046	-0.0039
16	16-16	0.	0.	0.0046	0.0099	-0.0026
16	16-16	0.	0.	0.1299	0.0721	-0.0019
16	16-16	0.	0.	0.1342	0.1177	-0.0031
16	16-16	0.	0.	-0.2653	-0.053	-0.0097
16	16-16	0.	0.	-0.2417	-0.0325	-0.009
16	16-16	0.	0.	-0.0354	-0.1059	-0.0108
16	16-17	0.	0.	0.0137	-0.0041	-0.0115
16	16-17	0.	0.	0.1032	0.0949	0.0017
16	16-17	0.	0.	0.0915	0.0726	0.0026
16	16-17	0.	0.	0.0046	0.0093	0.0014
16	16-17	0.	0.	0.0046	0.0101	2.820E-04
16	16-17	0.	0.	0.0039	-0.0322	-0.0044
16	16-17	0.	0.	0.0023	-0.0613	-0.0038
16	16-18	0.	0.	-0.2235	-0.0391	-0.0036
16	16-18	0.	0.	-0.2455	-0.0517	-0.0041
16	16-18	0.	0.	0.0046	0.0101	-0.0014
16	16-18	0.	0.	0.0046	0.0093	-4.294E-04
16	16-18	0.	0.	0.1099	0.0507	-8.503E-05
16	16-18	0.	0.	0.1145	0.0976	-0.001
16	16-18	0.	0.	-0.2455	-0.0517	-0.0051
16	16-18	0.	0.	-0.2234	-0.0391	-0.0052
16	16-18	0.	0.	-0.0371	-0.0975	-0.0075
16	16-19	0.	0.	0.0047	-0.0075	-0.0074
16	16-19	0.	0.	0.0906	0.0689	0.0047
16	16-19	0.	0.	0.0803	0.0546	0.0051
16	16-19	0.	0.	0.0033	0.0052	0.0033
16	16-19	0.	0.	0.0047	0.0095	0.0028
16	16-19	0.	0.	0.0022	-0.0346	-0.0033
16	16-19	0.	0.	9.339E-04	-0.0566	-0.0028
16	16-19	0.	0.	-0.2044	-0.0421	-0.0027
16	16-20	0.	0.	-0.2266	-0.055	-0.0031
16	16-20	0.	0.	0.0047	0.0095	5.393E-04
16	16-20	0.	0.	0.0033	0.0052	0.0013
16	16-20	0.	0.	0.0936	0.0347	0.0013
16	16-20	0.	0.	0.0973	0.0731	5.486E-04
16	16-20	0.	0.	-0.2266	-0.055	-0.0033
16	16-20	0.	0.	-0.2044	-0.0421	-0.0026
16	16-20	0.	0.	-0.0361	-0.087	-0.0054
16	16-21	0.	0.	-0.0036	-0.0152	-0.0049
16	16-21	0.	0.	0.0794	0.0487	0.0068
16	16-21	0.	0.	0.0705	0.0413	0.0071
16	16-21	0.	0.	0.0017	0.0021	0.0051
			0.	0.0033	0.0053	0.0048

16	16-21	0.	0.	7.195E-04	-0.0333	-0.0024
16	16-21	0.	0.	2.846E-04	-0.0489	-0.0021
16	16-21	0.	0.	-0.1842	-0.0414	-0.002
16	16-21	0.	0.	-0.2069	-0.055	-0.0023
16	16-22	0.	0.	0.0033	0.0053	0.002
16	16-22	0.	0.	0.0017	0.0021	0.0026
16	16-22	0.	0.	0.0801	0.0238	0.0023
16	16-22	0.	0.	0.0834	0.0521	0.0018
16	16-22	0.	0.	-0.2069	-0.0549	-0.002
16	16-22	0.	0.	-0.1842	-0.0414	-0.0017
16	16-22	0.	0.	-0.0332	-0.0745	-0.0037
16	16-23	0.	0.	-0.0086	-0.0186	-0.0032
16	16-23	0.	0.	0.0696	0.0334	0.0085
16	16-23	0.	0.	0.0609	0.0295	0.0087
16	16-23	0.	0.	4.867E-05	-0.0015	0.0066
16	16-23	0.	0.	0.0017	0.0022	0.0064
16	16-23	0.	0.	6.036E-05	-0.0292	-0.0018
16	16-23	0.	0.	-1.221E-04	-0.0414	-0.0014
			0.	-0.1636	-0.0402	-0.0013

16	16-23	0.	0.	-0.1862	-0.0515	-0.0016
16	16-24	0.	0.	0.0018	0.0022	0.0032
16	16-24	0.	0.	5.223E-05	-0.0015	0.0036
16	16-24	0.	0.	0.0679	0.0152	0.0032
16	16-24	0.	0.	0.0719	0.0361	0.0027
16	16-24	0.	0.	-0.1862	-0.0515	-0.0014
16	16-24	0.	0.	-0.1636	-0.0402	-0.0011
16	16-24	0.	0.	-0.0296	-0.0629	-0.0023
16	16-24	0.	0.	-0.0113	-0.0181	-0.0018
16	16-25	0.	0.	0.0601	0.0211	0.0099
16	16-25	0.	0.	0.0512	0.0183	0.01
16	16-25	0.	0.	-0.0019	-0.0073	0.0079
16	16-25	0.	0.	6.985E-05	-0.0014	0.0078
16	16-25	0.	0.	-3.712E-04	-0.0254	-0.0012
16	16-25	0.	0.	-0.0016	-0.04	-8.863E-04
16	16-25	0.	0.	-0.1436	-0.0436	-7.541E-04
16	16-25	0.	0.	-0.1651	-0.0477	-0.001
16	16-26	0.	0.	7.340E-05	-0.0014	0.0041
16	16-26	0.	0.	-0.0019	-0.0073	0.0046
16	16-26	0.	0.	0.0556	0.0066	0.0041
16	16-26	0.	0.	0.0616	0.0225	0.0036
16	16-26	0.	0.	-0.1651	-0.0477	-7.787E-04
16	16-26	0.	0.	-0.1436	-0.0436	-5.525E-04
16	16-26	0.	0.	-0.0263	-0.0575	-0.0012
16	16-26	0.	0.	-0.0126	-0.0172	-6.167E-04
16	16-27	0.	0.	0.0504	0.0092	0.0111
16	16-27	0.	0.	0.0402	0.0052	0.0113
16	16-27	0.	0.	-0.0039	-0.0169	0.0092
16	16-27	0.	0.	-0.0019	-0.0072	0.009
16	16-27	0.	0.	-0.0019	-0.0275	-6.514E-04
16	16-27	0.	0.	-0.0057	-0.0455	-3.617E-04
16	16-27	0.	0.	-0.1235	-0.0521	-1.696E-04
16	16-27	0.	0.	-0.1446	-0.0489	-4.593E-04
16	16-28	0.	0.	-0.0019	-0.0072	0.005
16	16-28	0.	0.	-0.0039	-0.0169	0.0054
16	16-28	0.	0.	0.0434	-0.004	0.0048
16	16-28	0.	0.	0.0508	0.0099	0.0045
16	16-28	0.	0.	-0.1446	-0.0489	-3.228E-04
16	16-28	0.	0.	-0.1234	-0.0521	-1.314E-04
16	16-28	0.	0.	-0.0261	-0.0593	-2.506E-04
16	16-28	0.	0.	-0.0137	-0.0217	-1.087E-04
16	16-29	0.	0.	0.0395	-0.0038	0.0122
16	16-29	0.	0.	0.0279	-0.0062	0.0124
16	16-29	0.	0.	-0.0042	-0.0247	0.0106
16	16-29	0.	0.	-0.0039	-0.0166	0.0103
16	16-29	0.	0.	-0.006	-0.0362	-1.531E-04
16	16-29	0.	0.	-0.0126	-0.0509	1.206E-04
16	16-29	0.	0.	-0.1008	-0.0581	4.418E-04
16	16-29	0.	0.	-0.1241	-0.0555	1.680E-04
16	16-30	0.	0.	-0.0039	-0.0166	0.0058
16	16-30	0.	0.	-0.0043	-0.0248	0.0061
16	16-30	0.	0.	0.0306	-0.0131	0.0055
16	16-30	0.	0.	0.0399	-0.0039	0.0052
16	16-30	0.	0.	-0.1241	-0.0555	5.647E-05
16	16-30	0.	0.	-0.1009	-0.0582	2.327E-04
16	16-30	0.	0.	-0.028	-0.0613	4.987E-04
16	16-30	0.	0.	-0.0172	-0.0326	3.224E-04
16	16-31	0.	0.	0.0273	-0.0121	0.0131
16	16-31	0.	0.	0.0156	-0.0034	0.0137
16	16-31	0.	0.	0.0013	-0.013	0.0123
16	16-31	0.	0.	-0.0042	-0.0245	0.0118
16	16-31	0.	0.	-0.0128	-0.0444	2.717E-04
16	16-31	0.	0.	-0.0196	-0.0309	8.066E-04
16	16-31	0.	0.	-0.0712	-0.0367	0.0015

16	16-31	0.	0.	-0.1012	-0.0599	9.825E-04
16	16-32	0.	0.	-0.0042	-0.0245	0.0066
16	16-32	0.	0.	0.0018	-0.0129	0.0074
16	16-32	0.	0.	0.0194	-0.0081	0.0068
16	16-32	0.	0.	0.0282	-0.0148	0.006
16	16-32	0.	0.	-0.1012	-0.0599	5.355E-04
16	16-32	0.	0.	-0.0709	-0.0366	0.001
16	16-32	0.	0.	-0.0275	-0.0401	0.0013
16	16-33	0.	0.	-0.0223	-0.0427	7.717E-04
16	16-33	0.	0.	0.0151	-0.0063	0.015
16	16-33	0.	0.	0.0067	0.0818	0.0171
16	16-33	0.	0.	0.0259	0.0759	0.0161
16	16-33	0.	0.	0.0014	-0.0127	0.0141
16	16-33	0.	0.	-0.0198	-0.0268	0.0016
16	16-33	0.	0.	-0.0202	0.0264	0.0032
16	16-33	0.	0.	-0.0349	0.0214	0.0042
16	16-34	0.	0.	-0.0713	-0.0373	0.0026
16	16-34	0.	0.	0.0019	-0.0126	0.0091
16	16-34	0.	0.	0.0245	0.0756	0.0097
16	16-34	0.	0.	0.0196	0.0774	0.0076
16	16-34	0.	0.	0.0179	-0.0089	0.007
16	16-34	0.	0.	-0.0711	-0.0372	0.0021
16	16-34	0.	0.	-0.0356	0.0212	0.0026
16	16-34	0.	0.	-0.0079	0.0214	0.0019
16	16-35	0.	0.	-0.0241	-0.0273	0.0014
16	16-35	0.	0.	0.0076	0.095	0.0254
16	16-35	0.	0.	0.0506	0.2461	0.0181
16	16-35	0.	0.	0.0793	0.3055	0.0097
16	16-35	0.	0.	0.0254	0.0736	0.017
16	16-35	0.	0.	-0.0178	0.0353	0.0094
16	16-35	0.	0.	0.0215	0.1016	0.0046
16	16-35	0.	0.	0.0138	0.1256	4.372E-05
16	16-36	0.	0.	-0.0352	0.0199	0.0048
16	16-36	0.	0.	0.024	0.0733	0.009
16	16-36	0.	0.	0.0825	0.3061	0.0024
16	16-36	0.	0.	0.0574	0.3381	3.258E-04
16	16-36	0.	0.	0.0181	0.073	0.0053
16	16-36	0.	0.	-0.0359	0.0197	0.0023
16	16-36	0.	0.	0.0152	0.1259	-0.0048
16	16-36	0.	0.	0.0173	0.1401	-0.0073
16	16-37	0.	0.	-0.0065	0.0276	5.919E-04
16	16-37	0.	0.	0.0357	0.172	-0.008
16	16-37	0.	0.	0.1092	0.8666	-0.0147
16	16-37	0.	0.	0.1045	0.7782	-0.0075
16	16-37	0.	0.	0.0804	0.311	-7.819E-04
16	16-37	0.	0.	0.0155	0.0713	-0.037
16	16-37	0.	0.	0.0461	0.3598	-0.049
16	16-37	0.	0.	0.0395	0.3243	-0.0283
16	16-38	0.	0.	0.0142	0.1276	-0.0185
16	16-38	0.	0.	0.0836	0.3116	-0.0052
16	16-38	0.	0.	0.1005	0.7774	0.0124
16	16-38	0.	0.	0.1603	0.6266	0.0172
16	16-38	0.	0.	0.0618	0.3599	-0.0037
16	16-38	0.	0.	0.0156	0.1279	-0.0187
16	16-38	0.	0.	0.0379	0.324	0.0048
16	16-38	0.	0.	0.0668	0.2628	0.0062
16	16-38	0.	0.	0.0198	0.1509	-0.0147

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 7 of 10

Area	AreaElem	FAngle	M11	M12	MMax	MMin
16	16-1	0.	0.8677	0.3296	0.	0.
16	16-1	0.	0.3473	0.1097	0.	0.
16	16-1	0.	0.4706	0.1308	0.	0.
16	16-1	0.	0.6828	0.3489	0.	0.
16	16-1	0.	0.4117	-0.1828	0.	0.
16	16-1	0.	0.0552	-0.1768	0.	0.
16	16-1	0.	-0.025	-0.1632	0.	0.
16	16-1	0.	0.4065	-0.1674	0.	0.
16	16-2	0.	0.6947	0.2486	0.	0.
16	16-2	0.	0.4706	0.2574	0.	0.
16	16-2	0.	0.2962	0.2738	0.	0.
16	16-2	0.	0.8125	0.2671	0.	0.
16	16-2	0.	0.4104	-0.248	0.	0.
16	16-2	0.	-0.0255	-0.0545	0.	0.
16	16-2	0.	-0.0022	-0.0311	0.	0.
16	16-2	0.	0.3666	-0.2266	0.	0.
16	16-3	0.	0.335	0.079	0.	0.
16	16-3	0.	0.1247	0.0331	0.	0.
16	16-3	0.	0.2358	0.0382	0.	0.
16	16-3	0.	0.4898	0.0899	0.	0.
16	16-3	0.	0.0389	-0.0932	0.	0.
16	16-3	0.	-0.0377	-0.0455	0.	0.
16	16-3	0.	-0.2725	-0.0307	0.	0.
16	16-3	0.	-0.0233	-0.0784	0.	0.
16	16-4	0.	0.4898	0.1371	0.	0.
16	16-4	0.	0.2363	0.0558	0.	0.
16	16-4	0.	0.088	0.0697	0.	0.
16	16-4	0.	0.2747	0.151	0.	0.
16	16-4	0.	-0.0238	-0.0302	0.	0.
16	16-4	0.	-0.2717	-0.0142	0.	0.
16	16-4	0.	-0.1145	-0.008	0.	0.
16	16-4	0.	0.0252	-0.024	0.	0.
16	16-5	0.	0.1221	-0.0013	0.	0.
16	16-5	0.	0.0842	-0.0187	0.	0.
16	16-5	0.	0.072	-0.0079	0.	0.
16	16-5	0.	0.2353	0.0069	0.	0.
16	16-5	0.	-0.0041	-0.0329	0.	0.
16	16-5	0.	-0.0652	-0.0498	0.	0.
16	16-5	0.	-0.3487	-0.0378	0.	0.
16	16-5	0.	-0.2859	-0.0218	0.	0.
16	16-6	0.	0.2358	0.0155	0.	0.
16	16-6	0.	0.0714	0.0062	0.	0.
16	16-6	0.	0.1225	0.0113	0.	0.
16	16-6	0.	0.091	0.0236	0.	0.
16	16-6	0.	-0.2851	-0.0023	0.	0.
16	16-6	0.	-0.3491	-0.0217	0.	0.
16	16-6	0.	-0.1049	-0.0141	0.	0.
16	16-6	0.	-0.0021	4.764E-04	0.	0.
16	16-7	0.	0.0855	-0.0098	0.	0.
16	16-7	0.	0.1144	-0.0022	0.	0.
16	16-7	0.	-2.073E-05	0.0014	0.	0.
16	16-7	0.	0.0726	-0.0061	0.	0.
16	16-7	0.	-0.0647	-0.0516	0.	0.
16	16-7	0.	-0.0546	-0.0521	0.	0.
16	16-7	0.	-0.3441	-0.0473	0.	0.
16	16-7	0.	-0.3588	-0.0468	0.	0.
16	16-8	0.	0.072	0.0043	0.	0.
16	16-8	0.	-1.524E-05	0.0031	0.	0.

16	16-8	0.	0.1693	0.0056	0.	0.
16	16-8	0.	0.0878	0.0069	0.	0.
16	16-8	0.	-0.3592	-0.0313	0.	0.
16	16-8	0.	-0.344	-0.0426	0.	0.
16	16-8	0.	-0.0612	-0.0379	0.	0.
16	16-8	0.	-0.0451	-0.0267	0.	0.
16	16-9	0.	0.1059	-0.0015	0.	0.
16	16-9	0.	0.13	0.0023	0.	0.
16	16-9	0.	-0.0119	0.0027	0.	0.
16	16-9	0.	-1.592E-04	-0.0012	0.	0.
16	16-9	0.	-0.055	-0.0424	0.	0.
16	16-9	0.	-0.0236	-0.0357	0.	0.
16	16-10	0.	-1.542E-04	5.960E-04	0.	0.
16	16-10	0.	-0.012	-0.0012	0.	0.
16	16-10	0.	0.1814	-2.581E-05	0.	0.
16	16-10	0.	0.1396	0.0017	0.	0.
16	16-10	0.	-0.3524	-0.037	0.	0.
16	16-10	0.	-0.3168	-0.0364	0.	0.
16	16-10	0.	-0.0324	-0.0346	0.	0.
16	16-10	0.	-0.0303	-0.0352	0.	0.
16	16-11	0.	0.1226	-2.811E-04	0.	0.
16	16-11	0.	0.1258	6.003E-04	0.	0.
16	16-11	0.	-0.0058	-5.656E-06	0.	0.
16	16-11	0.	-0.0122	-8.870E-04	0.	0.
16	16-11	0.	-0.0225	-0.026	0.	0.
16	16-11	0.	-0.0029	-0.0198	0.	0.
16	16-11	0.	-0.2855	-0.0201	0.	0.
16	16-11	0.	-0.3237	-0.0263	0.	0.
16	16-12	0.	-0.0122	-0.0034	0.	0.
16	16-12	0.	-0.0058	-0.004	0.	0.
16	16-12	0.	0.173	-0.0033	0.	0.
16	16-12	0.	0.1561	-0.0026	0.	0.
16	16-12	0.	-0.3237	-0.0274	0.	0.
16	16-12	0.	-0.2855	-0.0248	0.	0.
16	16-12	0.	-0.0274	-0.0247	0.	0.
16	16-13	0.	-0.004	-0.0273	0.	0.
16	16-13	0.	0.1231	-0.0016	0.	0.
16	16-13	0.	0.1161	3.496E-04	0.	0.
16	16-13	0.	0.0012	-5.500E-04	0.	0.
16	16-13	0.	-0.0059	-0.0025	0.	0.
16	16-13	0.	-0.0028	-0.0128	0.	0.
16	16-13	0.	0.004	-0.009	0.	0.
16	16-13	0.	-0.2608	-0.0099	0.	0.
16	16-14	0.	-0.291	-0.0138	0.	0.
16	16-14	0.	-0.0059	-0.0052	0.	0.
16	16-14	0.	0.0012	-0.0049	0.	0.
16	16-14	0.	0.1525	-0.0042	0.	0.
16	16-14	0.	0.1513	-0.0047	0.	0.
16	16-14	0.	-0.291	-0.0172	0.	0.
16	16-14	0.	-0.2607	-0.0151	0.	0.
16	16-14	0.	-0.0311	-0.0161	0.	0.
16	16-15	0.	0.0107	-0.0182	0.	0.
16	16-15	0.	0.1156	-0.0011	0.	0.
16	16-15	0.	0.104	5.687E-04	0.	0.
16	16-15	0.	0.0046	-5.212E-04	0.	0.
16	16-15	0.	0.0012	-0.0022	0.	0.
16	16-15	0.	0.0042	-0.0062	0.	0.
16	16-15	0.	0.0041	-0.0051	0.	0.
16	16-15	0.	-0.2417	-0.0047	0.	0.
16	16-16	0.	-0.2654	-0.0058	0.	0.
16	16-16	0.	0.0012	-0.0039	0.	0.
16	16-16	0.	0.0046	-0.0026	0.	0.
16	16-16	0.	0.1299	-0.0019	0.	0.
16	16-16	0.	0.1342	-0.0031	0.	0.

16	16-16	0.	-0.2653	-0.0097	0.	0.
16	16-16	0.	-0.2417	-0.009	0.	0.
16	16-16	0.	-0.0354	-0.0108	0.	0.
16	16-16	0.	0.0137	-0.0115	0.	0.
16	16-17	0.	0.1032	0.0017	0.	0.
16	16-17	0.	0.0915	0.0026	0.	0.
16	16-17	0.	0.0046	0.0014	0.	0.
16	16-17	0.	0.0046	2.820E-04	0.	0.
16	16-17	0.	0.0039	-0.0044	0.	0.
16	16-17	0.	0.0023	-0.0038	0.	0.
16	16-17	0.	-0.2235	-0.0036	0.	0.
16	16-17	0.	-0.2455	-0.0041	0.	0.
16	16-18	0.	0.0046	-0.0014	0.	0.
16	16-18	0.	0.0046	-4.294E-04	0.	0.
16	16-18	0.	0.1099	-8.503E-05	0.	0.
16	16-18	0.	0.1145	-0.001	0.	0.
16	16-18	0.	-0.2455	-0.0051	0.	0.
16	16-18	0.	-0.2234	-0.0052	0.	0.
16	16-19	0.	0.0906	0.0047	0.	0.
16	16-19	0.	0.0803	0.0051	0.	0.
16	16-19	0.	0.0033	0.0033	0.	0.
16	16-19	0.	0.0047	0.0028	0.	0.
16	16-19	0.	0.0022	-0.0033	0.	0.
16	16-19	0.	9.339E-04	-0.0028	0.	0.
16	16-19	0.	-0.2044	-0.0027	0.	0.
16	16-19	0.	-0.2266	-0.0031	0.	0.
16	16-20	0.	0.0047	5.393E-04	0.	0.
16	16-20	0.	0.0033	0.0013	0.	0.
16	16-20	0.	0.0936	0.0013	0.	0.
16	16-20	0.	0.0973	5.486E-04	0.	0.
16	16-20	0.	-0.2266	-0.0033	0.	0.
16	16-20	0.	-0.2044	-0.0026	0.	0.
16	16-20	0.	-0.0361	-0.0054	0.	0.
16	16-20	0.	-0.0036	-0.0049	0.	0.
16	16-21	0.	0.0794	0.0068	0.	0.
16	16-21	0.	0.0705	0.0071	0.	0.
16	16-21	0.	0.0017	0.0051	0.	0.
16	16-21	0.	0.0033	0.0048	0.	0.
16	16-21	0.	7.195E-04	-0.0024	0.	0.
16	16-21	0.	2.846E-04	-0.0021	0.	0.
16	16-21	0.	-0.1842	-0.002	0.	0.
16	16-21	0.	-0.2069	-0.0023	0.	0.
16	16-22	0.	0.0033	0.002	0.	0.
16	16-22	0.	0.0017	0.0026	0.	0.
16	16-22	0.	0.0801	0.0023	0.	0.
16	16-22	0.	0.0834	0.0018	0.	0.
16	16-22	0.	-0.2069	-0.002	0.	0.
16	16-22	0.	-0.1842	-0.0017	0.	0.
16	16-22	0.	-0.0332	-0.0037	0.	0.
16	16-22	0.	-0.0086	-0.0032	0.	0.
16	16-23	0.	0.0696	0.0085	0.	0.
16	16-23	0.	0.0609	0.0087	0.	0.
16	16-23	0.	4.867E-05	0.0066	0.	0.
16	16-23	0.	0.0017	0.0064	0.	0.
16	16-23	0.	6.036E-05	-0.0018	0.	0.
16	16-23	0.	-1.221E-04	-0.0014	0.	0.
16	16-23	0.	-0.1636	-0.0013	0.	0.
16	16-23	0.	-0.1862	-0.0016	0.	0.
16	16-24	0.	0.0018	0.0032	0.	0.
16	16-24	0.	5.223E-05	0.0036	0.	0.
16	16-24	0.	0.0679	0.0032	0.	0.
16	16-24	0.	0.0719	0.0027	0.	0.
16	16-24	0.	-0.1862	-0.0014	0.	0.
16	16-24	0.	-0.1636	-0.0011	0.	0.

16	16-24	0.	-0.0296	-0.0023	0.	0.
16	16-24	0.	-0.0113	-0.0018	0.	0.
16	16-25	0.	0.0601	0.0099	0.	0.
16	16-25	0.	0.0512	0.01	0.	0.
16	16-25	0.	-0.0019	0.0079	0.	0.
16	16-25	0.	6.985E-05	0.0078	0.	0.
16	16-25	0.	-3.712E-04	-0.0012	0.	0.
16	16-25	0.	-0.0016	-8.863E-04	0.	0.
16	16-25	0.	-0.1436	-7.541E-04	0.	0.
16	16-26	0.	-0.1651	-0.001	0.	0.
16	16-26	0.	7.340E-05	0.0041	0.	0.
16	16-26	0.	-0.0019	0.0046	0.	0.
16	16-26	0.	0.0556	0.0041	0.	0.
16	16-26	0.	0.0616	0.0036	0.	0.
16	16-26	0.	-0.1651	-7.787E-04	0.	0.
16	16-26	0.	-0.1436	-5.525E-04	0.	0.
16	16-26	0.	-0.0263	-0.0012	0.	0.
16	16-27	0.	-0.0126	-6.167E-04	0.	0.
16	16-27	0.	0.0504	0.0111	0.	0.
16	16-27	0.	0.0402	0.0113	0.	0.
16	16-27	0.	-0.0039	0.0092	0.	0.
16	16-27	0.	-0.0019	0.009	0.	0.
16	16-27	0.	-0.0019	-6.514E-04	0.	0.
16	16-27	0.	-0.0057	-3.617E-04	0.	0.
16	16-27	0.	-0.1235	-1.696E-04	0.	0.
16	16-27	0.	-0.1446	-4.593E-04	0.	0.
16	16-28	0.	-0.0019	0.005	0.	0.
16	16-28	0.	-0.0039	0.0054	0.	0.
16	16-28	0.	0.0434	0.0048	0.	0.
16	16-28	0.	0.0508	0.0045	0.	0.
16	16-28	0.	-0.1446	-3.228E-04	0.	0.
16	16-28	0.	-0.1234	-1.314E-04	0.	0.
16	16-28	0.	-0.0261	-2.506E-04	0.	0.
16	16-28	0.	-0.0137	-1.087E-04	0.	0.
16	16-29	0.	0.0395	0.0122	0.	0.
16	16-29	0.	0.0279	0.0124	0.	0.
16	16-29	0.	-0.0042	0.0106	0.	0.
16	16-29	0.	-0.0039	0.0103	0.	0.
16	16-29	0.	-0.006	-1.531E-04	0.	0.
16	16-29	0.	-0.0126	1.206E-04	0.	0.
16	16-29	0.	-0.1008	4.418E-04	0.	0.
16	16-29	0.	-0.1241	1.680E-04	0.	0.
16	16-30	0.	-0.0039	0.0058	0.	0.
16	16-30	0.	-0.0043	0.0061	0.	0.
16	16-30	0.	0.0306	0.0055	0.	0.
16	16-30	0.	0.0399	0.0052	0.	0.
16	16-30	0.	-0.1241	5.647E-05	0.	0.
16	16-30	0.	-0.1009	2.327E-04	0.	0.
16	16-30	0.	-0.028	4.987E-04	0.	0.
16	16-30	0.	-0.0172	3.224E-04	0.	0.
16	16-31	0.	0.0273	0.0131	0.	0.
16	16-31	0.	0.0156	0.0137	0.	0.
16	16-31	0.	0.0013	0.0123	0.	0.
16	16-31	0.	-0.0042	0.0118	0.	0.
16	16-31	0.	-0.0128	2.717E-04	0.	0.
16	16-31	0.	-0.0196	8.066E-04	0.	0.
16	16-31	0.	-0.0712	0.0015	0.	0.
16	16-31	0.	-0.1012	9.825E-04	0.	0.
16	16-32	0.	-0.0042	0.0066	0.	0.
16	16-32	0.	0.0018	0.0074	0.	0.
16	16-32	0.	0.0194	0.0068	0.	0.
16	16-32	0.	0.0282	0.006	0.	0.
16	16-32	0.	-0.1012	5.355E-04	0.	0.
16	16-32	0.	-0.0709	0.001	0.	0.

16	16-32	0.	-0.0275	0.0013	0.	0.
16	16-32	0.	-0.0223	7.717E-04	0.	0.
16	16-33	0.	0.0151	0.015	0.	0.
16	16-33	0.	0.0067	0.0171	0.	0.
16	16-33	0.	0.0259	0.0161	0.	0.
16	16-33	0.	0.0014	0.0141	0.	0.
16	16-33	0.	-0.0198	0.0016	0.	0.
16	16-33	0.	-0.0202	0.0032	0.	0.
16	16-33	0.	-0.0349	0.0042	0.	0.
16	16-33	0.	-0.0713	0.0026	0.	0.
16	16-34	0.	0.0019	0.0091	0.	0.
16	16-34	0.	0.0245	0.0097	0.	0.
16	16-34	0.	0.0196	0.0076	0.	0.
16	16-34	0.	0.0179	0.007	0.	0.
16	16-34	0.	-0.0711	0.0021	0.	0.
16	16-34	0.	-0.0356	0.0026	0.	0.
16	16-34	0.	-0.0079	0.0019	0.	0.
16	16-34	0.	-0.0241	0.0014	0.	0.
16	16-35	0.	0.0076	0.0254	0.	0.
16	16-35	0.	0.0506	0.0181	0.	0.
16	16-35	0.	0.0793	0.0097	0.	0.
16	16-35	0.	0.0254	0.017	0.	0.
16	16-35	0.	-0.0178	0.0094	0.	0.
16	16-35	0.	0.0215	0.0046	0.	0.
16	16-35	0.	0.0138	4.372E-05	0.	0.
16	16-35	0.	-0.0352	0.0048	0.	0.
16	16-36	0.	0.024	0.009	0.	0.
16	16-36	0.	0.0825	0.0024	0.	0.
16	16-36	0.	0.0574	3.258E-04	0.	0.
16	16-36	0.	0.0181	0.0053	0.	0.
16	16-36	0.	-0.0359	0.0023	0.	0.
16	16-36	0.	0.0152	-0.0048	0.	0.
16	16-36	0.	0.0173	-0.0073	0.	0.
16	16-36	0.	-0.0065	5.919E-04	0.	0.
16	16-37	0.	0.0357	-0.008	0.	0.
16	16-37	0.	0.1092	-0.0147	0.	0.
16	16-37	0.	0.1045	-0.0075	0.	0.
16	16-37	0.	0.0804	-7.819E-04	0.	0.
16	16-37	0.	0.0155	-0.037	0.	0.
16	16-37	0.	0.0461	-0.049	0.	0.
16	16-37	0.	0.0395	-0.0283	0.	0.
16	16-37	0.	0.0142	-0.0185	0.	0.
16	16-38	0.	0.0836	-0.0052	0.	0.
16	16-38	0.	0.1005	0.0124	0.	0.
16	16-38	0.	0.1603	0.0172	0.	0.
16	16-38	0.	0.0618	-0.0037	0.	0.
16	16-38	0.	0.0156	-0.0187	0.	0.
16	16-38	0.	0.0379	0.0048	0.	0.
16	16-38	0.	0.0668	0.0062	0.	0.
16	16-38	0.	0.0198	-0.0147	0.	0.

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 8 of 10

Area	AreaElem	M11	M12	MMin	MAngle	V13
16	16-1	0.8677	0.3296	0.	0.	1.32
16	16-1	0.3473	0.1097	0.	0.	1.73
16	16-1	0.4706	0.1308	0.	0.	1.73
16	16-1	0.6828	0.3489	0.	0.	1.32
16	16-1	0.4117	-0.1828	0.	0.	-1.21
16	16-1	0.0552	-0.1768	0.	0.	-0.36
16	16-1	-0.025	-0.1632	0.	0.	-0.36
16	16-1	0.4065	-0.1674	0.	0.	-1.21
16	16-2	0.6947	0.2486	0.	0.	0.68
16	16-2	0.4706	0.2574	0.	0.	0.22
16	16-2	0.2962	0.2738	0.	0.	0.22
16	16-2	0.8125	0.2671	0.	0.	0.68
16	16-2	0.4104	-0.248	0.	0.	-1.98
16	16-2	-0.0255	-0.0545	0.	0.	-2.1
16	16-2	-0.0022	-0.0311	0.	0.	-2.1
16	16-2	0.3666	-0.2266	0.	0.	-1.98
16	16-3	0.335	0.079	0.	0.	1.29
16	16-3	0.1247	0.0331	0.	0.	1.38
16	16-3	0.2358	0.0382	0.	0.	1.38
16	16-3	0.4898	0.0899	0.	0.	1.29
16	16-3	0.0389	-0.0932	0.	0.	-1.2
16	16-3	-0.0377	-0.0455	0.	0.	-2.03
16	16-3	-0.2725	-0.0307	0.	0.	-2.03
16	16-4	-0.0233	-0.0784	0.	0.	-1.2
16	16-4	0.4898	0.1371	0.	0.	1.31
16	16-4	0.2363	0.0558	0.	0.	1.98
16	16-4	0.088	0.0697	0.	0.	1.98
16	16-4	0.2747	0.151	0.	0.	1.31
16	16-4	-0.0238	-0.0302	0.	0.	-1.52
16	16-4	-0.2717	-0.0142	0.	0.	-1.43
16	16-4	-0.1145	-0.008	0.	0.	-1.43
16	16-5	0.0252	-0.024	0.	0.	-1.52
16	16-5	0.1221	-0.0013	0.	0.	1.53
16	16-5	0.0842	-0.0187	0.	0.	1.07
16	16-5	0.072	-0.0079	0.	0.	1.07
16	16-5	0.2353	0.0069	0.	0.	1.53
16	16-5	-0.0041	-0.0329	0.	0.	-2.15
16	16-5	-0.0652	-0.0498	0.	0.	-2.86
16	16-5	-0.3487	-0.0378	0.	0.	-2.86
16	16-6	-0.2859	-0.0218	0.	0.	-2.15
16	16-6	0.2358	0.0155	0.	0.	2.15
16	16-6	0.0714	0.0062	0.	0.	2.92
16	16-6	0.1225	0.0113	0.	0.	2.92
16	16-6	0.091	0.0236	0.	0.	2.15
16	16-6	-0.2851	-0.0023	0.	0.	-1.44
16	16-6	-0.3491	-0.0217	0.	0.	-0.77
16	16-6	-0.1049	-0.0141	0.	0.	-0.77
16	16-6	-0.0021	4.764E-04	0.	0.	-1.44
16	16-7	0.0855	-0.0098	0.	0.	0.95
16	16-7	0.1144	-0.0022	0.	0.	0.37
16	16-7	-2.073E-05	0.0014	0.	0.	0.37
16	16-7	0.0726	-0.0061	0.	0.	0.95
16	16-7	-0.0647	-0.0516	0.	0.	-2.66
16	16-7	-0.0546	-0.0521	0.	0.	-3.2
16	16-7	-0.3441	-0.0473	0.	0.	-3.2

16	16-7	-0.3588	-0.0468	0.	0.	-2.66
16	16-8	0.072	0.0043	0.	0.	2.77
16	16-8	-1.524E-05	0.0031	0.	0.	3.18
16	16-8	0.1693	0.0056	0.	0.	3.18
16	16-8	0.0878	0.0069	0.	0.	2.77
16	16-8	-0.3592	-0.0313	0.	0.	-0.8
16	16-8	-0.344	-0.0426	0.	0.	-0.2
16	16-8	-0.0612	-0.0379	0.	0.	-0.2
16	16-8	-0.0451	-0.0267	0.	0.	-0.8
16	16-9	0.1059	-0.0015	0.	0.	0.37
16	16-9	0.13	0.0023	0.	0.	6.490E-02
16	16-9	-0.0119	0.0027	0.	0.	6.490E-02
16	16-9	-1.592E-04	-0.0012	0.	0.	0.37
16	16-9	-0.055	-0.0424	0.	0.	-2.98
16	16-9	-0.0236	-0.0357	0.	0.	-3.13
16	16-9	-0.3168	-0.0345	0.	0.	-3.13
16	16-9	-0.3524	-0.0412	0.	0.	-2.98
16	16-10	-1.542E-04	5.960E-04	0.	0.	3.03
16	16-10	-0.012	-0.0012	0.	0.	3.04
16	16-10	0.1814	-2.581E-05	0.	0.	3.04
16	16-10	0.1396	0.0017	0.	0.	3.03
16	16-10	-0.3524	-0.037	0.	0.	-0.21
16	16-10	-0.3168	-0.0364	0.	0.	6.422E-02
16	16-10	-0.0324	-0.0346	0.	0.	6.422E-02
16	16-10	-0.0303	-0.0352	0.	0.	-0.21
16	16-11	0.1226	-2.811E-04	0.	0.	4.852E-02
16	16-11	0.1258	6.003E-04	0.	0.	-3.577E-02
16	16-11	-0.0058	-5.656E-06	0.	0.	-3.577E-02
16	16-11	-0.0122	-8.870E-04	0.	0.	4.852E-02
16	16-11	-0.0225	-0.026	0.	0.	-2.9
16	16-11	-0.0029	-0.0198	0.	0.	-2.9
16	16-11	-0.2855	-0.0201	0.	0.	-2.9
16	16-11	-0.3237	-0.0263	0.	0.	-2.9
16	16-12	-0.0122	-0.0034	0.	0.	2.91
16	16-12	-0.0058	-0.004	0.	0.	2.77
16	16-12	0.173	-0.0033	0.	0.	2.77
16	16-12	0.1561	-0.0026	0.	0.	2.91
16	16-12	-0.3237	-0.0274	0.	0.	5.711E-02
16	16-12	-0.2855	-0.0248	0.	0.	0.11
16	16-12	-0.0274	-0.0247	0.	0.	0.11
16	16-12	-0.004	-0.0273	0.	0.	5.711E-02
16	16-13	0.1231	-0.0016	0.	0.	-2.912E-02
16	16-13	0.1161	3.496E-04	0.	0.	-2.655E-02
16	16-13	0.0012	-5.500E-04	0.	0.	-2.655E-02
16	16-13	-0.0059	-0.0025	0.	0.	-2.912E-02
16	16-13	-0.0028	-0.0128	0.	0.	-2.7
16	16-13	0.004	-0.009	0.	0.	-2.64
16	16-13	-0.2608	-0.0099	0.	0.	-2.64
16	16-13	-0.291	-0.0138	0.	0.	-2.7
16	16-14	-0.0059	-0.0052	0.	0.	2.65
16	16-14	0.0012	-0.0049	0.	0.	2.47
16	16-14	0.1525	-0.0042	0.	0.	2.47
16	16-14	0.1513	-0.0047	0.	0.	2.65
16	16-14	-0.291	-0.0172	0.	0.	0.11
16	16-14	-0.2607	-0.0151	0.	0.	8.602E-02
16	16-14	-0.0311	-0.0161	0.	0.	8.602E-02
16	16-14	0.0107	-0.0182	0.	0.	0.11
16	16-15	0.1156	-0.0011	0.	0.	-2.675E-02
16	16-15	0.104	5.687E-04	0.	0.	-4.498E-03
16	16-15	0.0046	-5.212E-04	0.	0.	-4.498E-03
16	16-15	0.0012	-0.0022	0.	0.	-2.675E-02
16	16-15	0.0042	-0.0062	0.	0.	-2.46
16	16-15	0.0041	-0.0051	0.	0.	-2.38
16	16-15	-0.2417	-0.0047	0.	0.	-2.38

16	16-15	-0.2654	-0.0058	0.	0.	-2.46
16	16-16	0.0012	-0.0039	0.	0.	2.37
16	16-16	0.0046	-0.0026	0.	0.	2.21
16	16-16	0.1299	-0.0019	0.	0.	2.21
16	16-16	0.1342	-0.0031	0.	0.	2.37
16	16-16	-0.2653	-0.0097	0.	0.	8.434E-02
16	16-16	-0.2417	-0.009	0.	0.	4.529E-02
16	16-16	-0.0354	-0.0108	0.	0.	4.529E-02
16	16-16	0.0137	-0.0115	0.	0.	8.434E-02
16	16-17	0.1032	0.0017	0.	0.	-6.731E-04
16	16-17	0.0915	0.0026	0.	0.	1.173E-02
16	16-17	0.0046	0.0014	0.	0.	1.173E-02
16	16-17	0.0046	2.820E-04	0.	0.	-6.731E-04
16	16-17	0.0039	-0.0044	0.	0.	-2.23
16	16-17	0.0023	-0.0038	0.	0.	-2.16
16	16-17	-0.2235	-0.0036	0.	0.	-2.16
16	16-17	-0.2455	-0.0041	0.	0.	-2.23
16	16-18	0.0046	-0.0014	0.	0.	2.13
16	16-18	0.0046	-4.294E-04	0.	0.	1.97
16	16-18	0.1099	-8.503E-05	0.	0.	1.97
16	16-18	0.1145	-0.001	0.	0.	2.13
16	16-18	-0.2455	-0.0051	0.	0.	4.587E-02
16	16-18	-0.2234	-0.0052	0.	0.	1.914E-02
16	16-18	-0.0371	-0.0075	0.	0.	1.914E-02
16	16-18	0.0047	-0.0074	0.	0.	4.587E-02
16	16-19	0.0906	0.0047	0.	0.	1.334E-02
16	16-19	0.0803	0.0051	0.	0.	1.381E-02
16	16-19	0.0033	0.0033	0.	0.	1.381E-02
16	16-19	0.0047	0.0028	0.	0.	1.334E-02
16	16-19	0.0022	-0.0033	0.	0.	-2.03
16	16-19	9.339E-04	-0.0028	0.	0.	-1.94
16	16-19	-0.2044	-0.0027	0.	0.	-1.94
16	16-19	-0.2266	-0.0031	0.	0.	-2.03
16	16-20	0.0047	5.393E-04	0.	0.	1.91
16	16-20	0.0033	0.0013	0.	0.	1.77
16	16-20	0.0936	0.0013	0.	0.	1.77
16	16-20	0.0973	5.486E-04	0.	0.	1.91
16	16-20	-0.2266	-0.0033	0.	0.	1.955E-02
16	16-20	-0.2044	-0.0026	0.	0.	7.778E-03
16	16-20	-0.0361	-0.0054	0.	0.	7.778E-03
16	16-20	-0.0036	-0.0049	0.	0.	1.955E-02
16	16-21	0.0794	0.0068	0.	0.	1.634E-02
16	16-21	0.0705	0.0071	0.	0.	8.350E-03
16	16-21	0.0017	0.0051	0.	0.	8.350E-03
16	16-21	0.0033	0.0048	0.	0.	1.634E-02
16	16-21	7.195E-04	-0.0024	0.	0.	-1.84
16	16-21	2.846E-04	-0.0021	0.	0.	-1.73
16	16-21	-0.1842	-0.002	0.	0.	-1.73
16	16-21	-0.2069	-0.0023	0.	0.	-1.84
16	16-22	0.0033	0.002	0.	0.	1.71
16	16-22	0.0017	0.0026	0.	0.	1.57
16	16-22	0.0801	0.0023	0.	0.	1.57
16	16-22	0.0834	0.0018	0.	0.	1.71
16	16-22	-0.2069	-0.002	0.	0.	9.129E-03
16	16-22	-0.1842	-0.0017	0.	0.	6.334E-03
16	16-22	-0.0332	-0.0037	0.	0.	6.334E-03
16	16-22	-0.0086	-0.0032	0.	0.	9.129E-03
16	16-23	0.0696	0.0085	0.	0.	1.013E-02
16	16-23	0.0609	0.0087	0.	0.	-4.745E-04
16	16-23	4.867E-05	0.0066	0.	0.	-4.745E-04
16	16-23	0.0017	0.0064	0.	0.	1.013E-02
16	16-23	6.036E-05	-0.0018	0.	0.	-1.65
16	16-23	-1.221E-04	-0.0014	0.	0.	-1.53
16	16-23	-0.1636	-0.0013	0.	0.	-1.53
16	16-23	-0.1862	-0.0016	0.	0.	-1.65
16	16-24	0.0018	0.0032	0.	0.	1.53
16	16-24	5.223E-05	0.0036	0.	0.	1.38

16	16-24	0.0679	0.0032	0.	0.	1.38
16	16-24	0.0719	0.0027	0.	0.	1.53
16	16-24	-0.1862	-0.0014	0.	0.	7.586E-03
16	16-24	-0.1636	-0.0011	0.	0.	9.790E-03
16	16-24	-0.0296	-0.0023	0.	0.	9.790E-03
16	16-24	-0.0113	-0.0018	0.	0.	7.586E-03
16	16-25	0.0601	0.0099	0.	0.	1.664E-03
16	16-25	0.0512	0.01	0.	0.	-5.886E-03
16	16-25	-0.0019	0.0079	0.	0.	-5.886E-03
16	16-25	6.985E-05	0.0078	0.	0.	1.664E-03
16	16-25	-3.712E-04	-0.0012	0.	0.	-1.46
16	16-25	-0.0016	-8.863E-04	0.	0.	-1.32
16	16-25	-0.1436	-7.541E-04	0.	0.	-1.32
16	16-25	-0.1651	-0.001	0.	0.	-1.46
16	16-26	7.340E-05	0.0041	0.	0.	1.35
16	16-26	-0.0019	0.0046	0.	0.	1.19
16	16-26	0.0556	0.0041	0.	0.	1.19
16	16-26	0.0616	0.0036	0.	0.	1.35
16	16-26	-0.1651	-7.787E-04	0.	0.	1.114E-02
16	16-26	-0.1436	-5.525E-04	0.	0.	1.231E-02
16	16-26	-0.0263	-0.0012	0.	0.	1.231E-02
16	16-26	-0.0126	-6.167E-04	0.	0.	1.114E-02
16	16-27	0.0504	0.0111	0.	0.	-3.997E-03
16	16-27	0.0402	0.0113	0.	0.	1.988E-03
16	16-27	-0.0039	0.0092	0.	0.	1.988E-03
16	16-27	-0.0019	0.009	0.	0.	-3.997E-03
16	16-27	-0.0019	-6.514E-04	0.	0.	-1.27
16	16-27	-0.0057	-3.617E-04	0.	0.	-1.09
16	16-27	-0.1235	-1.696E-04	0.	0.	-1.09
16	16-27	-0.1446	-4.593E-04	0.	0.	-1.27
16	16-28	-0.0019	0.005	0.	0.	1.16
16	16-28	-0.0039	0.0054	0.	0.	0.98
16	16-28	0.0434	0.0048	0.	0.	0.98
16	16-28	0.0508	0.0045	0.	0.	1.16
16	16-28	-0.1446	-3.228E-04	0.	0.	1.322E-02
16	16-28	-0.1234	-1.314E-04	0.	0.	3.843E-03
16	16-28	-0.0261	-2.506E-04	0.	0.	3.843E-03
16	16-28	-0.0137	-1.087E-04	0.	0.	1.322E-02
16	16-29	0.0395	0.0122	0.	0.	4.476E-03
16	16-29	0.0279	0.0124	0.	0.	4.765E-02
16	16-29	-0.0042	0.0106	0.	0.	4.765E-02
16	16-29	-0.0039	0.0103	0.	0.	4.476E-03
16	16-29	-0.006	-1.531E-04	0.	0.	-1.05
16	16-29	-0.0126	1.206E-04	0.	0.	-0.85
16	16-29	-0.1008	4.418E-04	0.	0.	-0.85
16	16-29	-0.1241	1.680E-04	0.	0.	-1.05
16	16-30	-0.0039	0.0058	0.	0.	0.96
16	16-30	-0.0043	0.0061	0.	0.	0.76
16	16-30	0.0306	0.0055	0.	0.	0.76
16	16-30	0.0399	0.0052	0.	0.	0.96
16	16-30	-0.1241	5.647E-05	0.	0.	4.194E-03
16	16-30	-0.1009	2.327E-04	0.	0.	-3.417E-02
16	16-30	-0.028	4.987E-04	0.	0.	-3.417E-02
16	16-30	-0.0172	3.224E-04	0.	0.	4.194E-03
16	16-31	0.0273	0.0131	0.	0.	4.804E-02
16	16-31	0.0156	0.0137	0.	0.	0.14
16	16-31	0.0013	0.0123	0.	0.	0.14
16	16-31	-0.0042	0.0118	0.	0.	4.804E-02
16	16-31	-0.0128	2.717E-04	0.	0.	-0.82
16	16-31	-0.0196	8.066E-04	0.	0.	-0.58
16	16-31	-0.0712	0.0015	0.	0.	-0.58
16	16-31	-0.1012	9.825E-04	0.	0.	-0.82
16	16-32	-0.0042	0.0066	0.	0.	0.75
16	16-32	0.0018	0.0074	0.	0.	0.53

16	16-32	0.0194	0.0068	0.	0.	0.53
16	16-32	0.0282	0.006	0.	0.	0.75
16	16-32	-0.1012	5.355E-04	0.	0.	-3.757E-02
16	16-32	-0.0709	0.001	0.	0.	-0.11
16	16-32	-0.0275	0.0013	0.	0.	-0.11
16	16-32	-0.0223	7.717E-04	0.	0.	-3.757E-02
16	16-33	0.0151	0.015	0.	0.	0.14
16	16-33	0.0067	0.0171	0.	0.	0.31
16	16-33	0.0259	0.0161	0.	0.	0.31
16	16-33	0.0014	0.0141	0.	0.	0.14
16	16-33	-0.0198	0.0016	0.	0.	-0.57
16	16-33	-0.0202	0.0032	0.	0.	-0.28
16	16-33	-0.0349	0.0042	0.	0.	-0.28
16	16-33	-0.0713	0.0026	0.	0.	-0.57
16	16-34	0.0019	0.0091	0.	0.	0.52
16	16-34	0.0245	0.0097	0.	0.	0.31
16	16-34	0.0196	0.0076	0.	0.	0.31
16	16-34	0.0179	0.007	0.	0.	0.52
16	16-34	-0.0711	0.0021	0.	0.	-0.11
16	16-34	-0.0356	0.0026	0.	0.	-0.16
16	16-34	-0.0079	0.0019	0.	0.	-0.16
16	16-34	-0.0241	0.0014	0.	0.	-0.11
16	16-35	0.0076	0.0254	0.	0.	0.33
16	16-35	0.0506	0.0181	0.	0.	0.31
16	16-35	0.0793	0.0097	0.	0.	0.31
16	16-35	0.0254	0.017	0.	0.	0.33
16	16-35	-0.0178	0.0094	0.	0.	-0.25
16	16-35	0.0215	0.0046	0.	0.	-5.660E-02
16	16-35	0.0138	4.372E-05	0.	0.	-5.660E-02
16	16-35	-0.0352	0.0048	0.	0.	-0.25
16	16-36	0.024	0.009	0.	0.	0.33
16	16-36	0.0825	0.0024	0.	0.	9.750E-02
16	16-36	0.0574	3.258E-04	0.	0.	9.750E-02
16	16-36	0.0181	0.0053	0.	0.	0.33
16	16-36	-0.0359	0.0023	0.	0.	-0.12
16	16-36	0.0152	-0.0048	0.	0.	-0.19
16	16-36	0.0173	-0.0073	0.	0.	-0.19
16	16-36	-0.0065	5.919E-04	0.	0.	-0.12
16	16-37	0.0357	-0.008	0.	0.	0.41
16	16-37	0.1092	-0.0147	0.	0.	3.940E-02
16	16-37	0.1045	-0.0075	0.	0.	3.940E-02
16	16-37	0.0804	-7.819E-04	0.	0.	0.41
16	16-37	0.0155	-0.037	0.	0.	8.203E-03
16	16-37	0.0461	-0.049	0.	0.	-2.634E-02
16	16-37	0.0395	-0.0283	0.	0.	-2.634E-02
16	16-37	0.0142	-0.0185	0.	0.	8.203E-03
16	16-38	0.0836	-0.0052	0.	0.	1.032E-02
16	16-38	0.1005	0.0124	0.	0.	0.26
16	16-38	0.1603	0.0172	0.	0.	0.26
16	16-38	0.0618	-0.0037	0.	0.	1.032E-02
16	16-38	0.0156	-0.0187	0.	0.	-0.35
16	16-38	0.0379	0.0048	0.	0.	0.12
16	16-38	0.0668	0.0062	0.	0.	0.12
16	16-38	0.0198	-0.0147	0.	0.	-0.35

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 9 of 10

Área	AreaElem	M12	MMin	V13	V23	VMax
16	16-1	0.3296	0.	1.32	13.28	0.
16	16-1	0.1097	0.	1.73	13.28	0.
16	16-1	0.1308	0.	1.73	14.26	0.
16	16-1	0.3489	0.	1.32	14.26	0.
16	16-1	-0.1828	0.	-1.21	5.4	0.
16	16-1	-0.1768	0.	-0.36	5.4	0.
16	16-1	-0.1632	0.	-0.36	10.37	0.
16	16-1	-0.1674	0.	-1.21	10.37	0.
16	16-2	0.2486	0.	0.68	14.28	0.
16	16-2	0.2574	0.	0.22	14.28	0.
16	16-2	0.2738	0.	0.22	13.02	0.
16	16-2	0.2671	0.	0.68	13.02	0.
16	16-2	-0.248	0.	-1.98	10.4	0.
16	16-2	-0.0545	0.	-2.1	10.4	0.
16	16-2	-0.0311	0.	-2.1	5.97	0.
16	16-2	-0.2266	0.	-1.98	5.97	0.
16	16-3	0.079	0.	1.29	7.88	0.
16	16-3	0.0331	0.	1.38	7.88	0.
16	16-3	0.0382	0.	1.38	6.63	0.
16	16-3	0.0899	0.	1.29	6.63	0.
16	16-3	-0.0932	0.	-1.2	1.27	0.
16	16-3	-0.0455	0.	-2.03	1.27	0.
16	16-3	-0.0307	0.	-2.03	2.63	0.
16	16-3	-0.0784	0.	-1.2	2.63	0.
16	16-4	0.1371	0.	1.31	6.61	0.
16	16-4	0.0558	0.	1.98	6.61	0.
16	16-4	0.0697	0.	1.98	8.65	0.
16	16-4	0.151	0.	1.31	8.65	0.
16	16-4	-0.0302	0.	-1.52	2.57	0.
16	16-4	-0.0142	0.	-1.43	2.57	0.
16	16-4	-0.008	0.	-1.43	1.65	0.
16	16-4	-0.024	0.	-1.52	1.65	0.
16	16-5	-0.0013	0.	1.53	2.53	0.
16	16-5	-0.0187	0.	1.07	2.53	0.
16	16-5	-0.0079	0.	1.07	2.97	0.
16	16-5	0.0069	0.	1.53	2.97	0.
16	16-5	-0.0329	0.	-2.15	-1.81	0.
16	16-5	-0.0498	0.	-2.86	-1.81	0.
16	16-5	-0.0378	0.	-2.86	-0.43	0.
16	16-5	-0.0218	0.	-2.15	-0.43	0.
16	16-6	0.0155	0.	2.15	2.93	0.
16	16-6	0.0062	0.	2.92	2.93	0.
16	16-6	0.0113	0.	2.92	3.75	0.
16	16-6	0.0236	0.	2.15	3.75	0.
16	16-6	-0.0023	0.	-1.44	-0.47	0.
16	16-6	-0.0217	0.	-0.77	-0.47	0.
16	16-6	-0.0141	0.	-0.77	-1.4	0.
16	16-6	4.764E-04	0.	-1.44	-1.4	0.
16	16-7	-0.0098	0.	0.95	0.92	0.
16	16-7	-0.0022	0.	0.37	0.92	0.
16	16-7	0.0014	0.	0.37	0.48	0.
16	16-7	-0.0061	0.	0.95	0.48	0.
16	16-7	-0.0516	0.	-2.66	-2.25	0.
16	16-7	-0.0521	0.	-3.2	-2.25	0.
16	16-7	-0.0473	0.	-3.2	-1.23	0.
16	16-7	-0.0468	0.	-2.66	-1.23	0.
16	16-8	0.0043	0.	2.77	0.47	0.
16	16-8	0.0031	0.	3.18	0.47	0.

16	16-8	0.0056	0.	3.18	1.64	0.
16	16-8	0.0069	0.	2.77	1.64	0.
16	16-8	-0.0313	0.	-0.8	-1.24	0.
16	16-8	-0.0426	0.	-0.2	-1.24	0.
16	16-8	-0.0379	0.	-0.2	-1.87	0.
16	16-8	-0.0267	0.	-0.8	-1.87	0.
16	16-9	-0.0015	0.	0.37	0.76	0.
16	16-9	0.0023	0.	6.490E-02	0.76	0.
16	16-9	0.0027	0.	6.490E-02	-0.35	0.
16	16-9	-0.0012	0.	0.37	-0.35	0.
16	16-9	-0.0424	0.	-2.98	-1.89	0.
16	16-9	-0.0357	0.	-3.13	-1.89	0.
16	16-9	-0.0345	0.	-3.13	-1.05	0.
16	16-9	-0.0412	0.	-2.98	-1.05	0.
16	16-10	5.960E-04	0.	3.03	-0.35	0.
16	16-10	-0.0012	0.	3.04	-0.35	0.
16	16-10	-2.581E-05	0.	3.04	1.19	0.
16	16-10	0.0017	0.	3.03	1.19	0.
16	16-10	-0.037	0.	-0.21	-1.04	0.
16	16-10	-0.0364	0.	6.422E-02	-1.04	0.
16	16-10	-0.0346	0.	6.422E-02	-1.53	0.
16	16-10	-0.0352	0.	-0.21	-1.53	0.
16	16-11	-2.811E-04	0.	4.852E-02	0.91	0.
16	16-11	6.003E-04	0.	-3.577E-02	0.91	0.
16	16-11	-5.656E-06	0.	-3.577E-02	-0.34	0.
16	16-11	-8.870E-04	0.	4.852E-02	-0.34	0.
16	16-11	-0.026	0.	-2.9	-1.34	0.
16	16-11	-0.0198	0.	-2.9	-1.34	0.
16	16-11	-0.0201	0.	-2.9	-0.63	0.
16	16-11	-0.0263	0.	-2.9	-0.63	0.
16	16-12	-0.0034	0.	2.91	-0.33	0.
16	16-12	-0.004	0.	2.77	-0.33	0.
16	16-12	-0.0033	0.	2.77	1.23	0.
16	16-12	-0.0026	0.	2.91	1.23	0.
16	16-12	-0.0274	0.	5.711E-02	-0.62	0.
16	16-12	-0.0248	0.	0.11	-0.62	0.
16	16-12	-0.0247	0.	0.11	-1.	0.
16	16-12	-0.0273	0.	5.711E-02	-1.	0.
16	16-13	-0.0016	0.	-2.912E-02	0.99	0.
16	16-13	3.496E-04	0.	-2.655E-02	0.99	0.
16	16-13	-5.500E-04	0.	-2.655E-02	-0.13	0.
16	16-13	-0.0025	0.	-2.912E-02	-0.13	0.
16	16-13	-0.0128	0.	-2.7	-0.92	0.
16	16-13	-0.009	0.	-2.64	-0.92	0.
16	16-13	-0.0099	0.	-2.64	-0.3	0.
16	16-13	-0.0138	0.	-2.7	-0.3	0.
16	16-14	-0.0052	0.	2.65	-0.13	0.
16	16-14	-0.0049	0.	2.47	-0.13	0.
16	16-14	-0.0042	0.	2.47	1.23	0.
16	16-14	-0.0047	0.	2.65	1.23	0.
16	16-14	-0.0172	0.	0.11	-0.3	0.
16	16-14	-0.0151	0.	8.602E-02	-0.3	0.
16	16-14	-0.0161	0.	8.602E-02	-0.59	0.
16	16-14	-0.0182	0.	0.11	-0.59	0.
16	16-15	-0.0011	0.	-2.675E-02	0.92	0.
16	16-15	5.687E-04	0.	-4.498E-03	0.92	0.
16	16-15	-5.212E-04	0.	-4.498E-03	-1.441E-02	0.
16	16-15	-0.0022	0.	-2.675E-02	-1.441E-02	0.
16	16-15	-0.0062	0.	-2.46	-0.67	0.
16	16-15	-0.0051	0.	-2.38	-0.67	0.
16	16-15	-0.0047	0.	-2.38	-0.13	0.
16	16-15	-0.0058	0.	-2.46	-0.13	0.
16	16-16	-0.0039	0.	2.37	-1.239E-02	0.
16	16-16	-0.0026	0.	2.21	-1.239E-02	0.

16	16-16	-0.0019	0.	2.21	1.14	0.
16	16-16	-0.0031	0.	2.37	1.14	0.
16	16-16	-0.0097	0.	8.434E-02	-0.13	0.
16	16-16	-0.009	0.	4.529E-02	-0.13	0.
16	16-16	-0.0108	0.	4.529E-02	-0.38	0.
16	16-16	-0.0115	0.	8.434E-02	-0.38	0.
16	16-17	0.0017	0.	-6.731E-04	0.78	0.
16	16-17	0.0026	0.	1.173E-02	0.78	0.
16	16-17	0.0014	0.	1.173E-02	2.032E-02	0.
16	16-17	2.820E-04	0.	-6.731E-04	2.032E-02	0.
16	16-17	-0.0044	0.	-2.23	-0.54	0.
16	16-17	-0.0038	0.	-2.16	-0.54	0.
16	16-17	-0.0036	0.	-2.16	-7.678E-02	0.
16	16-17	-0.0041	0.	-2.23	-7.678E-02	0.
16	16-18	-0.0014	0.	2.13	2.148E-02	0.
16	16-18	-4.294E-04	0.	1.97	2.148E-02	0.
16	16-18	-8.503E-05	0.	1.97	0.98	0.
16	16-18	-0.001	0.	2.13	0.98	0.
16	16-18	-0.0051	0.	4.587E-02	-8.250E-02	0.
16	16-18	-0.0052	0.	1.914E-02	-8.250E-02	0.
16	16-18	-0.0075	0.	1.914E-02	-0.29	0.
16	16-18	-0.0074	0.	4.587E-02	-0.29	0.
16	16-19	0.0047	0.	1.334E-02	0.63	0.
16	16-19	0.0051	0.	1.381E-02	0.63	0.
16	16-19	0.0033	0.	1.381E-02	2.370E-02	0.
16	16-19	0.0028	0.	1.334E-02	2.370E-02	0.
16	16-19	-0.0033	0.	-2.03	-0.46	0.
16	16-19	-0.0028	0.	-1.94	-0.46	0.
16	16-19	-0.0027	0.	-1.94	-7.958E-02	0.
16	16-19	-0.0031	0.	-2.03	-7.958E-02	0.
16	16-20	5.393E-04	0.	1.91	2.543E-02	0.
16	16-20	0.0013	0.	1.77	2.543E-02	0.
16	16-20	0.0013	0.	1.77	0.8	0.
16	16-20	5.486E-04	0.	1.91	0.8	0.
16	16-20	-0.0033	0.	1.955E-02	-8.662E-02	0.
16	16-20	-0.0026	0.	7.778E-03	-8.662E-02	0.
16	16-20	-0.0054	0.	7.778E-03	-0.25	0.
16	16-20	-0.0049	0.	1.955E-02	-0.25	0.
16	16-21	0.0068	0.	1.634E-02	0.49	0.
16	16-21	0.0071	0.	8.350E-03	0.49	0.
16	16-21	0.0051	0.	8.350E-03	1.928E-02	0.
16	16-21	0.0048	0.	1.634E-02	1.928E-02	0.
16	16-21	-0.0024	0.	-1.84	-0.39	0.
16	16-21	-0.0021	0.	-1.73	-0.39	0.
16	16-21	-0.002	0.	-1.73	-8.371E-02	0.
16	16-21	-0.0023	0.	-1.84	-8.371E-02	0.
16	16-22	0.002	0.	1.71	2.053E-02	0.
16	16-22	0.0026	0.	1.57	2.053E-02	0.
16	16-22	0.0023	0.	1.57	0.63	0.
16	16-22	0.0018	0.	1.71	0.63	0.
16	16-22	-0.002	0.	9.129E-03	-9.174E-02	0.
16	16-22	-0.0017	0.	6.334E-03	-9.174E-02	0.
16	16-22	-0.0037	0.	6.334E-03	-0.22	0.
16	16-22	-0.0032	0.	9.129E-03	-0.22	0.
16	16-23	0.0085	0.	1.013E-02	0.37	0.
16	16-23	0.0087	0.	-4.745E-04	0.37	0.
16	16-23	0.0066	0.	-4.745E-04	2.068E-02	0.
16	16-23	0.0064	0.	1.013E-02	2.068E-02	0.
16	16-23	-0.0018	0.	-1.65	-0.32	0.
16	16-23	-0.0014	0.	-1.53	-0.32	0.
16	16-23	-0.0013	0.	-1.53	-7.654E-02	0.
16	16-23	-0.0016	0.	-1.65	-7.654E-02	0.
16	16-24	0.0032	0.	1.53	2.142E-02	0.
16	16-24	0.0036	0.	1.38	2.142E-02	0.

16	16-24	0.0032	0.	1.38	0.49	0.
16	16-24	0.0027	0.	1.53	0.49	0.
16	16-24	-0.0014	0.	7.586E-03	-8.530E-02	0.
16	16-24	-0.0011	0.	9.790E-03	-8.530E-02	0.
16	16-24	-0.0023	0.	9.790E-03	-0.18	0.
16	16-24	-0.0018	0.	7.586E-03	-0.18	0.
16	16-25	0.0099	0.	1.664E-03	0.3	0.
16	16-25	0.01	0.	-5.886E-03	0.3	0.
16	16-25	0.0079	0.	-5.886E-03	4.098E-02	0.
16	16-25	0.0078	0.	1.664E-03	4.098E-02	0.
16	16-25	-0.0012	0.	-1.46	-0.24	0.
16	16-25	-8.863E-04	0.	-1.32	-0.24	0.
16	16-25	-7.541E-04	0.	-1.32	-5.677E-02	0.
16	16-25	-0.001	0.	-1.46	-5.677E-02	0.
16	16-26	0.0041	0.	1.35	4.143E-02	0.
16	16-26	0.0046	0.	1.19	4.143E-02	0.
16	16-26	0.0041	0.	1.19	0.39	0.
16	16-26	0.0036	0.	1.35	0.39	0.
16	16-26	-7.787E-04	0.	1.114E-02	-6.607E-02	0.
16	16-26	-5.525E-04	0.	1.231E-02	-6.607E-02	0.
16	16-26	-0.0012	0.	1.231E-02	-0.13	0.
16	16-26	-6.167E-04	0.	1.114E-02	-0.13	0.
16	16-27	0.0111	0.	-3.997E-03	0.25	0.
16	16-27	0.0113	0.	1.988E-03	0.25	0.
16	16-27	0.0092	0.	1.988E-03	7.275E-02	0.
16	16-27	0.009	0.	-3.997E-03	7.275E-02	0.
16	16-27	-6.514E-04	0.	-1.27	-0.16	0.
16	16-27	-3.617E-04	0.	-1.09	-0.16	0.
16	16-27	-1.696E-04	0.	-1.09	-3.303E-02	0.
16	16-27	-4.593E-04	0.	-1.27	-3.303E-02	0.
16	16-28	0.005	0.	1.16	6.924E-02	0.
16	16-28	0.0054	0.	0.98	6.924E-02	0.
16	16-28	0.0048	0.	0.98	0.31	0.
16	16-28	0.0045	0.	1.16	0.31	0.
16	16-28	-3.228E-04	0.	1.322E-02	-4.288E-02	0.
16	16-28	-1.314E-04	0.	3.843E-03	-4.288E-02	0.
16	16-28	-2.506E-04	0.	3.843E-03	-7.674E-02	0.
16	16-28	-1.087E-04	0.	1.322E-02	-7.674E-02	0.
16	16-29	0.0122	0.	4.476E-03	0.18	0.
16	16-29	0.0124	0.	4.765E-02	0.18	0.
16	16-29	0.0106	0.	4.765E-02	6.114E-02	0.
16	16-29	0.0103	0.	4.476E-03	6.114E-02	0.
16	16-29	-1.531E-04	0.	-1.05	-0.11	0.
16	16-29	1.206E-04	0.	-0.85	-0.11	0.
16	16-29	4.418E-04	0.	-0.85	-2.997E-02	0.
16	16-29	1.680E-04	0.	-1.05	-2.997E-02	0.
16	16-30	0.0058	0.	0.96	5.849E-02	0.
16	16-30	0.0061	0.	0.76	5.849E-02	0.
16	16-30	0.0055	0.	0.76	0.21	0.
16	16-30	0.0052	0.	0.96	0.21	0.
16	16-30	5.647E-05	0.	4.194E-03	-4.031E-02	0.
16	16-30	2.327E-04	0.	-3.417E-02	-4.031E-02	0.
16	16-30	4.987E-04	0.	-3.417E-02	-5.089E-02	0.
16	16-30	3.224E-04	0.	4.194E-03	-5.089E-02	0.
16	16-31	0.0131	0.	4.804E-02	2.340E-02	0.
16	16-31	0.0137	0.	0.14	2.340E-02	0.
16	16-31	0.0123	0.	0.14	-4.986E-02	0.
16	16-31	0.0118	0.	4.804E-02	-4.986E-02	0.
16	16-31	2.717E-04	0.	-0.82	-0.17	0.
16	16-31	8.066E-04	0.	-0.58	-0.17	0.
16	16-31	0.0015	0.	-0.58	-0.13	0.
16	16-31	9.825E-04	0.	-0.82	-0.13	0.
16	16-32	0.0066	0.	0.75	-5.611E-02	0.
16	16-32	0.0074	0.	0.53	-5.611E-02	0.

16	16-32	0.0068	0.	0.53	4.519E-02	0.
16	16-32	0.006	0.	0.75	4.519E-02	0.
16	16-32	5.355E-04	0.	-3.757E-02	-0.14	0.
16	16-32	0.001	0.	-0.11	-0.14	0.
16	16-32	0.0013	0.	-0.11	-0.13	0.
16	16-32	7.717E-04	0.	-3.757E-02	-0.13	0.
16	16-33	0.015	0.	0.14	-0.2	0.
16	16-33	0.0171	0.	0.31	-0.2	0.
16	16-33	0.0161	0.	0.31	-0.23	0.
16	16-33	0.0141	0.	0.14	-0.23	0.
16	16-33	0.0016	0.	-0.57	-0.52	0.
16	16-33	0.0032	0.	-0.28	-0.52	0.
16	16-33	0.0042	0.	-0.28	-0.53	0.
16	16-33	0.0026	0.	-0.57	-0.53	0.
16	16-34	0.0091	0.	0.52	-0.24	0.
16	16-34	0.0097	0.	0.31	-0.24	0.
16	16-34	0.0076	0.	0.31	-0.2	0.
16	16-34	0.007	0.	0.52	-0.2	0.
16	16-34	0.0021	0.	-0.11	-0.55	0.
16	16-34	0.0026	0.	-0.16	-0.55	0.
16	16-34	0.0019	0.	-0.16	-0.54	0.
16	16-34	0.0014	0.	-0.11	-0.54	0.
16	16-35	0.0254	0.	0.33	-0.35	0.
16	16-35	0.0181	0.	0.31	-0.35	0.
16	16-35	0.0097	0.	0.31	-0.53	0.
16	16-35	0.017	0.	0.33	-0.53	0.
16	16-35	0.0094	0.	-0.25	-0.84	0.
16	16-35	0.0046	0.	-5.660E-02	-0.84	0.
16	16-35	4.372E-05	0.	-5.660E-02	-1.25	0.
16	16-35	0.0048	0.	-0.25	-1.25	0.
16	16-36	0.009	0.	0.33	-0.52	0.
16	16-36	0.0024	0.	9.750E-02	-0.52	0.
16	16-36	3.258E-04	0.	9.750E-02	-0.59	0.
16	16-36	0.0053	0.	0.33	-0.59	0.
16	16-36	0.0023	0.	-0.12	-1.23	0.
16	16-36	-0.0048	0.	-0.19	-1.23	0.
16	16-36	-0.0073	0.	-0.19	-1.39	0.
16	16-36	5.919E-04	0.	-0.12	-1.39	0.
16	16-37	-0.008	0.	0.41	-1.43	0.
16	16-37	-0.0147	0.	3.940E-02	-1.43	0.
16	16-37	-0.0075	0.	3.940E-02	-0.95	0.
16	16-37	-7.819E-04	0.	0.41	-0.95	0.
16	16-37	-0.037	0.	8.203E-03	-3.44	0.
16	16-37	-0.049	0.	-2.634E-02	-3.44	0.
16	16-37	-0.0283	0.	-2.634E-02	-2.27	0.
16	16-37	-0.0185	0.	8.203E-03	-2.27	0.
16	16-38	-0.0052	0.	1.032E-02	-1.	0.
16	16-38	0.0124	0.	0.26	-1.	0.
16	16-38	0.0172	0.	0.26	-0.57	0.
16	16-38	-0.0037	0.	1.032E-02	-0.57	0.
16	16-38	-0.0187	0.	-0.35	-2.37	0.
16	16-38	0.0048	0.	0.12	-2.37	0.
16	16-38	0.0062	0.	0.12	-1.34	0.
16	16-38	-0.0147	0.	-0.35	-1.34	0.

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 10 of 10

Table: Element Forces - Área Shells

Element Forces - Área Shells, Part 10 of 10

Area	AreaElem	MMin	V13	VMax	VAngle
16	16-1	0.	1.32	0.	0.
16	16-1	0.	1.73	0.	0.
16	16-1	0.	1.73	0.	0.
16	16-1	0.	1.32	0.	0.
16	16-1	0.	-1.21	0.	0.
16	16-1	0.	-0.36	0.	0.
16	16-1	0.	-0.36	0.	0.
16	16-1	0.	-1.21	0.	0.
16	16-2	0.	0.68	0.	0.
16	16-2	0.	0.22	0.	0.
16	16-2	0.	0.22	0.	0.
16	16-2	0.	0.68	0.	0.
16	16-2	0.	-1.98	0.	0.
16	16-2	0.	-2.1	0.	0.
16	16-2	0.	-2.1	0.	0.
16	16-2	0.	-1.98	0.	0.
16	16-3	0.	1.29	0.	0.
16	16-3	0.	1.38	0.	0.
16	16-3	0.	1.38	0.	0.
16	16-3	0.	1.29	0.	0.
16	16-3	0.	-1.2	0.	0.
16	16-3	0.	-2.03	0.	0.
16	16-3	0.	-2.03	0.	0.
16	16-3	0.	-1.2	0.	0.
16	16-4	0.	1.31	0.	0.
16	16-4	0.	1.98	0.	0.
16	16-4	0.	1.98	0.	0.
16	16-4	0.	1.31	0.	0.
16	16-4	0.	-1.52	0.	0.
16	16-4	0.	-1.43	0.	0.
16	16-4	0.	-1.43	0.	0.
16	16-4	0.	-1.52	0.	0.
16	16-5	0.	1.53	0.	0.
16	16-5	0.	1.07	0.	0.
16	16-5	0.	1.07	0.	0.
16	16-5	0.	1.53	0.	0.
16	16-5	0.	-2.15	0.	0.
16	16-5	0.	-2.86	0.	0.
16	16-5	0.	-2.86	0.	0.
16	16-5	0.	-2.15	0.	0.
16	16-6	0.	2.15	0.	0.
16	16-6	0.	2.92	0.	0.
16	16-6	0.	2.92	0.	0.
16	16-6	0.	2.15	0.	0.
16	16-6	0.	-1.44	0.	0.
16	16-6	0.	-0.77	0.	0.
16	16-6	0.	-0.77	0.	0.
16	16-6	0.	-1.44	0.	0.
16	16-7	0.	0.95	0.	0.
16	16-7	0.	0.37	0.	0.

16	16-7	0.	0.37	0.	0.
16	16-7	0.	0.95	0.	0.
16	16-7	0.	-2.66	0.	0.
16	16-7	0.	-3.2	0.	0.
16	16-7	0.	-3.2	0.	0.
16	16-7	0.	-2.66	0.	0.
16	16-8	0.	2.77	0.	0.
16	16-8	0.	3.18	0.	0.
16	16-8	0.	3.18	0.	0.
16	16-8	0.	2.77	0.	0.
16	16-8	0.	-0.8	0.	0.
16	16-8	0.	-0.2	0.	0.
16	16-8	0.	-0.2	0.	0.
16	16-8	0.	-0.8	0.	0.
16	16-9	0.	0.37	0.	0.
16	16-9	0.	6.490E-02	0.	0.
16	16-9	0.	6.490E-02	0.	0.
16	16-9	0.	0.37	0.	0.
16	16-9	0.	-2.98	0.	0.
16	16-9	0.	-3.13	0.	0.
16	16-9	0.	-3.13	0.	0.
16	16-9	0.	-2.98	0.	0.
16	16-10	0.	3.03	0.	0.
16	16-10	0.	3.04	0.	0.
16	16-10	0.	3.04	0.	0.
16	16-10	0.	3.03	0.	0.
16	16-10	0.	-0.21	0.	0.
16	16-10	0.	6.422E-02	0.	0.
16	16-10	0.	6.422E-02	0.	0.
16	16-10	0.	-0.21	0.	0.
16	16-11	0.	4.852E-02	0.	0.
16	16-11	0.	-3.577E-02	0.	0.
16	16-11	0.	-3.577E-02	0.	0.
16	16-11	0.	4.852E-02	0.	0.
16	16-11	0.	-2.9	0.	0.
16	16-11	0.	-2.9	0.	0.
16	16-11	0.	-2.9	0.	0.
16	16-11	0.	-2.9	0.	0.
16	16-12	0.	2.91	0.	0.
16	16-12	0.	2.77	0.	0.
16	16-12	0.	2.77	0.	0.
16	16-12	0.	2.91	0.	0.
16	16-12	0.	5.711E-02	0.	0.
16	16-12	0.	0.11	0.	0.
16	16-12	0.	0.11	0.	0.
16	16-12	0.	5.711E-02	0.	0.
16	16-13	0.	-2.912E-02	0.	0.
16	16-13	0.	-2.655E-02	0.	0.
16	16-13	0.	-2.655E-02	0.	0.
16	16-13	0.	-2.912E-02	0.	0.
16	16-13	0.	-2.7	0.	0.
16	16-13	0.	-2.64	0.	0.
16	16-13	0.	-2.64	0.	0.
16	16-13	0.	-2.7	0.	0.
16	16-14	0.	2.65	0.	0.
16	16-14	0.	2.47	0.	0.
16	16-14	0.	2.47	0.	0.
16	16-14	0.	2.65	0.	0.
16	16-14	0.	0.11	0.	0.
16	16-14	0.	8.602E-02	0.	0.
16	16-14	0.	8.602E-02	0.	0.
16	16-14	0.	0.11	0.	0.
16	16-15	0.	-2.675E-02	0.	0.
16	16-15	0.	-4.498E-03	0.	0.

16	16-15	0.	-4.498E-03	0.	0.
16	16-15	0.	-2.675E-02	0.	0.
16	16-15	0.	-2.46	0.	0.
16	16-15	0.	-2.38	0.	0.
16	16-15	0.	-2.38	0.	0.
16	16-15	0.	-2.46	0.	0.
16	16-16	0.	2.37	0.	0.
16	16-16	0.	2.21	0.	0.
16	16-16	0.	2.21	0.	0.
16	16-16	0.	2.37	0.	0.
16	16-16	0.	8.434E-02	0.	0.
16	16-16	0.	4.529E-02	0.	0.
16	16-16	0.	4.529E-02	0.	0.
16	16-16	0.	8.434E-02	0.	0.
16	16-17	0.	-6.731E-04	0.	0.
16	16-17	0.	1.173E-02	0.	0.
16	16-17	0.	1.173E-02	0.	0.
16	16-17	0.	-6.731E-04	0.	0.
16	16-17	0.	-2.23	0.	0.
16	16-17	0.	-2.16	0.	0.
16	16-17	0.	-2.16	0.	0.
16	16-17	0.	-2.23	0.	0.
16	16-18	0.	2.13	0.	0.
16	16-18	0.	1.97	0.	0.
16	16-18	0.	1.97	0.	0.
16	16-18	0.	2.13	0.	0.
16	16-18	0.	4.587E-02	0.	0.
16	16-18	0.	1.914E-02	0.	0.
16	16-18	0.	1.914E-02	0.	0.
16	16-18	0.	4.587E-02	0.	0.
16	16-19	0.	1.334E-02	0.	0.
16	16-19	0.	1.381E-02	0.	0.
16	16-19	0.	1.381E-02	0.	0.
16	16-19	0.	1.334E-02	0.	0.
16	16-19	0.	-2.03	0.	0.
16	16-19	0.	-1.94	0.	0.
16	16-19	0.	-1.94	0.	0.
16	16-19	0.	-2.03	0.	0.
16	16-20	0.	1.91	0.	0.
16	16-20	0.	1.77	0.	0.
16	16-20	0.	1.77	0.	0.
16	16-20	0.	1.91	0.	0.
16	16-20	0.	1.955E-02	0.	0.
16	16-20	0.	7.778E-03	0.	0.
16	16-20	0.	7.778E-03	0.	0.
16	16-20	0.	1.955E-02	0.	0.
16	16-21	0.	1.634E-02	0.	0.
16	16-21	0.	8.350E-03	0.	0.
16	16-21	0.	8.350E-03	0.	0.
16	16-21	0.	1.634E-02	0.	0.
16	16-21	0.	-1.84	0.	0.
16	16-21	0.	-1.73	0.	0.
16	16-21	0.	-1.73	0.	0.
16	16-21	0.	-1.84	0.	0.
16	16-22	0.	1.71	0.	0.
16	16-22	0.	1.57	0.	0.
16	16-22	0.	1.57	0.	0.
16	16-22	0.	1.71	0.	0.
16	16-22	0.	9.129E-03	0.	0.
16	16-22	0.	6.334E-03	0.	0.
16	16-22	0.	6.334E-03	0.	0.
16	16-22	0.	9.129E-03	0.	0.
16	16-23	0.	1.013E-02	0.	0.
16	16-23	0.	-4.745E-04	0.	0.

16	16-23	0.	-4.745E-04	0.	0.
16	16-23	0.	1.013E-02	0.	0.
16	16-23	0.	-1.65	0.	0.
16	16-23	0.	-1.53	0.	0.
16	16-23	0.	-1.53	0.	0.
16	16-23	0.	-1.65	0.	0.
16	16-24	0.	1.53	0.	0.
16	16-24	0.	1.38	0.	0.
16	16-24	0.	1.38	0.	0.
16	16-24	0.	1.53	0.	0.
16	16-24	0.	7.586E-03	0.	0.
16	16-24	0.	9.790E-03	0.	0.
16	16-24	0.	9.790E-03	0.	0.
16	16-24	0.	7.586E-03	0.	0.
16	16-25	0.	1.664E-03	0.	0.
16	16-25	0.	-5.886E-03	0.	0.
16	16-25	0.	-5.886E-03	0.	0.
16	16-25	0.	1.664E-03	0.	0.
16	16-25	0.	-1.46	0.	0.
16	16-25	0.	-1.32	0.	0.
16	16-25	0.	-1.32	0.	0.
16	16-25	0.	-1.46	0.	0.
16	16-26	0.	1.35	0.	0.
16	16-26	0.	1.19	0.	0.
16	16-26	0.	1.19	0.	0.
16	16-26	0.	1.35	0.	0.
16	16-26	0.	1.114E-02	0.	0.
16	16-26	0.	1.231E-02	0.	0.
16	16-26	0.	1.231E-02	0.	0.
16	16-26	0.	1.114E-02	0.	0.
16	16-27	0.	-3.997E-03	0.	0.
16	16-27	0.	1.988E-03	0.	0.
16	16-27	0.	1.988E-03	0.	0.
16	16-27	0.	-3.997E-03	0.	0.
16	16-27	0.	-1.27	0.	0.
16	16-27	0.	-1.09	0.	0.
16	16-28	0.	0.98	0.	0.
16	16-28	0.	0.98	0.	0.
16	16-28	0.	1.16	0.	0.
16	16-28	0.	1.322E-02	0.	0.
16	16-28	0.	3.843E-03	0.	0.
16	16-28	0.	3.843E-03	0.	0.
16	16-28	0.	1.322E-02	0.	0.
16	16-29	0.	4.476E-03	0.	0.
16	16-29	0.	4.765E-02	0.	0.
16	16-29	0.	4.765E-02	0.	0.
16	16-29	0.	4.476E-03	0.	0.
16	16-29	0.	-1.05	0.	0.
16	16-29	0.	-0.85	0.	0.
16	16-29	0.	-0.85	0.	0.
16	16-29	0.	-1.05	0.	0.
16	16-30	0.	0.96	0.	0.
16	16-30	0.	0.76	0.	0.
16	16-30	0.	0.76	0.	0.
16	16-30	0.	0.96	0.	0.
16	16-30	0.	4.194E-03	0.	0.
16	16-30	0.	-3.417E-02	0.	0.
16	16-30	0.	-3.417E-02	0.	0.
16	16-30	0.	4.194E-03	0.	0.
16	16-31	0.	4.804E-02	0.	0.
16	16-31	0.	0.14	0.	0.
16	16-31	0.	0.14	0.	0.
16	16-31	0.	4.804E-02	0.	0.
16	16-31	0.	-0.82	0.	0.
16	16-31	0.	-0.58	0.	0.
16	16-31	0.	-0.58	0.	0.

16	16-31	0.	-0.82	0.	0.
16	16-32	0.	0.75	0.	0.
16	16-32	0.	0.53	0.	0.
16	16-32	0.	0.53	0.	0.
16	16-32	0.	0.75	0.	0.
16	16-32	0.	-3.757E-02	0.	0.
16	16-32	0.	-0.11	0.	0.
16	16-32	0.	-0.11	0.	0.
16	16-32	0.	-3.757E-02	0.	0.
16	16-33	0.	0.14	0.	0.
16	16-33	0.	0.31	0.	0.
16	16-33	0.	0.31	0.	0.
16	16-33	0.	0.14	0.	0.
16	16-33	0.	-0.57	0.	0.
16	16-33	0.	-0.28	0.	0.
16	16-33	0.	-0.28	0.	0.
16	16-33	0.	-0.57	0.	0.
16	16-34	0.	0.52	0.	0.
16	16-34	0.	0.31	0.	0.
16	16-34	0.	0.31	0.	0.
16	16-34	0.	0.52	0.	0.
16	16-34	0.	-0.11	0.	0.
16	16-34	0.	-0.16	0.	0.
16	16-34	0.	-0.16	0.	0.
16	16-34	0.	-0.11	0.	0.
16	16-35	0.	0.33	0.	0.
16	16-35	0.	0.31	0.	0.
16	16-35	0.	0.31	0.	0.
16	16-35	0.	0.33	0.	0.
16	16-35	0.	-0.25	0.	0.
16	16-35	0.	-5.660E-02	0.	0.
16	16-35	0.	-5.660E-02	0.	0.
16	16-35	0.	-0.25	0.	0.
16	16-36	0.	0.33	0.	0.
16	16-36	0.	9.750E-02	0.	0.
16	16-36	0.	9.750E-02	0.	0.
16	16-36	0.	0.33	0.	0.
16	16-36	0.	-0.12	0.	0.
16	16-36	0.	-0.19	0.	0.
16	16-37	0.	3.940E-02	0.	0.
16	16-37	0.	3.940E-02	0.	0.
16	16-37	0.	0.41	0.	0.
16	16-37	0.	8.203E-03	0.	0.
16	16-37	0.	-2.634E-02	0.	0.
16	16-37	0.	-2.634E-02	0.	0.
16	16-37	0.	8.203E-03	0.	0.
16	16-38	0.	1.032E-02	0.	0.
16	16-38	0.	0.26	0.	0.
16	16-38	0.	0.26	0.	0.
16	16-38	0.	1.032E-02	0.	0.
16	16-38	0.	-0.35	0.	0.
16	16-38	0.	0.12	0.	0.
16	16-38	0.	0.12	0.	0.
16	16-38	0.	-0.35	0.	0.

13 ANEXOS

- **ANEXO 1. MEMORIAS DE CALCULO DE CANTIDADES (VÉASE EN MEDIO DIGITAL Y FISÍCO)**
- **ANEXO 2. PLANOS ESTRUCTURALES (VÉASE EN MEDIO DIGITAL Y FISÍCO)**

ANEXO 1. MEMORIAS DE CALCULO DE CANTIDADES

(VÉASE EN MEDIO DIGITAL Y FISÍCO)

AQUADATOS

CANTIDADES DE CONCRETO					
LOCALIZACION	CANTIDAD	AREA	LONG	VOL	TOTAL
PLACA INFERIOR	1.0	2.27	0.20	0.45	0.45
PLACA SUPERIOR	1.0	1.73	0.20	0.35	0.35
MUROS	1.0	0.88	2.60	2.29	2.29
VOLUMEN TOTAL DE CONCRETO					3.09 m3
VOLUMEN TOTAL DE CONCRETO + AJUSTE 5%					3.24 m3

CANTIDADES DE ACEROS DE REFUERZO

LOCALIZACION	NUMERACION EN PLANOS	ESQUEMA	DIAMETRO	CANTIDAD	LONG	PESO UNIT	PESO TOTAL	OBSERVACIONES
PLACA INF	1	 3.15	4.00	2	3.15	0.994	6.26	
PLACA INF	2	 3.20	4.00	2	3.20	0.994	6.36	
PLACA INF	10	1.60	4.00	36	1.60	0.994	57.25	FIGURAR EN OBRA
PLACA SUP	3	 1.90	4.00	2	1.90	0.994	3.78	
PLACA SUP	4	 1.85	4.00	2	1.85	0.994	3.68	
PLACA SUP	5	 2.30	4.00	2	2.30	0.994	4.57	
PLACA SUP	6	 2.35	4.00	2	2.35	0.994	4.67	
PLACA SUP	7	 3.00	4.00	2	3.00	0.994	5.96	
PLACA SUP	8	 3.10	4.00	2	3.10	0.994	6.16	
PLACA SUP	-	 0.10 0.10 0.42	3.00	40	0.62	0.560	13.89	
MUROS	9	 0.20 0.20 2.70	4.00	22	3.10	0.994	67.79	
MUROS	-	 3.20	4.00	34	3.20	0.994	108.15	
PESO TOTAL ACEROS DE REFUERZO							288.53 Kg	

ANEXO 2. PLANOS ESTRUCTURALES (VÉASE EN MEDIO DIGITAL Y FISÍCO)

AQUADATOS

APROBACIÓN INTERVENTORÍA

CONSORCIO INTERCONSULTA 2023
NIT: 901.720.639-3

Villavicencio (Meta), 08 de agosto de 2024

APROB-081-23-154

Señores
AQUADATOS S.A.S
Atn. Mauricio Cruz Gómez, Director de Consultoría
admonvillavicencio@aquadatos.com
La ciudad

REF: Contrato de consultoría N° 081 de 2023 que tiene por objeto "ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN, AMPLIACIÓN Y OPTIMIZACIÓN DE OBRAS DE REDES E INFRAESTRUCTURA DE AGUA POTABLE y SANEAMIENTO BÁSICO EN LOS MUNICIPIOS DEL DEPARTAMENTO DEL META"

Asunto: **Aprobación productos: informe de diseños estructurales de pozos y sumideros tipo , cámaras tipo y obras de protección del subproyecto de alcantarillado pluvial zona noroccidental GRA3D del municipio de Granada – Meta sector El Paraíso**
Respuesta a su oficio TEC-148-24-092 de fecha 29 de julio de 2024.

Cordial saludo,

Teniendo en cuenta el oficio según asunto, mediante el cual nos radican para revisión y aprobación por parte de la interventoría los productos: **informes de diseños estructurales de pozos y sumideros tipo, cámaras tipo y diseños estructurales y obras de protección para los cabezales de descarga del subproyecto de alcantarillado pluvial zona noroccidental GRA3D para el subproyecto "ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN DE LA RED DE ACUEDUCTO, ALCANTARILLADO SANITARIO Y ALCANTARILLADO PLUVIAL SECTOR EL PARAÍSO DEL MUNICIPIO DE GRANADA, META.", objeto de obra "ONSTRUCCIÓN DE LA RED DE ALCANTARILLADO PLUVIAL ZONA NOROCCIDENTAL DEL SECTOR PARAÍSO DEL MUNICIPIO DE GRANADA, META**:

1. AQ-148-GRA3D-DES_POZO_1.20_3M_SIN_CC-V.1
2. AQ-148-GRA3D-DES_POZO_1.50_3M_SIN_CC-V.1
3. AQ-148-GRA3D-DES_POZO_1.80_3M_SIN_CC-V.1
4. AQ-148-GRA3D-DES_POZO_1.20_3M_CON_CC-V.1
5. AQ-148-GRA3D-DES_SUM_COMP-V.1
6. AQ-148-GRA3D-DES_CAM_TIPO_6-V.1
7. AQ-148-GRA3D-DES_CAM_TIPO_9-V.1
8. AQ-148-GRA3D-DES_CAM_TIPO_12-V.1

AQUADATOS S.A. RECIBIDO
NOMBRE: Juan
FECHA: 8-08-2024
HORA: 2:30pm

Consorciointerconsulta2023@gmail.com

Cel. 3104290102 – Cr 4 este # 15-148

9. AQ-148-GRA3D-DES_CAM_TIPO_17-V.1
10. AQ-148-GRA3D-DES_CAM_TIPO_18-V.1
11. AQ-148-GRA3D-DES_CAM_TIPO_19-V.1
12. AQ-148-GRA3D-DES_CAM_TIPO_20-V.1
13. AQ-148-GRA3D-DES_CAM_TIPO_21-V.1
14. AQ-148-GRA3D-DES_CDD_TIPO_01-V.1

Una vez efectuada la respectiva revisión técnica por parte del equipo de profesionales de la interventoría, se certifica que los productos que a continuación se detallan fueron presentados por la consultoría en su totalidad, con la precisión y especificaciones según los lineamientos establecidos en el pliego de condiciones del CONCURSO DE MÉRITOS -ABIERTO No. CM-OAP-002-2023.

Por consiguiente, esta interventoría imparte la **APROBACIÓN de los productos** correspondientes a los **INFORME DE DISEÑOS ESTRUCTURALES DE POZOS Y SUMIDEROS TIPO , CÁMARAS TIPO Y OBRAS DE PROTECCIÓN DEL SUBPROYECTO DE ALCANTARILLADO PLUVIAL ZONA NOROCCIDENTAL GRA3D DEL MUNICIPIO DE GRANADA – META SECTOR EL PARAÍSO** en su versión inicial, con sus respectivos Planos y memorias.

Sin otro particular,

JOSÉ ALEJANDRO BALLÉN SUÁREZ
C.C. 80037996
REPRESENTANTE LEGAL
CONSORCIO INTERCONSULTA 2023

Revisó:	Camilo Andrés Rodríguez Parrado	Especialista estructural	
Aprobó:	José Alejandro Ballén Suárez	Director de interventoría	Firma:

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MEMORIAL RESPONSABILIDAD DISEÑOS ESTRUCTURALES

ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN, AMPLIACIÓN Y OPTIMIZACIÓN DE OBRAS DE REDES E INFRAESTRUCTURA DE AGUA POTABLE Y SANEAMIENTO BÁSICO EN LOS MUNICIPIOS DEL DEPARTAMENTO DEL META

CONTRATO CONSULTORÍA N° 081/2023

PRODUCTO E24-GRA3D-ALP

FECHA:	JULIO DE 2024
NOMBRE:	ING. MIGUEL ÁNGEL PINZÓN DÍAZ
CEDULA:	1.026.575.035 de Bogotá
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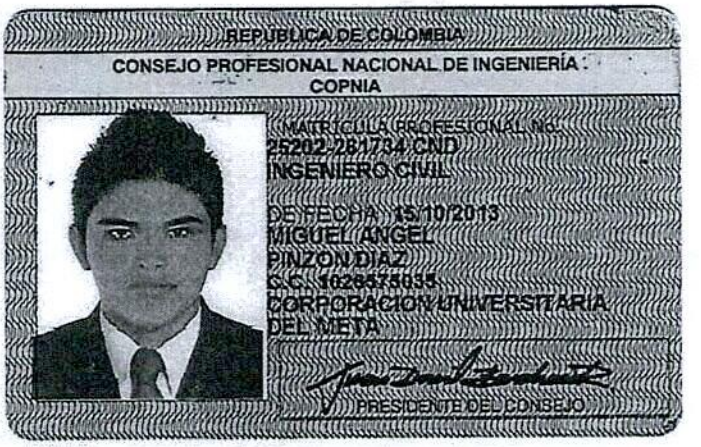
Cordialmente,



ING. MIGUEL ÁNGEL PINZÓN DÍAZ
Ingeniero civil
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JUAN SALVADOR DANGOND AMADO
R/L Aquadatos S.A.S.

REPÚBLICA DE COLOMBIA
COPNIA
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Certificado de vigencia y antecedentes disciplinarios
CVAD-2024-3008974

CONSEJO PROFESIONAL NACIONAL DE INGENIERÍA
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EL DIRECTOR GENERAL

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4. Que el profesional no tiene antecedentes disciplinarios ético-profesionales.

5. Que la presente certificación se expide en Bogotá, D.C., a los diecinueve (19) días del mes de Septiembre del año dos mil veinticuatro (2024).

Rubén Dario Ochoa Arbeláez

Firmal del titular (*)

(*)Con el fin de verificar que el titular autoriza su participación en procesos estatales de selección de contratistas. La falta de firma del titular no invalida el Certificado
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MEMORIAL RESPONSABILIDAD DISEÑOS ESTRUCTURALES

ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN, AMPLIACIÓN Y OPTIMIZACIÓN DE OBRAS DE REDES E INFRAESTRUCTURA DE AGUA POTABLE Y SANEAMIENTO BÁSICO EN LOS MUNICIPIOS DEL DEPARTAMENTO DEL META

CONTRATO CONSULTORÍA N° 081/2023

PRODUCTO E24-GRA3D-ALP

FECHA:	JULIO DE 2024
NOMBRE:	ING. SERGIO GABRIEL HERNÁNDEZ ROA
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Por este conducto cómo responsable de los diseños estructurales de los pozos, y sumidero del proyecto **"ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN DE LA RED DE ACUEDUCTO, ALCANTARILLADO SANITARIO Y ALCANTARILLADO PLUVIAL SECTOR EL PARAÍSO DEL MUNICIPIO DE GRANADA, META."**, del cual se deriva el objeto de obra **CONSTRUCCIÓN DE LA RED DE ALCANTARILLADO PLUVIAL ZONA NOROCCIDENTAL DEL SECTOR PARAÍSO DEL MUNICIPIO DE GRANADA, META"**, certifico que los diseños fueron desarrollados de acuerdo con la normatividad vigente.

Cordialmente,

ING. SERGIO GABRIEL HERNÁNDEZ ROA
Ingeniero civil

2520274170 CND



JUAN SALVADOR DANGOND AMADO
R/L Aquadatos S.A.S.

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EL DIRECTOR GENERAL

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Rubén Dario Ochoa Arbeláez

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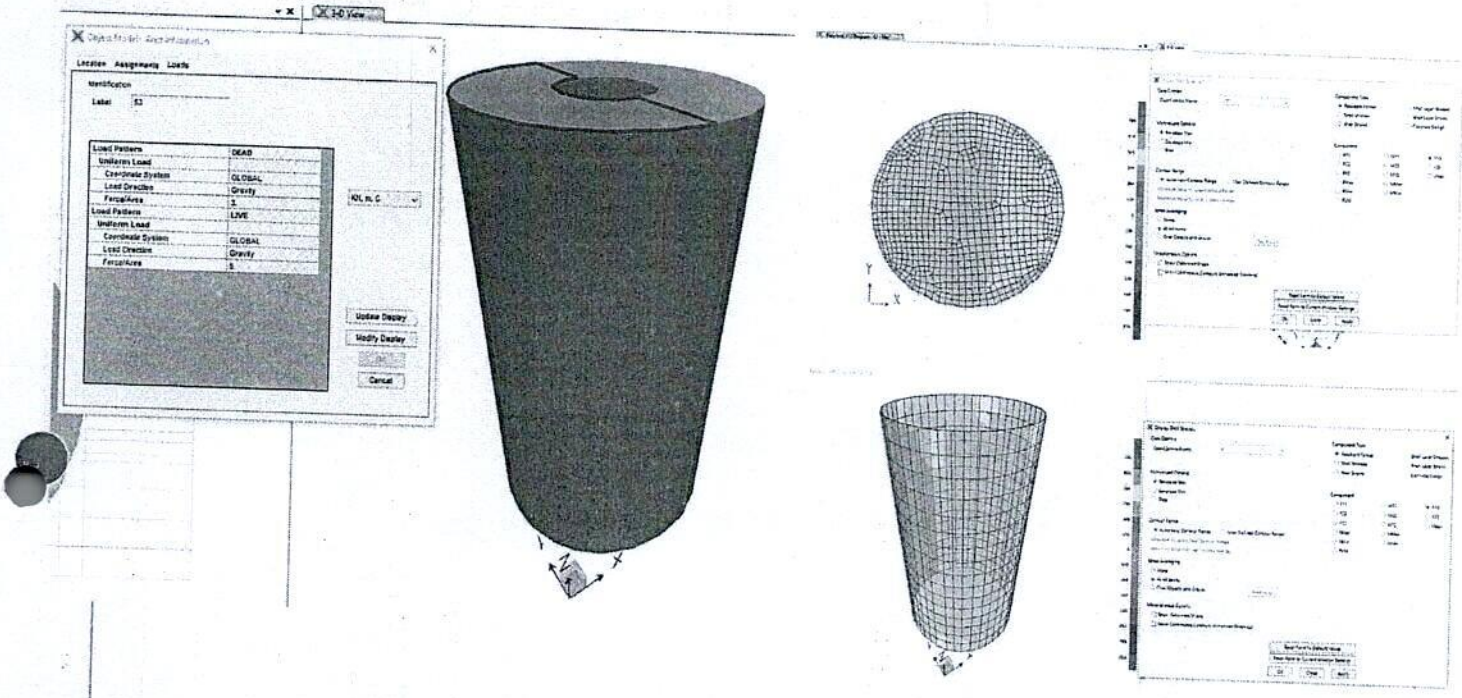

ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN, AMPLIACIÓN Y OPTIMIZACIÓN DE OBRAS DE REDES E INFRAESTRUCTURA DE AGUA POTABLE Y SANEAMIENTO BÁSICO EN LOS MUNICIPIOS DEL DEPARTAMENTO DEL META

CONTRATO No. 081 DE 2023.

SUBPROYECTO: ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN DE LA RED DE ACUEDUCTO, ALCANTARILLADO SANITARIO Y ALCANTARILLADO PLUVIAL SECTOR EL PARAÍSO DEL MUNICIPIO DE GRANADA, META.

INFORME DE DISEÑO ESTRUCTURAL
POZO DE INSPECCION DE 1.50M HASTA 3M SIN CAMARA DE CAIDA

AQ-148-GRA3D-DES_POZO_1.50_3M_SIN_CC-V1

Julio de 2024

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DIRECTOR DE PROYECTO: Mauricio Cruz Gómez	**CLIENTE:** EDESA S.A. E.S.P.	**CONTRATO No:** 081 de 2023

TITULO DEL DOCUMENTO:	**INFORME DE DISEÑO ESTRUCTURAL POZO DE INSPECCION DE 1.50M HASTA 3M SIN CÁMARA DE CAÍDA -** SUBPROYECTO: ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN DE LA RED DE ACUEDUCTO, ALCANTARILLADO SANITARIO Y ALCANTARILLADO PLUVIAL SECTOR EL PARAÍSO DEL MUNICIPIO DE GRANADA, META.
CÓDIGO:	**AQ-148-GRA3D-DES_POZO_1.50_3M_SIN_CC-V1**

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FECHA: 23/07/2024	**FECHA**: 25/07/2024	**FECHA**: 29/07/2024

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FECHA: 05/08/2024	**FECHA**: 08/08/2024

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Fecha:	25/07/2024					
Aprobó:	Mauricio Cruz Gómez (Director de Proyecto)					
Fecha:	29/07/2024					

SISTEMA DE GESTIÓN DE CALIDAD DE AQUADATOS	
VERSIÓN DE LA PLANTILLA	FECHA DE VIGENCIA DE LA PLANTILLA
1	14/05/2021

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1 INTRODUCCIÓN

Diseño y calculo estructural de un pozo de inspección de diámetro interno 1.50 metros hasta tres metros de profundidad sin cámara de caída en concreto reforzado, localizado en la zona de expansión de la urbanización del Paraíso del casco urbano del municipio de Granada – Dpto. del Meta zona de amenaza sísmica Alta con los siguientes parámetros sísmicos.

Perfil de Suelo=D (verificar estudio de suelos)
Aa= 0.20
Av=0.25
Fa=1.15
Fv=1.80
I=1.50 (Coeficiente de Importancia)

EL sistema estructural utilizado para resistir tanto las cargas verticales y laterales consiste en una sección rectangular en planta conformada por muros de perímetro (muros de concreto reforzado), estos a su vez funcionan monolíticamente con una placa superior y una inferior apoyada directamente sobre el terreno, la cual le trasmite las presiones dentro de la capacidad admisible según estudio de suelos.

Se siguieron los lineamientos de los Títulos A, B, C y D de la Norma Colombiana de Diseño y Construcción SismoResistente NSR-10 (sus decretos reglamentarios 926 del 19 de marzo de 2010, 2525 del 13 de Julio de 2010, 092 del 17 de enero de 2011, 340 del 13 de febrero de 2012 y 945 del 05 de junio de 2017) y AIS 180-13 Recomendaciones para requisitos sísmicos de Estructuras diferentes de edificaciones.

2 MATERIALES Y COEFICIENTES DE SEGURIDAD

MATERIALES

Concretos:

- Concreto de limpieza: f´c=11MPa.
- Concreto para Muros y losas f´c=28Mpa.

Aceros:

- Acero para barras de refuerzo $\phi \geq 3/8''$ fy=420MPa.
- Acero para barras de refuerzo $\phi \leq 3/8''$ fy=240MPa.

Módulo de elasticidad para el concreto: E =24,870MPa.
Módulo de elasticidad para el acero: E = 200,000MPa.

COEFICIENTES DE SEGURIDAD PARA DISEÑO DE CONCRETO

- Secciones controladas por tracción $\phi = 0.90$
- Secciones controladas por compresión
  - Elementos con refuerzo en espiral según C.10.9.3 $\phi = 0.75$
  - Otros elementos reforzados $\phi = 0.65$
- Cortante y torsión $\phi = 0.75$
- Aplastamiento en el concreto (excepto para anclajes de postensado y modelos puntal – tensor) $\phi = 0.65$

COEFICIENTES DE SEGURIDAD PARA DISEÑO DE ACERO

- Fluencia por tensión sobre el área bruta $\phi t = 0.90$
- Rotura por tensión sobre el área neta $\phi t = 0.75$
- Rotura por cortante sobre el área neta efectiva $\phi t = 0.75$
- Flexión $\phi b = 0.90$
- Cortante $\phi v = 0.75$
- Torsión $\phi t = 0.75$

3 CASOS DE CARGA

La estructura se diseñará para resistir las cargas que estarán presentes a lo largo de su vida útil, para esto se considera 1 caso:

1) Estructura considerando el empuje lateral del terreno.

3.1 CARGAS

D = Carga muerta.
L = Carga viva.
H = Carga estática por empuje de tierras.
SX (Tierras) = Fuerzas sismicas por tierras en X
SY (Tierras) = Fuerzas sismicas por tierras en Y

4 PARÁMETROS SÍSMICOS Y DATOS GEOTECNICOS

MUNICIPIO: GRANADA, META

ZONA DE AMENAZA SÍSMICA: ALTA

COEFICIENTE DE IMPORTANCIA: I=1.50

Aa = 0.20 (Coeficiente de aceleración pico efectiva)

Av = 0.25 (Coeficiente de velocidad pico efectiva)

Fa = 1.15 (Coeficiente de aceleracion periodos cortos)

Fv = 1.80 (Coeficiente de aceleración periodos intermedios)

Perfil de Suelo: D

σ = 120 kN/m2 (Presión admisible)

ϕ suelo = 33 (Angulo de fricción)

γ = 19.96 kN/m^3 (Peso unitario del terreno) (promedio)

5 EVALUACIÓN DE CARGAS

5.1 CÁLCULO DE PRESIÓN DE TIERRAS

CÁLCULO DE PRESION DE TIERRAS

PROPIEDADES DE LOS MATERIALES/DATOS INICIALES

f'c=	28000	kN/m2	
fy=	420000	kN/m2	
ϕsuelo=	33	°	(Angulo de friccion del terreno)
Ka=	0.295		
γ=	19.96	kN/m3	
Es=sobrecarga=	5.00	kN/m2	(Sobrecarga)
Aa=	0.35		(Aceleracion pico del terreno)
K=	3.39		(Coeficiente de presion pasiva)
Kv=	0.00		(Coeficiente de aceleracion sismica vertical)
Kh=	0.175		(Coeficiente de aceleracion sismica horizontal)
δ=	16.50	°	(Angulo de friccion en la interfase entre muro y relleno)
i=	10.00	°	(Angulo de la pendiente del relleno)
β=	0.00	°	(Inclinacion de la superficie del terreno detras de la cara del muro)
θ=	9.93	°	(Inclinacion del muro respecto a la horizontal)
KAE=	0.46		(Coeficiente sismico de presion activa)

PROPIEDADES GEOMETRICAS

H expuesta del muro a tierras (Crítica)=	3.33	m
Espesor losa fondo =	0.20	m
H Libre Muro (Crítica)=	3.13	m
Espesor Muro=	0.20	m

EMPUJES Y MOMENTOS

Empuje Estatico			
Ea=	32.62	kN	
Mvol1=	36.21	kN-m	
Empuje Por Sobrecarga			
hs=	0.25		
Es=	4.91	kN	
Mvol2=	8.17	kN-m	
Empuje Dinamico - (Mononobe Okabe)			
h Muro=	3.13	m	
e muro=	0.20	m	
i=	10	0.1745	rad
δ=	16.5	0.2880	rad
Ø=	33	0.576	rad
Aa=	0.35		
Kh=	0.18		
Kv=	0.00		
θ=	9.93	0.1732	rad
β=	0.00	0.0000	rad
Cos2(Ø-θ-β)=	0.85		
Cos(δ+β+θ)=	0.90		
Sen(Ø+δ)=	0.76		
Sen(Ø-θ-i)=	0.23		
Cos(i-β)=	0.98		
Cos(θ)=	0.99		
Cos2(β)=	1.00		

$\sqrt{\frac{Sen(phi+delta)*Sen(Ø-θ-i)}{Cos(δ+β+θ)*Cos(i-β)}}$	0.442
Ψ=	2.08
KAE=	0.462
EAE=	51.09
ΔEe=	18.47 **kN**
Mvol3=	41.00 **kN-m**

ANALISIS DE CARGAS

E suelo=	28.82	kN
M suelo=	30.07	kN-m
E sobrecarga=	4.61	kN
M sobrecarga=	7.22	kN-m
E dinamico=	16.32	kN
M dinamico=	34.01	kN-m
Σ Empujes=	**49.75**	kN

MÁXIMA PRESIÓN ESTÁTICA DE TIERRAS			DATOS PARA SAP2000	
h max (m)	Pw (kN/m2)	Ew (kN/m)	C=	-0.59
3.33	19.59	32.6	D=	1.96

MÁXIMA PRESIÓN DINÁMICA DE TIERRAS			DATOS PARA SAP2000	
h max (m)	Pw (kN/m2)	Ew (kN/m)	C=	-0.33
3.33	11.09	18.47	D=	1.11

pw = Presión de tierras

Ew = Fuerza resultante

γt =	19.96	kN/m3
Ka=	0.295	
KAE=	0.462	Coeficiente de empuje TOTAL (Dinámico + Estático)
KAE - Ka=	0.167	Coeficiente de empuje dinámico

6 COMBINACIONES DE CARGA

COMBINACIONES DE CARGA BÁSICAS PARA DISEÑO DE ELEMENTOS

	D	L	F	H	S.X (HD)	S.Y. (HD)
COMB1	1.40					
COMB2	1.20	+ 1.60		+ 1.60		
COMB3	1.20	+ 1.00				
COMB4	1.20	+ 1.00		+ 1.60	+ 1.00	
COMB5	1.20	+ 1.00		+ 1.60		+ 1.00
COMB6	0.90			+ 1.60		
COMB7	0.90			+ 1.60	+ 1.00	
COMB8	0.90			+ 1.60		+ 1.00

D	=	*Carga Muerta*
L	=	*Carga Viva*
H	=	*Carga estatica de Tierras*
F	=	*Carga estatica de Fluido*
S.X. (HD)	=	*Fuerzas Sismicas por Tierras en X*
S.Y. (HD)	=	*Fuerzas Sismicas por Tierras en Y*

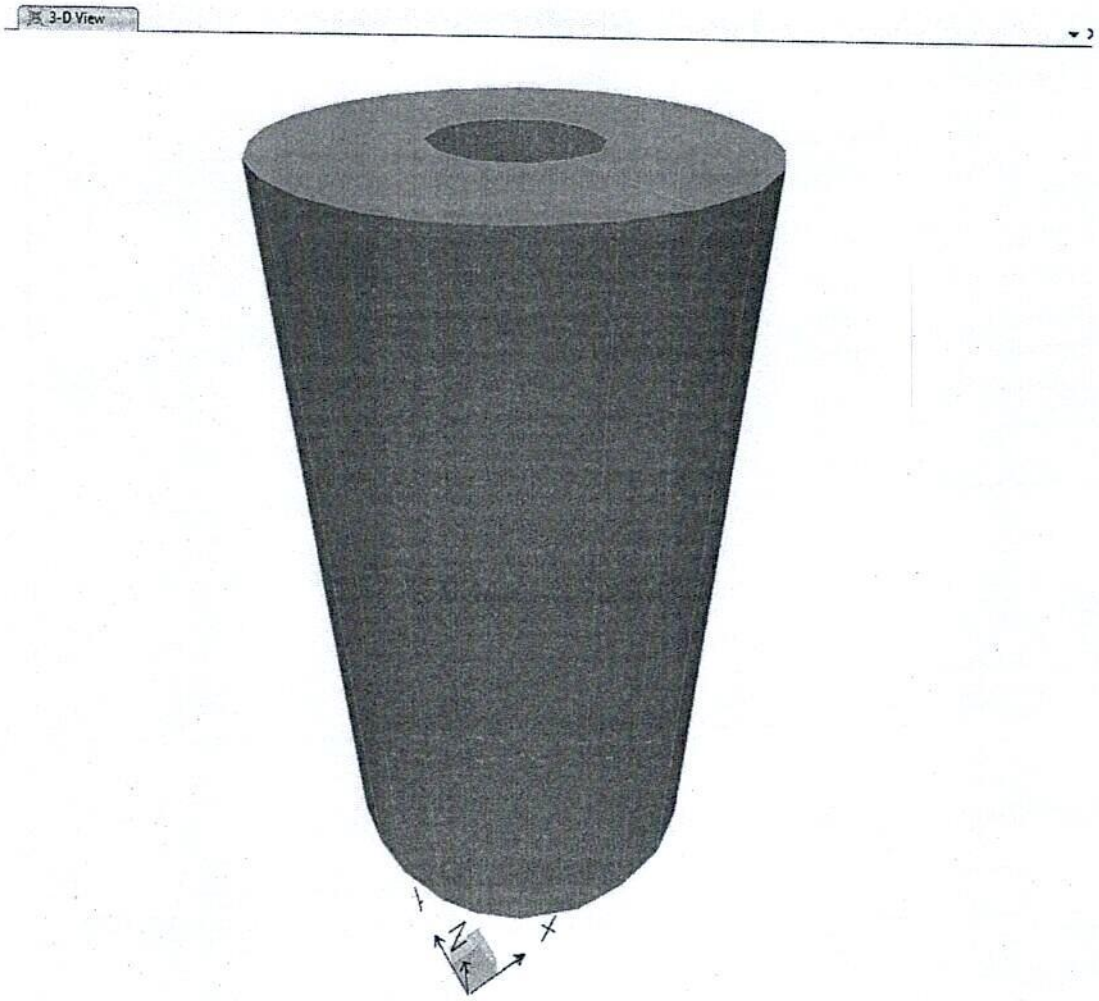
COMBINACIONES DE CARGA DE SERVICIO

	D	L	F	H	S.X (HD)	S.Y. (HD)
SERV1	1.00	+ 1.00		+ 1.00		
SERV2	1.00			+ 1.00		
SERV3	1.00	0.75				
SERV4	1.00			+ 1.00	+ 0.70	
SERV5	1.00			+ 1.00		+ 0.70
SERV6	1.00	+ 0.75		+ 1.00		
SERV7	1.00	+ 0.75		+ 1.00	+ 0.53	
SERV8	1.00	+ 0.75		+ 1.00		+ 0.53
SERV9	0.60			+ 1.00		
SERV10	0.60			+ 1.00	+ 0.70	
SERV11	0.60			+ 1.00		+ 0.70

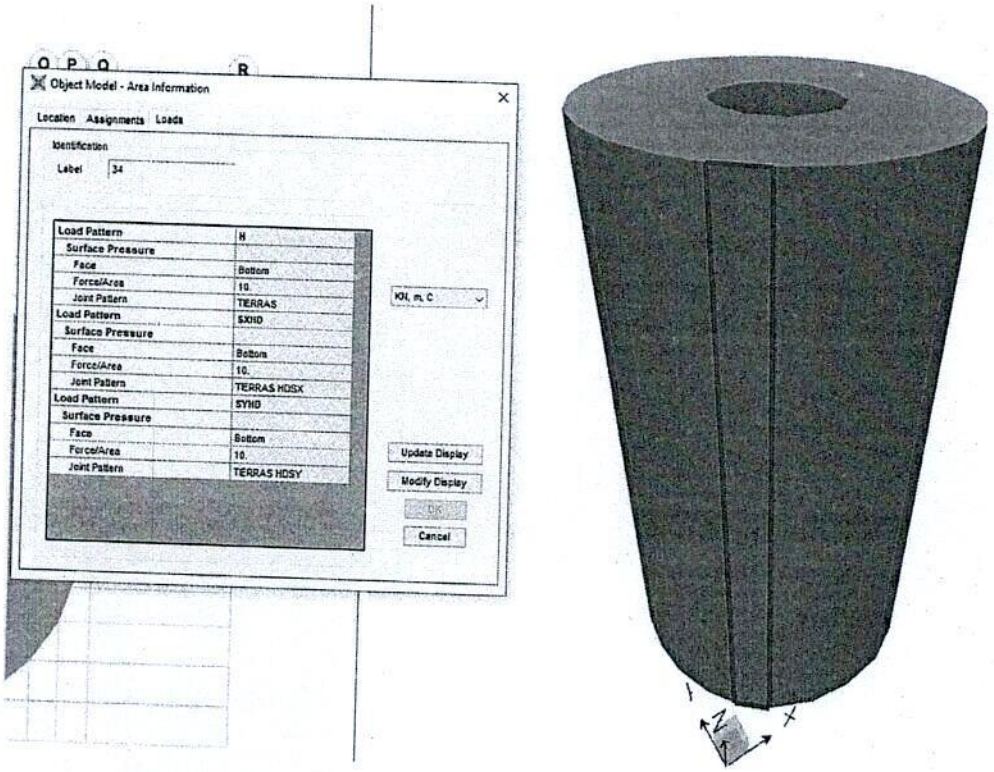
D	=	*Carga Muerta*
L	=	*Carga Viva*
H	=	*Carga estatica de Tierras*
F	=	*Carga estatica de Fluido*
S.X. (HD)	=	*Fuerzas Sismicas por Tierras en X*
S.Y. (HD)	=	*Fuerzas Sismicas por Tierras en Y*

7 MODELO MATEMÁTICO

(Los datos de entrada y de salida del modelo matemático se encuentran al final del documento)



7.1 VISTA 3D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Surface Pressure
Face Bottom
Force/Area 10.
Joint Pattern TERRAS HDSX
Load Pattern SYHD
Surface Pressure
Face Bottom
Force/Area 10.
Joint Pattern TERRAS HDSY
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Update Display
Modify Display
OK
Cancel
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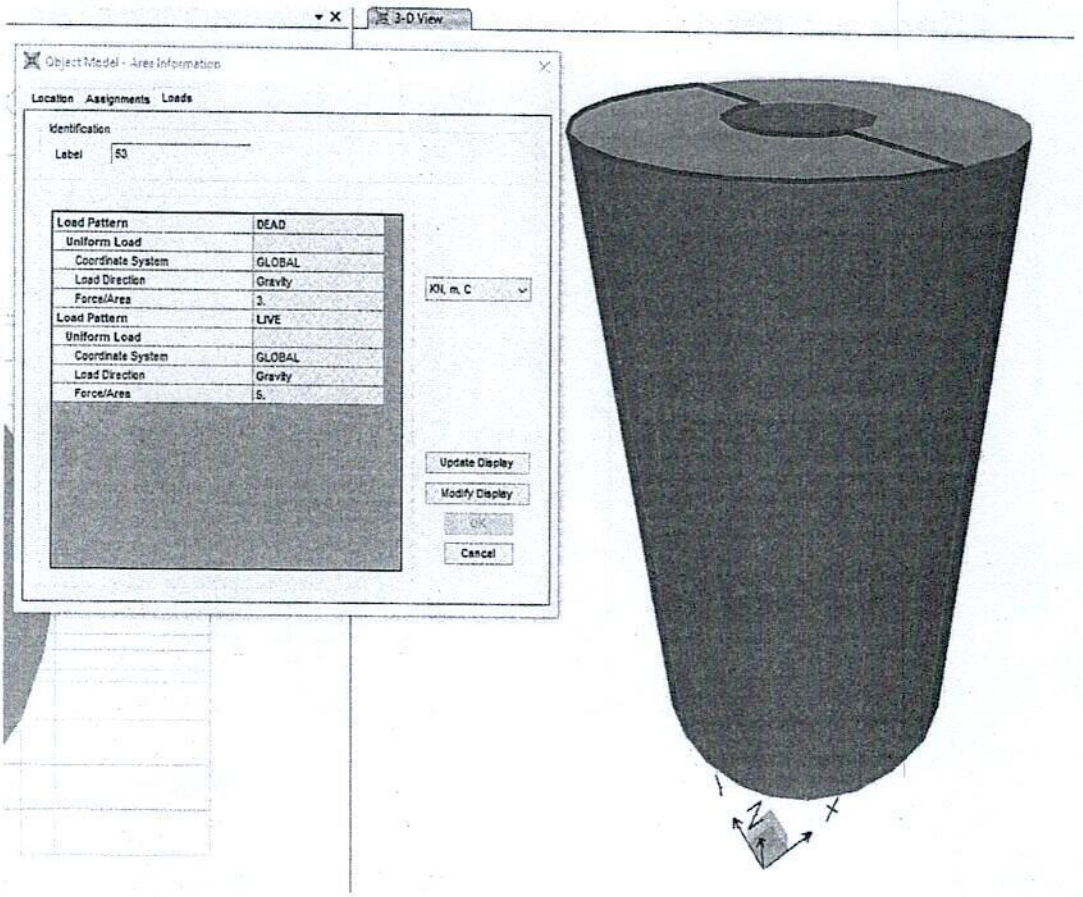
X

7.2 CARGAS DE TIERRAS APLICADAS A MUROS



7.3 CARGAS APLICADAS SOBRE LOSAS

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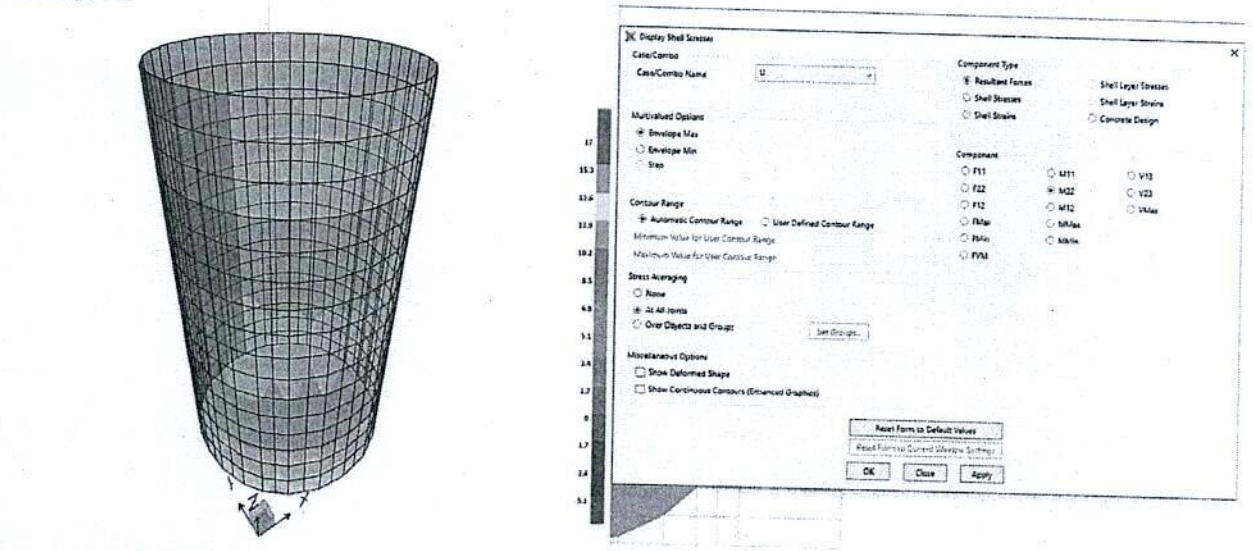
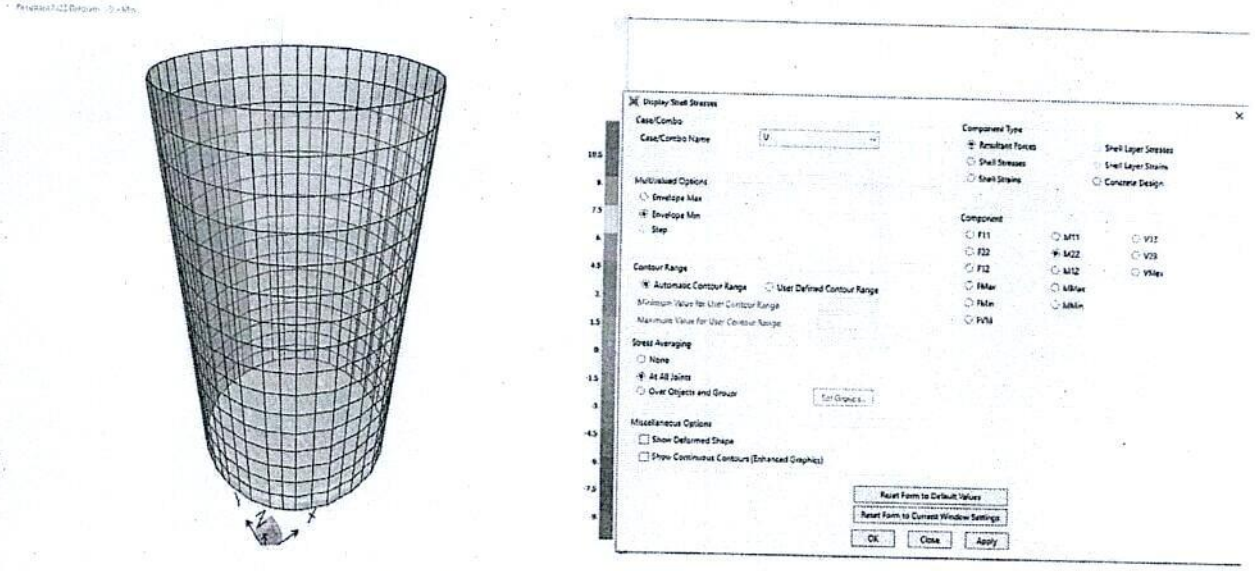
8 DISEÑO DE MUROS

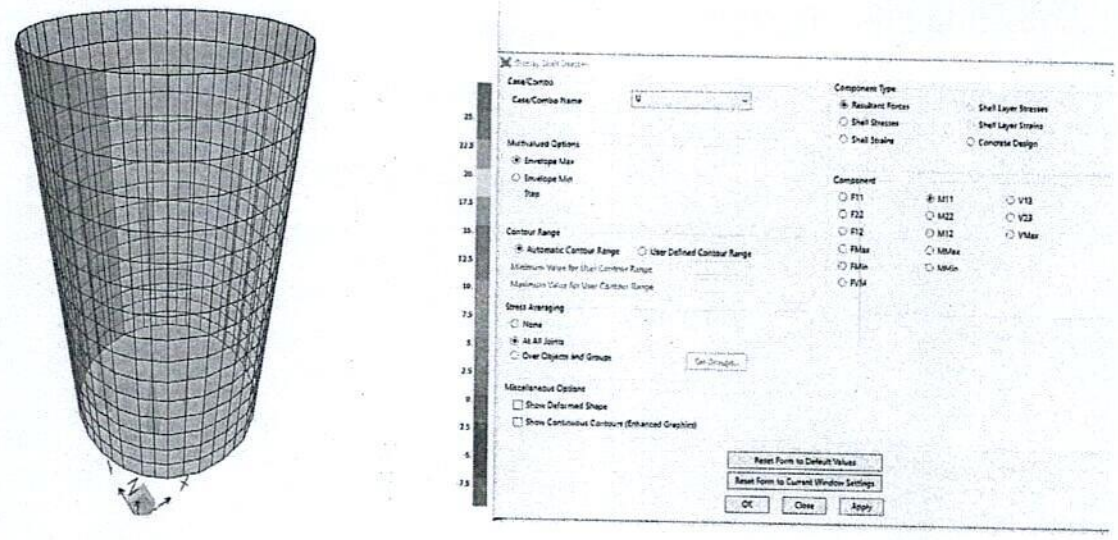
8.1 MURO TIPICO



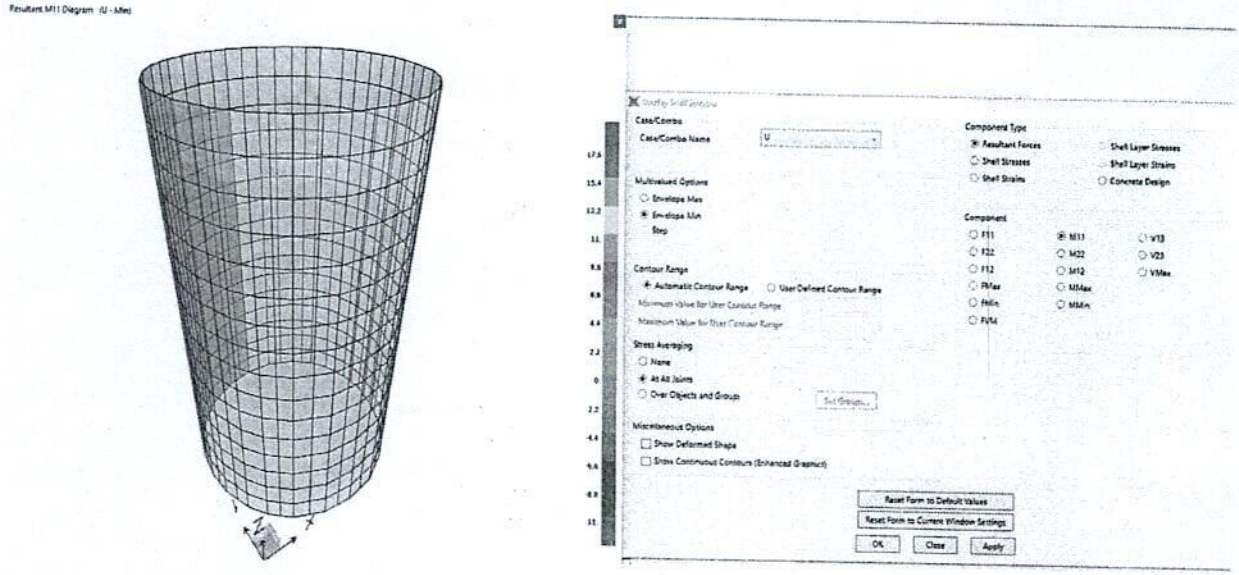
MOMENTOS (M22) MAX. COMB. ENVOLVENTE



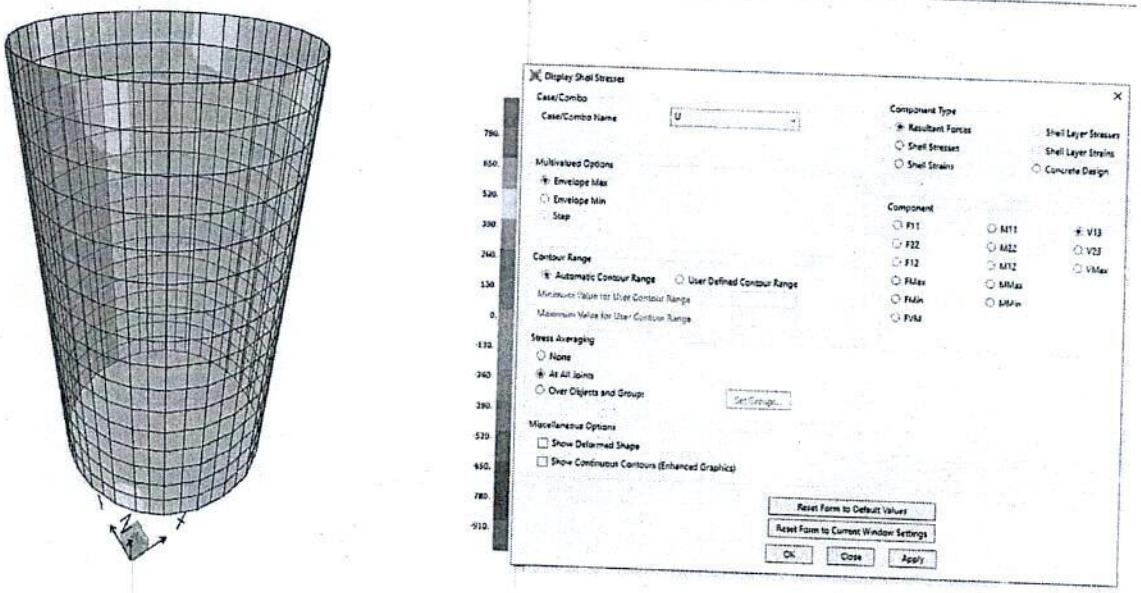
MOMENTOS (M22) MIN. COMB. ENVOLVENTE



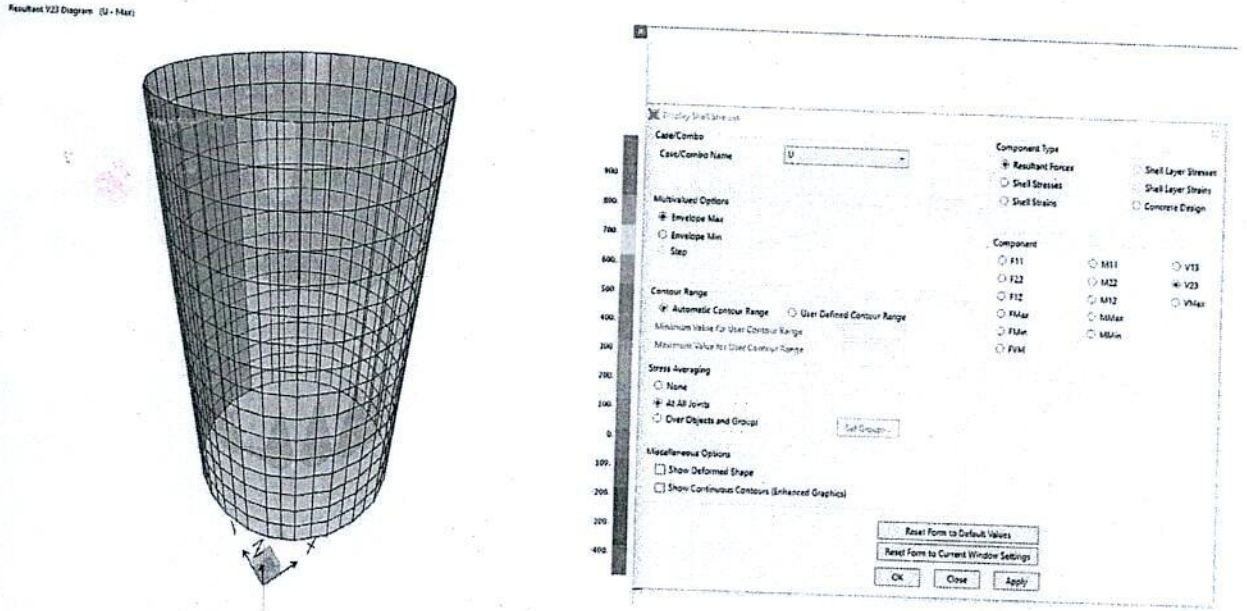
MOMENTOS (M11) MAX. COMB. ENVOLVENTE



MOMENTOS (M11) MIN. COMB. ENVOLVENTE



CORTANTES (V13) MAX ABS. COMB. ENVOLVENTE



CORTANTES (V23) MAX. ABS. COMB. ENVOLVENTE

RESUMEN DE SOLICITACIONES DEL MODELADO MUROS

MUROS TIPO e=20cm

MOMENTOS	Momento 22 Ref. vertical (KN.m)		Momento 11 Ref. Horizontal (KN.m)	
COMB.	Interior (-)	Exterior (+)	Interior (-)	Exterior (+)
U	2.90	9.15	0.40	1.10
U (Sin E)	2.65	8.70	0.20	1.00
S (Sin E)	2.10	7.00	0.15	0.78

CORTANTES		
COMB.	V13 MAX ABS	V23 MAX ABS
U	6.20	50.00

FACTOR DE DURABILIDAD AMBIENTAL (MUROS)(REF. VERTICAL INTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Muro
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	2 kN.m	(Momento de servicio)
Mu =	3 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0017	(Cuantía de acero para Mu)
As =	181mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	700mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.153$$

$$j = 1 - \frac{k}{3} = 0.94893$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 116.47 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{59.4\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{48.4\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	59	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**116 MPa**	**<**	**120 MPa**	OK

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**700mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.2619$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \quad = \quad 2.57$$

FACTOR DE DURABILIDAD AMBIENTAL (MUROS)(REF. VERTICAL EXTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Muro
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	7.0 kN.m	(Momento de servicio)
Mu =	8.7 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0048	(Cuantía de acero para Mu)
As =	507mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	250mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.242$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.91917$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 143.14 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{151.1\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{123.2\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	151	<	250.0	
fs, max def =	151 MPa				

fs < fs,max	**=**	**143 MPa**	**<**	**151 MPa**	**OK**

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**250mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.24286$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \quad = \quad \mathbf{2.12}$$

FACTOR DE DURABILIDAD AMBIENTAL (MUROS) (REF. HORIZONTAL INTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e= 200	Espesor Muro
fy =	420	MPa		
Ec =	24870.1	MPa		
Es =	200000	MPa		

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	0.2 kN.m	(Momento de servicio)
Mu =	0.2 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0004	(Cuantía de acero para Mu)
As =	42mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	3000mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.077$$

$$j = 1 - \frac{k}{3} = 0.97425$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 34.73 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{14.1\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{11.5\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	14	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**35 MPa**	**<**	**120 MPa**	**OK**

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**3000mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.33333$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 8.16$$

FACTOR DE DURABILIDAD AMBIENTAL (MUROS) (REF. HORIZONTAL EXTERIOR)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Muro
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	0.8 kN.m	(Momento de servicio)
Mu =	1.0 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0006	(Cuantía de acero para Mu)
As =	67mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	1900mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.096$$

$$j = 1 - \frac{k}{3} = 0.96797$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 115.11 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{22.2\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{18.1\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	22	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**115 MPa**	**<**	**120 MPa**	**OK**

Acero por control de agrietamiento	**θ =**	**1/2**	**cada**	**1900mm**

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.28205$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \quad = \quad 2.56$$

DISEÑO DE MUROS DE CONCRETO REFORZADO

DISEÑO DE MUROS

F'C = 28.0 MPa
Fy = 420 MPa
E = 24870.1 Mpa

Recubrimiento interior: 0.075 m
Recubrimiento exterior: 0.075 m

b = 1.00 e = 0.20

d (interior)= 0.11 m
d (exterior)= 0.11 m

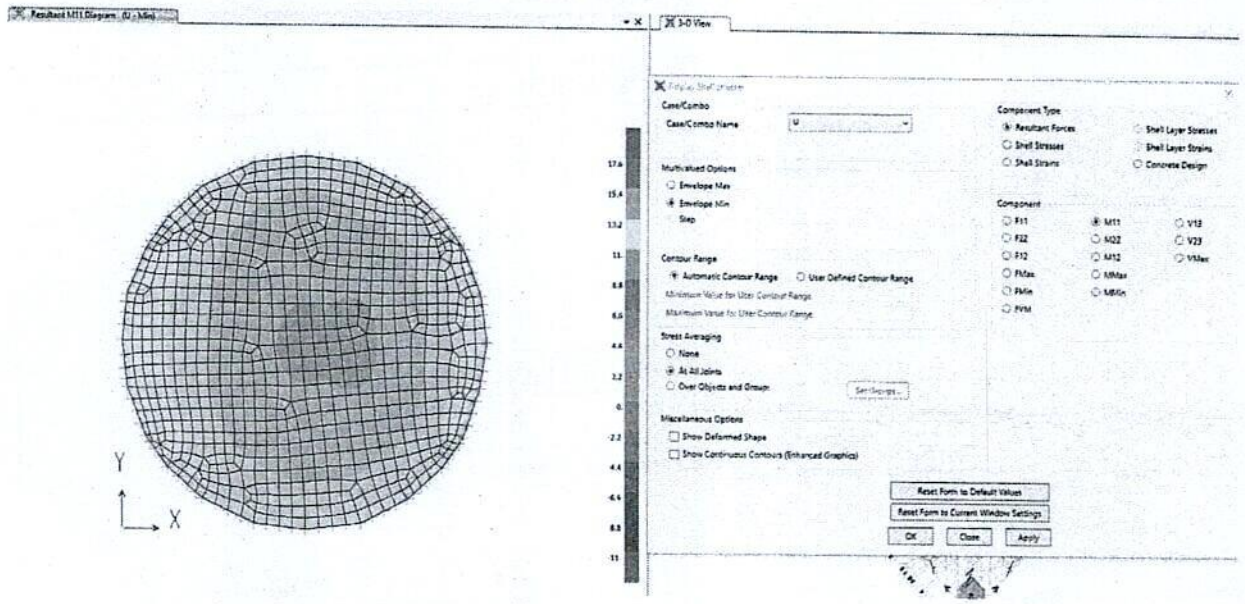
DISEÑO A FLEXIÓN

	Refuerzo vertical			Refuerzo Transversal		
	Interior		Exterior	Interior		Exterior
Mu (Sin E) =	2.1		7.0	0.2		0.8
Sd =	2.57		2.12	8.16		2.56
Mu (Sin E) * Sd=	**5.40**		**14.87**	**1.22**		**2.00**
Mu =	2.90		9.15	0.40		1.10
Mdef =	**5.40**		**14.87**	**1.22**		**2.00**
K =	489.902		1349.1	111.1		181.2
Ro=	0.0013		0.0037	0.0003		0.0005
Ro (Fisuración)=	0.0017		0.0048	0.0004		0.0006
Rmin=	0.0030		0.0030	0.0030		0.0030
As (cm2) =	1.81		5.07	0.42		0.67
As (min) =	1.58		1.58	1.58		1.58
As (Def) =	1.81		5.07	1.58		1.58
Refuerzo =	#4		#4	#4		#4
Separación Req.	Cda./0.71		Cda./0.25	Cda./0.82		Cda./0.82
Separación Def.	**Cda./0.20**		**Cda./0.20**	**Cda./0.20**		**Cda./0.20**

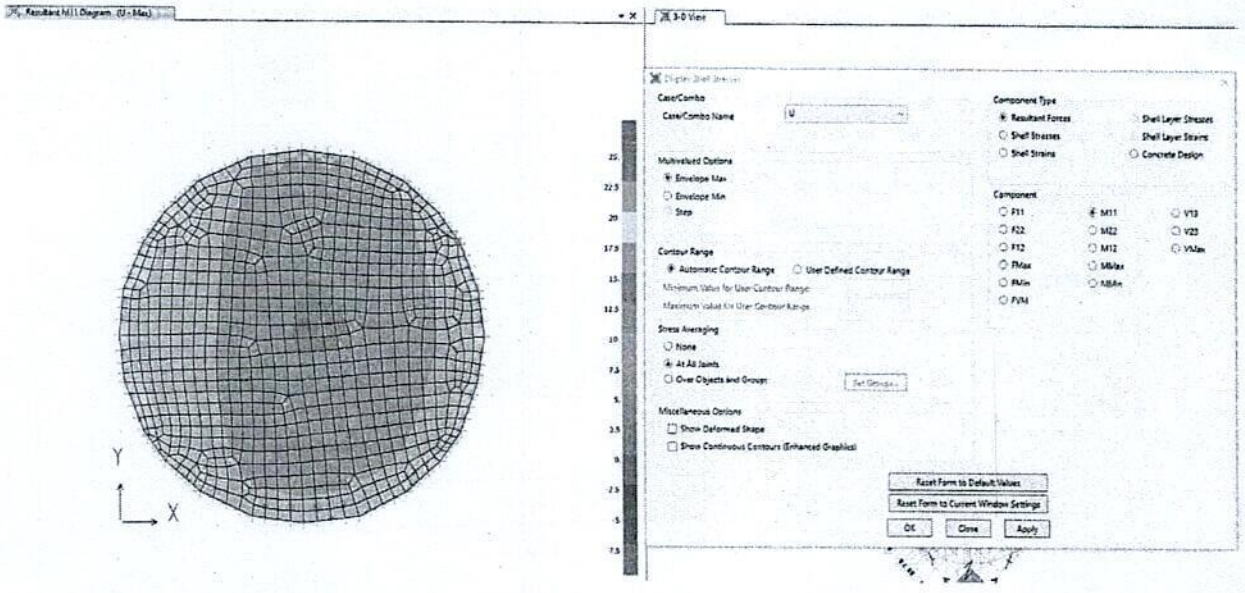
DISEÑO A CORTANTE

Vu (KN/m)=	**50.00**
VC (KN/m)=	94.45
θVN (KN/m2) =	70.8
Vu < θVc	OK

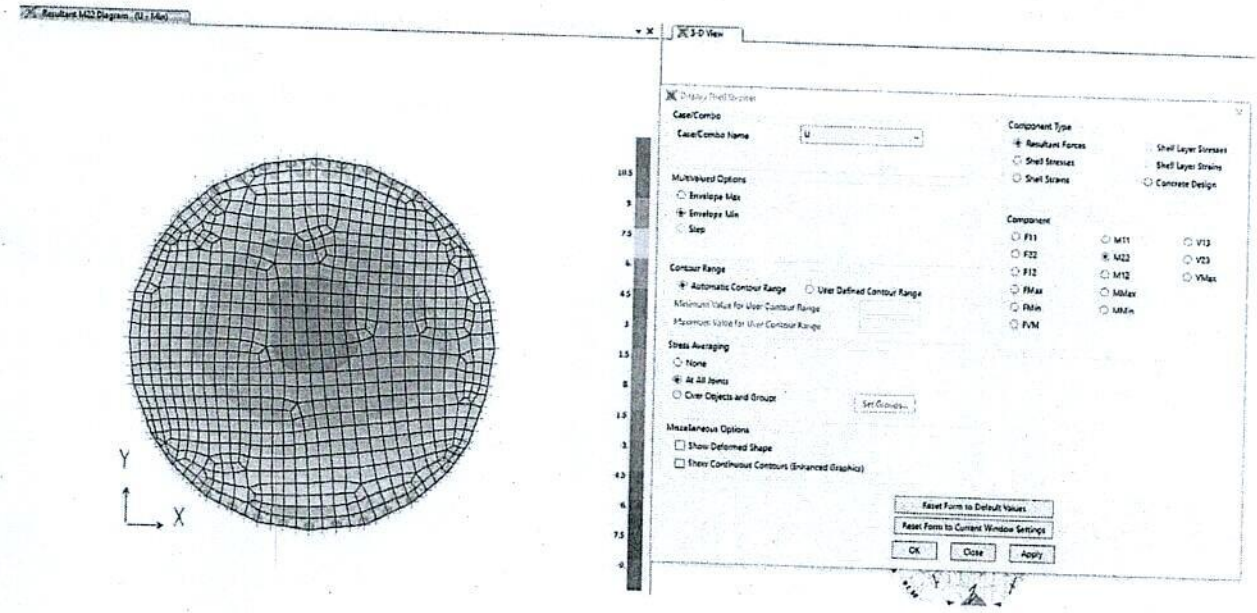
9 DISEÑO DE LOSA INFERIOR e=20cm



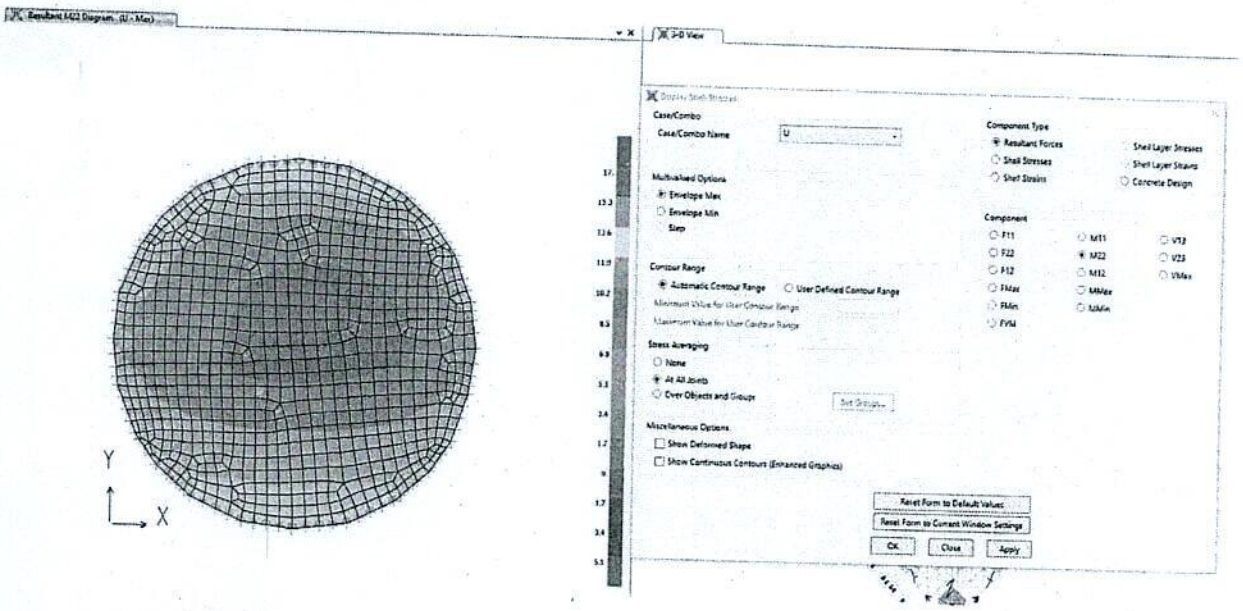
MOMENTOS (M11) MIN. COMB. ENVOLVENTE



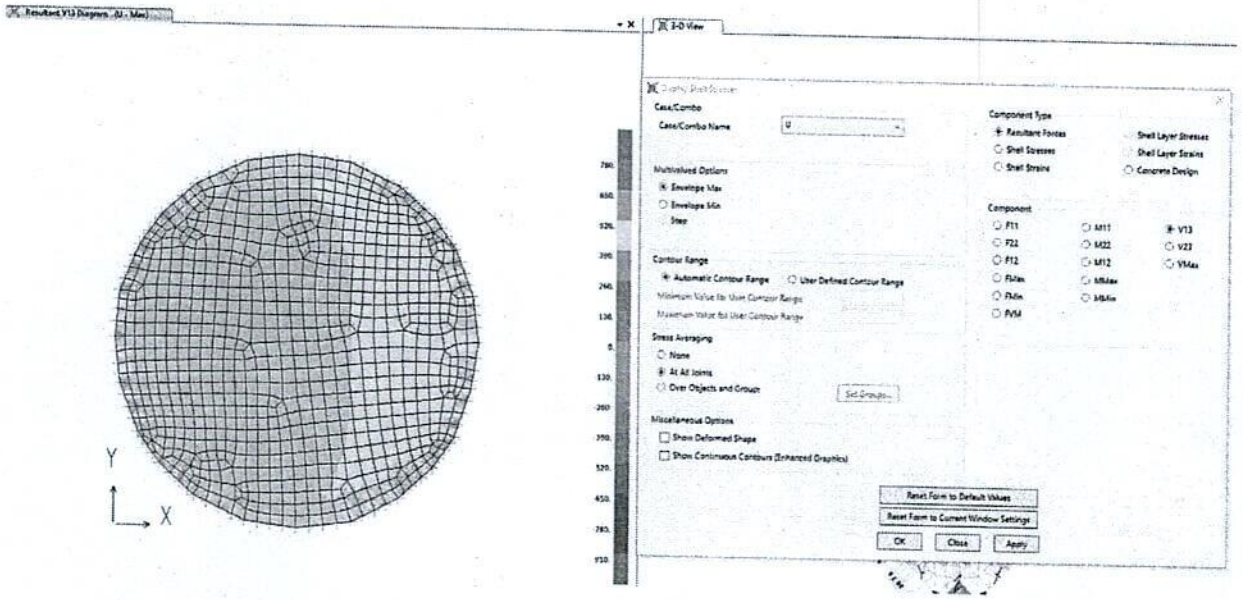
MOMENTOS (M11) MAX. COMB. ENVOLVENTE



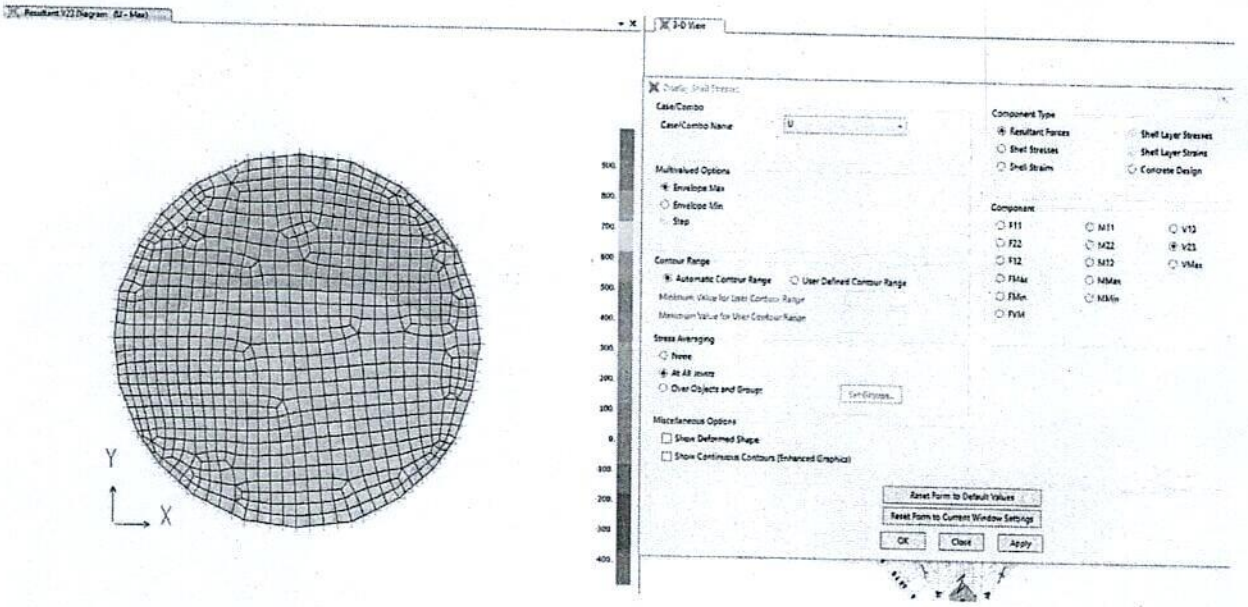
MOMENTOS (M22) MIN. COMB. ENVOLVENTE



MOMENTOS (M22) MAX. COMB. ENVOLVENTE



CORTANTES (V13) MAX. ABS. COMB. ENVOLVENTE



CORTANTES (V23) MAX. ABS. COMB. ENVOLVENTE

RESUMEN DE SOLICITACIONES DEL MODELADO EN LOSAS

LOSA				
MOMENTOS	Momento 22 Ref. Y (KN.m)		Momento 11 Ref. X (KN.m)	
COMB.	**ARRIBA (22-)**	**ABAJO (22+)**	**ARRIBA (11-)**	**ABAJO (11+)**
U	8.1	17.7	9.9	21.6
U (Sin E)	5	16.4	9.4	19.9
S (Sin E)	3.4	13	7.55	16

CORTANTES		
COMB.	**V13 MAX ABS**	**V23 MAX ABS**
U	70	60

FACTOR DE DURABILIDAD AMBIENTAL (REF X ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	7.6 kN.m	(Momento de servicio)
Mu =	9.4 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0050	(Cuantía de acero para Mu)
As =	528mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	240mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.247$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.91774$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 148.44 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{156.0 MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{127.3 MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	156	<	250.0	
fs, max def =	156 MPa				

fs < fs,max = 148 MPa < 156 MPa OK

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.24503$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.05$$

FACTOR DE DURABILIDAD AMBIENTAL (REF X ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms = 16.0 kN.m (Momento de servicio)
Mu = 19.9 kN.m (Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0080	(Cuantía de acero para Mu)
As =	845mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	150mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.301$$

$$j = 1 - \frac{k}{3} = 0.89975$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 200.54 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{216.2\ MPa}$$
en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{176.4\ MPa}$$
En zonas con exposición severa

B = 1.35
4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	216	<	250.0	
fs, max def =	216 MPa				

fs < fs,max	**=**	**201 MPa**	**<**	**216 MPa**	**OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.24375$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \quad = \quad 1.52$$

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	3.4 kN.m	(Momento de servicio)
Mu =	5.0 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0028	(Cuantía de acero para Mu)
As =	295mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	430mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.191$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.93631$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 117.39 \text{ MPa}$$

$$f_{s,max} = \frac{57\,000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{94.3 MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46\,500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \textbf{76.9 MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

364

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	94	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**117 MPa**	**<**	**120 MPa**	**OK**

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.47059$ $\quad \Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.19$$

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e=	200	Espesor Losa
fy =	420	MPa			
Ec =	24870.1	MPa			
Es =	200000	MPa			

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms = 13.0 kN.m (Momento de servicio)
Mu = 16.4 kN.m (Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0071	(Cuantía de acero para Mu)
As =	745mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	170mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.286$$

$$j = 1 - \frac{k}{3} = 0.90481$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 183.63 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{200.1\ MPa}$$
en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{163.2\ MPa}$$
En zonas con exposición severa

B = 1.35
4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	200	<	250.0	
fs, max def =	200 MPa				

fs < fs,max = 184 MPa < 200 MPa OK

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.26154$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 1.63$$

DISEÑO DE LOSAS

DISEÑO DE LOSA

F'C =	28.0 MPa	Recubrimiento interior:	0.075 m
Fy =	420 MPa	Recubrimiento exterior:	0.075 m
E =	24870.1 Mpa		

b = 1.00 e = 0.20 d (interior)= 0.11 m d (exterior)= 0.11 m

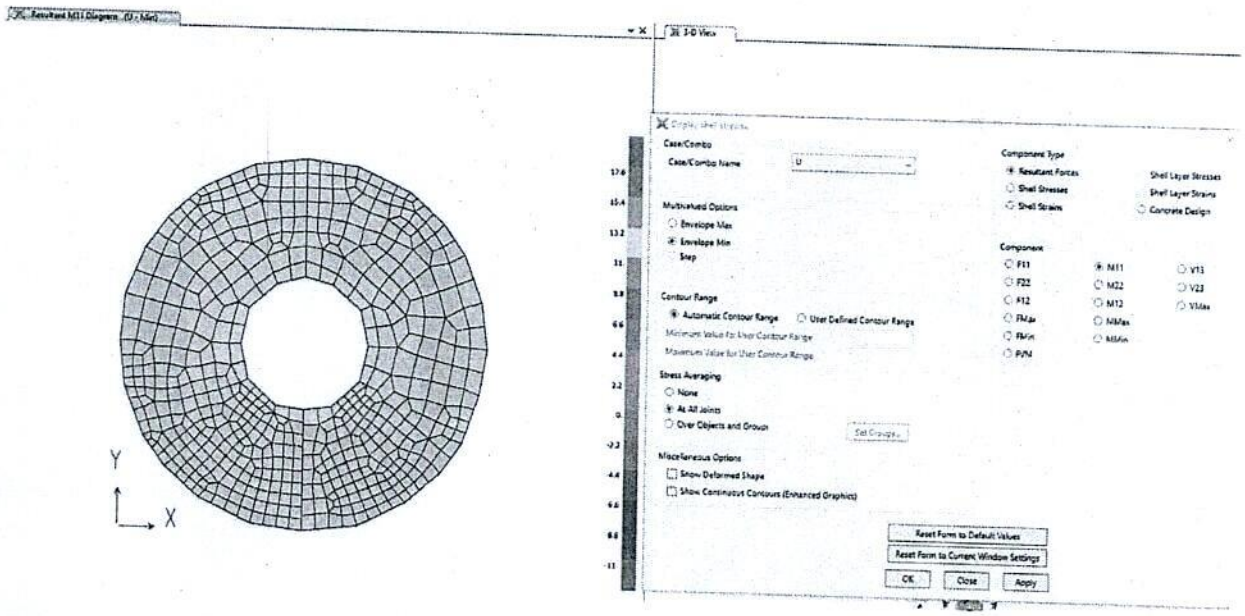
DISEÑO A FLEXIÓN

	Refuerzo Y			Refuerzo X		
	ARRIBA		ABAJO	ARRIBA		ABAJO
Mu (Sin E) =	5.00		16.40	9.40		19.90
Sd =	2.19		1.63	2.05		1.52
Mu (Sin E) * Sd=	10.95		26.76	19.23		30.16
Mu =	8.10		17.70	9.90		21.60
Mdef =	10.95		26.76	19.23		30.16
K =	993.008		2427.2	1743.85		2735.5
Ro=	0.0027		0.0068	0.0048		0.0078
Ro (Fisuración)=	0.0028		0.0071	0.0050		0.0080
Rmin=	0.0025		0.0025	0.0025		0.0025
As (cm2) =	2.95		7.45	5.28		8.45
As (min) =	2.63		2.63	2.63		2.63
As (Def) =	2.95		7.45	5.28		8.45
Refuerzo =	#4		#4	#4		#4
Separación Req.	Cda./0.44		Cda./0.17	Cda./0.24		Cda./0.15
Separación Def.	**Cda./0.20**		**Cda./0.20**	**Cda./0.20**		**Cda./0.20**

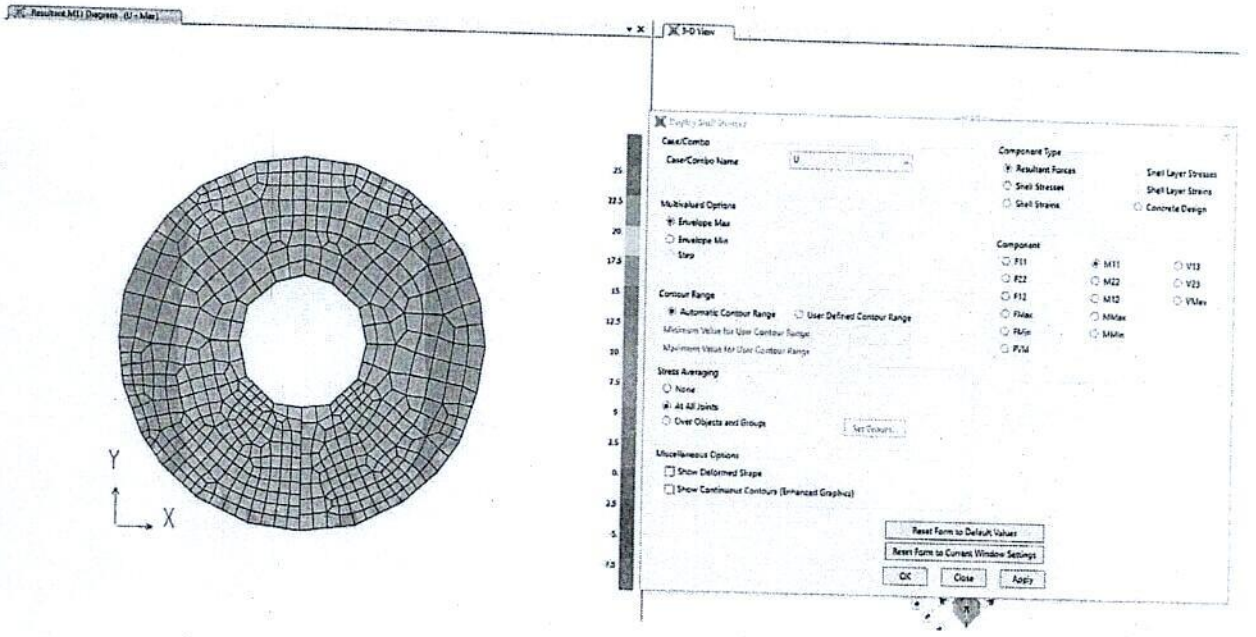
DISEÑO A CORTANTE

Vu (KN/m)=	**70.00**
VC (KN/m)=	94.45
θVN (KN/m) =	70.8
Vu < θVc	OK

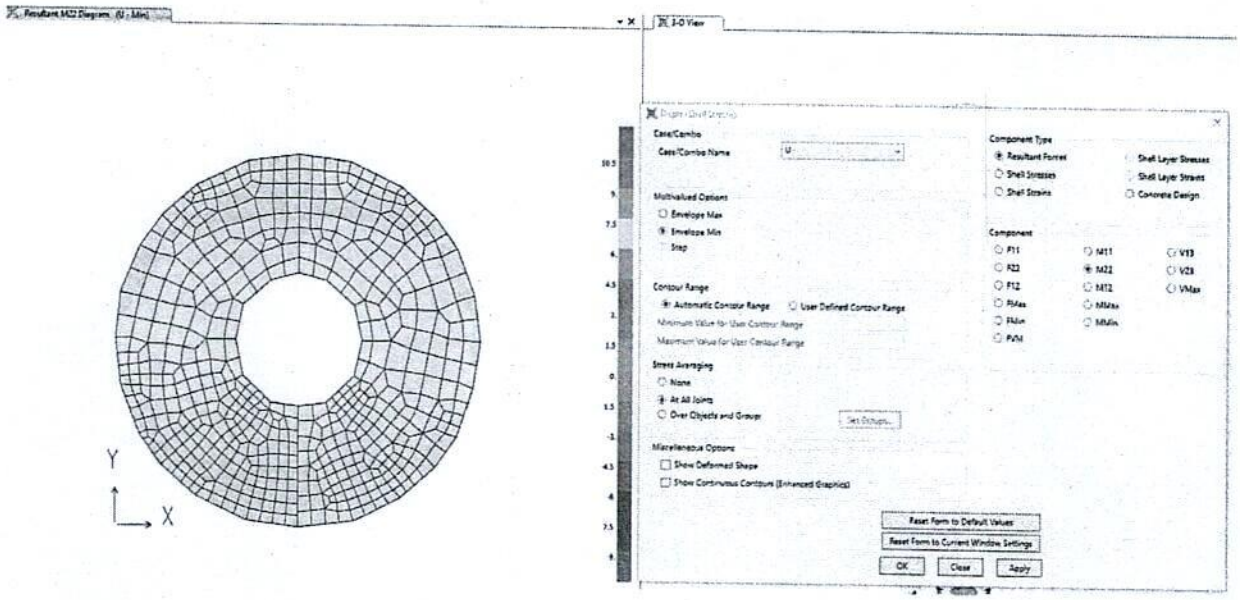
10 DISEÑO DE LOSA SUPERIOR e=20cm



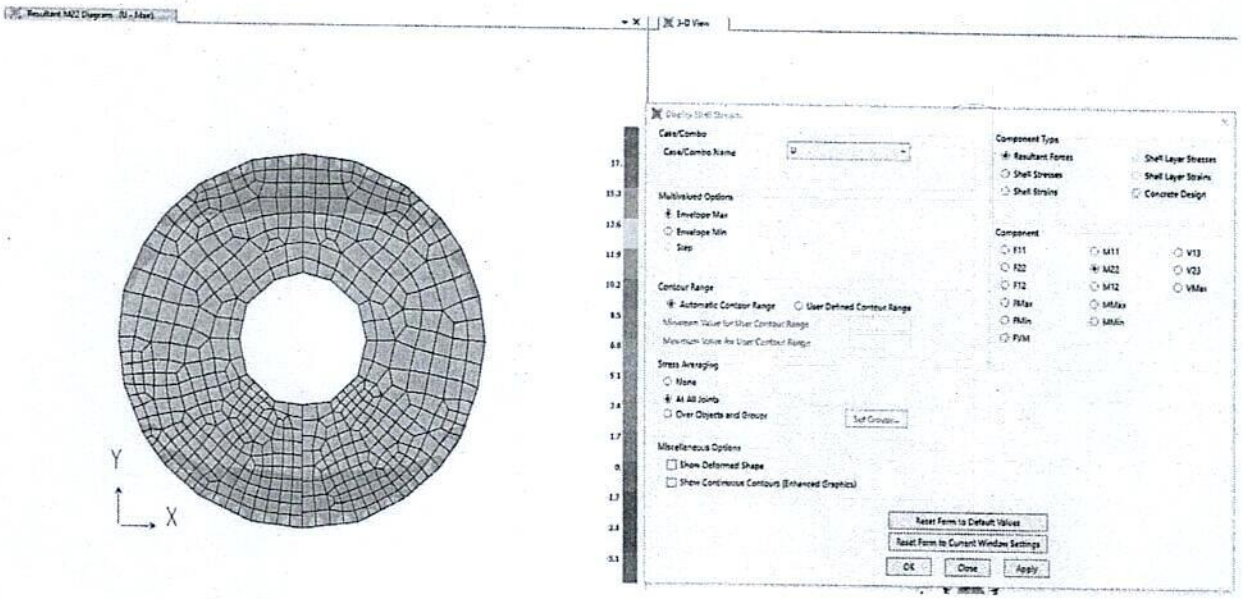
MOMENTOS (M11) MIN. COMB. ENVOLVENTE



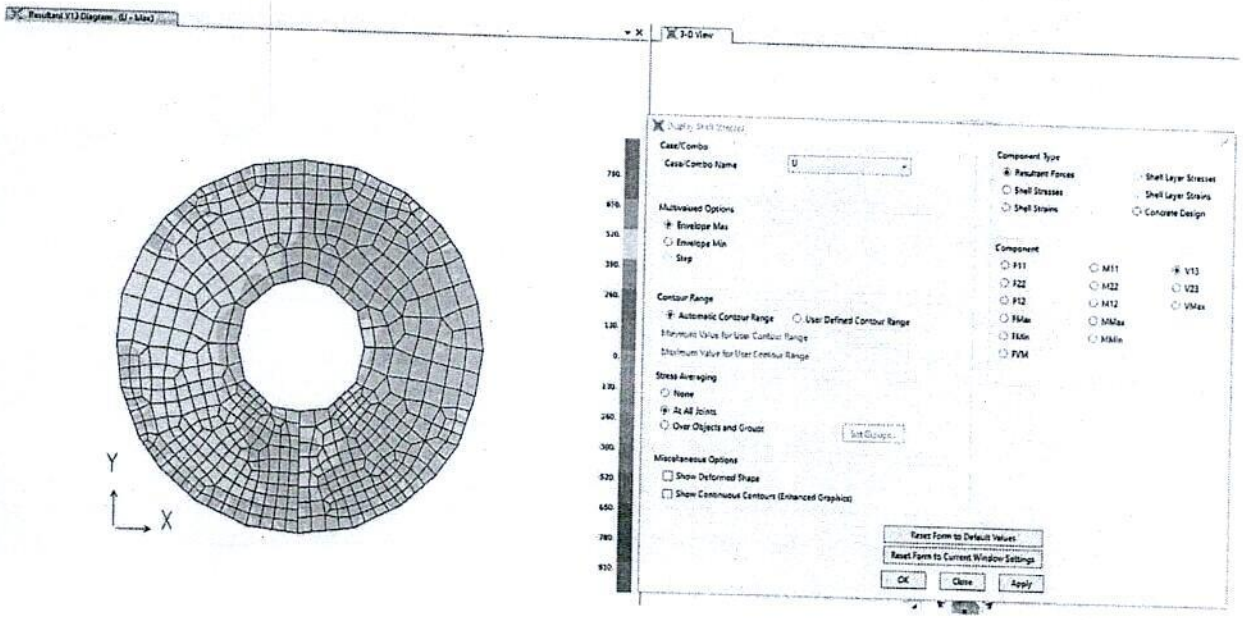
MOMENTOS (M11) MAX. COMB. ENVOLVENTE



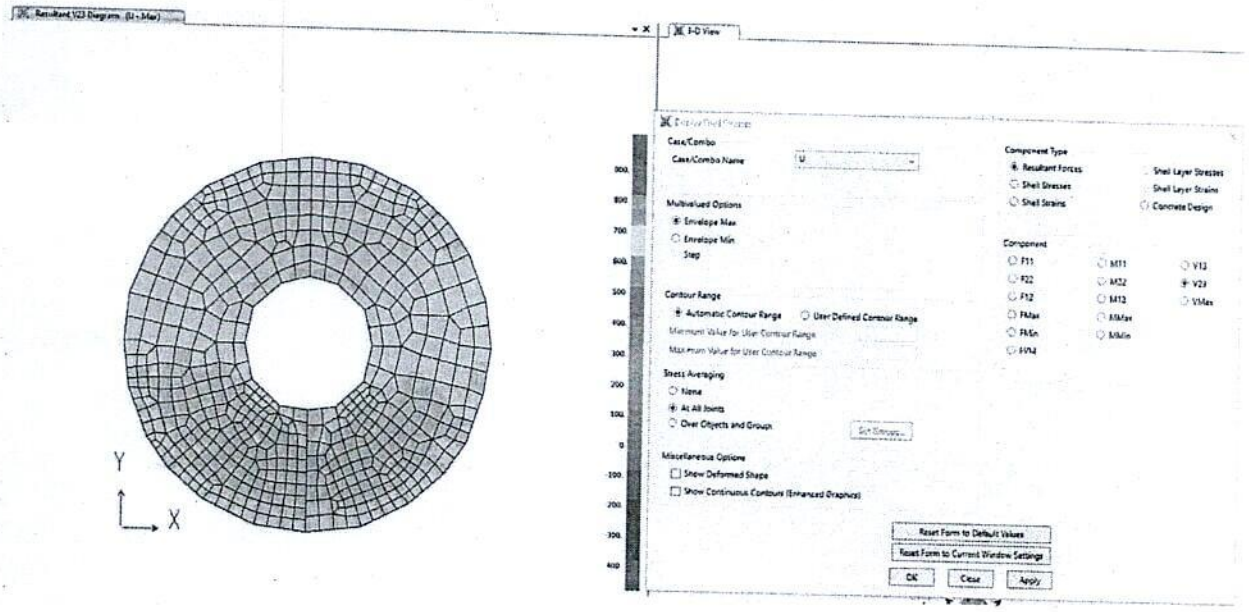
MOMENTOS (M22) MIN. COMB. ENVOLVENTE



MOMENTOS (M22) MAX. COMB. ENVOLVENTE



CORTANTES (V13) MAX. ABS. COMB. ENVOLVENTE



CORTANTES (V23) MAX. ABS. COMB. ENVOLVENTE

RESUMEN DE SOLICITACIONES DEL MODELADO EN Llosas

LOSA

MOMENTOS	Momento 22 Ref. Y (KN.m)		Momento 11 Ref. X (KN.m)	
COMB.	ARRIBA (22-)	ABAJO (22+)	ARRIBA (11-)	ABAJO (11+)
U	5.1	2.25	4.7	5.5
U (Sin E)	5.1	2	4.7	5.5
S (Sin E)	3.75	1.65	3.45	4

CORTANTES		
COMB.	V13 MAX ABS	V23 MAX ABS
U	60	60

FACTOR DE DURABILIDAD AMBIENTAL (REF X ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

f'c =	28	MPa	e= 200	Espesor Losa
fy =	420	MPa		
Ec =	24870.1	MPa		
Es =	200000	MPa		

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	3.5 kN.m	(Momento de servicio)
Mu =	4.7 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0028	(Cuantía de acero para Mu)
As =	295mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	430mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.191$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.93631$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 119.12 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{94.3} \ \mathbf{MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{76.9} \ \mathbf{MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	94	<	250.0	
fs, max def =	120 MPa				

fs < fs,max	**=**	**119 MPa**	**<**	**120 MPa**	OK

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.36232$ $\quad \Phi = 0.9$

$$S_{cl} = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.33$$

FACTOR DE DURABILIDAD AMBIENTAL (REF X ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

fc =	28	MPa	e= 200	Espesor Losa
fy =	420	MPa		
Ec =	24870.1	MPa		
Es =	200000	MPa		

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	4.0 kN.m	(Momento de servicio)
Mu =	5.5 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0033	(Cuantía de acero para Mu)
As =	342mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	370mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.204$$

$$j = 1 - \frac{k}{3} = 0.93191$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 119.40 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{108.1\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{88.2\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs = 140 MPa Tracción directa en exposición ambiental Normal
fs = 120 MPa Tracción directa en exposición ambiental Severa

120 MPa < 108 < 250.0

fs, max def = 120 MPa

fs < fs,max = 119 MPa < 120 MPa OK

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.375$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.30$$

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ARRIBA)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

fc =	28	MPa	e= 200	Espesor Losa
fy =	420	MPa		
Ec =	24870.1	MPa		
Es =	200000	MPa		

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	3.8 kN.m	(Momento de servicio)
Mu =	5.1 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0031	(Cuantía de acero para Mu)
As =	325mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	390mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) = 0.200$$

$$j = 1 - \frac{k}{3} = 0.93348$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} = 117.79 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{103.1\ MPa}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} = \mathbf{84.1\ MPa}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

FACTOR DE DURABILIDAD AMBIENTAL (REF Y ABAJO)

Según C.23-C.9.2.6 El cálculo del coeficiente ambiental no se requiere para las combinaciones de carga que incluyan fuerza sismica E.

fc =	28	MPa	e= 200	Espesor Losa
fy =	420	MPa		
Ec =	24870.1	MPa		
Es =	200000	MPa		

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 \qquad \text{donde } \gamma = \frac{\text{carga mayorada}}{\text{carga no mayorada}}$$

fs = Esfuerzo permisible de tracción en el refuerzo

Ms =	1.7 kN.m	(Momento de servicio)
Mu =	2.0 kN.m	(Momento Ultimo, por envolvente sin fuerzas E)

Calculo de fs =

n =	8.0	
d =	105mm	Altura afectiva
ro =	0.0013	(Cuantía de acero para Mu)
As =	138mm2	(Area de acero para Suministrada)
db =	12.7mm	(Diametro de la barra de refuerzo)
S =	920mm	(Separación del refuerzo)

$$k = \sqrt{(n\cdot\rho)^2 + (2\cdot n\cdot\rho)} - (n\cdot\rho) \quad = \quad 0.135$$

$$j = 1 - \frac{k}{3} \quad = \quad 0.95498$$

$$f_s = \frac{M_s}{A_s \cdot j \cdot d} \quad = \quad 119.51 \text{ MPa}$$

$$f_{s,max} = \frac{57000}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{45.5 \text{ MPa}}$$

en zonas con exposición normal

$$f_{s,max} = \frac{46500}{\beta\sqrt{s^2 + 4(50 + d_b/2)^2}} \quad = \quad \mathbf{37.1 \text{ MPa}}$$

En zonas con exposición severa

B = 1.35

4*(50 + db / 2)^2 = 15625

fs =	140 MPa	Tracción directa en exposición ambiental Normal			
fs =	120 MPa	Tracción directa en exposición ambiental Severa			
120 MPa	<	45	<	250.0	
fs, max def =	120 MPa				

fs < fs,max = 120 MPa < 120 MPa OK

Debido a que no cumple con el refuezo suministrado por resistencia ultima, se repite el analisis utilizando una cuantia de acero mayor.

CÁLCULO DEL COEFICIENTE DE DURABILIDAD AMBIENTAL

Debido a que los momentos son directamente proporcionales a las cargas que los producen podemos decir que:

$\gamma = \frac{Mu}{Ms} = 1.21212$ $\Phi = 0.9$

$$S_d = \frac{\phi f_y}{\gamma f_s} \geq 1.0 = 2.61$$

DISEÑO DE LOSAS

DISEÑO DE LOSA

F'C = 28.0 MPa
Fy = 420 MPa
E = 24870.1 Mpa

Recubrimiento interior: 0.075 m
Recubrimiento exterior: 0.075 m

d (interior)= 0.11 m
b = 1.00 e = 0.20 d (exterior)= 0.11 m

DISEÑO A FLEXIÓN

	Refuerzo Y			Refuerzo X		
	ARRIBA		ABAJO	ARRIBA		ABAJO
Mu (Sin E) =	5.10		2.00	4.70		5.50
Sd =	2.36		2.61	2.33		2.30
Mu (Sin E) * Sd=	12.03		5.22	10.95		12.66
Mu =	5.10		2.25	4.70		5.50
Mdef =	12.03		5.22	10.95		12.66
K =	1091.541		473.4	993.01		1148.6
Ro=	0.0030		0.0013	0.0027		0.0031
Ro (Fisuración)=	0.0031		0.0013	0.0028		0.0033
Rmin=	0.0025		0.0025	0.0025		0.0025
As (cm2) =	3.25		1.38	2.95		3.42
As (min) =	2.63		2.63	2.63		2.63
As (Def) =	3.25		2.63	2.95		3.42
Refuerzo =	#4		#4	#4		#4
Separación Req.	Cda./0.40		Cda./0.49	Cda./0.44		Cda./0.38
Separación Def.	Cda./0.20		Cda./0.20	Cda./0.20		Cda./0.20

DISEÑO A CORTANTE

Vu (KN/m)=	60.00
VC (KN/m)=	94.45
θVN (KN/m) =	70.8
Vu < θVc	OK

11 DATOS DE ENTRADA

Table: Area Auto Mesh Assignments

Area Auto Mesh Assignments, Part 1 of 2

Area	MeshType	MeshGroup	Max1 m	Max2 m	LocalEdg
25	Maximum Size	ALL	0.2	0.2	No
26	Maximum Size	ALL	0.2	0.2	No
27	Maximum Size	ALL	0.2	0.2	No
28	Maximum Size	ALL	0.2	0.2	No
29	Maximum Size	ALL	0.2	0.2	No
30	Maximum Size	ALL	0.2	0.2	No
31	Maximum Size	ALL	0.2	0.2	No
32	Maximum Size	ALL	0.2	0.2	No
33	Maximum Size	ALL	0.2	0.2	No
34	Maximum Size	ALL	0.2	0.2	No
35	Maximum Size	ALL	0.2	0.2	No
36	Maximum Size	ALL	0.2	0.2	No
37	Maximum Size	ALL	0.2	0.2	No
38	Maximum Size	ALL	0.2	0.2	No
39	Maximum Size	ALL	0.2	0.2	No
40	Maximum Size	ALL	0.2	0.2	No
41	Maximum Size	ALL	0.2	0.2	No
42	Maximum Size	ALL	0.2	0.2	No
43	Maximum Size	ALL	0.2	0.2	No
44	Maximum Size	ALL	0.2	0.2	No
45	Maximum Size	ALL	0.2	0.2	No
46	Maximum Size	ALL	0.2	0.2	No
47	Maximum Size	ALL	0.2	0.2	No
48	Maximum Size	ALL	0.2	0.2	No

Table: Area Auto Mesh Assignments

Area Auto Mesh Assignments, Part 2 of 2

Area	LocalFace	SuppEdge	SuppFace	SubMesh
25	No	No	No	No
26	No	No	No	No
27	No	No	No	No
28	No	No	No	No
29	No	No	No	No
30	No	No	No	No
31	No	No	No	No
32	No	No	No	No
33	No	No	No	No
34	No	No	No	No
35	No	No	No	No
36	No	No	No	No
37	No	No	No	No
38	No	No	No	No
39	No	No	No	No
40	No	No	No	No
41	No	No	No	No
42	No	No	No	No
43	No	No	No	No
44	No	No	No	No
45	No	No	No	No
46	No	No	No	No
47	No	No	No	No
48	No	No	No	No

Table: Area Loads - Surface Pressure

Area Loads - Surface Pressure

Area	LoadPat	Face	Pressure KN/m2	JtPattern
25	H	Bottom	10.	TIERRAS
25	SXHD	Bottom	10.	TIERRAS HDSX
26	H	Bottom	10.	TIERRAS

Area Loads - Surface Pressure

Area	LoadPat	Face	Pressure KN/m2	JtPattern
26	SXHD	Bottom	10.	TIERRAS HDSX
27	H	Bottom	10.	TIERRAS
27	SXHD	Bottom	10.	TIERRAS HDSX
28	H	Bottom	10.	TIERRAS
28	SXHD	Bottom	10.	TIERRAS HDSX
29	H	Bottom	10.	TIERRAS
29	SXHD	Bottom	10.	TIERRAS HDSX
30	H	Bottom	10.	TIERRAS
30	SXHD	Bottom	10.	TIERRAS HDSX
31	H	Bottom	10.	TIERRAS
31	SXHD	Bottom	10.	TIERRAS HDSX
31	SYHD	Bottom	10.	TIERRAS HDSY
32	H	Bottom	10.	TIERRAS
32	SXHD	Bottom	10.	TIERRAS HDSX
32	SYHD	Bottom	10.	TIERRAS HDSY
33	H	Bottom	10.	TIERRAS
33	SXHD	Bottom	10.	TIERRAS HDSX
33	SYHD	Bottom	10.	TIERRAS HDSY
34	H	Bottom	10.	TIERRAS
34	SXHD	Bottom	10.	TIERRAS HDSX
34	SYHD	Bottom	10.	TIERRAS HDSY
35	H	Bottom	10.	TIERRAS
35	SXHD	Bottom	10.	TIERRAS HDSX
35	SYHD	Bottom	10.	TIERRAS HDSY
36	H	Bottom	10.	TIERRAS
36	SXHD	Bottom	10.	TIERRAS HDSX
36	SYHD	Bottom	10.	TIERRAS HDSY
37	H	Bottom	10.	TIERRAS
37	SYHD	Bottom	10.	TIERRAS HDSY
38	H	Bottom	10.	TIERRAS
38	SYHD	Bottom	10.	TIERRAS HDSY
39	H	Bottom	10.	TIERRAS
39	SYHD	Bottom	10.	TIERRAS HDSY
40	H	Bottom	10.	TIERRAS
40	SYHD	Bottom	10.	TIERRAS HDSY
41	H	Bottom	10.	TIERRAS
42	H	Bottom	10.	TIERRAS
42	SYHD	Bottom	10.	TIERRAS HDSY
43	H	Bottom	10.	TIERRAS
43	SYHD	Bottom	10.	TIERRAS HDSY
44	H	Bottom	10.	TIERRAS
45	H	Bottom	10.	TIERRAS
46	H	Bottom	10.	TIERRAS
47	H	Bottom	10.	TIERRAS
48	H	Bottom	10.	TIERRAS

Table: Area Loads - Uniform

Area Loads - Uniform

Area	LoadPat	CoordSys	Dir	UnifLoad KN/m2
53	DEAD	GLOBAL	Gravity	3.
53	LIVE	GLOBAL	Gravity	5.
54	DEAD	GLOBAL	Gravity	3.
54	LIVE	GLOBAL	Gravity	5.

Table: Area Section Assignments

Area Section Assignments

Area	Section	MatProp
25	M20	Default
26	M20	Default
27	M20	Default
28	M20	Default
29	M20	Default

Area Section Assignments

Area	Section	MatProp
30	M20	Default
31	M20	Default
32	M20	Default
33	M20	Default
34	M20	Default
35	M20	Default
36	M20	Default
37	M20	Default
38	M20	Default
39	M20	Default
40	M20	Default
41	M20	Default
42	M20	Default
43	M20	Default
44	M20	Default
45	M20	Default
46	M20	Default
47	M20	Default
48	M20	Default
49	L20	Default
53	L20	Default
54	L20	Default

Table: Area Section Properties

Area Section Properties, Part 1 of 5

Section	Material	MatAngle Degrees	AreaType	Type	DrillDOF	Thickness m
L20	4000Psi	0.	Shell	Shell-Thin	Yes	0.2
L25	4000Psi	0.	Shell	Shell-Thin	Yes	0.25
L30	4000Psi	0.	Shell	Shell-Thin	Yes	0.3
L35	4000Psi	0.	Shell	Shell-Thin	Yes	0.35
M20	4000Psi	0.	Shell	Shell-Thin	Yes	0.2
M25	4000Psi	0.	Shell	Shell-Thin	Yes	0.25
M30	4000Psi	0.	Shell	Shell-Thin	Yes	0.3
M35	4000Psi	0.	Shell	Shell-Thin	Yes	0.35

Table: Area Section Properties

Area Section Properties, Part 2 of 5

Section	BendThick m	Arc Degrees	InComp	CoordSys	Color	TotalWt KN
L20	0.2				Cyan	19.905
L25	0.25				12615808	0.
L30	0.3				8421631	0.
L35	0.35				16744576	0.
M20	0.2				Gray8Dark	79.928
M25	0.25				12615680	0.
M30	0.3				4227327	0.
M35	0.35				16744448	0.

Table: Area Section Properties

Area Section Properties, Part 3 of 5

Section	TotalMass KN-s2/m	F11Mod	F22Mod	F12Mod	M11Mod	M22Mod
L20	2.03	1.	1.	1.	1.	1.
L25	0.	1.	1.	1.	1.	1.
L30	0.	1.	1.	1.	1.	1.
L35	0.	1.	1.	1.	1.	1.
M20	8.15	1.	1.	1.	1.	1.
M25	0.	1.	1.	1.	1.	1.

Area Section Properties, Part 3 of 5

Section	TotalMass KN-s2/m	F11Mod	F22Mod	F12Mod	M11Mod	M22Mod
M30	0.	1.	1.	1.	1.	1.
M35	0.	1.	1.	1.	1.	1.

Table: Area Section Properties

Area Section Properties, Part 4 of 5

Section	M12Mod	V13Mod	V23Mod	MMod	WMod	GUID
L20	1.	1.	1.	1.	1.	
L25	1.	1.	1.	1.	1.	
L30	1.	1.	1.	1.	1.	
L35	1.	1.	1.	1.	1.	
M20	1.	1.	1.	1.	1.	
M25	1.	1.	1.	1.	1.	
M30	1.	1.	1.	1.	1.	
M35	1.	1.	1.	1.	1.	

Table: Area Section Properties

Area Section Properties, Part 5 of 5

Section	Notes
L20	Added 1/05/2018 12:08:29 a. m.
L25	Added 1/05/2018 1:50:59 a. m.
L30	Added 1/05/2018 12:08:54 a. m.
L35	Added 1/05/2018 12:31:22 a. m.
M20	Added 1/05/2018 12:06:29 a. m.
M25	Added 1/05/2018 12:07:38 a. m.
M30	Added 1/05/2018 12:07:49 a. m.
M35	Added 1/05/2018 12:31:45 a. m.

Table: Area Spring Assignments

Area Spring Assignments, Part 1 of 2

Area	Type	Stiffness KN/m/m2	SimpleType	Face	Dir1Type
49	Simple	50000.	Tension and Compression	Bottom	Normal To Face
49	Simple	80000.	Tension and Compression	Bottom	Object Axes
49	Simple	80000.	Tension and Compression	Bottom	Object Axes

Table: Area Spring Assignments

Area Spring Assignments, Part 2 of 2

Area	Face	Dir1Type	Dir	NormalDir
49	Bottom	Normal To Face		Inward
49	Bottom	Object Axes	1	
49	Bottom	Object Axes	2	

Table: Case - Static 1 - Load Assignments

Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
DEAD	Load pattern	DEAD	1.

Case - Static 1 - Load Assignments

Case	LoadType	LoadName	LoadSF
LIVE	Load pattern	LIVE	1.
H	Load pattern	H	1.
SXHD	Load pattern	SXHD	1.
SYHD	Load pattern	SYHD	1.

Table: Combination Definitions

Combination Definitions, Part 1 of 4

ComboName	ComboType	AutoDesign	CaseType	CaseName	ScaleFactor
COMB1	Linear Add	No	Linear Static	DEAD	1.4
COMB2	Linear Add	No	Linear Static	DEAD	1.2
COMB2			Linear Static	LIVE	1.6
COMB2			Linear Static	H	1.6
COMB3	Linear Add	No	Linear Static	DEAD	1.2
COMB3			Linear Static	LIVE	1.
COMB4	Linear Add	No	Linear Static	DEAD	1.2
COMB4			Linear Static	LIVE	1.
COMB4			Linear Static	H	1.6
COMB4			Linear Static	SXHD	1.
COMB5	Linear Add	No	Linear Static	DEAD	1.2
COMB5			Linear Static	LIVE	1.
COMB5			Linear Static	H	1.6
COMB5			Linear Static	SYHD	1.
COMB6	Linear Add	No	Linear Static	DEAD	0.9
COMB6			Linear Static	H	1.6
COMB7	Linear Add	No	Linear Static	DEAD	0.9
COMB7			Linear Static	H	1.6
COMB7			Linear Static	SXHD	1.
COMB8	Linear Add	No	Linear Static	DEAD	0.9
COMB8			Linear Static	H	1.6
COMB8			Linear Static	SYHD	1.
SERV1	Linear Add	No	Linear Static	DEAD	1.
SERV1			Linear Static	LIVE	1.
SERV1			Linear Static	H	1.
SERV2	Linear Add	No	Linear Static	DEAD	1.
SERV2			Linear Static	H	1.
SERV3	Linear Add	No	Linear Static	DEAD	1.
SERV3			Linear Static	LIVE	0.75
SERV4	Linear Add	No	Linear Static	DEAD	1.
SERV4			Linear Static	H	1.
SERV4			Linear Static	SXHD	0.7
SERV5	Linear Add	No	Linear Static	DEAD	1.
SERV5			Linear Static	H	1.
SERV5			Linear Static	SYHD	0.7
SERV6	Linear Add	No	Linear Static	DEAD	1.
SERV6			Linear Static	LIVE	0.75
SERV6			Linear Static	H	1.
SERV7	Linear Add	No	Linear Static	DEAD	1.
SERV7			Linear Static	LIVE	0.75
SERV7			Linear Static	H	1.
SERV7			Linear Static	SXHD	0.53
SERV8	Linear Add	No	Linear Static	DEAD	1.
SERV8			Linear Static	LIVE	0.75
SERV8			Linear Static	H	1.
SERV8			Linear Static	SYHD	0.53
SERV9	Linear Add	No	Linear Static	DEAD	0.6
SERV9			Linear Static	H	1.
SERV10	Linear Add	No	Linear Static	DEAD	0.6
SERV10			Linear Static	H	1.
SERV10			Linear Static	SXHD	0.7
SERV11	Linear Add	No	Linear Static	DEAD	0.6
SERV11			Linear Static	H	1.
SERV11			Linear Static	SYHD	0.7
U	Envelope	No	Response Combo	COMB1	1.
U			Response Combo	COMB2	1.
U			Response Combo	COMB3	1.
U			Response Combo	COMB4	1.
U			Response Combo	COMB5	1.
U			Response Combo	COMB6	1.
U			Response Combo	COMB7	1.

Combination Definitions, Part 1 of 4

ComboName	ComboType	AutoDesign	CaseType	CaseName	ScaleFactor
U			Response Combo	COMB8	1.
U (SIN E)	Envelope	No	Response Combo	COMB1	1.
U (SIN E)			Response Combo	COMB2	1.
U (SIN E)			Response Combo	COMB3	1.
U (SIN E)			Response Combo	COMB6	1.
S (SIN E)	Envelope	No	Response Combo	SERV1	1.
S (SIN E)			Response Combo	SERV2	1.
S (SIN E)			Response Combo	SERV3	1.
S (SIN E)			Response Combo	SERV6	1.
S (SIN E)			Response Combo	SERV9	1.

Table: Combination Definitions

Combination Definitions, Part 2 of 4

ComboName	CaseName	SteelDesign	ConcDesign	AlumDesign
COMB1	DEAD	None	None	None
COMB2	DEAD	None	None	None
COMB2	LIVE			
COMB2	H			
COMB3	DEAD	None	None	None
COMB3	LIVE			
COMB4	DEAD	None	None	None
COMB4	LIVE			
COMB4	H			
COMB4	SXHD			
COMB5	DEAD	None	None	None
COMB5	LIVE			
COMB5	H			
COMB5	SYHD			
COMB6	DEAD	None	None	None
COMB6	H			
COMB7	DEAD	None	None	None
COMB7	H			
COMB7	SXHD			
COMB8	DEAD	None	None	None
COMB8	H			
COMB8	SYHD			
SERV1	DEAD	None	None	None
SERV1	LIVE			
SERV1	H			
SERV2	DEAD	None	None	None
SERV2	H			
SERV3	DEAD	None	None	None
SERV3	LIVE			
SERV4	DEAD	None	None	None
SERV4	H			
SERV4	SXHD			
SERV5	DEAD	None	None	None
SERV5	H			
SERV5	SYHD			
SERV6	DEAD	None	None	None
SERV6	LIVE			
SERV6	H			
SERV7	DEAD	None	None	None
SERV7	LIVE			
SERV7	H			
SERV7	SXHD			
SERV8	DEAD	None	None	None
SERV8	LIVE			
SERV8	H			
SERV8	SYHD			
SERV9	DEAD	None	None	None
SERV9	H			
SERV10	DEAD	None	None	None
SERV10	H			
SERV10	SXHD			
SERV11	DEAD	None	None	None
SERV11	H			
SERV11	SYHD			
U	COMB1	None	None	None

Combination Definitions, Part 2 of 4

ComboName	CaseName	SteelDesign	ConcDesign	AlumDesign
U	COMB2			
U	COMB3			
U	COMB4			
U	COMB5			
U	COMB6			
U	COMB7			
U	COMB8			
U (SIN E)	COMB1	None	None	None
U (SIN E)	COMB2			
U (SIN E)	COMB3			
U (SIN E)	COMB6			
S (SIN E)	SERV1	None	None	None
S (SIN E)	SERV2			
S (SIN E)	SERV3			
S (SIN E)	SERV6			
S (SIN E)	SERV9			

Table: Combination Definitions

Combination Definitions, Part 3 of 4

ComboName	AlumDesign	ColdDesign	GUID
COMB1	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB2	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB2			
COMB2			
COMB3	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB3			
COMB4	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB4			
COMB4			
COMB4			
COMB5	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB5			
COMB5			
COMB5			
COMB6	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB6			
COMB7	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB7			
COMB7			
COMB8	None	None	90ef74c1-5727-450f-8cce-b05f4668d0f3
COMB8			
COMB8			
SERV1	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV1			
SERV1			
SERV2	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV2			
SERV3	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV3			
SERV4	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV4			
SERV4			
SERV5	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV5			
SERV5			
SERV6	None	None	04170669-8486-4f2c-968c-448abc553a34

Combination Definitions, Part 3 of 4

ComboName	AlumDesign	ColdDesign	GUID
SERV6			
SERV6			
SERV7	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV7			
SERV7			
SERV7			
SERV8	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV8			
SERV8			
SERV8			
SERV9	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV9			
SERV10	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV10			
SERV10			
SERV11	None	None	04170669-8486-4f2c-968c-448abc553a34
SERV11			
SERV11			
U	None	None	5de89b2b-aa56-447d-9cb8-ef4c16398b75
U			
U			
U			
U			
U			
U			
U			
U (SIN E)	None	None	5de89b2b-aa56-447d-9cb8-ef4c16398b75
U (SIN E)			
U (SIN E)			
U (SIN E)			
S (SIN E)	None	None	2384b6aa-8863-4233-8f71-c3dad258587a
S (SIN E)			
S (SIN E)			
S (SIN E)			
S (SIN E)			

Table: Combination Definitions

Combination Definitions, Part 4 of 4

ComboName	AlumDesign	Notes
COMB1	None	
COMB2	None	
COMB2		
COMB2		
COMB3	None	
COMB3		
COMB4	None	
COMB4		
COMB4		
COMB4		
COMB5	None	
COMB5		
COMB5		
COMB5		
COMB6	None	
COMB6		
COMB7	None	
COMB7		
COMB7		
COMB8	None	
COMB8		
COMB8		

Combination Definitions, Part 4 of 4

ComboName	AlumDesign	Notes
SERV1	None	
SERV1		
SERV1		
SERV2	None	
SERV2		
SERV3	None	
SERV3		
SERV4	None	
SERV4		
SERV4		
SERV5	None	
SERV5		
SERV5		
SERV6	None	
SERV6		
SERV6		
SERV7	None	
SERV7		
SERV7		
SERV7		
SERV8	None	
SERV8		
SERV8		
SERV8		
SERV9	None	
SERV9		
SERV10	None	
SERV10		
SERV10		
SERV11	None	
SERV11		
SERV11		
U	None	
U		
U		
U		
U		
U		
U		
U		
U (SIN E)	None	
U (SIN E)		
U (SIN E)		
U (SIN E)		
S (SIN E)	None	
S (SIN E)		
S (SIN E)		
S (SIN E)		
S (SIN E)		

Table: Load Case Definitions

Load Case Definitions, Part 1 of 3

Case	Type	InitialCond	ModalCase	BaseCase	MassSource	DesTypeOpt
DEAD	LinStatic	Zero				Prog Det
MODAL	LinModal	Zero				Prog Det
LIVE	LinStatic	Zero				Prog Det
H	LinStatic	Zero				Prog Det
SXHD	LinStatic	Zero				Prog Det
SYHD	LinStatic	Zero				Prog Det

Table: Load Case Definitions

Load Case Definitions, Part 2 of 3

Case	DesignType	DesActOpt	DesignAct	AutoType	RunCase	CaseStatus
DEAD	Dead	Prog Det	Non-Composite	None	Yes	Finished

Load Case Definitions, Part 2 of 3

Case	DesignType	DesActOpt	DesignAct	AutoType	RunCase	CaseStatu
MODAL	Other	Prog Det	Other	None	Yes	Could Not Start
LIVE	Live	Prog Det	Short-Term Composite	None	Yes	Finished
H	Other	Prog Det	Other	None	Yes	Finished
SXHD	Other	Prog Det	Other	None	Yes	Finished
SYHD	Other	Prog Det	Other	None	Yes	Finished

Table: Load Case Definitions

Load Case Definitions, Part 3 of 3

Case	GUID	Notes
DEAD	36c11ee1-3052-4225-b5bd-faf725a891c1	
MODAL	0f4b0a9c-6172-4b8b-8d40-2600910c370b	
LIVE	ed29532b-3ac2-47f3-90d8-d52b9f8a2922	
H	c2de1063-eef3-4a6a-ad15-1a0620c60e4a	
SXHD	ff499036-cb0c-4751-95a4-42ff32e61f2a	
SYHD	dbdd4243-dfd7-4075-a6cd-c1f950818d51	

Table: Load Pattern Definitions

Load Pattern Definitions, Part 1 of 2

LoadPat	DesignType	SelfWtMult	AutoLoad	GUID
DEAD	Dead	1.		9d14ec55-ef81-4c2b-bae6-922028277a16
LIVE	Live	0.		f17c766e-879a-419a-b2d8-88586384ac54
H	Other	0.		821ee04d-79d5-40dc-9923-05ad6f231084
SXHD	Other	0.		cc74b4cc-cb81-4afe-8718-8e292405cb15
SYHD	Other	0.		b37caeef-722e-4dda-a6e3-a7b586fa4215

Table: Load Pattern Definitions

Load Pattern Definitions, Part 2 of 2

LoadPat	Notes
DEAD	
LIVE	
H	
SXHD	
SYHD	

Table: Material Properties 01 - General

Material Properties 01 - General, Part 1 of 2

Material	Type	SymType	TempDepend	Color	GUID
4000Psi	Concrete	Isotropic	No	Green	
A416Gr270	Tendon	Uniaxial	No	Cyan	
A992Fy50	Steel	Isotropic	No	Blue	

Table: Material Properties 01 - General

Material Properties 01 - General, Part 2 of 2

Material	Notes

Table: Material Properties 01 - General

Material Properties 01 - General, Part 2 of 2

Material	Notes
4000Psi	Customary f'c 4000 psi 1/05/2018 12:00:20 a. m.
A416Gr270	ASTM A416 Grade 270 1/05/2018 12:54:42 a. m.
A992Fy50	ASTM A992 Grade 50 1/05/2018 12:00:20 a. m.

Table: Material Properties 03b - Concrete Data

Material Properties 03b - Concrete Data, Part 1 of 2

Material	Fc KN/m2	eFc KN/m2	LtWtConc	SSCurveOpt	SSHysType	SFc
4000Psi	27579.03	27579.03	No	Mander	Takeda	0.002219

Table: Material Properties 03b - Concrete Data

Material Properties 03b - Concrete Data, Part 2 of 2

Material	SCap	FinalSlope	FAngle Degrees	DAngle Degrees
4000Psi	0.005	-0.1	0.	0.

Table: Solid Property Definitions

Solid Property Definitions, Part 1 of 3

SolidProp	Material	MatAngleA Degrees	MatAngleB Degrees	MatAngleC Degrees	InComp
Solid1	4000Psi	0.	0.	0.	Yes

Table: Solid Property Definitions

Solid Property Definitions, Part 2 of 3

SolidProp	Color	GUID	Notes	TotalWt KN
Solid1	Magenta			0.

Table: Solid Property Definitions

Solid Property Definitions, Part 3 of 3

SolidProp	TotalMass KN-s2/m
Solid1	0.

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Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 1 of 10

Area	AreaElem	ShellType	Joint	OutputCase	CaseType	StepType
36	36-1	Shell-Thin	25	U	Combination	Max
36	36-1	Shell-Thin	~304	U	Combination	Max
36	36-1	Shell-Thin	~334	U	Combination	Max
36	36-1	Shell-Thin	~335	U	Combination	Max
36	36-1	Shell-Thin	25	U	Combination	Min
36	36-1	Shell-Thin	~304	U	Combination	Min
36	36-1	Shell-Thin	~334	U	Combination	Min
36	36-1	Shell-Thin	~335	U	Combination	Min
36	36-2	Shell-Thin	~335	U	Combination	Max
36	36-2	Shell-Thin	~334	U	Combination	Max
36	36-2	Shell-Thin	~336	U	Combination	Max
36	36-2	Shell-Thin	22	U	Combination	Max
36	36-2	Shell-Thin	~335	U	Combination	Min
36	36-2	Shell-Thin	~334	U	Combination	Min
36	36-2	Shell-Thin	~336	U	Combination	Min
36	36-2	Shell-Thin	22	U	Combination	Min
36	36-3	Shell-Thin	~304	U	Combination	Max
36	36-3	Shell-Thin	~306	U	Combination	Max
36	36-3	Shell-Thin	~337	U	Combination	Max
36	36-3	Shell-Thin	~334	U	Combination	Max
36	36-3	Shell-Thin	~304	U	Combination	Min
36	36-3	Shell-Thin	~306	U	Combination	Min
36	36-3	Shell-Thin	~337	U	Combination	Min
36	36-3	Shell-Thin	~334	U	Combination	Min
36	36-4	Shell-Thin	~334	U	Combination	Max
36	36-4	Shell-Thin	~337	U	Combination	Max
36	36-4	Shell-Thin	~338	U	Combination	Max
36	36-4	Shell-Thin	~336	U	Combination	Max
36	36-4	Shell-Thin	~334	U	Combination	Min
36	36-4	Shell-Thin	~337	U	Combination	Min
36	36-4	Shell-Thin	~338	U	Combination	Min
36	36-4	Shell-Thin	~336	U	Combination	Min
36	36-5	Shell-Thin	~306	U	Combination	Max
36	36-5	Shell-Thin	~308	U	Combination	Max
36	36-5	Shell-Thin	~339	U	Combination	Max
36	36-5	Shell-Thin	~337	U	Combination	Max
36	36-5	Shell-Thin	~306	U	Combination	Min
36	36-5	Shell-Thin	~308	U	Combination	Min
36	36-5	Shell-Thin	~339	U	Combination	Min
36	36-5	Shell-Thin	~337	U	Combination	Min
36	36-6	Shell-Thin	~337	U	Combination	Max
36	36-6	Shell-Thin	~339	U	Combination	Max
36	36-6	Shell-Thin	~340	U	Combination	Max
36	36-6	Shell-Thin	~338	U	Combination	Max
36	36-6	Shell-Thin	~337	U	Combination	Min
36	36-6	Shell-Thin	~339	U	Combination	Min
36	36-6	Shell-Thin	~340	U	Combination	Min
36	36-6	Shell-Thin	~338	U	Combination	Min
36	36-7	Shell-Thin	~308	U	Combination	Max
36	36-7	Shell-Thin	~310	U	Combination	Max
36	36-7	Shell-Thin	~341	U	Combination	Max
36	36-7	Shell-Thin	~339	U	Combination	Max
36	36-7	Shell-Thin	~308	U	Combination	Min
36	36-7	Shell-Thin	~310	U	Combination	Min
36	36-7	Shell-Thin	~341	U	Combination	Min
36	36-7	Shell-Thin	~339	U	Combination	Min
36	36-8	Shell-Thin	~339	U	Combination	Max
36	36-8	Shell-Thin	~341	U	Combination	Max
36	36-8	Shell-Thin	~342	U	Combination	Max
36	36-8	Shell-Thin	~340	U	Combination	Max
36	36-8	Shell-Thin	~339	U	Combination	Min
36	36-8	Shell-Thin	~341	U	Combination	Min
36	36-8	Shell-Thin	~342	U	Combination	Min
36	36-8	Shell-Thin	~340	U	Combination	Min
36	36-9	Shell-Thin	~310	U	Combination	Max
36	36-9	Shell-Thin	~312	U	Combination	Max
36	36-9	Shell-Thin	~343	U	Combination	Max
36	36-9	Shell-Thin	~341	U	Combination	Max
36	36-9	Shell-Thin	~310	U	Combination	Min
36	36-9	Shell-Thin	~312	U	Combination	Min
36	36-9	Shell-Thin	~343	U	Combination	Min

Element Forces - Area Shells, Part 1 of 10

Area	AreaElem	ShellType	Joint	OutputCase	CaseType	StepType
36	36-9	Shell-Thin	~341	U	Combination	Min
36	36-10	Shell-Thin	~341	U	Combination	Max
36	36-10	Shell-Thin	~343	U	Combination	Max
36	36-10	Shell-Thin	~344	U	Combination	Max
36	36-10	Shell-Thin	~342	U	Combination	Max
36	36-10	Shell-Thin	~341	U	Combination	Min
36	36-10	Shell-Thin	~343	U	Combination	Min
36	36-10	Shell-Thin	~344	U	Combination	Min
36	36-10	Shell-Thin	~342	U	Combination	Min
36	36-11	Shell-Thin	~312	U	Combination	Max
36	36-11	Shell-Thin	~314	U	Combination	Max
36	36-11	Shell-Thin	~345	U	Combination	Max
36	36-11	Shell-Thin	~343	U	Combination	Max
36	36-11	Shell-Thin	~312	U	Combination	Min
36	36-11	Shell-Thin	~314	U	Combination	Min
36	36-11	Shell-Thin	~345	U	Combination	Min
36	36-11	Shell-Thin	~343	U	Combination	Min
36	36-12	Shell-Thin	~343	U	Combination	Max
36	36-12	Shell-Thin	~345	U	Combination	Max
36	36-12	Shell-Thin	~346	U	Combination	Max
36	36-12	Shell-Thin	~344	U	Combination	Max
36	36-12	Shell-Thin	~343	U	Combination	Min
36	36-12	Shell-Thin	~345	U	Combination	Min
36	36-12	Shell-Thin	~346	U	Combination	Min
36	36-12	Shell-Thin	~344	U	Combination	Min
36	36-13	Shell-Thin	~314	U	Combination	Max
36	36-13	Shell-Thin	~316	U	Combination	Max
36	36-13	Shell-Thin	~347	U	Combination	Max
36	36-13	Shell-Thin	~345	U	Combination	Max
36	36-13	Shell-Thin	~314	U	Combination	Min
36	36-13	Shell-Thin	~316	U	Combination	Min
36	36-13	Shell-Thin	~347	U	Combination	Min
36	36-13	Shell-Thin	~345	U	Combination	Min
36	36-14	Shell-Thin	~345	U	Combination	Max
36	36-14	Shell-Thin	~347	U	Combination	Max
36	36-14	Shell-Thin	~348	U	Combination	Max
36	36-14	Shell-Thin	~346	U	Combination	Max
36	36-14	Shell-Thin	~345	U	Combination	Min
36	36-14	Shell-Thin	~347	U	Combination	Min
36	36-14	Shell-Thin	~348	U	Combination	Min
36	36-14	Shell-Thin	~346	U	Combination	Min
36	36-15	Shell-Thin	~316	U	Combination	Max
36	36-15	Shell-Thin	~318	U	Combination	Max
36	36-15	Shell-Thin	~349	U	Combination	Max
36	36-15	Shell-Thin	~347	U	Combination	Max
36	36-15	Shell-Thin	~316	U	Combination	Min
36	36-15	Shell-Thin	~318	U	Combination	Min
36	36-15	Shell-Thin	~349	U	Combination	Min
36	36-15	Shell-Thin	~347	U	Combination	Min
36	36-16	Shell-Thin	~347	U	Combination	Max
36	36-16	Shell-Thin	~349	U	Combination	Max
36	36-16	Shell-Thin	~350	U	Combination	Max
36	36-16	Shell-Thin	~348	U	Combination	Max
36	36-16	Shell-Thin	~347	U	Combination	Min
36	36-16	Shell-Thin	~349	U	Combination	Min
36	36-16	Shell-Thin	~350	U	Combination	Min
36	36-16	Shell-Thin	~348	U	Combination	Min
36	36-17	Shell-Thin	~318	U	Combination	Max
36	36-17	Shell-Thin	~320	U	Combination	Max
36	36-17	Shell-Thin	~351	U	Combination	Max
36	36-17	Shell-Thin	~349	U	Combination	Max
36	36-17	Shell-Thin	~318	U	Combination	Min
36	36-17	Shell-Thin	~320	U	Combination	Min
36	36-17	Shell-Thin	~351	U	Combination	Min
36	36-17	Shell-Thin	~349	U	Combination	Min
36	36-18	Shell-Thin	~349	U	Combination	Max
36	36-18	Shell-Thin	~351	U	Combination	Max
36	36-18	Shell-Thin	~352	U	Combination	Max
36	36-18	Shell-Thin	~350	U	Combination	Max
36	36-18	Shell-Thin	~349	U	Combination	Min
36	36-18	Shell-Thin	~351	U	Combination	Min
36	36-18	Shell-Thin	~352	U	Combination	Min
36	36-18	Shell-Thin	~350	U	Combination	Min

Element Forces - Area Shells, Part 1 of 10

Area	AreaElem	ShellType	Joint	OutputCase	CaseType	StepType
36	36-19	Shell-Thin	~320	U	Combination	Max
36	36-19	Shell-Thin	~322	U	Combination	Max
36	36-19	Shell-Thin	~353	U	Combination	Max
36	36-19	Shell-Thin	~351	U	Combination	Max
36	36-19	Shell-Thin	~320	U	Combination	Min
36	36-19	Shell-Thin	~322	U	Combination	Min
36	36-19	Shell-Thin	~353	U	Combination	Min
36	36-19	Shell-Thin	~351	U	Combination	Min
36	36-20	Shell-Thin	~351	U	Combination	Max
36	36-20	Shell-Thin	~353	U	Combination	Max
36	36-20	Shell-Thin	~354	U	Combination	Max
36	36-20	Shell-Thin	~352	U	Combination	Max
36	36-20	Shell-Thin	~351	U	Combination	Min
36	36-20	Shell-Thin	~353	U	Combination	Min
36	36-20	Shell-Thin	~354	U	Combination	Min
36	36-20	Shell-Thin	~352	U	Combination	Min
36	36-21	Shell-Thin	~322	U	Combination	Max
36	36-21	Shell-Thin	~324	U	Combination	Max
36	36-21	Shell-Thin	~355	U	Combination	Max
36	36-21	Shell-Thin	~353	U	Combination	Max
36	36-21	Shell-Thin	~322	U	Combination	Min
36	36-21	Shell-Thin	~324	U	Combination	Min
36	36-21	Shell-Thin	~355	U	Combination	Min
36	36-21	Shell-Thin	~353	U	Combination	Min
36	36-22	Shell-Thin	~353	U	Combination	Max
36	36-22	Shell-Thin	~356	U	Combination	Max
36	36-22	Shell-Thin	~356	U	Combination	Max
36	36-22	Shell-Thin	~354	U	Combination	Max
36	36-22	Shell-Thin	~353	U	Combination	Min
36	36-22	Shell-Thin	~355	U	Combination	Min
36	36-22	Shell-Thin	~356	U	Combination	Min
36	36-22	Shell-Thin	~354	U	Combination	Min
36	36-23	Shell-Thin	~324	U	Combination	Max
36	36-23	Shell-Thin	~326	U	Combination	Max
36	36-23	Shell-Thin	~357	U	Combination	Max
36	36-23	Shell-Thin	~355	U	Combination	Max
36	36-23	Shell-Thin	~324	U	Combination	Min
36	36-23	Shell-Thin	~326	U	Combination	Min
36	36-23	Shell-Thin	~357	U	Combination	Min
36	36-23	Shell-Thin	~355	U	Combination	Min
36	36-24	Shell-Thin	~355	U	Combination	Max
36	36-24	Shell-Thin	~357	U	Combination	Max
36	36-24	Shell-Thin	~358	U	Combination	Max
36	36-24	Shell-Thin	~356	U	Combination	Max
36	36-24	Shell-Thin	~355	U	Combination	Min
36	36-24	Shell-Thin	~357	U	Combination	Min
36	36-24	Shell-Thin	~358	U	Combination	Min
36	36-24	Shell-Thin	~356	U	Combination	Min
36	36-25	Shell-Thin	~326	U	Combination	Max
36	36-25	Shell-Thin	~328	U	Combination	Max
36	36-25	Shell-Thin	~359	U	Combination	Max
36	36-25	Shell-Thin	~357	U	Combination	Max
36	36-25	Shell-Thin	~326	U	Combination	Min
36	36-25	Shell-Thin	~328	U	Combination	Min
36	36-25	Shell-Thin	~359	U	Combination	Min
36	36-25	Shell-Thin	~357	U	Combination	Min
36	36-26	Shell-Thin	~357	U	Combination	Max
36	36-26	Shell-Thin	~359	U	Combination	Max
36	36-26	Shell-Thin	~360	U	Combination	Max
36	36-26	Shell-Thin	~358	U	Combination	Max
36	36-26	Shell-Thin	~357	U	Combination	Min
36	36-26	Shell-Thin	~359	U	Combination	Min
36	36-26	Shell-Thin	~360	U	Combination	Min
36	36-26	Shell-Thin	~358	U	Combination	Min
36	36-27	Shell-Thin	~328	U	Combination	Max
36	36-27	Shell-Thin	~330	U	Combination	Max
36	36-27	Shell-Thin	~361	U	Combination	Max
36	36-27	Shell-Thin	~359	U	Combination	Max
36	36-27	Shell-Thin	~328	U	Combination	Min
36	36-27	Shell-Thin	~330	U	Combination	Min
36	36-27	Shell-Thin	~361	U	Combination	Min
36	36-27	Shell-Thin	~359	U	Combination	Min
36	36-28	Shell-Thin	~359	U	Combination	Max

Element Forces - Area Shells, Part 1 of 10

Area	AreaElem	ShellType	Joint	OutputCase	CaseType	StepType
36	36-28	Shell-Thin	~361	U	Combination	Max
36	36-28	Shell-Thin	~362	U	Combination	Max
36	36-28	Shell-Thin	~360	U	Combination	Max
36	36-28	Shell-Thin	~359	U	Combination	Min
36	36-28	Shell-Thin	~361	U	Combination	Min
36	36-28	Shell-Thin	~362	U	Combination	Min
36	36-28	Shell-Thin	~360	U	Combination	Min
36	36-29	Shell-Thin	~330	U	Combination	Max
36	36-29	Shell-Thin	~332	U	Combination	Max
36	36-29	Shell-Thin	~363	U	Combination	Max
36	36-29	Shell-Thin	~361	U	Combination	Max
36	36-29	Shell-Thin	~330	U	Combination	Min
36	36-29	Shell-Thin	~332	U	Combination	Min
36	36-29	Shell-Thin	~363	U	Combination	Min
36	36-29	Shell-Thin	~361	U	Combination	Min
36	36-30	Shell-Thin	~361	U	Combination	Max
36	36-30	Shell-Thin	~363	U	Combination	Max
36	36-30	Shell-Thin	~364	U	Combination	Max
36	36-30	Shell-Thin	~362	U	Combination	Max
36	36-30	Shell-Thin	~361	U	Combination	Min
36	36-30	Shell-Thin	~363	U	Combination	Min
36	36-30	Shell-Thin	~364	U	Combination	Min
36	36-30	Shell-Thin	~362	U	Combination	Min
36	36-31	Shell-Thin	~332	U	Combination	Max
36	36-31	Shell-Thin	114	U	Combination	Max
36	36-31	Shell-Thin	~365	U	Combination	Max
36	36-31	Shell-Thin	~363	U	Combination	Max
36	36-31	Shell-Thin	~332	U	Combination	Min
36	36-31	Shell-Thin	114	U	Combination	Min
36	36-31	Shell-Thin	~365	U	Combination	Min
36	36-31	Shell-Thin	~363	U	Combination	Min
36	36-32	Shell-Thin	~363	U	Combination	Max
36	36-32	Shell-Thin	~365	U	Combination	Max
36	36-32	Shell-Thin	115	U	Combination	Max
36	36-32	Shell-Thin	~364	U	Combination	Max
36	36-32	Shell-Thin	~363	U	Combination	Min
36	36-32	Shell-Thin	~365	U	Combination	Min
36	36-32	Shell-Thin	115	U	Combination	Min
36	36-32	Shell-Thin	~364	U	Combination	Min

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 2 of 10

Area	AreaElem	Joint	OutputCase	StepType	F11 KN/m	F22 KN/m
36	36-1	25	U	Max	2.2	0.47
36	36-1	~304	U	Max	16.87	-0.71
36	36-1	~334	U	Max	14.24	-6.37
36	36-1	~335	U	Max	1.07	-5.19
36	36-1	25	U	Min	-17.75	-21.
36	36-1	~304	U	Min	-5.09	-15.67
36	36-1	~334	U	Min	-6.97	-28.42
36	36-1	~335	U	Min	-20.3	-34.19
36	36-2	~335	U	Max	1.46	-5.11
36	36-2	~334	U	Max	14.78	-6.34
36	36-2	~336	U	Max	16.57	-1.87
36	36-2	22	U	Max	2.35	-0.64
36	36-2	~335	U	Min	-20.39	-34.19
36	36-2	~334	U	Min	-6.17	-28.31
36	36-2	~336	U	Min	-5.39	-19.53
36	36-2	22	U	Min	-18.64	-25.24
36	36-3	~304	U	Max	15.37	-3.66
36	36-3	~306	U	Max	17.94	-6.1
36	36-3	~337	U	Max	17.31	-5.25
36	36-3	~334	U	Max	14.74	-2.81
36	36-3	~304	U	Min	-5.81	-22.39
36	36-3	~306	U	Min	-16.45	-22.84
36	36-3	~337	U	Min	-16.31	-25.04
36	36-3	~334	U	Min	-6.24	-25.56
36	36-4	~334	U	Max	15.26	-2.78

Element Forces - Area Shells, Part 2 of 10

Area	AreaElem	Joint	OutputCase	StepType	F11 KN/m	F22 KN/m
36	36-4	~337	U	Max	17.37	-5.27
36	36-4	~338	U	Max	17.69	-5.57
36	36-4	~336	U	Max	15.6	-3.07
36	36-4	~334	U	Min	-5.45	-25.45
36	36-4	~337	U	Min	-16.45	-25.03
36	36-4	~338	U	Min	-16.51	-23.96
36	36-4	~336	U	Min	-5.72	-23.84
36	36-5	~306	U	Max	18.15	-5.45
36	36-5	~308	U	Max	10.61	-7.11
36	36-5	~339	U	Max	10.38	-5.58
36	36-5	~337	U	Max	17.92	-3.92
36	36-5	~306	U	Min	-16.35	-21.11
36	36-5	~308	U	Min	-24.64	-22.94
36	36-5	~339	U	Min	-24.34	-23.52
36	36-5	~337	U	Min	-16.05	-22.01
36	36-6	~337	U	Max	17.97	-3.95
36	36-6	~339	U	Max	10.49	-5.61
36	36-6	~340	U	Max	10.62	-6.23
36	36-6	~338	U	Max	18.1	-4.57
36	36-6	~337	U	Min	-16.19	-22.
36	36-6	~339	U	Min	-24.48	-23.49
36	36-6	~340	U	Min	-24.6	-23.07
36	36-6	~338	U	Min	-16.31	-21.36
36	36-7	~308	U	Max	11.07	-6.82
36	36-7	~310	U	Max	3.81	-7.34
36	36-7	~341	U	Max	3.88	-5.92
36	36-7	~339	U	Max	11.14	-5.39
36	36-7	~308	U	Min	-24.58	-20.56
36	36-7	~310	U	Min	-27.2	-21.78
36	36-7	~341	U	Min	-26.91	-21.12
36	36-7	~339	U	Min	-24.3	-19.74
36	36-8	~339	U	Max	11.26	-5.42
36	36-8	~341	U	Max	3.85	-5.95
36	36-8	~342	U	Max	3.85	-6.53
36	36-8	~340	U	Max	11.16	-6.
36	36-8	~339	U	Min	-24.44	-19.72
36	36-8	~341	U	Min	-27.07	-21.11
36	36-8	~342	U	Min	-27.19	-21.67
36	36-8	~340	U	Min	-24.56	-20.44
36	36-9	~310	U	Max	4.29	-7.61
36	36-9	~312	U	Max	0.14	-7.38
36	36-9	~343	U	Max	0.25	-6.45
36	36-9	~341	U	Max	4.41	-6.68
36	36-9	~310	U	Min	-27.25	-19.74
36	36-9	~312	U	Min	-26.11	-20.13
36	36-9	~343	U	Min	-25.92	-19.4
36	36-9	~341	U	Min	-27.07	-19.01
36	36-10	~341	U	Max	4.45	-6.71
36	36-10	~343	U	Max	0.24	-6.48
36	36-10	~344	U	Max	0.17	-6.74
36	36-10	~342	U	Max	4.4	-6.97
36	36-10	~341	U	Min	-27.22	-19.
36	36-10	~343	U	Min	-26.07	-19.41
36	36-10	~344	U	Min	-26.12	-19.85
36	36-10	~342	U	Min	-27.26	-19.45
36	36-11	~312	U	Max	0.54	-7.97
36	36-11	~314	U	Max	-1.01	-7.42
36	36-11	~345	U	Max	-0.94	-6.95
36	36-11	~343	U	Max	0.63	-7.5
36	36-11	~312	U	Min	-26.23	-18.68
36	36-11	~314	U	Min	-23.79	-18.55
36	36-11	~345	U	Min	-23.67	-18.15
36	36-11	~343	U	Min	-26.13	-18.28
36	36-12	~343	U	Max	0.61	-7.53
36	36-12	~345	U	Max	-0.94	-6.97
36	36-12	~346	U	Max	-0.99	-7.
36	36-12	~344	U	Max	0.56	-7.55
36	36-12	~343	U	Min	-26.25	-18.28
36	36-12	~345	U	Min	-23.78	-18.15
36	36-12	~346	U	Min	-23.81	-18.39
36	36-12	~344	U	Min	-26.28	-18.52
36	36-13	~314	U	Max	-0.73	-8.1

Element Forces - Area Shells, Part 2 of 10

Area	AreaElem	Joint	OutputCase	StepType	F11 KN/m	F22 KN/m
36	36-13	~316	U	Max	-1.01	-7.49
36	36-13	~347	U	Max	-0.98	-7.26
36	36-13	~345	U	Max	-0.7	-7.87
36	36-13	~314	U	Min	-23.85	-17.55
36	36-13	~316	U	Min	-20.9	-17.2
36	36-13	~347	U	Min	-20.84	-17.08
36	36-13	~345	U	Min	-23.79	-17.43
36	36-14	~345	U	Max	-0.71	-7.89
36	36-14	~347	U	Max	-0.99	-7.28
36	36-14	~348	U	Max	-1.	-7.21
36	36-14	~346	U	Max	-0.72	-7.82
36	36-14	~345	U	Min	-23.91	-17.43
36	36-14	~347	U	Min	-20.94	-17.08
36	36-14	~348	U	Min	-20.93	-17.14
36	36-14	~346	U	Min	-23.9	-17.48
36	36-15	~316	U	Max	-0.77	-8.03
36	36-15	~318	U	Max	-0.71	-7.48
36	36-15	~349	U	Max	-0.71	-7.36
36	36-15	~347	U	Max	-0.77	-7.91
36	36-15	~316	U	Min	-20.95	-16.39
36	36-15	~318	U	Min	-18.15	-16.02
36	36-15	~349	U	Min	-18.13	-16.04
36	36-15	~347	U	Min	-20.92	-16.41
36	36-16	~347	U	Max	-0.78	-7.93
36	36-16	~349	U	Max	-0.71	-7.37
36	36-16	~350	U	Max	-0.71	-7.29
36	36-16	~348	U	Max	-0.78	-7.85
36	36-16	~347	U	Min	-21.02	-16.42
36	36-16	~349	U	Min	-18.21	-16.04
36	36-16	~350	U	Min	-18.19	-16.03
36	36-16	~348	U	Min	-21.01	-16.41
36	36-17	~318	U	Max	-0.49	-7.83
36	36-17	~320	U	Max	-0.46	-7.34
36	36-17	~351	U	Max	-0.47	-7.24
36	36-17	~349	U	Max	-0.49	-7.73
36	36-17	~318	U	Min	-18.17	-15.27
36	36-17	~320	U	Min	-15.7	-14.93
36	36-17	~351	U	Min	-15.68	-14.98
36	36-17	~349	U	Min	-18.15	-15.32
36	36-18	~349	U	Max	-0.49	-7.75
36	36-18	~351	U	Max	-0.47	-7.25
36	36-18	~352	U	Max	-0.46	-7.21
36	36-18	~350	U	Max	-0.49	-7.7
36	36-18	~349	U	Min	-18.23	-15.32
36	36-18	~351	U	Min	-15.74	-14.98
36	36-18	~352	U	Min	-15.74	-14.97
36	36-18	~350	U	Min	-18.22	-15.31
36	36-19	~320	U	Max	-0.21	-7.5
36	36-19	~322	U	Max	-0.26	-7.04
36	36-19	~353	U	Max	-0.26	-6.94
36	36-19	~351	U	Max	-0.21	-7.4
36	36-19	~320	U	Min	-15.65	-14.2
36	36-19	~322	U	Min	-13.36	-13.87
36	36-19	~353	U	Min	-13.33	-13.88
36	36-19	~351	U	Min	-15.66	-14.21
36	36-20	~351	U	Max	-0.21	-7.41
36	36-20	~353	U	Max	-0.25	-6.95
36	36-20	~354	U	Max	-0.26	-6.94
36	36-20	~352	U	Max	-0.21	-7.41
36	36-20	~351	U	Min	-15.72	-14.21
36	36-20	~353	U	Min	-13.38	-13.88
36	36-20	~354	U	Min	-13.38	-13.91
36	36-20	~352	U	Min	-15.73	-14.24
36	36-21	~322	U	Max	-8.858E-03	-7.06
36	36-21	~324	U	Max	0.13	-6.59
36	36-21	~355	U	Max	0.14	-6.48
36	36-21	~353	U	Max	-4.948E-03	-6.95
36	36-21	~322	U	Min	-13.32	-13.18
36	36-21	~324	U	Min	-10.89	-12.8
36	36-21	~355	U	Min	-10.87	-12.75
36	36-21	~353	U	Min	-13.29	-13.13
36	36-22	~353	U	Max	2.998E-03	-6.96

Element Forces - Area Shells, Part 2 of 10

Area	AreaElem	Joint	OutputCase	StepType	F11 KN/m	F22 KN/m
36	36-22	~355	U	Max	0.16	-6.48
36	36-22	~356	U	Max	0.15	-6.53
36	36-22	~354	U	Max	-8.832E-03	-7.
36	36-22	~353	U	Min	-13.34	-13.12
36	36-22	~355	U	Min	-10.91	-12.74
36	36-22	~356	U	Min	-10.92	-12.85
36	36-22	~354	U	Min	-13.35	-13.23
36	36-23	~324	U	Max	0.32	-6.54
36	36-23	~326	U	Max	1.05	-6.01
36	36-23	~357	U	Max	1.06	-5.91
36	36-23	~355	U	Max	0.33	-6.43
36	36-23	~324	U	Min	-10.88	-12.2
36	36-23	~326	U	Min	-8.26	-11.69
36	36-23	~357	U	Min	-8.24	-11.63
36	36-23	~355	U	Min	-10.86	-12.14
36	36-24	~355	U	Max	0.35	-6.44
36	36-24	~357	U	Max	1.1	-5.91
36	36-24	~358	U	Max	1.08	-5.98
36	36-24	~356	U	Max	0.33	-6.51
36	36-24	~355	U	Min	-10.9	-12.13
36	36-24	~357	U	Min	-8.25	-11.62
36	36-24	~358	U	Min	-8.27	-11.78
36	36-24	~356	U	Min	-10.91	-12.3
36	36-25	~326	U	Max	1.23	-5.89
36	36-25	~328	U	Max	2.51	-5.31
36	36-25	~359	U	Max	2.48	-5.3
36	36-25	~357	U	Max	1.2	-5.88
36	36-25	~326	U	Min	-8.23	-11.17
36	36-25	~328	U	Min	-5.32	-10.62
36	36-25	~359	U	Min	-5.32	-10.64
36	36-25	~357	U	Min	-8.23	-11.3
36	36-26	~357	U	Max	1.25	-5.88
36	36-26	~359	U	Max	2.64	-5.29
36	36-26	~360	U	Max	2.61	-5.38
36	36-26	~358	U	Max	1.22	-5.98
36	36-26	~357	U	Min	-8.25	-11.28
36	36-26	~359	U	Min	-5.27	-10.61
36	36-26	~360	U	Min	-5.29	-10.81
36	36-26	~358	U	Min	-8.26	-11.49
36	36-27	~325	U	Max	2.69	-5.1
36	36-27	~330	U	Max	4.	-4.52
36	36-27	~361	U	Max	3.88	-4.78
36	36-27	~359	U	Max	2.57	-5.36
36	36-27	~328	U	Min	-5.28	-9.97
36	36-27	~330	U	Min	-2.38	-9.31
36	36-27	~361	U	Min	-2.43	-10.05
36	36-27	~359	U	Min	-5.33	-10.71
36	36-28	~359	U	Max	2.73	-5.35
36	36-28	~361	U	Max	3.87	-4.78
36	36-28	~362	U	Max	3.87	-4.78
36	36-28	~360	U	Max	2.73	-5.34
36	36-28	~359	U	Min	-5.29	-10.67
36	36-28	~361	U	Min	-2.45	-10.05
36	36-28	~362	U	Min	-2.45	-10.03
36	36-28	~360	U	Min	-5.29	-10.65
36	36-29	~330	U	Max	4.35	-3.81
36	36-29	~332	U	Max	1.62	-3.68
36	36-29	~363	U	Max	1.19	-4.65
36	36-29	~361	U	Max	3.92	-4.81
36	36-29	~330	U	Min	-2.25	-7.75
36	36-29	~332	U	Min	-1.35	-8.07
36	36-29	~363	U	Min	-1.54	-10.62
36	36-29	~361	U	Min	-2.44	-10.3
36	36-30	~361	U	Max	3.92	-4.81
36	36-30	~363	U	Max	3.01	-4.49
36	36-30	~364	U	Max	3.04	-4.41
36	36-30	~362	U	Max	3.95	-4.72
36	36-30	~361	U	Min	-2.46	-10.3
36	36-30	~363	U	Min	-0.76	-10.2
36	36-30	~364	U	Min	-0.75	-9.99
36	36-30	~362	U	Min	-2.45	-10.09
36	36-31	~332	U	Max	2.46	-1.71

Element Forces - Area Shells, Part 2 of 10

Area	AreaElem	Joint	OutputCase	StepType	F11 KN/m	F22 KN/m
36	36-31	114	U	Max	-2.78	-2.18
36	36-31	~365	U	Max	-3.21	-4.3
36	36-31	~363	U	Max	1.58	-3.86
36	36-31	~332	U	Min	-0.97	-3.53
36	36-31	114	U	Min	-6.81	-5.19
36	36-31	~365	U	Min	-7.87	-10.53
36	36-31	~363	U	Min	-1.39	-8.87
36	36-32	~363	U	Max	3.4	-3.7
36	36-32	~365	U	Max	-5.08	-4.69
36	36-32	115	U	Max	-5.12	-5.11
36	36-32	~364	U	Max	3.07	-4.18
36	36-32	~363	U	Min	-0.61	-8.45
36	36-32	~365	U	Min	-12.64	-11.49
36	36-32	115	U	Min	-12.98	-13.17
36	36-32	~364	U	Min	-0.7	-10.14

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 3 of 10

Area	AreaElem	OutputCase	StepType	F22 KN/m	F12 KN/m	FMax KN/m
36	36-1	U	Max	0.47	-3.228E-02	0.
36	36-1	U	Max	-0.71	1.65	0.
36	36-1	U	Max	-6.37	1.64	0.
36	36-1	U	Max	-5.19	-3.787E-02	0.
36	36-1	U	Min	-21.	-2.42	0.
36	36-1	U	Min	-15.67	-11.75	0.
36	36-1	U	Min	-28.42	-12.5	0.
36	36-1	U	Min	-34.19	-10.14	0.
36	36-2	U	Max	-5.11	2.24	0.
36	36-2	U	Max	-6.34	0.5	0.
36	36-2	U	Max	-1.87	0.41	0.
36	36-2	U	Max	-0.64	2.65	0.
36	36-2	U	Min	-34.19	-6.97	0.
36	36-2	U	Min	-28.31	-13.24	0.
36	36-2	U	Min	-19.53	-11.57	0.
36	36-2	U	Min	-25.24	-5.56	0.
36	36-3	U	Max	-3.66	1.89	0.
36	36-3	U	Max	-6.1	1.63	0.
36	36-3	U	Max	-5.25	1.42	0.
36	36-3	U	Max	-2.81	1.76	0.
36	36-3	U	Min	-22.39	-10.13	0.
36	36-3	U	Min	-22.84	-2.86	0.
36	36-3	U	Min	-25.04	-10.53	0.
36	36-3	U	Min	-25.56	-10.8	0.
36	36-4	U	Max	-2.78	0.62	0.
36	36-4	U	Max	-5.27	0.94	0.
36	36-4	U	Max	-5.57	0.63	0.
36	36-4	U	Max	-3.07	0.15	0.
36	36-4	U	Min	-25.45	-11.54	0.
36	36-4	U	Min	-25.03	-10.4	0.
36	36-4	U	Min	-23.96	-2.18	0.
36	36-4	U	Min	-23.84	-10.2	0.
36	36-5	U	Max	-5.45	1.8	0.
36	36-5	U	Max	-7.11	1.78	0.
36	36-5	U	Max	-5.58	1.43	0.
36	36-5	U	Max	-3.92	1.45	0.
36	36-5	U	Min	-21.11	-9.99	0.
36	36-5	U	Min	-22.94	-5.14	0.
36	36-5	U	Min	-23.52	-9.83	0.
36	36-5	U	Min	-22.01	-2.68	0.
36	36-6	U	Max	-3.95	0.91	0.
36	36-6	U	Max	-5.61	0.85	0.
36	36-6	U	Max	-6.23	0.33	0.
36	36-6	U	Max	-4.57	0.37	0.
36	36-6	U	Min	-22.	-2.54	0.
36	36-6	U	Min	-23.49	-9.7	0.
36	36-6	U	Min	-23.07	-7.94	0.
36	36-6	U	Min	-21.36	-5.77	0.

Element Forces - Area Shells, Part 3 of 10

Area	AreaElem	OutputCase	StepType	F22 KN/m	F12 KN/m	FMax KN/m
36	36-7	U	Max	-6.82	1.77	0.
36	36-7	U	Max	-7.34	1.68	0.
36	36-7	U	Max	-5.92	1.29	0.
36	36-7	U	Max	-5.39	1.38	0.
36	36-7	U	Min	-20.56	-7.11	0.
36	36-7	U	Min	-21.78	-6.22	0.
36	36-7	U	Min	-21.12	-7.03	0.
36	36-7	U	Min	-19.74	-7.92	0.
36	36-8	U	Max	-5.42	0.8	0.
36	36-8	U	Max	-5.95	0.78	0.
36	36-8	U	Max	-6.53	0.19	0.
36	36-8	U	Max	-6.	0.22	0.
36	36-8	U	Min	-19.72	-7.8	0.
36	36-8	U	Min	-21.11	-7.03	0.
36	36-8	U	Min	-21.67	-6.47	0.
36	36-8	U	Min	-20.44	-7.25	0.
36	36-9	U	Max	-7.61	1.56	0.
36	36-9	U	Max	-7.38	1.45	0.
36	36-9	U	Max	-6.45	1.13	0.
36	36-9	U	Max	-6.68	1.22	0.
36	36-9	U	Min	-19.74	-5.61	0.
36	36-9	U	Min	-20.13	-4.94	0.
36	36-9	U	Min	-19.4	-5.56	0.
36	36-9	U	Min	-19.01	-6.22	0.
36	36-10	U	Max	-6.71	0.71	0.
36	36-10	U	Max	-6.48	0.69	0.
36	36-10	U	Max	-6.74	0.15	0.
36	36-10	U	Max	-6.97	0.18	0.
36	36-10	U	Min	-19.	-6.21	0.
36	36-10	U	Min	-19.41	-5.54	0.
36	36-10	U	Min	-19.85	-5.18	0.
36	36-10	U	Min	-19.45	-5.85	0.
36	36-11	U	Max	-7.97	1.32	0.
36	36-11	U	Max	-7.42	1.22	0.
36	36-11	U	Max	-6.95	0.94	0.
36	36-11	U	Max	-7.5	1.05	0.
36	36-11	U	Min	-18.68	-4.45	0.
36	36-11	U	Min	-18.55	-3.93	0.
36	36-11	U	Min	-18.15	-4.46	0.
36	36-11	U	Min	-18.28	-4.99	0.
36	36-12	U	Max	-7.53	0.61	0.
36	36-12	U	Max	-6.97	0.57	0.
36	36-12	U	Max	-7.	0.13	0.
36	36-12	U	Max	-7.55	0.16	0.
36	36-12	U	Min	-18.28	-4.97	0.
36	36-12	U	Min	-18.15	-4.48	0.
36	36-12	U	Min	-18.39	-4.2	0.
36	36-12	U	Min	-18.52	-4.69	0.
36	36-13	U	Max	-8.1	1.08	0.
36	36-13	U	Max	-7.49	0.98	0.
36	36-13	U	Max	-7.26	0.77	0.
36	36-13	U	Max	-7.87	0.87	0.
36	36-13	U	Min	-17.55	-3.6	0.
36	36-13	U	Min	-17.2	-3.2	0.
36	36-13	U	Min	-17.08	-3.6	0.
36	36-13	U	Min	-17.43	-4.	0.
36	36-14	U	Max	-7.89	0.5	0.
36	36-14	U	Max	-7.28	0.47	0.
36	36-14	U	Max	-7.21	0.12	0.
36	36-14	U	Max	-7.82	0.15	0.
36	36-14	U	Min	-17.43	-4.02	0.
36	36-14	U	Min	-17.08	-3.6	0.
36	36-14	U	Min	-17.14	-3.36	0.
36	36-14	U	Min	-17.48	-3.78	0.
36	36-15	U	Max	-8.03	0.86	0.
36	36-15	U	Max	-7.48	0.77	0.
36	36-15	U	Max	-7.36	0.62	0.
36	36-15	U	Max	-7.91	0.71	0.
36	36-15	U	Min	-16.39	-2.9	0.
36	36-15	U	Min	-16.02	-2.55	0.
36	36-15	U	Min	-16.04	-2.88	0.
36	36-15	U	Min	-16.41	-3.23	0.

Element Forces - Area Shells, Part 3 of 10

Area	AreaElem	OutputCase	StepType	F22 KN/m	F12 KN/m	FMax KN/m
36	36-16	U	Max	-7.93	0.41	0.
36	36-16	U	Max	-7.37	0.36	0.
36	36-16	U	Max	-7.29	0.11	0.
36	36-16	U	Max	-7.85	0.14	0.
36	36-16	U	Min	-16.42	-3.23	0.
36	36-16	U	Min	-16.04	-2.82	0.
36	36-16	U	Min	-16.03	-2.66	0.
36	36-16	U	Min	-16.41	-3.02	0.
36	36-17	U	Max	-7.83	0.66	0.
36	36-17	U	Max	-7.34	0.61	0.
36	36-17	U	Max	-7.24	0.49	0.
36	36-17	U	Max	-7.73	0.56	0.
36	36-17	U	Min	-15.27	-2.31	0.
36	36-17	U	Min	-14.93	-2.01	0.
36	36-17	U	Min	-14.98	-2.25	0.
36	36-17	U	Min	-15.32	-2.55	0.
36	36-18	U	Max	-7.75	0.32	0.
36	36-18	U	Max	-7.25	0.3	0.
36	36-18	U	Max	-7.21	9.799E-02	0.
36	36-18	U	Max	-7.7	0.12	0.
36	36-18	U	Min	-15.32	-2.56	0.
36	36-18	U	Min	-14.98	-2.25	0.
36	36-18	U	Min	-14.97	-2.08	0.
36	36-18	U	Min	-15.31	-2.39	0.
36	36-19	U	Max	-7.5	0.53	0.
36	36-19	U	Max	-7.04	0.47	0.
36	36-19	U	Max	-6.94	0.38	0.
36	36-19	U	Max	-7.4	0.44	0.
36	36-19	U	Min	-14.2	-1.78	0.
36	36-19	U	Min	-13.87	-1.51	0.
36	36-19	U	Min	-13.88	-1.69	0.
36	36-19	U	Min	-14.21	-1.96	0.
36	36-20	U	Max	-7.41	0.25	0.
36	36-20	U	Max	-6.95	0.24	0.
36	36-20	U	Max	-6.94	8.444E-02	0.
36	36-20	U	Max	-7.41	0.1	0.
36	36-20	U	Min	-14.21	-1.96	0.
36	36-20	U	Min	-13.88	-1.7	0.
36	36-20	U	Min	-13.91	-1.56	0.
36	36-20	U	Min	-14.24	-1.83	0.
36	36-21	U	Max	-7.06	0.41	0.
36	36-21	U	Max	-6.59	0.37	0.
36	36-21	U	Max	-6.48	0.31	0.
36	36-21	U	Max	-6.95	0.35	0.
36	36-21	U	Min	-13.18	-1.31	0.
36	36-21	U	Min	-12.8	-1.07	0.
36	36-21	U	Min	-12.75	-1.2	0.
36	36-21	U	Min	-13.13	-1.44	0.
36	36-22	U	Max	-6.96	0.2	0.
36	36-22	U	Max	-6.48	0.19	0.
36	36-22	U	Max	-6.53	7.212E-02	0.
36	36-22	U	Max	-7.	8.640E-02	0.
36	36-22	U	Min	-13.12	-1.44	0.
36	36-22	U	Min	-12.74	-1.21	0.
36	36-22	U	Min	-12.85	-1.12	0.
36	36-22	U	Min	-13.23	-1.35	0.
36	36-23	U	Max	-6.54	0.34	0.
36	36-23	U	Max	-6.01	0.33	0.
36	36-23	U	Max	-5.91	0.27	0.
36	36-23	U	Max	-6.43	0.28	0.
36	36-23	U	Min	-12.2	-0.89	0.
36	36-23	U	Min	-11.69	-0.68	0.
36	36-23	U	Min	-11.63	-0.78	0.
36	36-23	U	Min	-12.14	-0.99	0.
36	36-24	U	Max	-6.44	0.16	0.
36	36-24	U	Max	-5.91	0.17	0.
36	36-24	U	Max	-5.98	6.663E-02	0.
36	36-24	U	Max	-6.51	6.607E-02	0.
36	36-24	U	Min	-12.13	-0.99	0.
36	36-24	U	Min	-11.62	-0.8	0.
36	36-24	U	Min	-11.78	-0.74	0.
36	36-24	U	Min	-12.3	-0.93	0.

Element Forces - Area Shells, Part 3 of 10

Area	AreaElem	OutputCase	StepType	F22 KN/m	F12 KN/m	FMax KN/m
36	36-25	U	Max	-5.89	0.34	0.
36	36-25	U	Max	-5.31	0.37	0.
36	36-25	U	Max	-5.3	0.32	0.
36	36-25	U	Max	-5.88	0.29	0.
36	36-25	U	Min	-11.17	-0.52	0.
36	36-25	U	Min	-10.52	-0.34	0.
36	36-25	U	Min	-10.64	-0.41	0.
36	36-25	U	Min	-11.3	-0.58	0.
36	36-26	U	Max	-5.88	0.19	0.
36	36-26	U	Max	-5.29	0.2	0.
36	36-26	U	Max	-5.38	5.963E-02	0.
36	36-26	U	Max	-5.98	4.720E-02	0.
36	36-26	U	Min	-11.28	-0.6	0.
36	36-26	U	Min	-10.61	-0.44	0.
36	36-26	U	Min	-10.81	-0.44	0.
36	36-26	U	Min	-11.49	-0.6	0.
36	36-27	U	Max	-5.1	0.46	0.
36	36-27	U	Max	-4.62	0.62	0.
36	36-27	U	Max	-4.78	0.45	0.
36	36-27	U	Max	-5.36	0.33	0.
36	36-27	U	Min	-9.97	-0.15	0.
36	36-27	U	Min	-9.31	-3.441E-03	0.
36	36-27	U	Min	-10.05	-8.955E-02	0.
36	36-27	U	Min	-10.71	-0.26	0.
36	36-28	U	Max	-5.35	0.21	0.
36	36-28	U	Max	-4.78	0.25	0.
36	36-28	U	Max	-4.78	6.200E-02	0.
36	36-28	U	Max	-5.34	2.359E-02	0.
36	36-28	U	Min	-10.67	-0.3	0.
36	36-28	U	Min	-10.05	-0.17	0.
36	36-28	U	Min	-10.03	-0.22	0.
36	36-28	U	Min	-10.65	-0.35	0.
36	36-29	U	Max	-3.81	1.03	0.
36	36-29	U	Max	-3.68	1.15	0.
36	36-29	U	Max	-4.65	0.91	0.
36	36-29	U	Max	-4.81	0.76	0.
36	36-29	U	Min	-7.75	0.22	0.
36	36-29	U	Min	-8.07	0.32	0.
36	36-29	U	Min	-10.62	0.21	0.
36	36-29	U	Min	-10.3	0.1	0.
36	36-30	U	Max	-4.81	0.53	0.
36	36-30	U	Max	-4.49	0.79	0.
36	36-30	U	Max	-4.41	0.25	0.
36	36-30	U	Max	-4.72	3.457E-03	0.
36	36-30	U	Min	-10.3	1.534E-02	0.
36	36-30	U	Min	-10.2	0.19	0.
36	36-30	U	Min	-9.99	-1.405E-02	0.
36	36-30	U	Min	-10.09	-0.19	0.
36	36-31	U	Max	-1.71	0.64	0.
36	36-31	U	Max	-2.18	0.8	0.
36	36-31	U	Max	-4.3	1.09	0.
36	36-31	U	Max	-3.86	0.93	0.
36	36-31	U	Min	-3.53	0.14	0.
36	36-31	U	Min	-5.19	0.28	0.
36	36-31	U	Min	-10.53	0.38	0.
36	36-31	U	Min	-8.87	0.24	0.
36	36-32	U	Max	-3.7	0.82	0.
36	36-32	U	Max	-4.69	1.67	0.
36	36-32	U	Max	-5.11	0.99	0.
36	36-32	U	Max	-4.18	0.15	0.
36	36-32	U	Min	-8.45	0.22	0.
36	36-32	U	Min	-11.49	0.51	0.
36	36-32	U	Min	-13.17	0.3	0.
36	36-32	U	Min	-10.14	6.219E-03	0.

Element Forces - Area Shells, Part 4 of 10

Area	AreaElem	StepType	F22 KN/m	FMax KN/m	FMin KN/m	FAngle Degrees
36	36-1	Max	0.47	0.	0.	0.
36	36-1	Max	-0.71	0.	0.	0.
36	36-1	Max	-6.37	0.	0.	0.
36	36-1	Max	-5.19	0.	0.	0.
36	36-1	Min	-21.	0.	0.	0.
36	36-1	Min	-15.67	0.	0.	0.
36	36-1	Min	-28.42	0.	0.	0.
36	36-1	Min	-34.19	0.	0.	0.
36	36-2	Max	-5.11	0.	0.	0.
36	36-2	Max	-6.34	0.	0.	0.
36	36-2	Max	-1.87	0.	0.	0.
36	36-2	Max	-0.64	0.	0.	0.
36	36-2	Min	-34.19	0.	0.	0.
36	36-2	Min	-28.31	0.	0.	0.
36	36-2	Min	-19.53	0.	0.	0.
36	36-2	Min	-25.24	0.	0.	0.
36	36-3	Max	-3.66	0.	0.	0.
36	36-3	Max	-6.1	0.	0.	0.
36	36-3	Max	-5.25	0.	0.	0.
36	36-3	Max	-2.81	0.	0.	0.
36	36-3	Min	-22.39	0.	0.	0.
36	36-3	Min	-22.84	0.	0.	0.
36	36-3	Min	-25.04	0.	0.	0.
36	36-3	Min	-25.56	0.	0.	0.
36	36-4	Max	-2.78	0.	0.	0.
36	36-4	Max	-5.27	0.	0.	0.
36	36-4	Max	-5.57	0.	0.	0.
36	36-4	Max	-3.07	0.	0.	0.
36	36-4	Min	-25.45	0.	0.	0.
36	36-4	Min	-25.03	0.	0.	0.
36	36-4	Min	-23.96	0.	0.	0.
36	36-4	Min	-23.84	0.	0.	0.
36	36-5	Max	-5.45	0.	0.	0.
36	36-5	Max	-7.11	0.	0.	0.
36	36-5	Max	-5.58	0.	0.	0.
36	36-5	Max	-3.92	0.	0.	0.
36	36-5	Min	-21.11	0.	0.	0.
36	36-5	Min	-22.94	0.	0.	0.
36	36-5	Min	-23.52	0.	0.	0.
36	36-5	Min	-22.01	0.	0.	0.
36	36-6	Max	-3.95	0.	0.	0.
36	36-6	Max	-5.61	0.	0.	0.
36	36-6	Max	-6.23	0.	0.	0.
36	36-6	Max	-4.57	0.	0.	0.
36	36-6	Min	-22.	0.	0.	0.
36	36-6	Min	-23.49	0.	0.	0.
36	36-6	Min	-23.07	0.	0.	0.
36	36-6	Min	-21.36	0.	0.	0.
36	36-7	Max	-6.82	0.	0.	0.
36	36-7	Max	-7.34	0.	0.	0.
36	36-7	Max	-5.92	0.	0.	0.
36	36-7	Max	-5.39	0.	0.	0.
36	36-7	Min	-20.56	0.	0.	0.
36	36-7	Min	-21.78	0.	0.	0.
36	36-7	Min	-21.12	0.	0.	0.
36	36-7	Min	-19.74	0.	0.	0.
36	36-8	Max	-5.42	0.	0.	0.
36	36-8	Max	-5.95	0.	0.	0.
36	36-8	Max	-6.53	0.	0.	0.
36	36-8	Max	-6.	0.	0.	0.
36	36-8	Min	-19.72	0.	0.	0.
36	36-8	Min	-21.11	0.	0.	0.
36	36-8	Min	-21.67	0.	0.	0.
36	36-8	Min	-20.44	0.	0.	0.
36	36-9	Max	-7.61	0.	0.	0.
36	36-9	Max	-7.38	0.	0.	0.
36	36-9	Max	-6.45	0.	0.	0.
36	36-9	Max	-6.68	0.	0.	0.
36	36-9	Min	-19.74	0.	0.	0.
36	36-9	Min	-20.13	0.	0.	0.

Element Forces - Area Shells, Part 4 of 10

Area	AreaElem	StepType	F22 KN/m	FMax KN/m	FMin KN/m	FAngle Degrees
36	36-9	Min	-19.4	0.	0.	0.
36	36-9	Min	-19.01	0.	0.	0.
36	36-10	Max	-6.71	0.	0.	0.
36	36-10	Max	-6.48	0.	0.	0.
36	36-10	Max	-6.74	0.	0.	0.
36	36-10	Max	-6.97	0.	0.	0.
36	36-10	Min	-19.	0.	0.	0.
36	36-10	Min	-19.41	0.	0.	0.
36	36-10	Min	-19.85	0.	0.	0.
36	36-10	Min	-19.45	0.	0.	0.
36	36-11	Max	-7.97	0.	0.	0.
36	36-11	Max	-7.42	0.	0.	0.
36	36-11	Max	-6.95	0.	0.	0.
36	36-11	Max	-7.5	0.	0.	0.
36	36-11	Min	-18.68	0.	0.	0.
36	36-11	Min	-18.55	0.	0.	0.
36	36-11	Min	-18.15	0.	0.	0.
36	36-11	Min	-18.28	0.	0.	0.
36	36-12	Max	-7.53	0.	0.	0.
36	36-12	Max	-6.97	0.	0.	0.
36	36-12	Max	-7.	0.	0.	0.
36	36-12	Max	-7.55	0.	0.	0.
36	36-12	Min	-18.28	0.	0.	0.
36	36-12	Min	-18.15	0.	0.	0.
36	36-12	Min	-18.39	0.	0.	0.
36	36-12	Min	-18.52	0.	0.	0.
36	36-13	Max	-8.1	0.	0.	0.
36	36-13	Max	-7.49	0.	0.	0.
36	36-13	Max	-7.26	0.	0.	0.
36	36-13	Max	-7.87	0.	0.	0.
36	36-13	Min	-17.55	0.	0.	0.
36	36-13	Min	-17.2	0.	0.	0.
36	36-13	Min	-17.08	0.	0.	0.
36	36-13	Min	-17.43	0.	0.	0.
36	36-14	Max	-7.89	0.	0.	0.
36	36-14	Max	-7.28	0.	0.	0.
36	36-14	Max	-7.21	0.	0.	0.
36	36-14	Max	-7.82	0.	0.	0.
36	36-14	Min	-17.43	0.	0.	0.
36	36-14	Min	-17.08	0.	0.	0.
36	36-14	Min	-17.14	0.	0.	0.
36	36-14	Min	-17.48	0.	0.	0.
36	36-15	Max	-8.03	0.	0.	0.
36	36-15	Max	-7.48	0.	0.	0.
36	36-15	Max	-7.36	0.	0.	0.
36	36-15	Max	-7.91	0.	0.	0.
36	36-15	Min	-16.39	0.	0.	0.
36	36-15	Min	-16.02	0.	0.	0.
36	36-15	Min	-16.04	0.	0.	0.
36	36-15	Min	-16.41	0.	0.	0.
36	36-16	Max	-7.93	0.	0.	0.
36	36-16	Max	-7.37	0.	0.	0.
36	36-16	Max	-7.29	0.	0.	0.
36	36-16	Max	-7.85	0.	0.	0.
36	36-16	Min	-16.42	0.	0.	0.
36	36-16	Min	-16.04	0.	0.	0.
36	36-16	Min	-16.03	0.	0.	0.
36	36-16	Min	-16.41	0.	0.	0.
36	36-17	Max	-7.83	0.	0.	0.
36	36-17	Max	-7.34	0.	0.	0.
36	36-17	Max	-7.24	0.	0.	0.
36	36-17	Max	-7.73	0.	0.	0.
36	36-17	Min	-15.27	0.	0.	0.
36	36-17	Min	-14.93	0.	0.	0.
36	36-17	Min	-14.98	0.	0.	0.
36	36-17	Min	-15.32	0.	0.	0.
36	36-18	Max	-7.75	0.	0.	0.
36	36-18	Max	-7.25	0.	0.	0.
36	36-18	Max	-7.21	0.	0.	0.
36	36-18	Max	-7.7	0.	0.	0.
36	36-18	Min	-15.32	0.	0.	0.
36	36-18	Min	-14.98	0.	0.	0.

Element Forces - Area Shells, Part 4 of 10

Area	AreaElem	StepType	F22 KN/m	FMax KN/m	FMin KN/m	FAngle Degrees
36	36-18	Min	-14.97	0.	0.	0.
36	36-18	Min	-15.31	0.	0.	0.
36	36-19	Max	-7.5	0.	0.	0.
36	36-19	Max	-7.04	0.	0.	0.
36	36-19	Max	-6.94	0.	0.	0.
36	36-19	Max	-7.4	0.	0.	0.
36	36-19	Min	-14.2	0.	0.	0.
36	36-19	Min	-13.87	0.	0.	0.
36	36-19	Min	-13.88	0.	0.	0.
36	36-19	Min	-14.21	0.	0.	0.
36	36-20	Max	-7.41	0.	0.	0.
36	36-20	Max	-6.95	0.	0.	0.
36	36-20	Max	-6.94	0.	0.	0.
36	36-20	Max	-7.41	0.	0.	0.
36	36-20	Min	-14.21	0.	0.	0.
36	36-20	Min	-13.88	0.	0.	0.
36	36-20	Min	-13.91	0.	0.	0.
36	36-20	Min	-14.24	0.	0.	0.
36	36-21	Max	-7.06	0.	0.	0.
36	36-21	Max	-6.59	0.	0.	0.
36	36-21	Max	-6.48	0.	0.	0.
36	36-21	Max	-6.95	0.	0.	0.
36	36-21	Min	-13.18	0.	0.	0.
36	36-21	Min	-12.8	0.	0.	0.
36	36-21	Min	-12.75	0.	0.	0.
36	36-21	Min	-13.13	0.	0.	0.
36	36-22	Max	-6.96	0.	0.	0.
36	36-22	Max	-6.48	0.	0.	0.
36	36-22	Max	-6.53	0.	0.	0.
36	36-22	Max	-7.	0.	0.	0.
36	36-22	Min	-13.12	0.	0.	0.
36	36-22	Min	-12.74	0.	0.	0.
36	36-22	Min	-12.85	0.	0.	0.
36	36-22	Min	-13.23	0.	0.	0.
36	36-23	Max	-6.54	0.	0.	0.
36	36-23	Max	-6.01	0.	0.	0.
36	36-23	Max	-5.91	0.	0.	0.
36	36-23	Max	-6.43	0.	0.	0.
36	36-23	Min	-12.2	0.	0.	0.
36	36-23	Min	-11.69	0.	0.	0.
36	36-23	Min	-11.63	0.	0.	0.
36	36-23	Min	-12.14	0.	0.	0.
36	36-24	Max	-6.44	0.	0.	0.
36	36-24	Max	-5.91	0.	0.	0.
36	36-24	Max	-5.98	0.	0.	0.
36	36-24	Max	-6.51	0.	0.	0.
36	36-24	Min	-12.13	0.	0.	0.
36	36-24	Min	-11.62	0.	0.	0.
36	36-24	Min	-11.78	0.	0.	0.
36	36-24	Min	-12.3	0.	0.	0.
36	36-25	Max	-5.89	0.	0.	0.
36	36-25	Max	-5.31	0.	0.	0.
36	36-25	Max	-5.3	0.	0.	0.
36	36-25	Max	-5.88	0.	0.	0.
36	36-25	Min	-11.17	0.	0.	0.
36	36-25	Min	-10.52	0.	0.	0.
36	36-25	Min	-10.64	0.	0.	0.
36	36-25	Min	-11.3	0.	0.	0.
36	36-26	Max	-5.88	0.	0.	0.
36	36-26	Max	-5.29	0.	0.	0.
36	36-26	Max	-5.38	0.	0.	0.
36	36-26	Max	-5.98	0.	0.	0.
36	36-26	Min	-11.28	0.	0.	0.
36	36-26	Min	-10.61	0.	0.	0.
36	36-26	Min	-10.81	0.	0.	0.
36	36-26	Min	-11.49	0.	0.	0.
36	36-27	Max	-5.1	0.	0.	0.
36	36-27	Max	-4.52	0.	0.	0.
36	36-27	Max	-4.78	0.	0.	0.
36	36-27	Max	-5.36	0.	0.	0.
36	36-27	Min	-9.97	0.	0.	0.
36	36-27	Min	-9.31	0.	0.	0.

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Element Forces - Area Shells, Part 4 of 10

Area	AreaElem	StepType	F22 KN/m	FMax KN/m	FMin KN/m	FAngle Degrees
36	36-27	Min	-10.05	0.	0.	0.
36	36-27	Min	-10.71	0.	0.	0.
36	36-28	Max	-5.35	0.	0.	0.
36	36-28	Max	-4.78	0.	0.	0.
36	36-28	Max	-4.78	0.	0.	0.
36	36-28	Max	-5.34	0.	0.	0.
36	36-28	Min	-10.67	0.	0.	0.
36	36-28	Min	-10.05	0.	0.	0.
36	36-28	Min	-10.03	0.	0.	0.
36	36-28	Min	-10.65	0.	0.	0.
36	36-29	Max	-3.81	0.	0.	0.
36	36-29	Max	-3.68	0.	0.	0.
36	36-29	Max	-4.65	0.	0.	0.
36	36-29	Max	-4.81	0.	0.	0.
36	36-29	Min	-7.75	0.	0.	0.
36	36-29	Min	-8.07	0.	0.	0.
36	36-29	Min	-10.62	0.	0.	0.
36	36-29	Min	-10.3	0.	0.	0.
36	36-30	Max	-4.81	0.	0.	0.
36	36-30	Max	-4.49	0.	0.	0.
36	36-30	Max	-4.41	0.	0.	0.
36	36-30	Max	-4.72	0.	0.	0.
36	36-30	Min	-10.3	0.	0.	0.
36	36-30	Min	-10.2	0.	0.	0.
36	36-30	Min	-9.99	0.	0.	0.
36	36-30	Min	-10.09	0.	0.	0.
36	36-31	Max	-1.71	0.	0.	0.
36	36-31	Max	-2.18	0.	0.	0.
36	36-31	Max	-4.3	0.	0.	0.
36	36-31	Max	-3.86	0.	0.	0.
36	36-31	Min	-3.53	0.	0.	0.
36	36-31	Min	-5.19	0.	0.	0.
36	36-31	Min	-10.53	0.	0.	0.
36	36-31	Min	-8.87	0.	0.	0.
36	36-32	Max	-3.7	0.	0.	0.
36	36-32	Max	-4.69	0.	0.	0.
36	36-32	Max	-5.11	0.	0.	0.
36	36-32	Max	-4.18	0.	0.	0.
36	36-32	Min	-8.45	0.	0.	0.
36	36-32	Min	-11.49	0.	0.	0.
36	36-32	Min	-13.17	0.	0.	0.
36	36-32	Min	-10.14	0.	0.	0.

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 5 of 10

Area	AreaElem	F22 KN/m	FMax KN/m	FAngle Degrees	FVM KN/m	M11 KN-m/m
36	36-1	0.47	0.	0.	0.	0.952
36	36-1	-0.71	0.	0.	0.	0.4093
36	36-1	-6.37	0.	0.	0.	0.5521
36	36-1	-5.19	0.	0.	0.	0.7942
36	36-1	-21.	0.	0.	0.	0.5391
36	36-1	-15.67	0.	0.	0.	0.1551
36	36-1	-28.42	0.	0.	0.	0.1035
36	36-1	-34.19	0.	0.	0.	0.499
36	36-2	-5.11	0.	0.	0.	0.795
36	36-2	-6.34	0.	0.	0.	0.5512
36	36-2	-1.87	0.	0.	0.	0.4696
36	36-2	-0.64	0.	0.	0.	0.904
36	36-2	-34.19	0.	0.	0.	0.4885
36	36-2	-28.31	0.	0.	0.	0.1053
36	36-2	-19.53	0.	0.	0.	0.1315
36	36-2	-25.24	0.	0.	0.	0.5237
36	36-3	-3.66	0.	0.	0.	0.3932
36	36-3	-6.1	0.	0.	0.	0.1066
36	36-3	-5.25	0.	0.	0.	0.2823
36	36-3	-2.81	0.	0.	0.	0.5719
36	36-3	-22.39	0.	0.	0.	0.1097

Element Forces - Area Shells, Part 5 of 10

Area	AreaElem	F22 KN/m	FMax KN/m	FAngle Degrees	FVM KN/m	M11 KN-m/m
36	36-3	-22.84	0.	0.	0.	-0.0161
36	36-3	-25.04	0.	0.	0.	-0.1427
36	36-3	-25.56	0.	0.	0.	0.1126
36	36-4	-2.78	0.	0.	0.	0.5709
36	36-4	-5.27	0.	0.	0.	0.2824
36	36-4	-5.57	0.	0.	0.	0.1798
36	36-4	-3.07	0.	0.	0.	0.4484
36	36-4	-25.45	0.	0.	0.	0.1124
36	36-4	-25.03	0.	0.	0.	-0.1432
36	36-4	-23.96	0.	0.	0.	-0.0149
36	36-4	-23.84	0.	0.	0.	0.1239
36	36-5	-5.45	0.	0.	0.	0.1032
36	36-5	-7.11	0.	0.	0.	0.0461
36	36-5	-5.58	0.	0.	0.	0.0992
36	36-5	-3.92	0.	0.	0.	0.2829
36	36-5	-21.11	0.	0.	0.	-0.08
36	36-5	-22.94	0.	0.	0.	-0.0851
36	36-5	-23.52	0.	0.	0.	-0.258
36	36-5	-22.01	0.	0.	0.	-0.1406
36	36-6	-3.95	0.	0.	0.	0.2829
36	36-6	-5.61	0.	0.	0.	0.0989
36	36-6	-6.23	0.	0.	0.	0.0373
36	36-6	-4.57	0.	0.	0.	0.1791
36	36-6	-22.	0.	0.	0.	-0.1411
36	36-6	-23.49	0.	0.	0.	-0.2581
36	36-6	-23.07	0.	0.	0.	-0.0722
36	36-6	-21.36	0.	0.	0.	-0.0099
36	36-7	-6.82	0.	0.	0.	0.0642
36	36-7	-7.34	0.	0.	0.	0.0922
36	36-7	-5.92	0.	0.	0.	0.0167
36	36-7	-5.39	0.	0.	0.	0.1003
36	36-7	-20.56	0.	0.	0.	-0.1388
36	36-7	-21.78	0.	0.	0.	-0.0782
36	36-7	-21.12	0.	0.	0.	-0.2833
36	36-7	-19.74	0.	0.	0.	-0.2558
36	36-8	-5.42	0.	0.	0.	0.0999
36	36-8	-5.95	0.	0.	0.	0.0169
36	36-8	-6.53	0.	0.	0.	-0.0011
36	36-8	-6.	0.	0.	0.	0.0369
36	36-8	-19.72	0.	0.	0.	-0.2558
36	36-8	-21.11	0.	0.	0.	-0.2832
36	36-8	-21.67	0.	0.	0.	-0.079
36	36-8	-20.44	0.	0.	0.	-0.036
36	36-9	-7.61	0.	0.	0.	0.1084
36	36-9	-7.38	0.	0.	0.	0.1218
36	36-9	-6.45	0.	0.	0.	-0.0035
36	36-9	-6.68	0.	0.	0.	0.0168
36	36-9	-19.74	0.	0.	0.	-0.1219
36	36-9	-20.13	0.	0.	0.	-0.0553
36	36-9	-19.4	0.	0.	0.	-0.2677
36	36-9	-19.01	0.	0.	0.	-0.2816
36	36-10	-6.71	0.	0.	0.	0.017
36	36-10	-6.48	0.	0.	0.	-0.0034
36	36-10	-6.74	0.	0.	0.	0.0288
36	36-10	-6.97	0.	0.	0.	0.002
36	36-10	-19.	0.	0.	0.	-0.2815
36	36-10	-19.41	0.	0.	0.	-0.2677
36	36-10	-19.85	0.	0.	0.	-0.0625
36	36-10	-19.45	0.	0.	0.	-0.0498
36	36-11	-7.97	0.	0.	0.	0.1349
36	36-11	-7.42	0.	0.	0.	0.1299
36	36-11	-6.95	0.	0.	0.	1.602E-04
36	36-11	-7.5	0.	0.	0.	-0.0037
36	36-11	-18.68	0.	0.	0.	-0.0891
36	36-11	-18.55	0.	0.	0.	-0.0424
36	36-11	-18.15	0.	0.	0.	-0.239
36	36-11	-18.28	0.	0.	0.	-0.2666
36	36-12	-7.53	0.	0.	0.	-0.0036
36	36-12	-6.97	0.	0.	0.	2.087E-04
36	36-12	-7.	0.	0.	0.	0.0462
36	36-12	-7.55	0.	0.	0.	0.0312
36	36-12	-18.28	0.	0.	0.	-0.2666

Element Forces - Area Shells, Part 5 of 10

Area	AreaElem	F22 KN/m	FMax KN/m	FAngle Degrees	FVM KN/m	M11 KN-m/m
36	36-12	-18.15	0.	0.	0.	-0.239
36	36-12	-18.39	0.	0.	0.	-0.0463
36	36-12	-18.52	0.	0.	0.	-0.0382
36	36-13	-8.1	0.	0.	0.	0.1409
36	36-13	-7.49	0.	0.	0.	0.125
36	36-13	-7.26	0.	0.	0.	0.0073
36	36-13	-7.87	0.	0.	0.	-7.984E-05
36	36-13	-17.55	0.	0.	0.	-0.0705
36	36-13	-17.2	0.	0.	0.	-0.041
36	36-13	-17.08	0.	0.	0.	-0.2126
36	36-13	-17.43	0.	0.	0.	-0.238
36	36-14	-7.89	0.	0.	0.	-3.133E-05
36	36-14	-7.28	0.	0.	0.	0.0073
36	36-14	-7.21	0.	0.	0.	0.0518
36	36-14	-7.82	0.	0.	0.	0.048
36	36-14	-17.43	0.	0.	0.	-0.238
36	36-14	-17.08	0.	0.	0.	-0.2126
36	36-14	-17.14	0.	0.	0.	-0.0377
36	36-14	-17.48	0.	0.	0.	-0.0252
36	36-15	-8.03	0.	0.	0.	0.1337
36	36-15	-7.48	0.	0.	0.	0.1114
36	36-15	-7.36	0.	0.	0.	0.011
36	36-15	-7.91	0.	0.	0.	0.0071
36	36-15	-16.39	0.	0.	0.	-0.0634
36	36-15	-16.02	0.	0.	0.	-0.0419
36	36-15	-16.04	0.	0.	0.	-0.1892
36	36-15	-16.41	0.	0.	0.	-0.2116
36	36-16	-7.93	0.	0.	0.	0.0071
36	36-16	-7.37	0.	0.	0.	0.011
36	36-16	-7.29	0.	0.	0.	0.0487
36	36-16	-7.85	0.	0.	0.	0.0531
36	36-16	-16.42	0.	0.	0.	-0.2117
36	36-16	-16.04	0.	0.	0.	-0.1892
36	36-16	-16.03	0.	0.	0.	-0.0335
36	36-16	-16.41	0.	0.	0.	-0.0193
36	36-17	-7.83	0.	0.	0.	0.1183
36	36-17	-7.34	0.	0.	0.	0.095
36	36-17	-7.24	0.	0.	0.	0.0108
36	36-17	-7.73	0.	0.	0.	0.0108
36	36-17	-15.27	0.	0.	0.	-0.06
36	36-17	-14.93	0.	0.	0.	-0.0422
36	36-17	-14.98	0.	0.	0.	-0.1677
36	36-17	-15.32	0.	0.	0.	-0.1884
36	36-18	-7.75	0.	0.	0.	0.0108
36	36-18	-7.25	0.	0.	0.	0.0108
36	36-18	-7.21	0.	0.	0.	0.0417
36	36-18	-7.7	0.	0.	0.	0.0496
36	36-18	-15.32	0.	0.	0.	-0.1884
36	36-18	-14.98	0.	0.	0.	-0.1677
36	36-18	-14.97	0.	0.	0.	-0.0307
36	36-18	-15.31	0.	0.	0.	-0.0186
36	36-19	-7.5	0.	0.	0.	0.1003
36	36-19	-7.04	0.	0.	0.	0.0779
36	36-19	-6.94	0.	0.	0.	0.0087
36	36-19	-7.4	0.	0.	0.	0.0107
36	36-19	-14.2	0.	0.	0.	-0.0562
36	36-19	-13.87	0.	0.	0.	-0.0409
36	36-19	-13.88	0.	0.	0.	-0.1461
36	36-19	-14.21	0.	0.	0.	-0.167
36	36-20	-7.41	0.	0.	0.	0.0107
36	36-20	-6.95	0.	0.	0.	0.0087
36	36-20	-6.94	0.	0.	0.	0.0337
36	36-20	-7.41	0.	0.	0.	0.0423
36	36-20	-14.21	0.	0.	0.	-0.167
36	36-20	-13.88	0.	0.	0.	-0.1461
36	36-20	-13.91	0.	0.	0.	-0.028
36	36-20	-14.24	0.	0.	0.	-0.0194
36	36-21	-7.06	0.	0.	0.	0.0819
36	36-21	-6.59	0.	0.	0.	0.0606
36	36-21	-6.48	0.	0.	0.	0.008
36	36-21	-6.95	0.	0.	0.	0.0086
36	36-21	-13.18	0.	0.	0.	-0.0515

Element Forces - Area Shells, Part 5 of 10

Area	AreaElem	F22 KN/m	FMax KN/m	FAngle Degrees	FVM KN/m	M11 KN-m/m
36	36-21	-12.8	0.	0.	0.	-0.0383
36	36-21	-12.75	0.	0.	0.	-0.1225
36	36-21	-13.13	0.	0.	0.	-0.1455
36	36-22	-6.96	0.	0.	0.	0.0086
36	36-22	-6.48	0.	0.	0.	0.008
36	36-22	-6.53	0.	0.	0.	0.0271
36	36-22	-7.	0.	0.	0.	0.0341
36	36-22	-13.12	0.	0.	0.	-0.1455
36	36-22	-12.74	0.	0.	0.	-0.1225
36	36-22	-12.85	0.	0.	0.	-0.0242
36	36-22	-13.23	0.	0.	0.	-0.0196
36	36-23	-6.54	0.	0.	0.	0.0636
36	36-23	-6.01	0.	0.	0.	0.0468
36	36-23	-5.91	0.	0.	0.	0.0162
36	36-23	-6.43	0.	0.	0.	0.0079
36	36-23	-12.2	0.	0.	0.	-0.0458
36	36-23	-11.69	0.	0.	0.	-0.0348
36	36-23	-11.63	0.	0.	0.	-0.094
36	36-23	-12.14	0.	0.	0.	-0.1221
36	36-24	-6.44	0.	0.	0.	0.0079
36	36-24	-5.91	0.	0.	0.	0.0162
36	36-24	-5.98	0.	0.	0.	0.0262
36	36-24	-6.51	0.	0.	0.	0.0273
36	36-24	-12.13	0.	0.	0.	-0.1221
36	36-24	-11.62	0.	0.	0.	-0.0939
36	36-24	-11.78	0.	0.	0.	-0.0173
36	36-24	-12.3	0.	0.	0.	-0.0184
36	36-25	-5.89	0.	0.	0.	0.0488
36	36-25	-5.31	0.	0.	0.	0.0412
36	36-25	-5.3	0.	0.	0.	0.0427
36	36-25	-5.88	0.	0.	0.	0.0158
36	36-25	-11.17	0.	0.	0.	-0.039
36	36-25	-10.52	0.	0.	0.	-0.0228
36	36-25	-10.64	0.	0.	0.	-0.0558
36	36-25	-11.3	0.	0.	0.	-0.0937
36	36-26	-5.88	0.	0.	0.	0.0159
36	36-26	-5.29	0.	0.	0.	0.0426
36	36-26	-5.38	0.	0.	0.	0.0407
36	36-26	-5.98	0.	0.	0.	0.0263
36	36-26	-11.28	0.	0.	0.	-0.0937
36	36-26	-10.61	0.	0.	0.	-0.0558
36	36-26	-10.81	0.	0.	0.	-0.0028
36	36-26	-11.49	0.	0.	0.	-0.0135
36	36-27	-5.1	0.	0.	0.	0.0442
36	36-27	-4.52	0.	0.	0.	0.0703
36	36-27	-4.78	0.	0.	0.	0.0964
36	36-27	-5.36	0.	0.	0.	0.042
36	36-27	-9.97	0.	0.	0.	-0.0251
36	36-27	-9.31	0.	0.	0.	0.0049
36	36-27	-10.05	0.	0.	0.	-0.0038
36	36-27	-10.71	0.	0.	0.	-0.0558
36	36-28	-5.35	0.	0.	0.	0.0419
36	36-28	-4.78	0.	0.	0.	0.0966
36	36-28	-4.76	0.	0.	0.	0.0838
36	36-28	-5.34	0.	0.	0.	0.0409
36	36-28	-10.67	0.	0.	0.	-0.0558
36	36-28	-10.05	0.	0.	0.	-0.0038
36	36-28	-10.03	0.	0.	0.	0.0258
36	36-28	-10.65	0.	0.	0.	-5.183E-04
36	36-29	-3.81	0.	0.	0.	0.074
36	36-29	-3.68	0.	0.	0.	0.127
36	36-29	-4.65	0.	0.	0.	0.2075
36	36-29	-4.81	0.	0.	0.	0.0947
36	36-29	-7.75	0.	0.	0.	0.0046
36	36-29	-8.07	0.	0.	0.	0.0407
36	36-29	-10.62	0.	0.	0.	0.0632
36	36-29	-10.3	0.	0.	0.	-0.0043
36	36-30	-4.81	0.	0.	0.	0.0948
36	36-30	-4.49	0.	0.	0.	0.2092
36	36-30	-4.41	0.	0.	0.	0.2067
36	36-30	-4.72	0.	0.	0.	0.0855
36	36-30	-10.3	0.	0.	0.	-0.0043

Element Forces - Area Shells, Part 5 of 10

Area	AreaElem	F22 KN/m	FMax KN/m	FAngle Degrees	FVM KN/m	M11 KN-m/m
36	36-30	-10.2	0.	0.	0.	0.064
36	36-30	-9.99	0.	0.	0.	0.0794
36	36-30	-10.09	0.	0.	0.	0.0276
36	36-31	-1.71	0.	0.	0.	0.1369
36	36-31	-2.18	0.	0.	0.	0.2266
36	36-31	-4.3	0.	0.	0.	0.1741
36	36-31	-3.86	0.	0.	0.	0.2031
36	36-31	-3.53	0.	0.	0.	0.0436
36	36-31	-5.19	0.	0.	0.	0.0917
36	36-31	-10.53	0.	0.	0.	0.0638
36	36-31	-8.87	0.	0.	0.	0.0614
36	36-32	-3.7	0.	0.	0.	0.2048
36	36-32	-4.69	0.	0.	0.	0.1703
36	36-32	-5.11	0.	0.	0.	0.5448
36	36-32	-4.18	0.	0.	0.	0.2077
36	36-32	-8.45	0.	0.	0.	0.0623
36	36-32	-11.49	0.	0.	0.	0.0618
36	36-32	-13.17	0.	0.	0.	0.2194
36	36-32	-10.14	0.	0.	0.	0.0803

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 6 of 10

Area	AreaElem	FMax KN/m	FAngle Degrees	M11 KN-m/m	M22 KN-m/m	M12 KN-m/m
36	36-1	0.	0.	0.952	3.9768	0.3822
36	36-1	0.	0.	0.4093	2.1725	0.171
36	36-1	0.	0.	0.5521	2.0093	0.1778
36	36-1	0.	0.	0.7942	4.5801	0.3853
36	36-1	0.	0.	0.5391	2.2723	0.0285
36	36-1	0.	0.	0.1551	0.3967	-0.0467
36	36-1	0.	0.	0.1035	0.3147	-0.0481
36	36-1	0.	0.	0.499	2.5659	0.0307
36	36-2	0.	0.	0.795	4.5802	0.253
36	36-2	0.	0.	0.5512	2.0091	0.2659
36	36-2	0.	0.	0.4696	2.209	0.2514
36	36-2	0.	0.	0.904	4.158	0.2453
36	36-2	0.	0.	0.4885	2.566	-0.0512
36	36-2	0.	0.	0.1053	0.3146	0.0315
36	36-2	0.	0.	0.1315	0.4248	0.0321
36	36-2	0.	0.	0.5237	2.2469	-0.067
36	36-3	0.	0.	0.3932	2.0921	0.1321
36	36-3	0.	0.	0.1066	0.5484	0.0763
36	36-3	0.	0.	0.2823	0.615	0.0839
36	36-3	0.	0.	0.5719	2.108	0.1398
36	36-3	0.	0.	0.1097	0.4542	-0.0178
36	36-3	0.	0.	-0.0161	-0.4447	-0.011
36	36-3	0.	0.	-0.1427	-0.3922	-0.0069
36	36-3	0.	0.	0.1126	0.3416	-0.0137
36	36-4	0.	0.	0.5709	2.1078	0.1565
36	36-4	0.	0.	0.2824	0.615	0.0931
36	36-4	0.	0.	0.1798	0.5995	0.0992
36	36-4	0.	0.	0.4484	2.1025	0.1619
36	36-4	0.	0.	0.1124	0.3416	0.0072
36	36-4	0.	0.	-0.1432	-0.3922	0.0026
36	36-4	0.	0.	-0.0149	-0.4031	-0.0024
36	36-4	0.	0.	0.1239	0.3872	0.0055
36	36-5	0.	0.	0.1032	0.5267	0.025
36	36-5	0.	0.	0.0461	-0.0832	-0.0099
36	36-5	0.	0.	0.0992	-0.0746	5.944E-04
36	36-5	0.	0.	0.2829	0.6179	0.0354
36	36-5	0.	0.	-0.08	-0.3392	-0.0227
36	36-5	0.	0.	-0.0851	-0.4964	-0.0323
36	36-5	0.	0.	-0.258	-0.4903	-0.0239
36	36-5	0.	0.	-0.1406	-0.4274	-0.0144
36	36-6	0.	0.	0.2829	0.6179	0.049
36	36-6	0.	0.	0.0989	-0.0746	0.0154
36	36-6	0.	0.	0.0373	-0.0825	0.0254
36	36-6	0.	0.	0.1791	0.5959	0.0593

Element Forces - Area Shells, Part 6 of 10

Area	AreaElem	FMax KN/m	FAngle Degrees	M11 KN-m/m	M22 KN-m/m	M12 KN-m/m
36	36-6	0.	0.	-0.1411	-0.4274	-0.0052
36	36-6	0.	0.	-0.2581	-0.4904	-0.0061
36	36-6	0.	0.	-0.0722	-0.4855	1.089E-04
36	36-6	0.	0.	-0.0099	-0.378	9.409E-04
36	36-7	0.	0.	0.0642	-0.09	-0.0058
36	36-7	0.	0.	0.0922	-0.1645	-7.927E-04
36	36-7	0.	0.	0.0167	-0.2255	5.313E-04
36	36-7	0.	0.	0.1003	-0.0697	-0.0045
36	36-7	0.	0.	-0.1388	-0.5204	-0.0248
36	36-7	0.	0.	-0.0782	-0.3691	-0.0307
36	36-7	0.	0.	-0.2833	-0.3934	-0.0244
36	36-8	0.	0.	-0.2558	-0.516	-0.0199
36	36-8	0.	0.	0.0999	-0.0698	0.003
36	36-8	0.	0.	0.0169	-0.2254	0.0021
36	36-8	0.	0.	-0.0011	-0.2306	0.0062
36	36-8	0.	0.	0.0369	-0.0842	0.0071
36	36-8	0.	0.	-0.2558	-0.516	-0.0071
36	36-8	0.	0.	-0.2832	-0.3933	-0.0164
36	36-8	0.	0.	-0.079	-0.4352	-0.0074
36	36-9	0.	0.	-0.036	-0.4668	7.065E-04
36	36-9	0.	0.	0.1084	-0.2174	0.0013
36	36-9	0.	0.	0.1218	-0.0543	0.0038
36	36-9	0.	0.	-0.0035	-0.1364	0.0041
36	36-9	0.	0.	0.0168	-0.2252	0.0016
36	36-9	0.	0.	-0.1219	-0.454	-0.0263
36	36-9	0.	0.	-0.0553	-0.1857	-0.0279
36	36-9	0.	0.	-0.2677	-0.2456	-0.0252
36	36-10	0.	0.	-0.2816	-0.3951	-0.0236
36	36-10	0.	0.	0.017	-0.2252	0.0034
36	36-10	0.	0.	-0.0034	-0.1364	0.0019
36	36-10	0.	0.	0.0288	-0.1182	0.0028
36	36-10	0.	0.	0.002	-0.1817	0.004
36	36-10	0.	0.	-0.2815	-0.395	-0.0177
36	36-10	0.	0.	-0.2677	-0.2456	-0.0224
36	36-10	0.	0.	-0.0625	-0.2758	-0.0187
36	36-11	0.	0.	-0.0498	-0.3423	-0.0137
36	36-11	0.	0.	0.1349	-0.0634	0.003
36	36-11	0.	0.	0.1299	0.0213	0.0033
36	36-11	0.	0.	1.602E-04	-0.041	0.0034
36	36-11	0.	0.	-0.0037	-0.1562	0.0031
36	36-11	0.	0.	-0.0891	-0.2771	-0.0216
36	36-11	0.	0.	-0.0424	-0.0878	-0.0201
36	36-11	0.	0.	-0.239	-0.1204	-0.0198
36	36-12	0.	0.	-0.2666	-0.2399	-0.0212
36	36-12	0.	0.	-0.0036	-0.1562	0.0019
36	36-12	0.	0.	2.087E-04	-0.041	3.963E-04
36	36-12	0.	0.	0.0462	-0.0222	0.0014
36	36-12	0.	0.	0.0312	-0.0757	0.0013
36	36-12	0.	0.	-0.2666	-0.2399	-0.02
36	36-12	0.	0.	-0.239	-0.1204	-0.0218
36	36-12	0.	0.	-0.0463	-0.1402	-0.0215
36	36-13	0.	0.	-0.0382	-0.197	-0.0197
36	36-13	0.	0.	0.1409	0.0223	0.0016
36	36-13	0.	0.	0.125	0.0484	0.0016
36	36-13	0.	0.	0.0073	-0.0062	0.0018
36	36-13	0.	0.	-7.984E-05	-0.0567	0.0018
36	36-13	0.	0.	-0.0705	-0.1431	-0.0155
36	36-13	0.	0.	-0.041	-0.0209	-0.0157
36	36-13	0.	0.	-0.2126	-0.0532	-0.0169
36	36-14	0.	0.	-0.238	-0.1155	-0.0168
36	36-14	0.	0.	-3.133E-05	-0.0567	-1.155E-04
36	36-14	0.	0.	0.0073	-0.0062	-5.152E-04
36	36-14	0.	0.	0.0518	0.0117	6.977E-04
36	36-14	0.	0.	0.048	0.0026	7.000E-04
36	36-14	0.	0.	-0.238	-0.1154	-0.0193
36	36-14	0.	0.	-0.2126	-0.0532	-0.0204
36	36-14	0.	0.	-0.0377	-0.0641	-0.022
36	36-15	0.	0.	-0.0252	-0.088	-0.0208
36	36-15	0.	0.	0.1337	0.0475	0.0018
36	36-15	0.	0.	0.1114	0.0472	0.0021
36	36-15	0.	0.	0.011	0.0061	0.0018
36	36-15	0.	0.	0.0071	-0.0184	0.0015

Element Forces - Area Shells, Part 6 of 10

Area	AreaElem	FMax KN/m	FAngle Degrees	M11 KN-m/m	M22 KN-m/m	M12 KN-m/m
36	36-15	0.	0.	-0.0634	-0.0683	-0.0126
36	36-15	0.	0.	-0.0419	0.0056	-0.0129
36	36-15	0.	0.	-0.1892	-0.0329	-0.0152
36	36-15	0.	0.	-0.2116	-0.0489	-0.0149
36	36-16	0.	0.	0.0071	-0.0184	-3.677E-04
36	36-16	0.	0.	0.011	0.0061	-5.061E-04
36	36-16	0.	0.	0.0487	0.0132	1.656E-04
36	36-16	0.	0.	0.0531	0.0351	2.642E-04
36	36-16	0.	0.	-0.2117	-0.0489	-0.0187
36	36-16	0.	0.	-0.1892	-0.0329	-0.0198
36	36-16	0.	0.	-0.0335	-0.0378	-0.0223
36	36-16	0.	0.	-0.0193	-0.0206	-0.0212
36	36-17	0.	0.	0.1183	0.0434	0.0024
36	36-17	0.	0.	0.095	0.0286	0.0029
36	36-17	0.	0.	0.0108	0.0059	0.0022
36	36-17	0.	0.	0.0108	0.0055	0.0018
36	36-17	0.	0.	-0.06	-0.0449	-0.0109
36	36-17	0.	0.	-0.0422	-0.0042	-0.0119
36	36-17	0.	0.	-0.1677	-0.0359	-0.0151
36	36-17	0.	0.	-0.1884	-0.0288	-0.0141
36	36-18	0.	0.	0.0108	0.0055	-2.338E-04
36	36-18	0.	0.	0.0108	0.0059	-2.174E-04
36	36-18	0.	0.	0.0417	0.0059	-5.303E-05
36	36-18	0.	0.	0.0496	0.038	-5.635E-05
36	36-18	0.	0.	-0.1884	-0.0288	-0.0187
36	36-18	0.	0.	-0.1677	-0.0359	-0.0199
36	36-18	0.	0.	-0.0307	-0.0362	-0.023
36	36-18	0.	0.	-0.0186	0.0049	-0.0218
36	36-19	0.	0.	0.1003	0.0221	0.0037
36	36-19	0.	0.	0.0779	0.0072	0.0044
36	36-19	0.	0.	0.0087	-0.0101	0.0032
36	36-19	0.	0.	0.0107	0.0054	0.0025
36	36-19	0.	0.	-0.0562	-0.0414	-0.0105
36	36-19	0.	0.	-0.0409	-0.0282	-0.0113
36	36-19	0.	0.	-0.1461	-0.0539	-0.0149
36	36-19	0.	0.	-0.167	-0.0328	-0.0142
36	36-20	0.	0.	0.0107	0.0054	7.546E-05
36	36-20	0.	0.	0.0087	-0.0101	1.671E-04
36	36-20	0.	0.	0.0337	-0.0104	-1.542E-04
36	36-20	0.	0.	0.0423	0.0215	-2.133E-04
36	36-20	0.	0.	-0.167	-0.0328	-0.0192
36	36-20	0.	0.	-0.1461	-0.0539	-0.0202
36	36-20	0.	0.	-0.028	-0.0513	-0.0237
36	36-20	0.	0.	-0.0194	-0.003	-0.0228
36	36-21	0.	0.	0.0819	0.0011	0.0058
36	36-21	0.	0.	0.0606	-0.0137	0.007
36	36-21	0.	0.	0.008	-0.0309	0.0052
36	36-21	0.	0.	0.0086	-0.0105	0.0039
36	36-21	0.	0.	-0.0515	-0.0549	-0.0099
36	36-21	0.	0.	-0.0383	-0.0543	-0.0104
36	36-21	0.	0.	-0.1225	-0.0751	-0.0145
36	36-21	0.	0.	-0.1455	-0.0515	-0.014
36	36-22	0.	0.	0.0086	-0.0105	6.641E-04
36	36-22	0.	0.	0.008	-0.0309	9.309E-04
36	36-22	0.	0.	0.0271	-0.0267	-9.577E-05
36	36-22	0.	0.	0.0341	0.0015	-2.982E-04
36	36-22	0.	0.	-0.1455	-0.0515	-0.0194
36	36-22	0.	0.	-0.1225	-0.0751	-0.0203
36	36-22	0.	0.	-0.0242	-0.0709	-0.0242
36	36-22	0.	0.	-0.0196	-0.0292	-0.0235
36	36-23	0.	0.	0.0636	-0.0179	0.0092
36	36-23	0.	0.	0.0468	-0.0247	0.011
36	36-23	0.	0.	0.0162	-0.0395	0.0084
36	36-23	0.	0.	0.0079	-0.0316	0.0066
36	36-23	0.	0.	-0.0458	-0.0721	-0.0088
36	36-23	0.	0.	-0.0348	-0.0669	-0.0088
36	36-23	0.	0.	-0.094	-0.0795	-0.0133
36	36-23	0.	0.	-0.1221	-0.0736	-0.0133
36	36-24	0.	0.	0.0079	-0.0316	0.0017
36	36-24	0.	0.	0.0162	-0.0395	0.0023
36	36-24	0.	0.	0.0262	-0.0323	3.041E-04
36	36-24	0.	0.	0.0273	-0.0185	-2.330E-04

Element Forces - Area Shells, Part 6 of 10

Area	AreaElem	FMax KN/m	FAngle Degrees	M11 KN-m/m	M22 KN-m/m	M12 KN-m/m
36	36-24	0.	0.	-0.1221	-0.0736	-0.0194
36	36-24	0.	0.	-0.0939	-0.0795	-0.0198
36	36-24	0.	0.	-0.0173	-0.0761	-0.0242
36	36-24	0.	0.	-0.0184	-0.0606	-0.024
36	36-25	0.	0.	0.0488	-0.0251	0.0141
36	36-25	0.	0.	0.0412	-0.0046	0.016
36	36-25	0.	0.	0.0427	-0.0029	0.0124
36	36-25	0.	0.	0.0158	-0.0396	0.0106
36	36-25	0.	0.	-0.039	-0.0744	-0.0069
36	36-25	0.	0.	-0.0228	-0.018	-0.0067
36	36-25	0.	0.	-0.0558	-0.0225	-0.0116
36	36-26	0.	0.	-0.0937	-0.0793	-0.0118
36	36-26	0.	0.	0.0159	-0.0396	0.0037
36	36-26	0.	0.	0.0426	-0.003	0.0049
36	36-26	0.	0.	0.0407	-0.0078	0.0012
36	36-26	0.	0.	0.0263	-0.028	2.376E-04
36	36-26	0.	0.	-0.0937	-0.0793	-0.0188
36	36-26	0.	0.	-0.0558	-0.0225	-0.0188
36	36-26	0.	0.	-0.0028	-0.0224	-0.0239
36	36-27	0.	0.	-0.0135	-0.0732	-0.0239
36	36-27	0.	0.	0.0442	-0.0011	0.0195
36	36-27	0.	0.	0.0703	0.1866	0.0194
36	36-27	0.	0.	0.0964	0.2051	0.0143
36	36-27	0.	0.	0.042	-0.0057	0.0144
36	36-27	0.	0.	-0.0251	-0.0174	-0.0047
36	36-27	0.	0.	0.0049	0.0751	-0.005
36	36-27	0.	0.	-0.0038	0.0751	-0.0105
36	36-28	0.	0.	-0.0558	-0.0245	-0.0103
36	36-28	0.	0.	0.0419	-0.0057	0.006
36	36-28	0.	0.	0.0966	0.2052	0.0065
36	36-28	0.	0.	0.0838	0.2011	0.0019
36	36-28	0.	0.	0.0409	-0.0061	0.0015
36	36-28	0.	0.	-0.0558	-0.0246	-0.0179
36	36-28	0.	0.	-0.0038	0.0751	-0.0177
36	36-28	0.	0.	0.0258	0.0766	-0.0231
36	36-29	0.	0.	-5.183E-04	-0.0153	-0.0233
36	36-29	0.	0.	0.074	0.2063	0.0171
36	36-29	0.	0.	0.127	0.6358	0.0169
36	36-29	0.	0.	0.2075	0.6675	0.017
36	36-29	0.	0.	0.0947	0.1955	0.0172
36	36-29	0.	0.	0.0046	0.0762	-0.0054
36	36-29	0.	0.	0.0407	0.2625	-0.005
36	36-29	0.	0.	0.0632	0.272	-0.0081
36	36-30	0.	0.	-0.0043	0.0722	-0.0086
36	36-30	0.	0.	0.0948	0.1955	0.006
36	36-30	0.	0.	0.2092	0.6678	0.0168
36	36-30	0.	0.	0.2067	0.6191	0.0089
36	36-30	0.	0.	0.0855	0.2115	-1.183E-04
36	36-30	0.	0.	-0.0043	0.0722	-0.0172
36	36-30	0.	0.	0.064	0.2721	-0.0119
36	36-30	0.	0.	0.0794	0.2539	-0.0177
36	36-31	0.	0.	0.0276	0.0838	-0.0231
36	36-31	0.	0.	0.1369	0.6853	0.0048
36	36-31	0.	0.	0.2266	1.0591	-0.0239
36	36-31	0.	0.	0.1741	1.302	-0.0169
36	36-31	0.	0.	0.2031	0.6456	0.0232
36	36-31	0.	0.	0.0436	0.2806	-0.0085
36	36-31	0.	0.	0.0917	0.4387	-0.0639
36	36-31	0.	0.	0.0638	0.5352	-0.0488
36	36-32	0.	0.	0.0614	0.2631	-0.0034
36	36-32	0.	0.	0.2048	0.6459	0.028
36	36-32	0.	0.	0.1703	1.3013	0.0107
36	36-32	0.	0.	0.5448	1.4493	0.0099
36	36-32	0.	0.	0.2077	0.6239	0.0272
36	36-32	0.	0.	0.0623	0.2633	-0.0055
36	36-32	0.	0.	0.0618	0.5348	-0.0068
36	36-32	0.	0.	0.2194	0.5859	-0.0091
36	36-32	0.	0.	0.0803	0.2569	-0.0078

Element Forces - Area Shells, Part 7 of 10

Area	AreaElem	FAngle Degrees	M11 KN-m/m	M12 KN-m/m	MMax KN-m/m	MMin KN-m/m
36	36-1	0.	0.952	0.3822	0.	0.
36	36-1	0.	0.4093	0.171	0.	0.
36	36-1	0.	0.5521	0.1778	0.	0.
36	36-1	0.	0.7942	0.3853	0.	0.
36	36-1	0.	0.5391	0.0285	0.	0.
36	36-1	0.	0.1551	-0.0467	0.	0.
36	36-1	0.	0.1035	-0.0481	0.	0.
36	36-1	0.	0.499	0.0307	0.	0.
36	36-2	0.	0.795	0.253	0.	0.
36	36-2	0.	0.5512	0.2659	0.	0.
36	36-2	0.	0.4696	0.2514	0.	0.
36	36-2	0.	0.904	0.2453	0.	0.
36	36-2	0.	0.4885	-0.0512	0.	0.
36	36-2	0.	0.1053	0.0315	0.	0.
36	36-2	0.	0.1315	0.0321	0.	0.
36	36-2	0.	0.5237	-0.067	0.	0.
36	36-3	0.	0.3932	0.1321	0.	0.
36	36-3	0.	0.1066	0.0763	0.	0.
36	36-3	0.	0.2823	0.0839	0.	0.
36	36-3	0.	0.5719	0.1398	0.	0.
36	36-3	0.	0.1097	-0.0178	0.	0.
36	36-3	0.	-0.0161	-0.011	0.	0.
36	36-3	0.	-0.1427	-0.0069	0.	0.
36	36-3	0.	0.1126	-0.0137	0.	0.
36	36-4	0.	0.5709	0.1565	0.	0.
36	36-4	0.	0.2824	0.0931	0.	0.
36	36-4	0.	0.1798	0.0992	0.	0.
36	36-4	0.	0.4484	0.1619	0.	0.
36	36-4	0.	0.1124	0.0072	0.	0.
36	36-4	0.	-0.1432	0.0026	0.	0.
36	36-4	0.	-0.0149	-0.0024	0.	0.
36	36-5	0.	0.1239	0.0055	0.	0.
36	36-5	0.	0.1032	0.025	0.	0.
36	36-5	0.	0.0461	-0.0099	0.	0.
36	36-5	0.	0.0992	5.944E-04	0.	0.
36	36-5	0.	0.2829	0.0354	0.	0.
36	36-5	0.	-0.08	-0.0227	0.	0.
36	36-5	0.	-0.0851	-0.0323	0.	0.
36	36-5	0.	-0.258	-0.0239	0.	0.
36	36-6	0.	-0.1406	-0.0144	0.	0.
36	36-6	0.	0.2829	0.049	0.	0.
36	36-6	0.	0.0989	0.0154	0.	0.
36	36-6	0.	0.0373	0.0254	0.	0.
36	36-6	0.	0.1791	0.0593	0.	0.
36	36-6	0.	-0.1411	-0.0052	0.	0.
36	36-6	0.	-0.2581	-0.0061	0.	0.
36	36-6	0.	-0.0722	1.089E-04	0.	0.
36	36-6	0.	-0.0099	9.409E-04	0.	0.
36	36-7	0.	0.0642	-0.0058	0.	0.
36	36-7	0.	0.0922	-7.927E-04	0.	0.
36	36-7	0.	0.0167	5.313E-04	0.	0.
36	36-7	0.	0.1003	-0.0045	0.	0.
36	36-7	0.	-0.1388	-0.0248	0.	0.
36	36-7	0.	-0.0782	-0.0307	0.	0.
36	36-7	0.	-0.2833	-0.0244	0.	0.
36	36-7	0.	-0.2558	-0.0199	0.	0.
36	36-8	0.	0.0999	0.003	0.	0.
36	36-8	0.	0.0169	0.0021	0.	0.
36	36-8	0.	-0.0011	0.0062	0.	0.
36	36-8	0.	0.0369	0.0071	0.	0.
36	36-8	0.	-0.2558	-0.0071	0.	0.
36	36-8	0.	-0.2832	-0.0164	0.	0.
36	36-8	0.	-0.079	-0.0074	0.	0.
36	36-8	0.	-0.036	7.065E-04	0.	0.
36	36-9	0.	0.1084	0.0013	0.	0.
36	36-9	0.	0.1218	0.0038	0.	0.
36	36-9	0.	-0.0035	0.0041	0.	0.
36	36-9	0.	0.0168	0.0016	0.	0.
36	36-9	0.	-0.1219	-0.0263	0.	0.
36	36-9	0.	-0.0553	-0.0279	0.	0.

Element Forces - Area Shells, Part 7 of 10

Area	AreaElem	FAngle Degrees	M11 KN-m/m	M12 KN-m/m	MMax KN-m/m	MMin KN-m/m
36	36-9	0.	-0.2677	-0.0252	0.	0.
36	36-9	0.	-0.2816	-0.0236	0.	0.
36	36-10	0.	0.017	0.0034	0.	0.
36	36-10	0.	-0.0034	0.0019	0.	0.
36	36-10	0.	0.0288	0.0028	0.	0.
36	36-10	0.	0.002	0.004	0.	0.
36	36-10	0.	-0.2815	-0.0177	0.	0.
36	36-10	0.	-0.2677	-0.0224	0.	0.
36	36-10	0.	-0.0625	-0.0187	0.	0.
36	36-11	0.	-0.0498	-0.0137	0.	0.
36	36-11	0.	0.1349	0.003	0.	0.
36	36-11	0.	0.1299	0.0033	0.	0.
36	36-11	0.	1.602E-04	0.0034	0.	0.
36	36-11	0.	-0.0037	0.0031	0.	0.
36	36-11	0.	-0.0891	-0.0216	0.	0.
36	36-11	0.	-0.0424	-0.0201	0.	0.
36	36-11	0.	-0.239	-0.0198	0.	0.
36	36-12	0.	-0.2666	-0.0212	0.	0.
36	36-12	0.	-0.0036	0.0019	0.	0.
36	36-12	0.	2.087E-04	3.963E-04	0.	0.
36	36-12	0.	0.0462	0.0014	0.	0.
36	36-12	0.	0.0312	0.0013	0.	0.
36	36-12	0.	-0.2666	-0.02	0.	0.
36	36-12	0.	-0.239	-0.0218	0.	0.
36	36-12	0.	-0.0463	-0.0215	0.	0.
36	36-12	0.	-0.0382	-0.0197	0.	0.
36	36-13	0.	0.1409	0.0016	0.	0.
36	36-13	0.	0.125	0.0016	0.	0.
36	36-13	0.	0.0073	0.0018	0.	0.
36	36-13	0.	-7.984E-05	0.0018	0.	0.
36	36-13	0.	-0.0705	-0.0155	0.	0.
36	36-13	0.	-0.041	-0.0157	0.	0.
36	36-13	0.	-0.2126	-0.0169	0.	0.
36	36-13	0.	-0.238	-0.0168	0.	0.
36	36-14	0.	-3.133E-05	-1.155E-04	0.	0.
36	36-14	0.	0.0073	-5.152E-04	0.	0.
36	36-14	0.	0.0518	6.977E-04	0.	0.
36	36-14	0.	0.048	7.000E-04	0.	0.
36	36-14	0.	-0.238	-0.0193	0.	0.
36	36-14	0.	-0.2126	-0.0204	0.	0.
36	36-14	0.	-0.0377	-0.022	0.	0.
36	36-14	0.	-0.0252	-0.0208	0.	0.
36	36-15	0.	0.1337	0.0018	0.	0.
36	36-15	0.	0.1114	0.0021	0.	0.
36	36-15	0.	0.011	0.0018	0.	0.
36	36-15	0.	0.0071	0.0015	0.	0.
36	36-15	0.	-0.0634	-0.0126	0.	0.
36	36-15	0.	-0.0419	-0.0129	0.	0.
36	36-15	0.	-0.1892	-0.0152	0.	0.
36	36-15	0.	-0.2116	-0.0149	0.	0.
36	36-16	0.	0.0071	-3.677E-04	0.	0.
36	36-16	0.	0.011	-5.061E-04	0.	0.
36	36-16	0.	0.0487	1.656E-04	0.	0.
36	36-16	0.	0.0531	2.642E-04	0.	0.
36	36-16	0.	-0.2117	-0.0187	0.	0.
36	36-16	0.	-0.1892	-0.0198	0.	0.
36	36-16	0.	-0.0335	-0.0223	0.	0.
36	36-16	0.	-0.0193	-0.0212	0.	0.
36	36-17	0.	0.1183	0.0024	0.	0.
36	36-17	0.	0.095	0.0029	0.	0.
36	36-17	0.	0.0108	0.0022	0.	0.
36	36-17	0.	0.0108	0.0018	0.	0.
36	36-17	0.	-0.06	-0.0109	0.	0.
36	36-17	0.	-0.0422	-0.0119	0.	0.
36	36-17	0.	-0.1677	-0.0151	0.	0.
36	36-17	0.	-0.1884	-0.0141	0.	0.
36	36-18	0.	0.0108	-2.338E-04	0.	0.
36	36-18	0.	0.0108	-2.174E-04	0.	0.
36	36-18	0.	0.0417	-5.303E-05	0.	0.
36	36-18	0.	0.0496	-5.635E-05	0.	0.
36	36-18	0.	-0.1884	-0.0187	0.	0.
36	36-18	0.	-0.1677	-0.0199	0.	0.

Element Forces - Area Shells, Part 7 of 10

Area	AreaElem	FAngle Degrees	M11 KN-m/m	M12 KN-m/m	MMax KN-m/m	MMin KN-m/m
36	36-18	0.	-0.0307	-0.023	0.	0.
36	36-18	0.	-0.0186	-0.0218	0.	0.
36	36-19	0.	0.1003	0.0037	0.	0.
36	36-19	0.	0.0779	0.0044	0.	0.
36	36-19	0.	0.0087	0.0032	0.	0.
36	36-19	0.	0.0107	0.0025	0.	0.
36	36-19	0.	-0.0562	-0.0105	0.	0.
36	36-19	0.	-0.0409	-0.0113	0.	0.
36	36-19	0.	-0.1461	-0.0149	0.	0.
36	36-19	0.	-0.167	-0.0142	0.	0.
36	36-20	0.	0.0107	7.546E-05	0.	0.
36	36-20	0.	0.0087	1.671E-04	0.	0.
36	36-20	0.	0.0337	-1.542E-04	0.	0.
36	36-20	0.	0.0423	-2.133E-04	0.	0.
36	36-20	0.	-0.167	-0.0192	0.	0.
36	36-20	0.	-0.1461	-0.0202	0.	0.
36	36-20	0.	-0.028	-0.0237	0.	0.
36	36-20	0.	-0.0194	-0.0228	0.	0.
36	36-21	0.	0.0819	0.0058	0.	0.
36	36-21	0.	0.0606	0.007	0.	0.
36	36-21	0.	0.008	0.0052	0.	0.
36	36-21	0.	0.0086	0.0039	0.	0.
36	36-21	0.	-0.0515	-0.0099	0.	0.
36	36-21	0.	-0.0383	-0.0104	0.	0.
36	36-21	0.	-0.1225	-0.0145	0.	0.
36	36-21	0.	-0.1455	-0.014	0.	0.
36	36-22	0.	0.0086	6.641E-04	0.	0.
36	36-22	0.	0.008	9.309E-04	0.	0.
36	36-22	0.	0.0271	-9.577E-05	0.	0.
36	36-22	0.	0.0341	-2.982E-04	0.	0.
36	36-22	0.	-0.1455	-0.0194	0.	0.
36	36-22	0.	-0.1225	-0.0203	0.	0.
36	36-22	0.	-0.0242	-0.0242	0.	0.
36	36-22	0.	-0.0196	-0.0235	0.	0.
36	36-23	0.	0.0636	0.0092	0.	0.
36	36-23	0.	0.0468	0.011	0.	0.
36	36-23	0.	0.0162	0.0084	0.	0.
36	36-23	0.	0.0079	0.0066	0.	0.
36	36-23	0.	-0.0458	-0.0088	0.	0.
36	36-23	0.	-0.0348	-0.0088	0.	0.
36	36-23	0.	-0.094	-0.0133	0.	0.
36	36-23	0.	-0.1221	-0.0133	0.	0.
36	36-24	0.	0.0079	0.0017	0.	0.
36	36-24	0.	0.0162	0.0023	0.	0.
36	36-24	0.	0.0262	3.041E-04	0.	0.
36	36-24	0.	0.0273	-2.330E-04	0.	0.
36	36-24	0.	-0.1221	-0.0194	0.	0.
36	36-24	0.	-0.0939	-0.0198	0.	0.
36	36-24	0.	-0.0173	-0.0242	0.	0.
36	36-24	0.	-0.0184	-0.024	0.	0.
36	36-25	0.	0.0488	0.0141	0.	0.
36	36-25	0.	0.0412	0.016	0.	0.
36	36-25	0.	0.0427	0.0124	0.	0.
36	36-25	0.	0.0158	0.0106	0.	0.
36	36-25	0.	-0.039	-0.0069	0.	0.
36	36-25	0.	-0.0228	-0.0067	0.	0.
36	36-25	0.	-0.0556	-0.0116	0.	0.
36	36-25	0.	-0.0937	-0.0118	0.	0.
36	36-26	0.	0.0159	0.0037	0.	0.
36	36-26	0.	0.0426	0.0049	0.	0.
36	36-26	0.	0.0407	0.0012	0.	0.
36	36-26	0.	0.0263	2.376E-04	0.	0.
36	36-26	0.	-0.0937	-0.0188	0.	0.
36	36-26	0.	-0.0556	-0.0188	0.	0.
36	36-26	0.	-0.0028	-0.0239	0.	0.
36	36-26	0.	-0.0135	-0.0239	0.	0.
36	36-27	0.	0.0442	0.0195	0.	0.
36	36-27	0.	0.0703	0.0194	0.	0.
36	36-27	0.	0.0964	0.0143	0.	0.
36	36-27	0.	0.042	0.0144	0.	0.
36	36-27	0.	-0.0251	-0.0047	0.	0.
36	36-27	0.	0.0049	-0.005	0.	0.

Element Forces - Area Shells, Part 7 of 10

Area	AreaElem	FAngle Degrees	M11 KN-m/m	M12 KN-m/m	MMax KN-m/m	MMin KN-m/m
36	36-27	0.	-0.0038	-0.0105	0.	0.
36	36-27	0.	-0.0558	-0.0103	0.	0.
36	36-28	0.	0.0419	0.006	0.	0.
36	36-28	0.	0.0966	0.0065	0.	0.
36	36-28	0.	0.0838	0.0019	0.	0.
36	36-28	0.	0.0409	0.0015	0.	0.
36	36-28	0.	-0.0558	-0.0179	0.	0.
36	36-28	0.	-0.0038	-0.0177	0.	0.
36	36-28	0.	0.0258	-0.0231	0.	0.
36	36-29	0.	-5.183E-04	-0.0233	0.	0.
36	36-29	0.	0.074	0.0171	0.	0.
36	36-29	0.	0.127	0.0169	0.	0.
36	36-29	0.	0.2075	0.017	0.	0.
36	36-29	0.	0.0947	0.0172	0.	0.
36	36-29	0.	0.0046	-0.0054	0.	0.
36	36-29	0.	0.0407	-0.005	0.	0.
36	36-29	0.	0.0632	-0.0081	0.	0.
36	36-30	0.	-0.0043	-0.0086	0.	0.
36	36-30	0.	0.0948	0.006	0.	0.
36	36-30	0.	0.2092	0.0168	0.	0.
36	36-30	0.	0.2067	0.0089	0.	0.
36	36-30	0.	0.0855	-1.183E-04	0.	0.
36	36-30	0.	-0.0043	-0.0172	0.	0.
36	36-30	0.	0.064	-0.0119	0.	0.
36	36-30	0.	0.0794	-0.0177	0.	0.
36	36-31	0.	0.0276	-0.0231	0.	0.
36	36-31	0.	0.1369	0.0048	0.	0.
36	36-31	0.	0.2266	-0.0239	0.	0.
36	36-31	0.	0.1741	-0.0169	0.	0.
36	36-31	0.	0.2031	0.0232	0.	0.
36	36-31	0.	0.0436	-0.0085	0.	0.
36	36-31	0.	0.0917	-0.0639	0.	0.
36	36-31	0.	0.0638	-0.0488	0.	0.
36	36-32	0.	0.0614	-0.0034	0.	0.
36	36-32	0.	0.2048	0.028	0.	0.
36	36-32	0.	0.1703	0.0107	0.	0.
36	36-32	0.	0.5448	0.0099	0.	0.
36	36-32	0.	0.2077	0.0272	0.	0.
36	36-32	0.	0.0623	-0.0055	0.	0.
36	36-32	0.	0.0618	-0.0068	0.	0.
36	36-32	0.	0.2194	-0.0091	0.	0.
36	36-32	0.	0.0803	-0.0078	0.	0.

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 8 of 10

Area	AreaElem	M11 KN-m/m	M12 KN-m/m	MMin KN-m/m	MAngle Degrees	V13 KN/m
36	36-1	0.952	0.3822	0.	0.	0.59
36	36-1	0.4093	0.171	0.	0.	1.92
36	36-1	0.5521	0.1778	0.	0.	1.92
36	36-1	0.7942	0.3853	0.	0.	0.59
36	36-1	0.5391	0.0285	0.	0.	-0.63
36	36-1	0.1551	-0.0467	0.	0.	-2.473E-02
36	36-1	0.1035	-0.0481	0.	0.	-2.473E-02
36	36-1	0.499	0.0307	0.	0.	-0.63
36	36-2	0.795	0.253	0.	0.	1.3
36	36-2	0.5512	0.2659	0.	0.	0.76
36	36-2	0.4696	0.2514	0.	0.	0.76
36	36-2	0.904	0.2453	0.	0.	1.3
36	36-2	0.4865	-0.0512	0.	0.	-0.71
36	36-2	0.1053	0.0315	0.	0.	-1.19
36	36-2	0.1315	0.0321	0.	0.	-1.19
36	36-2	0.5237	-0.067	0.	0.	-0.71
36	36-3	0.3932	0.1321	0.	0.	1.49
36	36-3	0.1066	0.0763	0.	0.	1.56
36	36-3	0.2823	0.0839	0.	0.	1.56
36	36-3	0.5719	0.1398	0.	0.	1.49
36	36-3	0.1097	-0.0178	0.	0.	-0.48

Element Forces - Area Shells, Part 8 of 10

Area	AreaElem	M11 KN-m/m	M12 KN-m/m	MMin KN-m/m	MAngle Degrees	V13 KN/m
36	36-3	-0.0161	-0.011	0.	0.	-1.25
36	36-3	-0.1427	-0.0069	0.	0.	-1.25
36	36-3	0.1126	-0.0137	0.	0.	-0.48
36	36-4	0.5709	0.1565	0.	0.	1.31
36	36-4	0.2824	0.0931	0.	0.	1.45
36	36-4	0.1798	0.0992	0.	0.	1.45
36	36-4	0.4484	0.1619	0.	0.	1.31
36	36-4	0.1124	0.0072	0.	0.	-0.97
36	36-4	-0.1432	0.0026	0.	0.	-0.81
36	36-4	-0.0149	-0.0024	0.	0.	-0.81
36	36-4	0.1239	0.0055	0.	0.	-0.97
36	36-5	0.1032	0.025	0.	0.	1.64
36	36-5	0.0461	-0.0099	0.	0.	1.14
36	36-5	0.0992	5.944E-04	0.	0.	1.14
36	36-5	0.2829	0.0354	0.	0.	1.64
36	36-5	-0.08	-0.0227	0.	0.	-1.47
36	36-5	-0.0851	-0.0323	0.	0.	-1.9
36	36-5	-0.258	-0.0239	0.	0.	-1.9
36	36-5	-0.1406	-0.0144	0.	0.	-1.47
36	36-6	0.2829	0.049	0.	0.	1.75
36	36-6	0.0989	0.0154	0.	0.	1.71
36	36-6	0.0373	0.0254	0.	0.	1.71
36	36-6	0.1791	0.0593	0.	0.	1.75
36	36-6	-0.1411	-0.0052	0.	0.	-0.85
36	36-6	-0.2581	-0.0061	0.	0.	-0.51
36	36-6	-0.0722	1.089E-04	0.	0.	-0.51
36	36-6	-0.0099	9.409E-04	0.	0.	-0.85
36	36-7	0.0642	-0.0058	0.	0.	1.07
36	36-7	0.0922	-7.927E-04	0.	0.	0.44
36	36-7	0.0167	5.313E-04	0.	0.	0.44
36	36-7	0.1003	-0.0045	0.	0.	1.07
36	36-7	-0.1388	-0.0248	0.	0.	-2.1
36	36-7	-0.0782	-0.0307	0.	0.	-2.2
36	36-7	-0.2833	-0.0244	0.	0.	-2.2
36	36-7	-0.2558	-0.0199	0.	0.	-2.1
36	36-8	0.0999	0.003	0.	0.	1.97
36	36-8	0.0169	0.0021	0.	0.	1.78
36	36-8	-0.0011	0.0062	0.	0.	1.78
36	36-8	0.0369	0.0071	0.	0.	1.97
36	36-8	-0.2558	-0.0071	0.	0.	-0.53
36	36-8	-0.2832	-0.0164	0.	0.	-0.2
36	36-8	-0.079	-0.0074	0.	0.	-0.2
36	36-8	-0.036	7.065E-04	0.	0.	-0.53
36	36-9	0.1084	0.0013	0.	0.	0.45
36	36-9	0.1218	0.0038	0.	0.	8.353E-02
36	36-9	-0.0035	0.0041	0.	0.	8.353E-02
36	36-9	0.0168	0.0016	0.	0.	0.45
36	36-9	-0.1219	-0.0263	0.	0.	-2.36
36	36-9	-0.0553	-0.0279	0.	0.	-2.14
36	36-9	-0.2677	-0.0252	0.	0.	-2.14
36	36-9	-0.2816	-0.0236	0.	0.	-2.36
36	36-10	0.017	0.0034	0.	0.	2.02
36	36-10	-0.0034	0.0019	0.	0.	1.73
36	36-10	0.0288	0.0028	0.	0.	1.73
36	36-10	0.002	0.004	0.	0.	2.02
36	36-10	-0.2815	-0.0177	0.	0.	-0.2
36	36-10	-0.2677	-0.0224	0.	0.	-2.280E-02
36	36-10	-0.0625	-0.0187	0.	0.	-2.280E-02
36	36-10	-0.0498	-0.0137	0.	0.	-0.2
36	36-11	0.1349	0.003	0.	0.	7.707E-02
36	36-11	0.1299	0.0033	0.	0.	-5.022E-02
36	36-11	1.602E-04	0.0034	0.	0.	-5.022E-02
36	36-11	-0.0037	0.0031	0.	0.	7.707E-02
36	36-11	-0.0891	-0.0216	0.	0.	-2.27
36	36-11	-0.0424	-0.0201	0.	0.	-1.95
36	36-11	-0.239	-0.0198	0.	0.	-1.95
36	36-11	-0.2666	-0.0212	0.	0.	-2.27
36	36-12	-0.0036	0.0019	0.	0.	1.94
36	36-12	2.087E-04	3.963E-04	0.	0.	1.62
36	36-12	0.0462	0.0014	0.	0.	1.62
36	36-12	0.0312	0.0013	0.	0.	1.94
36	36-12	-0.2666	-0.02	0.	0.	-1.394E-02

Element Forces - Area Shells, Part 8 of 10

Area	AreaElem	M11 KN-m/m	M12 KN-m/m	MMin KN-m/m	MAngle Degrees	V13 KN/m
36	36-12	-0.239	-0.0218	0.	0.	4.018E-02
36	36-12	-0.0463	-0.0215	0.	0.	4.018E-02
36	36-12	-0.0382	-0.0197	0.	0.	-1.394E-02
36	36-13	0.1409	0.0016	0.	0.	-5.141E-02
36	36-13	0.125	0.0016	0.	0.	-6.521E-02
36	36-13	0.0073	0.0018	0.	0.	-6.521E-02
36	36-13	-7.984E-05	0.0018	0.	0.	-5.141E-02
36	36-13	-0.0705	-0.0155	0.	0.	-2.06
36	36-13	-0.041	-0.0157	0.	0.	-1.72
36	36-13	-0.2126	-0.0169	0.	0.	-1.72
36	36-13	-0.238	-0.0168	0.	0.	-2.06
36	36-14	-3.133E-05	-1.155E-04	0.	0.	1.8
36	36-14	0.0073	-5.152E-04	0.	0.	1.47
36	36-14	0.0518	6.977E-04	0.	0.	1.47
36	36-14	0.048	7.000E-04	0.	0.	1.8
36	36-14	-0.238	-0.0193	0.	0.	4.384E-02
36	36-14	-0.2126	-0.0204	0.	0.	4.342E-02
36	36-14	-0.0377	-0.022	0.	0.	4.342E-02
36	36-14	-0.0252	-0.0208	0.	0.	4.384E-02
36	36-15	0.1337	0.0018	0.	0.	-6.867E-02
36	36-15	0.1114	0.0021	0.	0.	-4.568E-02
36	36-15	0.011	0.0018	0.	0.	-4.568E-02
36	36-15	0.0071	0.0015	0.	0.	-6.867E-02
36	36-15	-0.0634	-0.0126	0.	0.	-1.81
36	36-15	-0.0419	-0.0129	0.	0.	-1.49
36	36-15	-0.1892	-0.0152	0.	0.	-1.49
36	36-15	-0.2116	-0.0149	0.	0.	-1.81
36	36-16	0.0071	-3.677E-04	0.	0.	1.61
36	36-16	0.011	-5.061E-04	0.	0.	1.3
36	36-16	0.0487	1.656E-04	0.	0.	1.3
36	36-16	0.0531	2.642E-04	0.	0.	1.61
36	36-16	-0.2117	-0.0187	0.	0.	4.681E-02
36	36-16	-0.1892	-0.0198	0.	0.	2.998E-02
36	36-16	-0.0335	-0.0223	0.	0.	2.998E-02
36	36-16	-0.0193	-0.0212	0.	0.	4.681E-02
36	36-17	0.1183	0.0024	0.	0.	-4.920E-02
36	36-17	0.095	0.0029	0.	0.	-2.269E-02
36	36-17	0.0108	0.0022	0.	0.	-2.269E-02
36	36-17	0.0108	0.0018	0.	0.	-4.920E-02
36	36-17	-0.06	-0.0109	0.	0.	-1.56
36	36-17	-0.0422	-0.0119	0.	0.	-1.29
36	36-17	-0.1677	-0.0151	0.	0.	-1.29
36	36-17	-0.1884	-0.0141	0.	0.	-1.56
36	36-18	0.0108	-2.338E-04	0.	0.	1.42
36	36-18	0.0108	-2.174E-04	0.	0.	1.15
36	36-18	0.0417	-5.303E-05	0.	0.	1.15
36	36-18	0.0496	-5.635E-05	0.	0.	1.42
36	36-18	-0.1884	-0.0187	0.	0.	3.130E-02
36	36-18	-0.1677	-0.0199	0.	0.	1.700E-02
36	36-18	-0.0307	-0.023	0.	0.	1.700E-02
36	36-18	-0.0186	-0.0218	0.	0.	3.130E-02
36	36-19	0.1003	0.0037	0.	0.	-2.634E-02
36	36-19	0.0779	0.0044	0.	0.	-1.947E-03
36	36-19	0.0087	0.0032	0.	0.	-1.947E-03
36	36-19	0.0107	0.0025	0.	0.	-2.634E-02
36	36-19	-0.0562	-0.0105	0.	0.	-1.34
36	36-19	-0.0409	-0.0113	0.	0.	-1.09
36	36-19	-0.1461	-0.0149	0.	0.	-1.09
36	36-19	-0.167	-0.0142	0.	0.	-1.34
36	36-20	0.0107	7.546E-05	0.	0.	1.23
36	36-20	0.0087	1.671E-04	0.	0.	0.98
36	36-20	0.0337	-1.542E-04	0.	0.	0.98
36	36-20	0.0423	-2.133E-04	0.	0.	1.23
36	36-20	-0.167	-0.0192	0.	0.	1.798E-02
36	36-20	-0.1461	-0.0202	0.	0.	6.371E-03
36	36-20	-0.028	-0.0237	0.	0.	6.371E-03
36	36-20	-0.0194	-0.0228	0.	0.	1.798E-02
36	36-21	0.0819	0.0058	0.	0.	-7.246E-03
36	36-21	0.0606	0.007	0.	0.	3.985E-02
36	36-21	0.008	0.0052	0.	0.	3.985E-02
36	36-21	0.0086	0.0039	0.	0.	-7.246E-03
36	36-21	-0.0515	-0.0099	0.	0.	-1.13

Element Forces - Area Shells, Part 8 of 10

Area	AreaElem	M11 KN-m/m	M12 KN-m/m	MMin KN-m/m	MAngle Degrees	V13 KN/m
36	36-21	-0.0383	-0.0104	0.	0.	-0.89
36	36-21	-0.1225	-0.0145	0.	0.	-0.89
36	36-21	-0.1455	-0.014	0.	0.	-1.13
36	36-22	0.0086	6.641E-04	0.	0.	1.05
36	36-22	0.008	9.309E-04	0.	0.	0.82
36	36-22	0.0271	-9.577E-05	0.	0.	0.82
36	36-22	0.0341	-2.982E-04	0.	0.	1.05
36	36-22	-0.1455	-0.0194	0.	0.	6.753E-03
36	36-22	-0.1225	-0.0203	0.	0.	-1.283E-02
36	36-22	-0.0242	-0.0242	0.	0.	-1.283E-02
36	36-22	-0.0196	-0.0235	0.	0.	6.753E-03
36	36-23	0.0636	0.0092	0.	0.	3.051E-02
36	36-23	0.0468	0.011	0.	0.	0.13
36	36-23	0.0162	0.0084	0.	0.	0.13
36	36-23	0.0079	0.0066	0.	0.	3.051E-02
36	36-23	-0.0458	-0.0088	0.	0.	-0.92
36	36-23	-0.0348	-0.0088	0.	0.	-0.66
36	36-23	-0.094	-0.0133	0.	0.	-0.66
36	36-23	-0.1221	-0.0133	0.	0.	-0.92
36	36-24	0.0079	0.0017	0.	0.	0.86
36	36-24	0.0162	0.0023	0.	0.	0.64
36	36-24	0.0262	3.041E-04	0.	0.	0.64
36	36-24	0.0273	-2.330E-04	0.	0.	0.86
36	36-24	-0.1221	-0.0194	0.	0.	-1.239E-02
36	36-24	-0.0939	-0.0198	0.	0.	-5.698E-02
36	36-24	-0.0173	-0.0242	0.	0.	-5.698E-02
36	36-24	-0.0184	-0.024	0.	0.	-1.239E-02
36	36-25	0.0488	0.0141	0.	0.	0.12
36	36-25	0.0412	0.016	0.	0.	0.3
36	36-25	0.0427	0.0124	0.	0.	0.3
36	36-25	0.0158	0.0106	0.	0.	0.12
36	36-25	-0.039	-0.0069	0.	0.	-0.68
36	36-25	-0.0228	-0.0067	0.	0.	-0.4
36	36-25	-0.0558	-0.0116	0.	0.	-0.4
36	36-25	-0.0937	-0.0118	0.	0.	-0.68
36	36-26	0.0159	0.0037	0.	0.	0.66
36	36-26	0.0426	0.0049	0.	0.	0.44
36	36-26	0.0407	0.0012	0.	0.	0.44
36	36-26	0.0263	2.376E-04	0.	0.	0.66
36	36-26	-0.0937	-0.0188	0.	0.	-5.442E-02
36	36-26	-0.0558	-0.0188	0.	0.	-0.13
36	36-26	-0.0028	-0.0239	0.	0.	-0.13
36	36-26	-0.0135	-0.0239	0.	0.	-5.442E-02
36	36-27	0.0442	0.0195	0.	0.	0.28
36	36-27	0.0703	0.0194	0.	0.	0.42
36	36-27	0.0964	0.0143	0.	0.	0.42
36	36-27	0.042	0.0144	0.	0.	0.28
36	36-27	-0.0251	-0.0047	0.	0.	-0.42
36	36-27	0.0049	-0.005	0.	0.	-0.16
36	36-27	-0.0038	-0.0105	0.	0.	-0.16
36	36-27	-0.0558	-0.0103	0.	0.	-0.42
36	36-28	0.0419	0.006	0.	0.	0.46
36	36-28	0.0966	0.0065	0.	0.	0.24
36	36-28	0.0838	0.0019	0.	0.	0.24
36	36-28	0.0409	0.0015	0.	0.	0.46
36	36-28	-0.0558	-0.0179	0.	0.	-0.11
36	36-28	-0.0038	-0.0177	0.	0.	-0.19
36	36-28	0.0258	-0.0231	0.	0.	-0.19
36	36-28	-5.183E-04	-0.0233	0.	0.	-0.11
36	36-29	0.074	0.0171	0.	0.	0.37
36	36-29	0.127	0.0169	0.	0.	0.67
36	36-29	0.2075	0.017	0.	0.	0.67
36	36-29	0.0947	0.0172	0.	0.	0.37
36	36-29	0.0046	-0.0054	0.	0.	-0.18
36	36-29	0.0407	-0.005	0.	0.	0.14
36	36-29	0.0632	-0.0081	0.	0.	0.14
36	36-29	-0.0043	-0.0086	0.	0.	-0.18
36	36-30	0.0948	0.006	0.	0.	0.24
36	36-30	0.2092	0.0168	0.	0.	0.1
36	36-30	0.2067	0.0089	0.	0.	0.1
36	36-30	0.0855	-1.183E-04	0.	0.	0.24
36	36-30	-0.0043	-0.0172	0.	0.	-0.2

Element Forces - Area Shells, Part 8 of 10

Area	AreaElem	M11 KN-m/m	M12 KN-m/m	MMin KN-m/m	MAngle Degrees	V13 KN/m
36	36-30	0.064	-0.0119	0.	0.	-0.12
36	36-30	0.0794	-0.0177	0.	0.	-0.12
36	36-30	0.0276	-0.0231	0.	0.	-0.2
36	36-31	0.1369	0.0048	0.	0.	0.89
36	36-31	0.2266	-0.0239	0.	0.	-3.147E-02
36	36-31	0.1741	-0.0169	0.	0.	-3.147E-02
36	36-31	0.2031	0.0232	0.	0.	0.89
36	36-31	0.0436	-0.0085	0.	0.	0.23
36	36-31	0.0917	-0.0639	0.	0.	-0.13
36	36-31	0.0638	-0.0488	0.	0.	-0.13
36	36-31	0.0614	-0.0034	0.	0.	0.23
36	36-32	0.2048	0.028	0.	0.	0.18
36	36-32	0.1703	0.0107	0.	0.	3.19
36	36-32	0.5448	0.0099	0.	0.	3.19
36	36-32	0.2077	0.0272	0.	0.	0.18
36	36-32	0.0623	-0.0055	0.	0.	3.861E-02
36	36-32	0.0618	-0.0068	0.	0.	1.28
36	36-32	0.2194	-0.0091	0.	0.	1.28
36	36-32	0.0803	-0.0078	0.	0.	3.861E-02

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 9 of 10

Area	AreaElem	M12 KN-m/m	MMin KN-m/m	V13 KN/m	V23 KN/m	VMax KN/m
36	36-1	0.3822	0.	0.59	11.89	0.
36	36-1	0.171	0.	1.92	11.89	0.
36	36-1	0.1778	0.	1.92	15.13	0.
36	36-1	0.3853	0.	0.59	15.13	0.
36	36-1	0.0285	0.	-0.63	6.79	0.
36	36-1	-0.0467	0.	-2.473E-02	6.79	0.
36	36-1	-0.0481	0.	-2.473E-02	10.75	0.
36	36-1	0.0307	0.	-0.63	10.75	0.
36	36-2	0.253	0.	1.3	14.98	0.
36	36-2	0.2659	0.	0.76	14.98	0.
36	36-2	0.2514	0.	0.76	13.14	0.
36	36-2	0.2453	0.	1.3	13.14	0.
36	36-2	-0.0512	0.	-0.71	10.73	0.
36	36-2	0.0315	0.	-1.19	10.73	0.
36	36-2	0.0321	0.	-1.19	8.07	0.
36	36-2	-0.067	0.	-0.71	8.07	0.
36	36-3	0.1321	0.	1.49	7.75	0.
36	36-3	0.0763	0.	1.56	7.75	0.
36	36-3	0.0839	0.	1.56	7.5	0.
36	36-3	0.1398	0.	1.49	7.5	0.
36	36-3	-0.0178	0.	-0.48	3.2	0.
36	36-3	-0.011	0.	-1.25	3.2	0.
36	36-3	-0.0069	0.	-1.25	3.73	0.
36	36-3	-0.0137	0.	-0.48	3.73	0.
36	36-4	0.1565	0.	1.31	7.5	0.
36	36-4	0.0931	0.	1.45	7.5	0.
36	36-4	0.0992	0.	1.45	8.76	0.
36	36-4	0.1619	0.	1.31	8.76	0.
36	36-4	0.0072	0.	-0.97	3.75	0.
36	36-4	0.0026	0.	-0.81	3.75	0.
36	36-4	-0.0024	0.	-0.81	4.04	0.
36	36-4	0.0055	0.	-0.97	4.04	0.
36	36-5	0.025	0.	1.64	3.14	0.
36	36-5	-0.0099	0.	1.14	3.14	0.
36	36-5	5.944E-04	0.	1.14	3.56	0.
36	36-5	0.0354	0.	1.64	3.56	0.
36	36-5	-0.0227	0.	-1.47	-0.48	0.
36	36-5	-0.0323	0.	-1.9	-0.48	0.
36	36-5	-0.0239	0.	-1.9	0.24	0.
36	36-5	-0.0144	0.	-1.47	0.24	0.
36	36-6	0.049	0.	1.75	3.56	0.
36	36-6	0.0154	0.	1.71	3.56	0.
36	36-6	0.0254	0.	1.71	3.78	0.
36	36-6	0.0593	0.	1.75	3.78	0.

Element Forces - Area Shells, Part 9 of 10

Area	AreaElem	M12 KN-m/m	MMin KN-m/m	V13 KN/m	V23 KN/m	VMax KN/m
36	36-6	-0.0052	0.	-0.85	0.26	0.
36	36-6	-0.0061	0.	-0.51	0.26	0.
36	36-6	1.089E-04	0.	-0.51	0.47	0.
36	36-6	9.409E-04	0.	-0.85	0.47	0.
36	36-7	-0.0058	0.	1.07	0.78	0.
36	36-7	-7.927E-04	0.	0.44	0.78	0.
36	36-7	5.313E-04	0.	0.44	0.87	0.
36	36-7	-0.0045	0.	1.07	0.87	0.
36	36-7	-0.0248	0.	-2.1	-1.61	0.
36	36-7	-0.0307	0.	-2.2	-1.61	0.
36	36-7	-0.0244	0.	-2.2	-0.96	0.
36	36-7	-0.0199	0.	-2.1	-0.96	0.
36	36-8	0.003	0.	1.97	0.91	0.
36	36-8	0.0021	0.	1.78	0.91	0.
36	36-8	0.0062	0.	1.78	1.08	0.
36	36-8	0.0071	0.	1.97	1.08	0.
36	36-8	-0.0071	0.	-0.53	-0.94	0.
36	36-8	-0.0164	0.	-0.2	-0.94	0.
36	36-8	-0.0074	0.	-0.2	-0.75	0.
36	36-8	7.065E-04	0.	-0.53	-0.75	0.
36	36-9	0.0013	0.	0.45	-0.27	0.
36	36-9	0.0038	0.	8.353E-02	-0.27	0.
36	36-9	0.0041	0.	8.353E-02	-0.24	0.
36	36-9	0.0016	0.	0.45	-0.24	0.
36	36-9	-0.0263	0.	-2.36	-1.72	0.
36	36-9	-0.0279	0.	-2.14	-1.72	0.
36	36-9	-0.0252	0.	-2.14	-1.02	0.
36	36-9	-0.0236	0.	-2.36	-1.02	0.
36	36-10	0.0034	0.	2.02	-0.22	0.
36	36-10	0.0019	0.	1.73	-0.22	0.
36	36-10	0.0028	0.	1.73	0.22	0.
36	36-10	0.004	0.	2.02	0.22	0.
36	36-10	-0.0177	0.	-0.2	-1.02	0.
36	36-10	-0.0224	0.	-2.280E-02	-1.02	0.
36	36-10	-0.0187	0.	-2.280E-02	-0.84	0.
36	36-10	-0.0137	0.	-0.2	-0.84	0.
36	36-11	0.003	0.	7.707E-02	-0.16	0.
36	36-11	0.0033	0.	-5.022E-02	-0.16	0.
36	36-11	0.0034	0.	-5.022E-02	-0.44	0.
36	36-11	0.0031	0.	7.707E-02	-0.44	0.
36	36-11	-0.0216	0.	-2.27	-1.37	0.
36	36-11	-0.0201	0.	-1.95	-1.37	0.
36	36-11	-0.0198	0.	-1.95	-0.72	0.
36	36-11	-0.0212	0.	-2.27	-0.72	0.
36	36-12	0.0019	0.	1.94	-0.44	0.
36	36-12	3.963E-04	0.	1.62	-0.44	0.
36	36-12	0.0014	0.	1.62	0.2	0.
36	36-12	0.0013	0.	1.94	0.2	0.
36	36-12	-0.02	0.	-1.394E-02	-0.72	0.
36	36-12	-0.0218	0.	4.018E-02	-0.72	0.
36	36-12	-0.0215	0.	4.018E-02	-0.59	0.
36	36-12	-0.0197	0.	-1.394E-02	-0.59	0.
36	36-13	0.0016	0.	-5.141E-02	8.807E-02	0.
36	36-13	0.0016	0.	-6.521E-02	8.807E-02	0.
36	36-13	0.0018	0.	-6.521E-02	-0.23	0.
36	36-13	0.0018	0.	-5.141E-02	-0.23	0.
36	36-13	-0.0155	0.	-2.06	-0.95	0.
36	36-13	-0.0157	0.	-1.72	-0.95	0.
36	36-13	-0.0169	0.	-1.72	-0.35	0.
36	36-13	-0.0168	0.	-2.06	-0.35	0.
36	36-14	-1.155E-04	0.	1.8	-0.23	0.
36	36-14	-5.152E-04	0.	1.47	-0.23	0.
36	36-14	6.977E-04	0.	1.47	0.29	0.
36	36-14	7.000E-04	0.	1.8	0.29	0.
36	36-14	-0.0193	0.	4.384E-02	-0.36	0.
36	36-14	-0.0204	0.	4.342E-02	-0.36	0.
36	36-14	-0.022	0.	4.342E-02	-0.33	0.
36	36-14	-0.0208	0.	4.384E-02	-0.33	0.
36	36-15	0.0018	0.	-6.867E-02	0.2	0.
36	36-15	0.0021	0.	-4.568E-02	0.2	0.
36	36-15	0.0018	0.	-4.568E-02	-6.554E-02	0.
36	36-15	0.0015	0.	-6.867E-02	-6.554E-02	0.

Element Forces - Area Shells, Part 9 of 10

Area	AreaElem	M12 KN-m/m	MMin KN-m/m	V13 KN/m	V23 KN/m	VMax KN/m
36	36-15	-0.0126	0.	-1.81	-0.6	0.
36	36-15	-0.0129	0.	-1.49	-0.6	0.
36	36-15	-0.0152	0.	-1.49	-0.14	0.
36	36-15	-0.0149	0.	-1.81	-0.14	0.
36	36-16	-3.677E-04	0.	1.61	-7.090E-02	0.
36	36-16	-5.061E-04	0.	1.3	-7.090E-02	0.
36	36-16	1.656E-04	0.	1.3	0.35	0.
36	36-16	2.642E-04	0.	1.61	0.35	0.
36	36-16	-0.0187	0.	4.681E-02	-0.14	0.
36	36-16	-0.0198	0.	2.998E-02	-0.14	0.
36	36-16	-0.0223	0.	2.998E-02	-0.13	0.
36	36-16	-0.0212	0.	4.681E-02	-0.13	0.
36	36-17	0.0024	0.	-4.920E-02	0.24	0.
36	36-17	0.0029	0.	-2.269E-02	0.24	0.
36	36-17	0.0022	0.	-2.269E-02	3.143E-02	0.
36	36-17	0.0018	0.	-4.920E-02	3.143E-02	0.
36	36-17	-0.0109	0.	-1.56	-0.4	0.
36	36-17	-0.0119	0.	-1.29	-0.4	0.
36	36-17	-0.0151	0.	-1.29	1.060E-03	0.
36	36-17	-0.0141	0.	-1.56	1.060E-03	0.
36	36-18	-2.338E-04	0.	1.42	2.215E-02	0.
36	36-18	-2.174E-04	0.	1.15	2.215E-02	0.
36	36-18	-5.303E-05	0.	1.15	0.35	0.
36	36-18	-5.635E-05	0.	1.42	0.35	0.
36	36-18	-0.0187	0.	3.130E-02	-6.737E-06	0.
36	36-18	-0.0199	0.	1.700E-02	-6.737E-06	0.
36	36-18	-0.023	0.	1.700E-02	6.064E-03	0.
36	36-18	-0.0218	0.	3.130E-02	6.064E-03	0.
36	36-19	0.0037	0.	-2.634E-02	0.25	0.
36	36-19	0.0044	0.	-1.947E-03	0.25	0.
36	36-19	0.0032	0.	-1.947E-03	0.11	0.
36	36-19	0.0025	0.	-2.634E-02	0.11	0.
36	36-19	-0.0105	0.	-1.34	-0.27	0.
36	36-19	-0.0113	0.	-1.09	-0.27	0.
36	36-19	-0.0149	0.	-1.09	2.977E-02	0.
36	36-19	-0.0142	0.	-1.34	2.977E-02	0.
36	36-20	7.546E-05	0.	1.23	0.1	0.
36	36-20	1.671E-04	0.	0.98	0.1	0.
36	36-20	-1.542E-04	0.	0.98	0.33	0.
36	36-20	-2.133E-04	0.	1.23	0.33	0.
36	36-20	-0.0192	0.	1.798E-02	3.160E-02	0.
36	36-20	-0.0202	0.	6.371E-03	3.160E-02	0.
36	36-20	-0.0237	0.	6.371E-03	4.226E-02	0.
36	36-20	-0.0226	0.	1.798E-02	4.226E-02	0.
36	36-21	0.0058	0.	-7.246E-03	0.23	0.
36	36-21	0.007	0.	3.985E-02	0.23	0.
36	36-21	0.0052	0.	3.985E-02	0.13	0.
36	36-21	0.0039	0.	-7.246E-03	0.13	0.
36	36-21	-0.0099	0.	-1.13	-0.19	0.
36	36-21	-0.0104	0.	-0.89	-0.19	0.
36	36-21	-0.0145	0.	-0.89	2.541E-02	0.
36	36-21	-0.014	0.	-1.13	2.541E-02	0.
36	36-22	6.641E-04	0.	1.05	0.12	0.
36	36-22	9.309E-04	0.	0.82	0.12	0.
36	36-22	-9.577E-05	0.	0.82	0.27	0.
36	36-22	-2.982E-04	0.	1.05	0.27	0.
36	36-22	-0.0194	0.	6.753E-03	2.700E-02	0.
36	36-22	-0.0203	0.	-1.283E-02	2.700E-02	0.
36	36-22	-0.0242	0.	-1.283E-02	4.479E-02	0.
36	36-22	-0.0235	0.	6.753E-03	4.479E-02	0.
36	36-23	0.0092	0.	3.051E-02	0.12	0.
36	36-23	0.011	0.	0.13	0.12	0.
36	36-23	0.0084	0.	0.13	3.758E-02	0.
36	36-23	0.0066	0.	3.051E-02	3.758E-02	0.
36	36-23	-0.0086	0.	-0.92	-0.17	0.
36	36-23	-0.0088	0.	-0.66	-0.17	0.
36	36-23	-0.0133	0.	-0.66	-2.881E-02	0.
36	36-23	-0.0133	0.	-0.92	-2.881E-02	0.
36	36-24	0.0017	0.	0.86	3.071E-02	0.
36	36-24	0.0023	0.	0.64	3.071E-02	0.
36	36-24	3.041E-04	0.	0.64	0.13	0.
36	36-24	-2.330E-04	0.	0.86	0.13	0.

Element Forces - Area Shells, Part 9 of 10

Area	AreaElem	M12 KN-m/m	MMin KN-m/m	V13 KN/m	V23 KN/m	VMax KN/m
36	36-24	-0.0194	0.	-1.239E-02	-2.865E-02	0.
36	36-24	-0.0198	0.	-5.698E-02	-2.865E-02	0.
36	36-24	-0.0242	0.	-5.698E-02	-2.530E-03	0.
36	36-24	-0.024	0.	-1.239E-02	-2.530E-03	0.
36	36-25	0.0141	0.	0.12	-7.870E-02	0.
36	36-25	0.016	0.	0.3	-7.870E-02	0.
36	36-25	0.0124	0.	0.3	-0.16	0.
36	36-25	0.0106	0.	0.12	-0.16	0.
36	36-25	-0.0069	0.	-0.68	-0.36	0.
36	36-25	-0.0067	0.	-0.4	-0.36	0.
36	36-25	-0.0116	0.	-0.4	-0.36	0.
36	36-25	-0.0118	0.	-0.68	-0.36	0.
36	36-26	0.0037	0.	0.66	-0.17	0.
36	36-26	0.0049	0.	0.44	-0.17	0.
36	36-26	0.0012	0.	0.44	-9.533E-02	0.
36	36-26	2.376E-04	0.	0.66	-9.533E-02	0.
36	36-26	-0.0188	0.	-5.442E-02	-0.38	0.
36	36-26	-0.0188	0.	-0.13	-0.38	0.
36	36-26	-0.0239	0.	-0.13	-0.34	0.
36	36-26	-0.0239	0.	-5.442E-02	-0.34	0.
36	36-27	0.0195	0.	0.28	-0.4	0.
36	36-27	0.0194	0.	0.42	-0.4	0.
36	36-27	0.0143	0.	0.42	-0.49	0.
36	36-27	0.0144	0.	0.28	-0.49	0.
36	36-27	-0.0047	0.	-0.42	-0.99	0.
36	36-27	-0.005	0.	-0.16	-0.99	0.
36	36-27	-0.0105	0.	-0.16	-1.16	0.
36	36-27	-0.0103	0.	-0.42	-1.16	0.
36	36-28	0.006	0.	0.46	-0.5	0.
36	36-28	0.0065	0.	0.24	-0.5	0.
36	36-28	0.0019	0.	0.24	-0.46	0.
36	36-28	0.0015	0.	0.46	-0.46	0.
36	36-28	-0.0179	0.	-0.11	-1.17	0.
36	36-28	-0.0177	0.	-0.19	-1.17	0.
36	36-28	-0.0231	0.	-0.19	-1.14	0.
36	36-28	-0.0233	0.	-0.11	-1.14	0.
36	36-29	0.0171	0.	0.37	-0.9	0.
36	36-29	0.0169	0.	0.67	-0.9	0.
36	36-29	0.017	0.	0.67	-0.98	0.
36	36-29	0.0172	0.	0.37	-0.98	0.
36	36-29	-0.0054	0.	-0.18	-2.16	0.
36	36-29	-0.005	0.	0.14	-2.16	0.
36	36-29	-0.0081	0.	0.14	-2.37	0.
36	36-29	-0.0086	0.	-0.18	-2.37	0.
36	36-30	0.006	0.	0.24	-1.02	0.
36	36-30	0.0168	0.	0.1	-1.02	0.
36	36-30	0.0089	0.	0.1	-0.89	0.
36	36-30	-1.183E-04	0.	0.24	-0.89	0.
36	36-30	-0.0172	0.	-0.2	-2.45	0.
36	36-30	-0.0119	0.	-0.12	-2.45	0.
36	36-30	-0.0177	0.	-0.12	-2.12	0.
36	36-30	-0.0231	0.	-0.2	-2.12	0.
36	36-31	0.0048	0.	0.89	-0.73	0.
36	36-31	-0.0239	0.	-3.147E-02	-0.73	0.
36	36-31	-0.0169	0.	-3.147E-02	-1.3	0.
36	36-31	0.0232	0.	0.89	-1.3	0.
36	36-31	-0.0085	0.	0.23	-1.73	0.
36	36-31	-0.0639	0.	-0.13	-1.73	0.
36	36-31	-0.0488	0.	-0.13	-3.15	0.
36	36-31	-0.0034	0.	0.23	-3.15	0.
36	36-32	0.028	0.	0.18	-1.37	0.
36	36-32	0.0107	0.	3.19	-1.37	0.
36	36-32	0.0099	0.	3.19	-1.66	0.
36	36-32	0.0272	0.	0.18	-1.66	0.
36	36-32	-0.0055	0.	3.861E-02	-3.3	0.
36	36-32	-0.0068	0.	1.28	-3.3	0.
36	36-32	-0.0091	0.	1.28	-4.16	0.
36	36-32	-0.0078	0.	3.861E-02	-4.16	0.

Table: Element Forces - Area Shells

Element Forces - Area Shells, Part 10 of 10

Area	AreaElem	MMin KN-m/m	V13 KN/m	VMax KN/m	VAngle Degrees
36	36-1	0.	0.59	0.	0.
36	36-1	0.	1.92	0.	0.
36	36-1	0.	1.92	0.	0.
36	36-1	0.	0.59	0.	0.
36	36-1	0.	-0.63	0.	0.
36	36-1	0.	-2.473E-02	0.	0.
36	36-1	0.	-2.473E-02	0.	0.
36	36-1	0.	-0.63	0.	0.
36	36-2	0.	1.3	0.	0.
36	36-2	0.	0.76	0.	0.
36	36-2	0.	0.76	0.	0.
36	36-2	0.	1.3	0.	0.
36	36-2	0.	-0.71	0.	0.
36	36-2	0.	-1.19	0.	0.
36	36-2	0.	-1.19	0.	0.
36	36-2	0.	-0.71	0.	0.
36	36-3	0.	1.49	0.	0.
36	36-3	0.	1.56	0.	0.
36	36-3	0.	1.56	0.	0.
36	36-3	0.	1.49	0.	0.
36	36-3	0.	-0.48	0.	0.
36	36-3	0.	-1.25	0.	0.
36	36-3	0.	-1.25	0.	0.
36	36-3	0.	-0.48	0.	0.
36	36-4	0.	1.31	0.	0.
36	36-4	0.	1.45	0.	0.
36	36-4	0.	1.45	0.	0.
36	36-4	0.	1.31	0.	0.
36	36-4	0.	-0.97	0.	0.
36	36-4	0.	-0.81	0.	0.
36	36-4	0.	-0.81	0.	0.
36	36-4	0.	-0.97	0.	0.
36	36-5	0.	1.64	0.	0.
36	36-5	0.	1.14	0.	0.
36	36-5	0.	1.14	0.	0.
36	36-5	0.	1.64	0.	0.
36	36-5	0.	-1.47	0.	0.
36	36-5	0.	-1.9	0.	0.
36	36-5	0.	-1.9	0.	0.
36	36-5	0.	-1.47	0.	0.
36	36-6	0.	1.75	0.	0.
36	36-6	0.	1.71	0.	0.
36	36-6	0.	1.71	0.	0.
36	36-6	0.	1.75	0.	0.
36	36-6	0.	-0.85	0.	0.
36	36-6	0.	-0.51	0.	0.
36	36-6	0.	-0.51	0.	0.
36	36-6	0.	-0.85	0.	0.
36	36-7	0.	1.07	0.	0.
36	36-7	0.	0.44	0.	0.
36	36-7	0.	0.44	0.	0.
36	36-7	0.	1.07	0.	0.
36	36-7	0.	-2.1	0.	0.
36	36-7	0.	-2.2	0.	0.
36	36-7	0.	-2.2	0.	0.
36	36-7	0.	-2.1	0.	0.
36	36-8	0.	1.97	0.	0.
36	36-8	0.	1.78	0.	0.
36	36-8	0.	1.78	0.	0.
36	36-8	0.	1.97	0.	0.
36	36-8	0.	-0.53	0.	0.
36	36-8	0.	-0.2	0.	0.
36	36-8	0.	-0.2	0.	0.
36	36-8	0.	-0.53	0.	0.
36	36-9	0.	0.45	0.	0.
36	36-9	0.	8.353E-02	0.	0.
36	36-9	0.	8.353E-02	0.	0.
36	36-9	0.	0.45	0.	0.
36	36-9	0.	-2.36	0.	0.
36	36-9	0.	-2.14	0.	0.

Element Forces - Area Shells, Part 10 of 10

Area	AreaElem	MMin KN-m/m	V13 KN/m	VMax KN/m	VAngle Degrees
36	36-9	0.	-2.14	0.	0.
36	36-9	0.	-2.36	0.	0.
36	36-10	0.	2.02	0.	0.
36	36-10	0.	1.73	0.	0.
36	36-10	0.	1.73	0.	0.
36	36-10	0.	2.02	0.	0.
36	36-10	0.	-0.2	0.	0.
36	36-10	0.	-2.280E-02	0.	0.
36	36-10	0.	-2.280E-02	0.	0.
36	36-10	0.	-0.2	0.	0.
36	36-11	0.	7.707E-02	0.	0.
36	36-11	0.	-5.022E-02	0.	0.
36	36-11	0.	-5.022E-02	0.	0.
36	36-11	0.	7.707E-02	0.	0.
36	36-11	0.	-2.27	0.	0.
36	36-11	0.	-1.95	0.	0.
36	36-11	0.	-1.95	0.	0.
36	36-11	0.	-2.27	0.	0.
36	36-12	0.	1.94	0.	0.
36	36-12	0.	1.62	0.	0.
36	36-12	0.	1.62	0.	0.
36	36-12	0.	1.94	0.	0.
36	36-12	0.	-1.394E-02	0.	0.
36	36-12	0.	4.018E-02	0.	0.
36	36-12	0.	4.018E-02	0.	0.
36	36-12	0.	-1.394E-02	0.	0.
36	36-13	0.	-5.141E-02	0.	0.
36	36-13	0.	-6.521E-02	0.	0.
36	36-13	0.	-6.521E-02	0.	0.
36	36-13	0.	-5.141E-02	0.	0.
36	36-13	0.	-2.06	0.	0.
36	36-13	0.	-1.72	0.	0.
36	36-13	0.	-1.72	0.	0.
36	36-13	0.	-2.06	0.	0.
36	36-14	0.	1.8	0.	0.
36	36-14	0.	1.47	0.	0.
36	36-14	0.	1.47	0.	0.
36	36-14	0.	1.8	0.	0.
36	36-14	0.	4.384E-02	0.	0.
36	36-14	0.	4.342E-02	0.	0.
36	36-14	0.	4.342E-02	0.	0.
36	36-14	0.	4.384E-02	0.	0.
36	36-15	0.	-6.867E-02	0.	0.
36	36-15	0.	-4.568E-02	0.	0.
36	36-15	0.	-4.568E-02	0.	0.
36	36-15	0.	-6.867E-02	0.	0.
36	36-15	0.	-1.81	0.	0.
36	36-15	0.	-1.49	0.	0.
36	36-15	0.	-1.49	0.	0.
36	36-15	0.	-1.81	0.	0.
36	36-16	0.	1.61	0.	0.
36	36-16	0.	1.3	0.	0.
36	36-16	0.	1.3	0.	0.
36	36-16	0.	1.61	0.	0.
36	36-16	0.	4.681E-02	0.	0.
36	36-16	0.	2.998E-02	0.	0.
36	36-16	0.	2.998E-02	0.	0.
36	36-16	0.	4.681E-02	0.	0.
36	36-17	0.	-4.920E-02	0.	0.
36	36-17	0.	-2.269E-02	0.	0.
36	36-17	0.	-2.269E-02	0.	0.
36	36-17	0.	-4.920E-02	0.	0.
36	36-17	0.	-1.56	0.	0.
36	36-17	0.	-1.29	0.	0.
36	36-17	0.	-1.29	0.	0.
36	36-17	0.	-1.56	0.	0.
36	36-18	0.	1.42	0.	0.
36	36-18	0.	1.15	0.	0.
36	36-18	0.	1.15	0.	0.
36	36-18	0.	1.42	0.	0.
36	36-18	0.	3.130E-02	0.	0.
36	36-18	0.	1.700E-02	0.	0.

Element Forces - Area Shells, Part 10 of 10

Area	AreaElem	MMin KN-m/m	V13 KN/m	VMax KN/m	VAngle Degrees
36	36-18	0.	1.700E-02	0.	0.
36	36-18	0.	3.130E-02	0.	0.
36	36-19	0.	-2.634E-02	0.	0.
36	36-19	0.	-1.947E-03	0.	0.
36	36-19	0.	-1.947E-03	0.	0.
36	36-19	0.	-2.634E-02	0.	0.
36	36-19	0.	-1.34	0.	0.
36	36-19	0.	-1.09	0.	0.
36	36-19	0.	-1.09	0.	0.
36	36-19	0.	-1.34	0.	0.
36	36-20	0.	1.23	0.	0.
36	36-20	0.	0.98	0.	0.
36	36-20	0.	0.98	0.	0.
36	36-20	0.	1.23	0.	0.
36	36-20	0.	1.798E-02	0.	0.
36	36-20	0.	6.371E-03	0.	0.
36	36-20	0.	6.371E-03	0.	0.
36	36-20	0.	1.798E-02	0.	0.
36	36-21	0.	-7.246E-03	0.	0.
36	36-21	0.	3.985E-02	0.	0.
36	36-21	0.	3.985E-02	0.	0.
36	36-21	0.	-7.246E-03	0.	0.
36	36-21	0.	-1.13	0.	0.
36	36-21	0.	-0.89	0.	0.
36	36-21	0.	-0.89	0.	0.
36	36-21	0.	-1.13	0.	0.
36	36-22	0.	1.05	0.	0.
36	36-22	0.	0.82	0.	0.
36	36-22	0.	0.82	0.	0.
36	36-22	0.	1.05	0.	0.
36	36-22	0.	6.753E-03	0.	0.
36	36-22	0.	-1.283E-02	0.	0.
36	36-22	0.	-1.283E-02	0.	0.
36	36-22	0.	6.753E-03	0.	0.
36	36-23	0.	3.051E-02	0.	0.
36	36-23	0.	0.13	0.	0.
36	36-23	0.	0.13	0.	0.
36	36-23	0.	3.051E-02	0.	0.
36	36-23	0.	-0.92	0.	0.
36	36-23	0.	-0.66	0.	0.
36	36-23	0.	-0.66	0.	0.
36	36-23	0.	-0.92	0.	0.
36	36-24	0.	0.86	0.	0.
36	36-24	0.	0.64	0.	0.
36	36-24	0.	0.64	0.	0.
36	36-24	0.	0.86	0.	0.
36	36-24	0.	-1.239E-02	0.	0.
36	36-24	0.	-5.698E-02	0.	0.
36	36-24	0.	-5.698E-02	0.	0.
36	36-24	0.	-1.239E-02	0.	0.
36	36-25	0.	0.12	0.	0.
36	36-25	0.	0.3	0.	0.
36	36-25	0.	0.3	0.	0.
36	36-25	0.	0.12	0.	0.
36	36-25	0.	-0.68	0.	0.
36	36-25	0.	-0.4	0.	0.
36	36-25	0.	-0.4	0.	0.
36	36-25	0.	-0.68	0.	0.
36	36-26	0.	0.66	0.	0.
36	36-26	0.	0.44	0.	0.
36	36-26	0.	0.44	0.	0.
36	36-26	0.	0.66	0.	0.
36	36-26	0.	-5.442E-02	0.	0.
36	36-26	0.	-0.13	0.	0.
36	36-26	0.	-0.13	0.	0.
36	36-26	0.	-5.442E-02	0.	0.
36	36-27	0.	0.28	0.	0.
36	36-27	0.	0.42	0.	0.
36	36-27	0.	0.42	0.	0.
36	36-27	0.	0.28	0.	0.
36	36-27	0.	-0.42	0.	0.
36	36-27	0.	-0.16	0.	0.

Element Forces - Area Shells, Part 10 of 10

Area	AreaElem	MMin KN-m/m	V13 KN/m	VMax KN/m	VAngle Degrees
36	36-27	0.	-0.16	0.	0.
36	36-27	0.	-0.42	0.	0.
36	36-28	0.	0.46	0.	0.
36	36-28	0.	0.24	0.	0.
36	36-28	0.	0.24	0.	0.
36	36-28	0.	0.46	0.	0.
36	36-28	0.	-0.11	0.	0.
36	36-28	0.	-0.19	0.	0.
36	36-28	0.	-0.19	0.	0.
36	36-28	0.	-0.11	0.	0.
36	36-29	0.	0.37	0.	0.
36	36-29	0.	0.67	0.	0.
36	36-29	0.	0.67	0.	0.
36	36-29	0.	0.37	0.	0.
36	36-29	0.	-0.18	0.	0.
36	36-29	0.	0.14	0.	0.
36	36-29	0.	0.14	0.	0.
36	36-29	0.	-0.18	0.	0.
36	36-30	0.	0.24	0.	0.
36	36-30	0.	0.1	0.	0.
36	36-30	0.	0.1	0.	0.
36	36-30	0.	0.24	0.	0.
36	36-30	0.	-0.2	0.	0.
36	36-30	0.	-0.12	0.	0.
36	36-30	0.	-0.12	0.	0.
36	36-30	0.	-0.2	0.	0.
36	36-31	0.	0.89	0.	0.
36	36-31	0.	-3.147E-02	0.	0.
36	36-31	0.	-3.147E-02	0.	0.
36	36-31	0.	0.89	0.	0.
36	36-31	0.	0.23	0.	0.
36	36-31	0.	-0.13	0.	0.
36	36-31	0.	-0.13	0.	0.
36	36-31	0.	0.23	0.	0.
36	36-32	0.	0.18	0.	0.
36	36-32	0.	3.19	0.	0.
36	36-32	0.	3.19	0.	0.
36	36-32	0.	0.18	0.	0.
36	36-32	0.	3.861E-02	0.	0.
36	36-32	0.	1.28	0.	0.
36	36-32	0.	1.28	0.	0.
36	36-32	0.	3.861E-02	0.	0.

13 ANEXOS

- **ANEXO 1. MEMORIAS DE CALCULO DE CANTIDADES**
- **ANEXO 2. PLANOS ESTRUCTURALES**

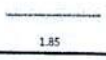
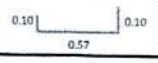
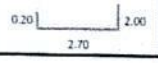
ANEXO 1. MEMORIAS DE CALCULO DE CANTIDADES

(VÉASE EN MEDIO DIGITAL Y FISÍCO)

AQUADATOS

CANTIDADES DE CONCRETO					
LOCALIZACION	CANTIDAD	AREA	LONG	VOL	TOTAL
PLACA INFERIOR	1.0	2.99	0.20	0.60	0.60
PLACA SUPERIOR	1.0	2.55	0.20	0.51	0.51
MUROS	1.0	1.06	2.60	2.76	2.76
VOLUMEN TOTAL DE CONCRETO					3.86 m3
VOLUMEN TOTAL DE CONCRETO + AJUSTE 5%					4.06 m3

CANTIDADES DE ACEROS DE REFUERZO

LOCALIZACION	NUMERACION EN PLANOS	ESQUEMA	DIAMETRO	CANTIDAD	LONG	PESO UNIT	PESO TOTAL	OBSERVACIONES
PLACA INF	1	 3.50	4.00	2	3.50	0.994	6.96	
PLACA INF	2	 3.60	4.00	2	3.60	0.994	7.16	
PLACA INF	10	 1.85	4.00	40	1.85	0.994	73.56	FIGURAR EN OBRA
PLACA SUP	3	 3.90	4.00	2	3.90	0.994	7.75	
PLACA SUP	4	 1.85	4.00	2	1.85	0.994	3.68	
PLACA SUP	5	 2.75	4.00	2	2.75	0.994	5.47	
PLACA SUP	5A	 1.90	4.00	2	1.90	0.994	3.78	
PLACA SUP	6	 2.85	4.00	2	2.85	0.994	5.67	
PLACA SUP	6A	 2.00	4.00	2	2.00	0.994	3.98	
PLACA SUP	7	 3.45	4.00	2	3.45	0.994	6.86	
PLACA SUP	8	 3.40	4.00	2	3.40	0.994	6.76	
PLACA SUP	-	 0.10 0.10 0.57	3.00	40	0.77	0.560	17.25	
MUROS	9	 0.20 2.00 2.70	4.00	26	4.90	0.994	126.64	
MUROS	-	 3.60	4.00	32	3.60	0.994	114.51	
PESO TOTAL ACEROS DE REFUERZO							390.00 Kg	

APROBACIÓN INTERVENTORÍA

AQUADATOS

CONSORCIO INTERCONSULTA 2023
NIT: 901.720.639-3

Villavicencio (Meta), 08 de agosto de 2024

APROB-081-23-154

Señores
AQUADATOS S.A.S
Atn. Mauricio Cruz Gómez, Director de Consultoría
admonvillavicencio@aquadatos.com
La ciudad

REF: Contrato de consultoría N° 081 de 2023 que tiene por objeto "ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN, AMPLIACIÓN Y OPTIMIZACIÓN DE OBRAS DE REDES E INFRAESTRUCTURA DE AGUA POTABLE y SANEAMIENTO BÁSICO EN LOS MUNICIPIOS DEL DEPARTAMENTO DEL META"

Asunto: **Aprobación productos: informe de diseños estructurales de pozos y sumideros tipo , cámaras tipo y obras de protección del subproyecto de alcantarillado pluvial zona noroccidental GRA3D del municipio de Granada – Meta sector El Paraíso**
Respuesta a su oficio TEC-148-24-092 de fecha 29 de julio de 2024.

Cordial saludo,

Teniendo en cuenta el oficio según asunto, mediante el cual nos radican para revisión y aprobación por parte de la interventoría los productos: **informes de diseños estructurales de pozos y sumideros tipo, cámaras tipo y diseños estructurales y obras de protección para los cabezales de descarga del subproyecto de alcantarillado pluvial zona noroccidental GRA3D para el subproyecto "ESTUDIOS Y DISEÑOS PARA LA CONSTRUCCIÓN DE LA RED DE ACUEDUCTO, ALCANTARILLADO SANITARIO Y ALCANTARILLADO PLUVIAL SECTOR EL PARAÍSO DEL MUNICIPIO DE GRANADA, META.", objeto de obra "ONSTRUCCIÓN DE LA RED DE ALCANTARILLADO PLUVIAL ZONA NOROCCIDENTAL DEL SECTOR PARAÍSO DEL MUNICIPIO DE GRANADA, META**:

1. AQ-148-GRA3D-DES_POZO_1.20_3M_SIN_CC-V.1
2. AQ-148-GRA3D-DES_POZO_1.50_3M_SIN_CC-V.1
3. AQ-148-GRA3D-DES_POZO_1.80_3M_SIN_CC-V.1
4. AQ-148-GRA3D-DES_POZO_1.20_3M_CON_CC-V.1
5. AQ-148-GRA3D-DES_SUM_COMP-V.1
6. AQ-148-GRA3D-DES_CAM_TIPO_6-V.1
7. AQ-148-GRA3D-DES_CAM_TIPO_9-V.1
8. AQ-148-GRA3D-DES_CAM_TIPO_12-V.1

AQUADATOS RECIBIDO
NOMBRE: [signature]
FECHA: 8-08-2024
HORA: 7:30pm

Consorciointerconsulta2023@gmail.com

Cel. 3104290102 – Cr 4 este # 15-148