





1	PARA CONSTRUCCIÓN			EA	ZC/AM	LR/RG	
0	PARA CONSTRUCCIÓN		13/07/11	EA	ZC/AM	LR/RG	
A	PARA COMENTARIOS		06/06/11	EA	ZC/AM	LR/RG	
REV.	DENOMINACIÓN		FECHA	REALIZÓ	REVISÓ	APROBÓ	
							
OBM3285							
ESTE DOCUMENTO CONTIENE INFORMACIÓN PROPIEDAD DE AESA E YPFB, SU REPRODUCCIÓN TOTAL O PARCIAL ESTA PROHIBIDA.			PROYECTO PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	REALIZO	REVISO	APROBO	TITULO MEMORIA DE CÁLCULO FUNDACIONES PARRAL ESTE - OESTE			
INICIAL	EA	ZC/AM	LR/RG				
FECHA							
FIRMA				DOC. AESA N°	3285-G210-635-4523-DC-001	PAGINAS	VERSIÓN
GUARDADO WORD 97 - 2003 NO MODIFICAR MANUALMENTE						1 DE 126	1
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  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-A520-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1	Página 2 de 126

ÍNDICE

1.	PREMISAS DE DISEÑO Y ANÁLISIS DE CARGAS	3
1.1.	OBJETIVO	3
1.2.	ALCANCE	3
1.3.	DOCUMENTOS DE REFERENCIA.....	3
1.4.	ESPECIFICACIONES, CÓDIGOS Y REGLAMENTOS	3
1.5.	MATERIALES	3
1.6.	PESOS UNITARIOS.....	4
1.7.	RECUBRIMIENTOS	4
1.8.	DATOS GEOTÉCNICOS.....	4
1.9.	FACTORES DE SEGURIDAD.....	4
1.10.	FUNDACIONES Y CARGAS.....	4
1.11.	SELECCIÓN DEL SISTEMA.....	4
1.12.	ANÁLISIS DE CARGAS.....	5
1.12.1.	CASOS DE CARGAS	5
1.12.2.	COMBINACIONES DE CARGA	6
2.	DATOS DE ENTRADA.....	10
2.1.	CARGAS SOBRE LAS FUNDACIONES	10
2.2.	PARÁMETROS DE DISEÑO	81
3.	ESFUERZO EN EL SUELO	82
4.	ESTABILIDAD AL DESLIZAMIENTO Y AL VOLCAMIENTO	90
5.	DISEÑO DE HORMIGÓN ARMADO	111
5.1.	VERIFICACIÓN DE PUNZONADO EN LA ZAPATA	111
5.2.	VERIFICACIÓN DE CORTE EN LA ZAPATA.....	112
5.3.	CÁLCULO DEL ACERO DE REFUERZO EN LA ZAPATA.....	114
5.4.	DISEÑO DEL TINTERO	117
5.4.1.	ENTRADA DE DATOS DEL PROGRAMA.....	118
5.4.2.	DISEÑO POR CORTE.....	125
5.4.3.	DISEÑO A FLEXIÓN.....	126

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO: OBM 3285 PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE	AESA N° 3285-G210-635-4523-DC-001	
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1
Página 3 de 126			

1. PREMISAS DE DISEÑO Y ANÁLISIS DE CARGAS

1.1. OBJETIVO

La presente memoria describe el diseño de las fundaciones del Parral Este-Oeste, las cuales soportarán la estructura de hormigón premoldeado y los módulos metálicos, a construirse en el contexto del proyecto de la Planta de Separación de Líquidos Río Grande, ubicada en el Departamento Santa Cruz, Bolivia .

1.2. ALCANCE

El alcance de la presente memoria es el diseño de las fundaciones. El diseño procede de tomar las reacciones de los apoyos provenientes del análisis dinámico de la estructura, las cuales son importadas directamente por el programa Staad Foundation.

Se colocaron en el programa todos los requerimientos particulares especificados, y de acuerdo a las Bases y Criterios de Diseño Civil para el presente proyecto.

1.3. DOCUMENTOS DE REFERENCIA

3285-G100-635-4112-RP-001	ESTUDIO DE SUELOS
3285-G100-635-4550-DW-001	UBICACIÓN DE FUNDACIONES
3285-G000-634-2047-DW-001	PLANO DE UBICACIÓN GENERAL DE EQUIPOS
3285-G100-635-2021-DB-001	BASES Y CRITERIOS DE DISEÑO CIVIL

1.4. ESPECIFICACIONES, CÓDIGOS Y REGLAMENTOS

ASCE 7- 2010	American Society of Civil Engineers. Minimum design loads for buildings and other structures.
IBC – 2009	International Building Code
ACI 318 – 2008	American Concrete Institute. Building code requirements for structural concrete and commentary.
CIRSOC 102	Centro de Investigación de los Reglamentos Nacionales de Seguridad para Obras Civiles. Acción Del Viento Sobre Las Construcciones
CIRSOC 103	Centro de Investigación de los Reglamentos Nacionales de Seguridad para Obras Civiles. Normas Argentinas para Construcciones Sismorresistentes

1.5. MATERIALES



Hormigón

Hormigón para Estructuras: Tipo H- 21 $f'c = 21 \text{ MPa}$

Armadura de refuerzo

Tensión de cedencia: $f_y = 400 \text{ MPa}$

Resistencia última: $F_u = 520 \text{ Mpa}$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 4 de 126
		1	1	

1.6. PESOS UNITARIOS

Gravedad Especifica Hormigón Armado $\gamma_H = 25.0 \text{ kN/m}^3 = 2500 \text{ kg/m}^3$

1.7. RECUBRIMIENTOS

Zapatas y cimientos extendidos sobre hormigón de limpieza 50 mm

Zapatas y cimientos apoyados sobre el terreno 75 mm

1.8. DATOS GEOTÉCNICOS

Capacidad admisible del suelo 180 kN/m²

Gravedad Específica del Suelo 19 kN/m³

1.9. FACTORES DE SEGURIDAD

La fundación será estable al volcamiento y al deslizamiento de tal manera que cumpla con los siguientes factores de seguridad:

Factor de seguridad al volcamiento F.S. ≥ 1.5

Factor de seguridad al deslizamiento F.S. ≥ 1.5

1.10. FUNDACIONES Y CARGAS

Para el análisis de las fundaciones se consideraron las reacciones de la estructura para cada una de las combinaciones de carga, tanto en el caso de servicio como de diseño, las cuales pasan al tope del pedestal de cada uno de los apoyos.

1.11. SELECCIÓN DEL SISTEMA

Como selección para el apoyo del sistema estructural y por las mismas condiciones del suelo, el tipo de fundación elegida son zapatas aisladas. Se crearon grupos de soporte, dependiendo del tipo de cargas a las cuales estaban sometidas. Los grupos creados fueron:

Parral Este-Oeste, ejes 22 al 30

Grupo F-1: Apoyos 1, 2, 3, 4, 9, 10, 16 y 18

Grupo F-2: Apoyos 5, 6, 7, 8, 11, 12, 13 y 14

Grupo F-5: Apoyos 15 y 17

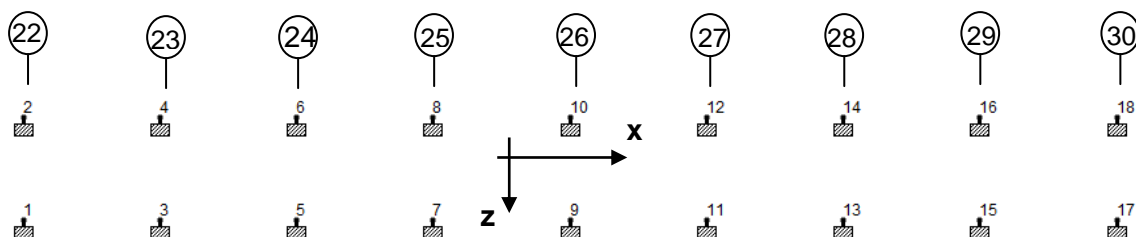




Figura 1. Planta de apoyos parral Este-Oeste ejes 22 al 30

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
		RIO GRANDE			
		FUNDACIONES PARRAL		Ver.	Rev.
		ESTE - OESTE		1	1
				Página 5 de 126	

Parral Este-Oeste, ejes G al M

Grupo F-3: Apoyos 1, 2, 3, 4, 9, 10, 11, y 12

Grupo F-4: Apoyos 5, 6, 7 y 8

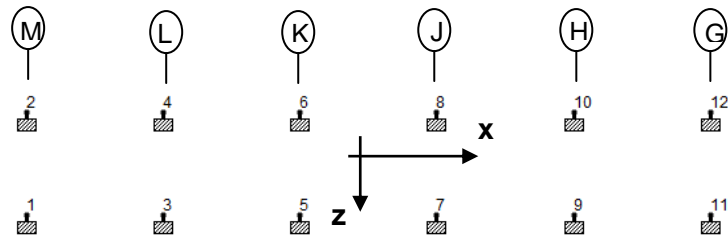




Figura 2. Planta de apoyos parral Este-Oeste ejes G al M

1.12. ANÁLISIS DE CARGAS

1.12.1. CASOS DE CARGAS

Para el diseño de las diferentes fundaciones se considerarán los siguientes casos de carga:



D	Carga Permanente
L	Carga Variable
PE	Peso de Tubería Vacía
PO	Peso de Tubería en Operación
PT	Peso de Tubería en Prueba
EE	Peso de Equipo Vacío
EO	Peso de Equipo en Operación
ET	Peso de Equipo en Prueba
EM	Peso Equipo Mantenimiento
T	Carga Térmica Ambiental
TL	Carga Térmica Operación
WX	Viento En Dirección X
-WX	Viento En Dirección- X
WZ	Viento En Dirección +Z
-WZ	Viento En Dirección -Z
EQX	Sismo En Dirección X
EQZ	Sismo En Dirección Z
EQY	Sismo En Dirección Y (Dirección Vertical)
EQPX	Sismo En Tuberías En Dirección X
EQPZ	Sismo En Tuberías En Dirección Z
EQPY	Sismo En Tuberías En Dirección Y (Dirección Vertical)

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AESA N°	3285-G210-635-4523-DC-001
	OBM 3285		
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE		
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1
			Página 6 de 126



1.12.2. COMBINACIONES DE CARGA

Combinaciones de carga mayoradas para diseño del hormigón:

CONDICIÓN VACÍO	
1001	1.4 (D + PE+ EE + T)
1002	1.2 (D + PE + EE + T) + 1.6 L
1003	1.2 (D + PE+ EE + T) + 0.8WX
1004	1.2 (D + PE+ EE + T) - 0.8WX
1005	1.2 (D + PE+ EE + T) + 0.8WZ
1006	1.2 (D + PE+ EE + T) - 0.8WZ
1007	1.2 (D + PE+ EE + T) + L + 1.6WX
1008	1.2 (D + PE+ EE + T) + L - 1.6WX
1009	1.2 (D + PE+ EE + T) + L + 1.6WZ
1010	1.2 (D + PE+ EE + T) + L - 1.6WZ
1011	1.2 (D + PE + EE + T) + L + (EQX + EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)
1012	1.2 (D + PE + EE + T) + L + (EQX + EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)
1013	1.2 (D + PE + EE + T) + L + (-EQX - EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)
1014	1.2 (D + PE + EE + T) + L + (-EQX - EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)
1015	1.2 (D + PE + EE + T) + L + (0.30EQX + 0.30EQPX + EQZ + EQPZ + EQY + EQPY)
1016	1.2 (D + PE + EE + T) + L + (0.30EQX + 0.30EQPX - EQZ - EQPZ + EQY + EQPY)
1017	1.2 (D + PE + EE + T) + L + (-0.30EQX - 0.30EQPX + EQZ + EQPZ + EQY + EQPY)
1018	1.2 (D + PE + EE + T) + L + (-0.30EQX - 0.30EQPX - EQZ - EQPZ + EQY + EQPY)
1019	1.2 (D + PE + EE + T) + L + (EQX+ EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)
1020	1.2 (D + PE + EE + T) + L + (EQX + EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)
1021	1.2 (D + PE + EE + T) + L + (-EQX - EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)
1022	1.2 (D + PE + EE + T) + L + (-EQX - EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)
1023	1.2 (D + PE + EE + T) + L + (0.30EQX + 0.30EQPX + EQZ + EQPZ - EQY - EQPY)
1024	1.2 (D + PE + EE + T) + L + (0.30EQX + 0.30EQPX - EQZ - EQPZ - EQY - EQPY)
1025	1.2 (D + PE + EE + T) + L + (-0.30EQX - 0.30EQPX + EQZ + EQPZ - EQY - EQPY)
1026	1.2 (D + PE + EE + T) + L + (-0.30EQX - 0.30EQPX - EQZ - EQPZ - EQY - EQPY)
CONDICIÓN OPERACIÓN	
1027	1.4 (D + PO+ EO + T +TL)
1028	1.2 (D + PO+ EO + T +TL)+ 1.6 L
1029	1.2 (D + PO+ EO + T +TL) + 0.8WX
1030	1.2 (D + PO+ EO + T +TL) - 0.8WX
1031	1.2 (D + PO+ EO + T +TL) + 0.8WZ
1032	1.2 (D + PO+ EO + T +TL) - 0.8WZ
1033	1.2 (D + PO+ EO + T +TL) + L + 1.6WX
1034	1.2 (D + PO+ EO + T +TL) + L - 1.6WX
1035	1.2 (D + PO+ EO + T +TL) + L + 1.6WZ
1036	1.2 (D + PO+ EO + T +TL) + L - 1.6WZ
1037	1.2 (D + PO + EO + T + TL) + L + (EQX + EQPX + 0.30EQZ + 0.30EQZ + EQY + EQPY)



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 7 de 126
		1	1	

1038	$1.2 (D + PO + EO + T + TL) + L + (EQX + EQPX - 0.30EQZ - 0.30EQZ + EQY + EQPY)$
1039	$1.2 (D + PO + EO + T + TL) + L + (-EQX - EQPX + 0.30EQZ + 0.30EQZ + EQY + EQPY)$
1040	$1.2 (D + PO + EO + T + TL) + L + (-EQX - EQPX - 0.30EQZ - 0.30EQZ + EQY + EQPY)$
1041	$1.2 (D + PO + EO + T + TL) + L + (0.30EQX + 0.30EQPX + EQZ + EQZ + EQY + EQPY)$
1042	$1.2 (D + PO + EO + T + TL) + L + (0.30EQX + 0.30EQPX - EQZ - EQZ + EQY + EQPY)$
1043	$1.2 (D + PO + EO + T + TL) + L + (-0.30EQX - 0.30EQPX + EQZ + EQZ + EQY + EQPY)$
1044	$1.2 (D + PO + EO + T + TL) + L + (-0.3 EQX - 0.30EQPX - EQZ - EQZ + EQY + EQPY)$
1045	$1.2 (D + PO + EO + T + TL) + L + (EQX + EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)$
1046	$1.2 (D + PO + EO + T + TL) + L + (EQX + EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)$
1047	$1.2 (D + PO + EO + T + TL) + L + (-EQX - EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)$
1048	$1.2 (D + PO + EO + T + TL) + L + (-EQX - EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)$
1049	$1.2 (D + PO + EO + T + TL) + L + (0.30EQX + 0.30EQPX + EQZ + EQPZ - EQY - EQPY)$
1050	$1.2 (D + PO + EO + T + TL) + L + (0.30EQX + 0.30EQPX - EQZ - EQPZ - EQY - EQPY)$
1051	$1.2 (D + PO + EO + T + TL) + L + (-0.30EQX - 0.30EQPX + EQZ + EQPZ - EQY - EQPY)$
1052	$1.2 (D + PO + EO + T + TL) + L + (-0.30EQX - 0.30EQPX - EQZ - EQPZ - EQY - EQPY)$
CONDICIÓN CONSTRUCCIÓN	
1053	$0.90 (D + PE + EE) + T + 1.6 WX$
1054	$0.90 (D + PE + EE) + T - 1.6 WX$
1055	$0.90 (D + PE + EE) + T + 1.6 WZ$
1056	$0.90 (D + PE + EE) + T - 1.6 WZ$
1057	$0.9 (D + PE + EE) + T + (EQX + EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)$
1058	$0.9 (D + PE + EE) + T + (EQX + EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)$
1059	$0.9 (D + PE + EE) + T + (-EQX - EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)$
1060	$0.9 (D + PE + EE) + T + (-EQX - EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)$
1061	$0.9 (D + PE + EE) + T + (0.30 EQX + 0.30EQPX + EQZ + EQPZ + EQY + EQPY)$
1062	$0.9 (D + PE + EE) + T + (0.30 EQX + 0.30EQPX - EQZ - EQPZ + EQY + EQPY)$
1063	$0.9 (D + PE + EE) + T + (-0.30 EQX - 0.30EQPX + EQZ + EQPZ + EQY + EQPY)$
1064	$0.9 (D + PE + EE) + T + (-0.30 EQX - 0.30EQPX - EQZ - EQPZ + EQY + EQPY)$
1065	$0.9 (D + PE + EE) + T + (EQX + EQPX + 0.30EQZ - EQY - EQPY)$
1066	$0.9 (D + PE + EE) + T + (EQX + EQPX - 0.30EQZ - EQY - EQPY)$
1067	$0.9 (D + PE + EE) + T + (-EQX - EQPX + 0.30EQZ - EQY - EQPY)$
1068	$0.9 (D + PE + EE) + T + (-EQX - EQPX - 0.30EQZ - EQY - EQPY)$
1069	$0.9 (D + PE + EE) + T + (0.30EQX + 0.30EQPX + EQZ - EQY - EQPY)$
1070	$0.9 (D + PE + EE) + T + (0.30EQX + 0.30EQPX - EQZ - EQY - EQPY)$
1071	$0.9 (D + PE + EE) + T + (-0.30EQX - 0.30EQPX + EQZ - EQY - EQPY)$
1072	$0.9 (D + PE + EE) + T + (-0.30EQX - 0.30EQPX - EQZ - EQY - EQPY)$
CONDICIÓN PRUEBA	
1073	$1.2 (D + PT + ET + T) + L$
CONDICIÓN MANTENIMIENTO	
1074	$1.2 (D + EM + T) + L$



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AESA N°	3285-G210-635-4523-DC-001
	OBM 3285		
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE		
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1
			Página 8 de 126

Combinaciones de carga de servicio para dimensionado de la zapata:

CONDICIÓN VACÍO	
2001	D + PE+ EE + T
2002	D + PE + EE + T + L
2003	D + PE+ EE + T + WX
2004	D + PE+ EE + T - WX
2005	D + PE+ EE + T + WZ
2006	D + PE+ EE + T - WZ
2007	D + PE+ EE + T + 0.75 L + 0.75 WX
2008	D + PE+ EE + T + 0.75 L - 0.75 WX
2009	D + PE+ EE + T + 0.75 L + 0.75 WZ
2010	D + PE+ EE + T + 0.75 L - 0.75 WZ
2011	D + PE + EE + T + 0.70 (EQX + EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)
2012	D + PE + EE + T + 0.70 (EQX + EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)
2013	D + PE + EE + T + 0.70 (-EQX - EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)
2014	D + PE + EE + T + 0.70 (-EQX - EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)
2015	D + PE + EE + T + 0.70 (0.30EQX + 0.30EQPX + EQZ + EQPZ + EQY + EQPY)
2016	D + PE + EE + T + 0.70 (0.30EQX + 0.30EQPX - EQZ - EQPZ + EQY + EQPY)
2017	D + PE + EE + T + 0.70 (-0.30EQX - 0.30EQPX + EQZ + EQPZ + EQY + EQPY)
2018	D + PE + EE + T + 0.70 (-0.30EQX - 0.30EQPX - EQZ - EQPZ + EQY + EQPY)
2019	D + PE + EE + T + 0.70 (EQX + EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)
2020	D + PE + EE + T + 0.70 (EQX + EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)
2021	D + PE + EE + T + 0.70 (-EQX - EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)
2022	D + PE + EE + T + 0.70 (-EQX - EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)
2023	D + PE + EE + T + 0.70 (0.30EQX + 0.30EQPX + EQZ + EQPZ - EQY - EQPY)
2024	D + PE + EE + T + 0.70 (0.30EQX + 0.30EQPX - EQZ - EQPZ - EQY - EQPY)
2025	D + PE + EE + T + 0.70 (-0.30EQX - 0.30EQPX + EQZ + EQPZ - EQY - EQPY)
2026	D + PE + EE + T + 0.70 (-0.30EQX - 0.30EQPX - EQZ - EQPZ - EQY - EQPY)
2027	D + PE + EE + T + 0.75 L + 0.75*0.70 (EQX+EQPX+0.30EQZ+0.30EQPZ+EQY+EQPY)
2028	D + PE + EE + T + 0.75 L + 0.75*0.70 (EQX+EQPX-0.30EQZ- 0.30EQPZ+EQY+EQPY)
2029	D + PE + EE + T + 0.75 L + 0.75*0.70 (-EQX-EQPX+0.30EQZ+0.30EQPZ+EQY+EQPY)
2030	D + PE + EE + T + 0.75 L + 0.75*0.70 (-EQX-EQPX-0.30EQZ-0.30EQPZ+EQY+EQPY)
2031	D + PE + EE + T + 0.75 L + 0.75*0.70 (0.30EQX+0.30EQPX+EQZ+EQPZ+EQY+EQPY)
2032	D + PE + EE + T + 0.75 L + 0.75*0.70 (0.30EQX+0.30EQPX-EQZ-EQPZ+EQY+EQPY)
2033	D + PE + EE + T + 0.75 L + 0.75*0.70 (-0.30EQX-0.30EQPX+EQZ+EQPZ+EQY+EQPY)
2034	D + PE + EE + T + 0.75 L + 0.75*0.70 (-0.30EQX-0.30EQPX-EQZ-EQPZ+EQY+EQPY)
2035	D + PE + EE + T + 0.75 L + 0.75*0.70 (EQX+EQPX+0.30EQZ+0.30EQPZ-EQY-EQPY)
2036	D + PE + EE + T + 0.75 L + 0.75*0.70 (EQX+EQPX-0.30EQZ-0.30EQPZ-EQY- EQPY)
2037	D + PE + EE + T + 0.75 L + 0.75*0.70 (-EQX - EQPX+0.30EQZ+0.30EQPZ-EQY-EQPY)
2038	D + PE + EE + T + 0.75 L + 0.75*0.70 (-EQX-EQPX-0.30EQZ-0.30EQPZ-EQY-EQPY)
2039	D + PE + EE + T + 0.75 L + 0.75*0.70 (0.30EQX+ 0.30EQPX+EQZ+EQPZ-EQY-EQPY)

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 9 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2040	D + PE + EE + T + 0.75 L + 0.75*0.70 (0.30EQX+0.30EQPX -EQZ-EQPZ-EQY-EQPY)
2041	D + PE + EE + T + 0.75 L + 0.75*0.70 (-0.30EQX -0.30EQPX+EQZ+EQPZ-EQY-EQPY)
2042	D + PE + EE + T + 0.75 L + 0.75*0.70 (-0.30EQX-0.30EQPX-EQZ-EQPZ-EQY-EQPY)
CONDICIÓN OPERACIÓN	
2043	D + PO+ EO + T + TL
2044	D + PO+ EO + T + TL + L
2045	D + PO+ EO + T + TL + WX
2046	D + PO+ EO + T + TL - WX
2047	D + PO+ EO + T + TL + WZ
2048	D + PO+ EO + T + TL - WZ
2049	D + PO+ EO + T + TL + 0.75 L + 0.75 WX
2050	D + PO+ EO + T + TL + 0.75 L - 0.75 WX
2051	D + PO+ EO + T + TL +0.75 L + 0.75 WZ
2052	D + PO+ EO + T + TL +0.75 L - 0.75 WZ
2053	D + PO + EO + T + TL + 0.70 (EQX + EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)
2054	D + PO + EO + T + TL + 0.70 (EQX + EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)
2055	D + PO + EO + T + TL + 0.70 (-EQX - EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)
2056	D + PO + EO + T + TL + 0.70 (-EQX - EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)
2057	D + PO + EO + T + TL + 0.70 (0.30EQX + 0.30EQPX + EQZ + EQPZ + EQY + EQPY)
2058	D + PO + EO + T + TL + 0.70 (0.30EQX + 0.30EQPX - EQZ - EQPZ + EQY + EQPY)
2059	D + PO + EO + T + TL + 0.70 (-0.30EQX - 0.30EQPX + EQZ + EQPZ + EQY + EQPY)
2060	D + PO + EO + T + TL + 0.70 (-0.30EQX - 0.30EQPX - EQZ - EQPZ + EQY + EQPY)
2061	D + PO + EO + T + TL + 0.70 (EQX + EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)
2062	D + PO + EO + T + TL + 0.70 (EQX + EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)
2063	D + PO + EO + T + TL + 0.70 (-EQX - EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)
2064	D + PO + EO + T + TL + 0.70 (-EQX - EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)
2065	D + PO + EO + T + TL + 0.70 (0.30EQX + 0.30EQPX + EQZ + EQPZ - EQY - EQPY)
2066	D + PO + EO + T + TL + 0.70 (0.30EQX + 0.30EQPX - EQZ - EQPZ - EQY - EQPY)
2067	D + PO + EO + T + TL + 0.70 (-0.30EQX - 0.30EQPX + EQZ + EQPZ - EQY - EQPY)
2068	D + PO + EO + T + TL + 0.70 (-0.30EQX - 0.30EQPX - EQZ - EQPZ - EQY - EQPY)
2069	D + PO + EO +T+TL+0.75L+0.75*0.70(EQX+EQPX+0.30EQZ+0.30EQPZ+EQY+EQPY)
2070	D + PO + EO +T+TL+0.75L+0.75*0.70(EQX+EQPX-0.30EQZ-0.30EQPZ+EQY+EQPY)
2071	D + PO + EO +T+TL+0.75L+0.75*0.70(-EQX-EQPX+0.30EQZ+0.30EQPZ+EQY+EQPY)
2072	D + PO + EO +T+TL+0.75L+0.75*0.70(-EQX-EQPX-0.30EQZ-0.30EQPZ+EQY+EQPY)
2073	D + PO + EO +T+TL+0.75L+0.75*0.70(0.30EQX+0.30EQPX+EQZ+EQPZ+EQY+EQPY)
2074	D + PO + EO +T+TL+0.75L+0.75*0.70(0.30EQX+0.30EQPX-EQZ-EQPZ+EQY+EQPY)
2075	D + PO + EO +T+TL+0.75L+0.75*0.70(-0.30EQX-0.30EQPX+EQZ+EQPZ+EQY+EQPY)
2076	D + PO + EO +T+TL+0.75L+0.75*0.70(-0.30EQX-0.30EQPX -EQZ-EQPZ+EQY+EQPY)
2077	D + PO + EO +T+TL+0.75L+0.75*0.70(EQX+EQPX+0.30EQZ+0.30EQPZ-EQY-EQPY)
2078	D + PO + EO +T+TL+0.75L+0.75*0.70(EQX+EQPX-0.30EQZ-0.30EQPZ-EQY-EQPY)
2079	D + PO + EO +T+TL+0.75L+0.75*0.70(-EQX-EQPX+0.30EQZ+0.30EQPZ-EQY-EQPY)
2080	D + PO + EO +T+TL+0.75L+0.75*0.70(-EQX -EQPX-0.30EQZ-0.30EQPZ-EQY-EQPY)
2081	D + PO + EO +T+TL+0.75L+0.75*0.70(0.30EQX+0.30EQPX+EQZ+EQPZ-EQY-EQPY)



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 10 de 126
		1	1	

2082	$D + PO + EO + T + TL + 0.75L + 0.75 \cdot 0.70 (0.30EQX + 0.30EQPX - EQZ - EQPZ - EQY - EQPY)$
2083	$D + PO + EO + T + TL + 0.75L + 0.75 \cdot 0.70 (-0.30EQX - 0.30EQPX + EQZ + EQPZ - EQY - EQPY)$
2084	$D + PO + EO + T + TL + 0.75L + 0.75 \cdot 0.70 (-0.30EQX - 0.30EQPX - EQZ - EQPZ - EQY - EQPY)$
CONDICIÓN CONSTRUCCIÓN	
2085	$0.60 (D + PE + EE) + T + WX$
2086	$0.60 (D + PE + EE) + T - WX$
2087	$0.60 (D + PE + EE) + T + WZ$
2088	$0.60 (D + PE + EE) + T - WZ$
2089	$0.60 (D + PE + EE) + T + 0.70 (EQX + EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)$
2090	$0.60 (D + PE + EE) + T + 0.70 (EQX + EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)$
2091	$0.60 (D + PE + EE) + T + 0.70 (-EQX - EQPX + 0.30EQZ + 0.30EQPZ + EQY + EQPY)$
2092	$0.60 (D + PE + EE) + T + 0.70 (-EQX - EQPX - 0.30EQZ - 0.30EQPZ + EQY + EQPY)$
2093	$0.60 (D + PE + EE) + T + 0.70 (0.30EQX + 0.30EQPX + EQZ + EQPZ + EQY + EQPY)$
2094	$0.60 (D + PE + EE) + T + 0.70 (0.30EQX + 0.30EQPX - EQZ - EQPZ + EQY + EQPY)$
2095	$0.60 (D + PE + EE) + T + 0.70 (-0.30EQX - 0.30EQPX + EQZ + EQPZ + EQY + EQPY)$
2096	$0.60 (D + PE + EE) + T + 0.70 (-0.30EQX - 0.30EQPX - EQZ - EQPZ + EQY + EQPY)$
2097	$0.60 (D + PE + EE) + T + 0.70 (EQX + EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)$
2098	$0.60 (D + PE + EE) + T + 0.70 (EQX + EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)$
2099	$0.60 (D + PE + EE) + T + 0.70 (-EQX - EQPX + 0.30EQZ + 0.30EQPZ - EQY - EQPY)$
2100	$0.60 (D + PE + EE) + T + 0.70 (-EQX - EQPX - 0.30EQZ - 0.30EQPZ - EQY - EQPY)$
2101	$0.60 (D + PE + EE) + T + 0.70 (0.30EQX + 0.30EQPX + EQZ + EQPZ - EQY - EQPY)$
2102	$0.60 (D + PE + EE) + T + 0.70 (0.30EQX + 0.30EQPX - EQZ - EQPZ - EQY - EQPY)$
2103	$0.60 (D + PE + EE) + T + 0.70 (-0.30EQX - 0.30EQPX + EQZ + EQPZ - EQY - EQPY)$
2104	$0.60 (D + PE + EE) + T + 0.70 (-0.30EQX - 0.30EQPX - EQZ - EQPZ - EQY - EQPY)$
CONDICIÓN PRUEBA	
2105	$D + PT + ET + T + L$
CONDICIÓN MANTENIMIENTO	
2106	$D + EM + T + L$

2. DATOS DE ENTRADA

2.1. CARGAS SOBRE LAS FUNDACIONES



A continuación se presentan las cargas sobre las fundaciones, correspondientes a las reacciones de la estructura para cada combinación de carga. La orientación de los ejes de coordenadas corresponde a la indicada en las figuras 1 y 2.

  Corporación La fuerza que transforma Bolivia	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285 PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 11 de 126

Ejes 22 al 30. Apoyo 1



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	109.59	0.01	0.01	0.05	-0.05
2002	109.59	0.04	0.01	0.05	-0.17
2003	109.59	0.66	0.01	0.05	-0.73
2004	109.59	-0.01	0.01	0.05	0.05
2005	112.59	0.01	2.98	13.53	-0.04
2006	106.59	0.01	-3.58	-13.97	-0.05
2007	109.59	0.52	0.01	0.05	-0.65
2008	109.59	0.02	0.01	0.05	-0.07
2009	111.84	0.03	2.24	10.16	-0.14
2010	107.34	0.03	-2.68	-10.46	-0.14
2011	112.27	-1.21	-2.26	-10.00	-5.40
2012	107.21	-1.20	2.23	9.90	-5.39
2013	112.19	1.22	-2.21	-9.80	5.29
2014	107.13	1.23	2.28	10.10	5.31
2015	118.15	-0.36	-7.48	-33.15	-1.67
2016	101.28	-0.35	7.49	33.19	-1.63
2017	118.12	0.37	-7.47	-33.09	1.54
2018	101.25	0.38	7.51	33.25	1.58
2019	112.04	-1.21	-2.26	-10.00	-5.40
2020	106.98	-1.20	2.23	9.90	-5.38
2021	111.96	1.22	-2.21	-9.80	5.30
2022	106.90	1.23	2.28	10.10	5.31
2023	117.92	-0.36	-7.48	-33.15	-1.67
2024	101.05	-0.35	7.49	33.19	-1.63
2025	117.89	0.37	-7.47	-33.09	1.54
2026	101.02	0.38	7.51	33.25	1.58
2027	111.63	-0.89	-1.72	-7.61	-4.19
2028	107.77	-0.89	1.70	7.56	-4.18
2029	111.57	0.95	-1.68	-7.46	3.90
2030	107.71	0.95	1.74	7.71	3.91
2031	116.07	-0.25	-5.66	-25.09	-1.38
2032	103.29	-0.24	5.67	25.14	-1.35
2033	116.05	0.31	-5.65	-25.04	1.07
2034	103.28	0.31	5.69	25.19	1.10
2035	111.46	-0.89	-1.72	-7.61	-4.19
2036	107.60	-0.89	1.70	7.56	-4.18
2037	111.40	0.95	-1.68	-7.46	3.91
2038	107.54	0.95	1.74	7.71	3.92
2039	115.90	-0.25	-5.66	-25.09	-1.38
2040	103.12	-0.24	5.67	25.14	-1.34
2041	115.88	0.31	-5.65	-25.04	1.07
2042	103.10	0.31	5.69	25.19	1.10
2043	114.96	1.11	0.01	0.05	-4.89
2044	114.96	1.14	0.01	0.05	-5.02

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	153.42	0.01	0.02	0.07	-0.06
1002	131.50	0.06	0.01	0.06	-0.26
1003	131.50	0.53	0.01	0.06	-0.60
1004	131.50	0.00	0.01	0.06	0.02
1005	133.90	0.01	2.39	10.84	-0.05
1006	129.10	0.01	-2.86	-11.16	-0.05
1007	131.50	1.08	0.01	0.06	-1.27
1008	131.50	0.01	0.01	0.06	-0.04
1009	136.30	0.04	4.77	21.62	-0.18
1010	126.70	0.04	-5.74	-22.37	-0.18
1011	135.34	-1.70	-3.23	-14.30	-7.83
1012	128.11	-1.69	3.19	14.13	-7.81
1013	135.22	1.77	-3.16	-14.02	7.45
1014	127.99	1.78	3.26	14.42	7.46
1015	143.73	-0.49	-10.69	-47.37	-2.50
1016	119.63	-0.47	10.70	47.40	-2.44
1017	143.70	0.55	-10.67	-47.29	2.08
1018	119.60	0.57	10.72	47.49	2.14
1019	135.01	-1.70	-3.23	-14.29	-7.82
1020	127.78	-1.69	3.19	14.14	-7.81
1021	134.90	1.78	-3.16	-14.01	7.45
1022	127.67	1.78	3.26	14.42	7.47
1023	143.41	-0.49	-10.69	-47.37	-2.50
1024	119.31	-0.47	10.70	47.41	-2.44
1025	143.37	0.56	-10.67	-47.28	2.08
1026	119.27	0.57	10.72	47.49	2.15
1027	160.94	1.56	0.02	0.07	-6.85
1028	137.95	1.38	0.01	0.06	-6.07
1029	137.95	1.85	0.01	0.06	-6.41
1030	137.95	1.32	0.01	0.06	-5.80
1031	140.35	1.33	2.39	10.84	-5.87
1032	135.55	1.33	-2.86	-11.16	-5.87
1033	137.95	2.40	0.01	0.06	-7.08
1034	137.95	1.33	0.01	0.06	-5.85
1035	142.75	1.36	4.77	21.62	-5.99
1036	133.15	1.36	-5.74	-22.37	-6.00
1037	141.79	-0.38	-3.23	-14.30	-13.65
1038	134.56	-0.37	3.19	14.13	-13.63
1039	141.67	3.10	-3.16	-14.02	1.63
1040	134.44	3.10	3.26	14.42	1.65
1041	150.18	0.83	-10.69	-47.37	-8.32
1042	126.08	0.85	10.70	47.40	-8.26
1043	150.15	1.88	-10.67	-47.28	-3.74
1044	126.05	1.89	10.72	47.49	-3.68

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES A N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 12 de 126
	ESTE - OESTE				1	1	

2045	114.96	1.76	0.01	0.05	-5.57
2046	114.96	1.09	0.01	0.05	-4.80
2047	117.96	1.11	2.98	13.53	-4.89
2048	111.96	1.11	-3.58	-13.97	-4.89
2049	114.96	1.62	0.01	0.05	-5.50
2050	114.96	1.12	0.01	0.05	-4.92
2051	117.21	1.13	2.24	10.16	-4.98
2052	112.71	1.13	-2.68	-10.46	-4.99
2053	117.65	-0.11	-2.26	-10.00	-10.25
2054	112.58	-0.10	2.23	9.90	-10.23
2055	117.56	2.33	-2.21	-9.80	0.45
2056	112.50	2.33	2.28	10.10	0.46
2057	123.52	0.74	-7.48	-33.15	-6.52
2058	106.65	0.75	7.49	33.19	-6.48
2059	123.50	1.47	-7.47	-33.09	-3.31
2060	106.63	1.48	7.51	33.25	-3.27
2061	117.42	-0.11	-2.26	-10.00	-10.24
2062	112.36	-0.10	2.23	9.91	-10.23
2063	117.34	2.33	-2.21	-9.80	0.45
2064	112.27	2.33	2.28	10.10	0.46
2065	123.29	0.74	-7.48	-33.15	-6.51
2066	106.42	0.75	7.49	33.19	-6.47
2067	123.27	1.47	-7.47	-33.09	-3.31
2068	106.40	1.48	7.51	33.25	-3.26
2069	117.01	0.21	-1.72	-7.61	-9.04
2070	113.15	0.21	1.70	7.56	-9.03
2071	116.94	2.05	-1.68	-7.46	-0.94
2072	113.09	2.05	1.74	7.71	-0.93
2073	121.44	0.85	-5.66	-25.09	-6.23
2074	108.67	0.86	5.67	25.14	-6.19
2075	121.42	1.41	-5.65	-25.04	-3.78
2076	108.65	1.41	5.69	25.19	-3.75
2077	116.83	0.21	-1.72	-7.60	-9.04
2078	112.98	0.21	1.70	7.56	-9.03
2079	116.77	2.05	-1.68	-7.46	-0.94
2080	112.91	2.06	1.74	7.71	-0.93
2081	121.27	0.85	-5.66	-25.09	-6.22
2082	108.50	0.86	5.68	25.14	-6.19
2083	121.25	1.41	-5.65	-25.04	-3.78
2084	108.48	1.42	5.69	25.19	-3.75
2085	65.75	0.66	0.01	0.03	-0.71
2086	65.75	-0.01	0.01	0.03	0.06
2087	68.75	0.01	2.98	13.51	-0.03
2088	62.75	0.01	-3.59	-13.99	-0.03
2089	68.44	-1.21	-2.26	-10.02	-5.38
2090	63.38	-1.21	2.23	9.88	-5.37
2091	68.36	1.22	-2.22	-9.82	5.31
2092	63.29	1.22	2.28	10.08	5.32
2093	74.31	-0.35	-7.49	-33.17	-1.58

1045	141.46	-0.38	-3.23	-14.29	-13.64
1046	134.23	-0.37	3.19	14.14	-13.62
1047	141.35	3.10	-3.16	-14.01	1.64
1048	134.12	3.10	3.26	14.42	1.66
1049	149.86	0.84	-10.69	-47.37	-8.31
1050	125.76	0.85	10.70	47.41	-8.25
1051	149.82	1.88	-10.67	-47.28	-3.73
1052	125.72	1.89	10.72	47.49	-3.67
1053	98.63	1.05	0.01	0.05	-1.13
1054	98.63	-0.02	0.01	0.05	0.10
1055	103.43	0.01	4.77	21.61	-0.04
1056	93.83	0.01	-5.74	-22.39	-0.04
1057	102.46	-1.73	-3.23	-14.31	-7.69
1058	95.23	-1.73	3.18	14.12	-7.67
1059	102.35	1.74	-3.16	-14.03	7.59
1060	95.12	1.75	3.25	14.40	7.60
1061	110.86	-0.52	-10.70	-47.39	-2.37
1062	86.76	-0.51	10.69	47.39	-2.30
1063	110.82	0.52	-10.67	-47.30	2.22
1064	86.72	0.54	10.72	47.47	2.28
1065	102.14	-1.73	-3.23	-14.31	-7.68
1066	94.91	-1.72	3.18	14.12	-7.67
1067	102.02	1.74	-3.16	-14.03	7.59
1068	94.79	1.75	3.26	14.41	7.61
1069	110.53	-0.52	-10.70	-47.38	-2.36
1070	86.43	-0.50	10.70	47.39	-2.30
1071	110.50	0.52	-10.67	-47.30	2.22
1072	86.40	0.54	10.72	47.48	2.29
1073	201.23	0.04	0.02	0.09	-0.18
1074	46.60	0.04	0.00	0.00	-0.17



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 13 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2094	57.44	-0.34	7.49	33.17	-1.54
2095	74.29	0.35	-7.47	-33.11	1.48
2096	57.42	0.36	7.50	33.23	1.52
2097	68.21	-1.21	-2.26	-10.02	-5.38
2098	63.15	-1.21	2.23	9.88	-5.37
2099	68.13	1.22	-2.21	-9.82	5.32
2100	63.07	1.22	2.28	10.08	5.33
2101	74.08	-0.35	-7.49	-33.17	-1.57
2102	57.21	-0.34	7.49	33.17	-1.53
2103	74.06	0.35	-7.47	-33.11	1.48
2104	57.19	0.36	7.50	33.23	1.52
2105	167.69	0.04	0.02	0.08	-0.17
2106	38.83	0.04	0.00	0.00	-0.16

Ejes 22 al 30. Apoyo 2



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	111.03	0.006	-0.012	-0.051	-0.027
2002	111.03	0.007	-0.012	-0.051	-0.032
2003	111.03	0.656	-0.012	-0.051	-0.707
2004	111.03	-0.014	-0.012	-0.051	0.062
2005	108.03	0.006	3.583	13.983	-0.029
2006	114.03	0.006	-2.984	-13.514	-0.027
2007	111.03	0.494	-0.012	-0.051	-0.541
2008	111.03	-0.008	-0.012	-0.051	0.036
2009	108.78	0.007	2.684	10.475	-0.032
2010	113.28	0.007	-2.241	-10.148	-0.03
2011	113.7	-0.849	-2.283	-10.102	-3.789
2012	108.64	-0.846	2.209	9.8	-3.777
2013	113.62	0.857	-2.233	-9.904	3.718
2014	108.56	0.86	2.259	9.998	3.73
2015	119.58	-0.255	-7.506	-33.252	-1.176
2016	102.71	-0.246	7.467	33.088	-1.135
2017	119.56	0.257	-7.491	-33.193	1.076
2018	102.68	0.266	7.482	33.147	1.117
2019	113.5	-0.848	-2.282	-10.099	-3.785
2020	108.44	-0.845	2.21	9.803	-3.772
2021	113.42	0.858	-2.232	-9.901	3.723
2022	108.35	0.861	2.26	10.001	3.735
2023	119.37	-0.254	-7.505	-33.249	-1.172
2024	102.5	-0.245	7.468	33.091	-1.131
2025	119.35	0.258	-7.49	-33.189	1.081
2026	102.48	0.267	7.483	33.151	1.122
2027	113.07	-0.64	-1.742	-7.709	-2.879
2028	109.21	-0.638	1.681	7.455	-2.87
2029	113	0.651	-1.704	-7.559	2.805

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	155.44	0.009	-0.016	-0.071	-0.038
1002	133.234	0.009	-0.014	-0.061	-0.04
1003	133.234	0.527	-0.014	-0.061	-0.577
1004	133.234	-0.009	-0.014	-0.061	0.039
1005	130.835	0.008	2.861	11.166	-0.034
1006	135.634	0.007	-2.392	-10.831	-0.032
1007	133.234	1.048	-0.014	-0.061	-1.125
1008	133.234	-0.024	-0.014	-0.061	0.106
1009	128.435	0.009	5.737	22.393	-0.04
1010	138.034	0.008	-4.77	-21.602	-0.037
1011	137.056	-1.213	-3.258	-14.42	-5.412
1012	129.825	-1.209	3.159	14.011	-5.395
1013	136.939	1.224	-3.187	-14.138	5.313
1014	129.709	1.228	3.23	14.294	5.33
1015	145.451	-0.365	-10.72	-47.491	-1.679
1016	121.349	-0.351	10.67	47.28	-1.62
1017	145.416	0.367	-10.699	-47.406	1.539
1018	121.314	0.38	10.691	47.365	1.597
1019	136.76	-1.211	-3.257	-14.416	-5.405
1020	129.529	-1.207	3.16	14.016	-5.388
1021	136.643	1.226	-3.186	-14.133	5.32
1022	129.413	1.23	3.231	14.298	5.337
1023	145.155	-0.363	-10.719	-47.487	-1.672
1024	121.053	-0.35	10.671	47.285	-1.614
1025	145.12	0.368	-10.698	-47.402	1.545
1026	121.018	0.382	10.692	47.369	1.604
1027	161.915	1.555	-0.016	-0.071	-6.843
1028	138.784	1.335	-0.014	-0.061	-5.873
1029	138.784	1.853	-0.014	-0.061	-6.409

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 14 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2030	109.15	0.654	1.718	7.605	2.814
2031	117.5	-0.192	-5.686	-25.189	-0.906
2032	104.73	-0.185	5.651	25.04	-0.875
2033	117.49	0.198	-5.674	-25.144	0.81
2034	104.71	0.205	5.662	25.085	0.841
2035	112.91	-0.64	-1.741	-7.706	-2.876
2036	109.05	-0.637	1.681	7.457	-2.866
2037	112.85	0.652	-1.704	-7.556	2.808
2038	108.99	0.654	1.719	7.607	2.818
2039	117.35	-0.191	-5.685	-25.187	-0.903
2040	104.57	-0.184	5.651	25.042	-0.872
2041	117.33	0.199	-5.674	-25.141	0.813
2042	104.55	0.206	5.663	25.088	0.844
2043	115.65	1.111	-0.012	-0.051	-4.888
2044	115.65	1.112	-0.012	-0.051	-4.892
2045	115.65	1.76	-0.012	-0.051	-5.567
2046	115.65	1.091	-0.012	-0.051	-4.798
2047	112.65	1.111	3.583	13.983	-4.889
2048	118.65	1.111	-2.984	-13.514	-4.887
2049	115.65	1.599	-0.012	-0.051	-5.401
2050	115.65	1.096	-0.012	-0.051	-4.824
2051	113.4	1.112	2.684	10.474	-4.892
2052	117.9	1.112	-2.241	-10.148	-4.891
2053	118.33	0.256	-2.283	-10.103	-8.65
2054	113.27	0.259	2.209	9.799	-8.638
2055	118.25	1.962	-2.233	-9.905	-1.142
2056	113.19	1.965	2.259	9.997	-1.13
2057	124.21	0.85	-7.506	-33.252	-6.037
2058	107.33	0.859	7.467	33.088	-5.996
2059	124.18	1.362	-7.491	-33.193	-3.784
2060	107.31	1.371	7.482	33.147	-3.743
2061	118.12	0.257	-2.282	-10.099	-8.645
2062	113.06	0.26	2.21	9.803	-8.633
2063	118.04	1.963	-2.232	-9.901	-1.138
2064	112.98	1.966	2.26	10	-1.125
2065	124	0.851	-7.505	-33.249	-6.032
2066	107.13	0.86	7.468	33.091	-5.991
2067	123.97	1.363	-7.49	-33.19	-3.78
2068	107.1	1.372	7.483	33.15	-3.739
2069	117.69	0.464	-1.742	-7.709	-7.74
2070	113.84	0.466	1.68	7.455	-7.73
2071	117.63	1.756	-1.704	-7.559	-2.056
2072	113.77	1.758	1.718	7.604	-2.046
2073	122.13	0.913	-5.686	-25.189	-5.766
2074	109.35	0.92	5.651	25.04	-5.735
2075	122.11	1.303	-5.675	-25.144	-4.05
2076	109.34	1.31	5.662	25.085	-4.019
2077	117.53	0.465	-1.741	-7.706	-7.736

1030	138.784	1.317	-0.014	-0.061	-5.794
1031	136.385	1.333	2.861	11.166	-5.866
1032	141.184	1.333	-2.392	-10.832	-5.865
1033	138.784	2.373	-0.014	-0.061	-6.958
1034	138.784	1.302	-0.014	-0.061	-5.727
1035	133.985	1.335	5.737	22.393	-5.872
1036	143.584	1.334	-4.77	-21.602	-5.869
1037	142.606	0.113	-3.259	-14.421	-11.244
1038	135.375	0.117	3.158	14.011	-11.227
1039	142.489	2.55	-3.187	-14.138	-0.52
1040	135.259	2.554	3.23	14.293	-0.502
1041	151.001	0.961	-10.72	-47.492	-7.511
1042	126.899	0.974	10.67	47.28	-7.453
1043	150.966	1.692	-10.699	-47.407	-4.294
1044	126.864	1.706	10.691	47.365	-4.235
1045	142.31	0.114	-3.257	-14.416	-11.238
1046	135.079	0.118	3.16	14.016	-11.22
1047	142.193	2.552	-3.186	-14.133	-0.513
1048	134.963	2.556	3.231	14.298	-0.495
1049	150.705	0.963	-10.719	-47.487	-7.504
1050	126.603	0.976	10.671	47.284	-7.446
1051	150.67	1.694	-10.698	-47.402	-4.287
1052	126.568	1.707	10.692	47.369	-4.228
1053	99.926	1.045	-0.01	-0.046	-1.112
1054	99.926	-0.027	-0.01	-0.046	0.118
1055	95.126	0.006	5.74	22.408	-0.027
1056	104.725	0.005	-4.767	-21.586	-0.024
1057	103.747	-1.216	-3.255	-14.405	-5.399
1058	96.517	-1.212	3.162	14.026	-5.382
1059	103.631	1.221	-3.184	-14.122	5.326
1060	96.4	1.225	3.233	14.309	5.343
1061	112.142	-0.367	-10.717	-47.476	-1.666
1062	88.04	-0.354	10.673	47.295	-1.607
1063	112.107	0.364	-10.695	-47.391	1.552
1064	88.005	0.377	10.695	47.38	1.61
1065	103.451	-1.214	-3.254	-14.4	-5.392
1066	96.221	-1.21	3.163	14.031	-5.375
1067	103.335	1.223	-3.183	-14.118	5.333
1068	96.104	1.227	3.234	14.314	5.35
1069	111.846	-0.366	-10.715	-47.471	-1.659
1070	87.744	-0.353	10.674	47.3	-1.601
1071	111.811	0.365	-10.694	-47.387	1.558
1072	87.709	0.379	10.696	47.385	1.617
1073	203.364	0.009	-0.021	-0.091	-0.038
1074	46.595	0.006	0	-0.002	-0.025



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 15 de 126
	ESTE - OESTE		1	1	

2078	113.68	0.467	1.681	7.457	-7.727
2079	117.47	1.757	-1.704	-7.557	-2.052
2080	113.62	1.759	1.719	7.607	-2.043
2081	121.97	0.914	-5.685	-25.187	-5.763
2082	109.2	0.921	5.651	25.042	-5.732
2083	121.95	1.304	-5.674	-25.142	-4.047
2084	109.18	1.311	5.663	25.087	-4.016
2085	66.617	0.653	-0.007	-0.03	-0.696
2086	66.617	-0.017	-0.007	-0.03	0.073
2087	63.617	0.004	3.587	14.003	-0.018
2088	69.617	0.004	-2.98	-13.493	-0.016
2089	69.292	-0.851	-2.278	-10.082	-3.779
2090	64.231	-0.848	2.214	9.82	-3.766
2091	69.211	0.855	-2.228	-9.884	3.729
2092	64.149	0.858	2.264	10.018	3.741
2093	75.168	-0.245	-7.501	-33.23	-1.112
2094	58.297	-0.236	7.472	33.11	-1.071
2095	75.145	0.242	-7.487	-33.174	1.033
2096	58.273	0.252	7.486	33.166	1.074
2097	69.085	-0.85	-2.277	-10.079	-3.774
2098	64.024	-0.847	2.215	9.823	-3.762
2099	69.004	0.856	-2.228	-9.881	3.734
2100	63.942	0.859	2.264	10.021	3.746
2101	74.961	-0.244	-7.5	-33.227	-1.107
2102	58.089	-0.235	7.473	33.113	-1.066
2103	74.938	0.243	-7.486	-33.171	1.038
2104	58.066	0.253	7.487	33.169	1.079
2105	169.47	0.007	-0.017	-0.076	-0.033
2106	38.829	0.005	0	-0.002	-0.021

Ejes 22 al 30. Apoyo 3



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	140.79	0.01	0.012	0.051	-0.045
2002	147.6	0.039	0.012	0.051	-0.171
2003	140.79	0.039	0.012	0.051	-0.171
2004	140.79	-0.01	0.012	0.051	0.045
2005	144.91	0.01	3.959	17.06	-0.043
2006	136.67	0.01	-4.561	-17.465	-0.045
2007	145.9	0.053	0.012	0.051	-0.234
2008	145.9	0.016	0.012	0.051	-0.072
2009	148.99	0.031	2.972	12.808	-0.138
2010	142.81	0.032	-3.418	-13.086	-0.14
2011	146.38	-1.202	-3.99	-16.558	-5.376
2012	135.85	-1.199	3.928	16.375	-5.364
2013	146.27	1.218	-3.907	-16.282	5.27
2014	135.74	1.221	4.011	16.652	5.283
2015	158.62	-0.358	-13.199	-54.884	-1.665

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	197.104	0.014	0.016	0.072	-0.063
1002	179.841	0.058	0.014	0.062	-0.256
1003	168.947	0.035	0.014	0.061	-0.154
1004	168.947	-0.004	0.014	0.061	0.018
1005	172.242	0.012	3.172	13.669	-0.053
1006	165.651	0.012	-3.644	-13.952	-0.054
1007	175.756	0.087	0.014	0.062	-0.381
1008	175.756	0.008	0.014	0.062	-0.037
1009	182.347	0.04	6.33	27.277	-0.178
1010	169.165	0.041	-7.302	-27.965	-0.181
1011	183.738	-1.69	-5.703	-23.666	-7.797
1012	168.697	-1.686	5.609	23.381	-7.778
1013	183.579	1.767	-5.584	-23.271	7.413
1014	168.538	1.771	5.728	23.777	7.431
1015	201.23	-0.485	-18.858	-78.417	-2.495

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 16 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				



2016	123.53	-0.348	13.195	54.894	-1.622
2017	158.59	0.368	-13.174	-54.801	1.529
2018	123.49	0.378	13.22	54.977	1.572
2019	145.84	-1.201	-3.988	-16.549	-5.372
2020	135.31	-1.198	3.93	16.384	-5.359
2021	145.73	1.219	-3.905	-16.273	5.274
2022	135.2	1.222	4.013	16.661	5.287
2023	158.09	-0.357	-13.197	-54.875	-1.661
2024	122.99	-0.347	13.197	54.903	-1.618
2025	158.05	0.369	-13.172	-54.792	1.533
2026	122.96	0.378	13.222	54.986	1.576
2027	150.15	-0.886	-3.037	-12.603	-4.176
2028	142.13	-0.884	2.996	12.489	-4.167
2029	150.07	0.946	-2.974	-12.393	3.885
2030	142.05	0.949	3.059	12.699	3.894
2031	159.4	-0.249	-9.991	-41.542	-1.374
2032	132.83	-0.242	9.993	41.575	-1.342
2033	159.37	0.304	-9.972	-41.479	1.06
2034	132.8	0.312	10.012	41.638	1.092
2035	149.75	-0.885	-3.035	-12.596	-4.173
2036	141.73	-0.883	2.997	12.496	-4.163
2037	149.66	0.947	-2.973	-12.387	3.888
2038	141.64	0.949	3.06	12.705	3.897
2039	158.99	-0.248	-9.989	-41.536	-1.371
2040	132.42	-0.241	9.995	41.582	-1.338
2041	158.97	0.305	-9.97	-41.472	1.063
2042	132.39	0.312	10.014	41.645	1.095
2043	149.09	1.103	0.012	0.051	-4.852
2044	155.9	1.131	0.012	0.052	-4.978
2045	149.09	1.131	0.012	0.051	-4.978
2046	149.09	1.082	0.012	0.051	-4.762
2047	153.21	1.102	3.959	17.061	-4.85
2048	144.97	1.103	-4.561	-17.465	-4.852
2049	154.2	1.146	0.012	0.051	-5.041
2050	154.2	1.109	0.012	0.051	-4.879
2051	157.29	1.124	2.973	12.808	-4.946
2052	151.11	1.124	-3.418	-13.086	-4.947
2053	154.68	-0.109	-3.99	-16.558	-10.183
2054	144.15	-0.106	3.928	16.375	-10.171
2055	154.57	2.311	-3.907	-16.281	0.463
2056	144.04	2.314	4.011	16.652	0.476
2057	166.92	0.734	-13.199	-54.884	-6.472
2058	131.83	0.744	13.195	54.894	-6.429
2059	166.89	1.46	-13.174	-54.801	-3.278
2060	131.79	1.47	13.22	54.977	-3.235
2061	154.14	-0.108	-3.988	-16.549	-10.179
2062	143.62	-0.105	3.93	16.384	-10.166
2063	154.03	2.312	-3.905	-16.273	0.467

1016	151.094	-0.471	18.848	78.408	-2.434
1017	201.182	0.552	-18.823	-78.298	2.068
1018	151.046	0.566	18.883	78.527	2.129
1019	182.974	-1.689	-5.7	-23.654	-7.791
1020	167.933	-1.685	5.612	23.394	-7.772
1021	182.815	1.768	-5.581	-23.258	7.418
1022	167.774	1.772	5.731	23.789	7.437
1023	200.466	-0.484	-18.855	-78.404	-2.489
1024	150.33	-0.47	18.851	78.421	-2.428
1025	200.418	0.553	-18.82	-78.285	2.074
1026	150.282	0.567	18.886	78.54	2.135
1027	208.728	1.544	0.016	0.072	-6.792
1028	189.804	1.369	0.014	0.062	-6.024
1029	178.909	1.346	0.014	0.062	-5.923
1030	178.909	1.307	0.014	0.062	-5.75
1031	182.205	1.323	3.172	13.669	-5.821
1032	175.614	1.323	-3.644	-13.952	-5.823
1033	185.719	1.398	0.014	0.062	-6.15
1034	185.719	1.319	0.014	0.062	-5.805
1035	192.31	1.351	6.33	27.277	-5.946
1036	179.128	1.352	-7.302	-27.964	-5.949
1037	193.701	-0.379	-5.703	-23.666	-13.565
1038	178.66	-0.375	5.609	23.382	-13.547
1039	193.542	3.078	-5.584	-23.271	1.644
1040	178.501	3.082	5.728	23.777	1.662
1041	211.193	0.826	-18.858	-78.417	-8.263
1042	161.057	0.84	18.848	78.409	-8.202
1043	211.145	1.863	-18.823	-78.298	-3.7
1044	161.009	1.877	18.883	78.527	-3.639
1045	192.937	-0.378	-5.7	-23.653	-13.559
1046	177.896	-0.374	5.612	23.394	-13.541
1047	192.778	3.079	-5.581	-23.258	1.65
1048	177.737	3.083	5.731	23.79	1.668
1049	210.429	0.827	-18.855	-78.404	-8.257
1050	160.293	0.841	18.851	78.421	-8.196
1051	210.381	1.864	-18.82	-78.285	-3.695
1052	160.245	1.878	18.887	78.54	-3.634
1053	126.71	0.055	0.01	0.046	-0.242
1054	126.71	-0.023	0.01	0.046	0.103
1055	133.301	0.009	6.327	27.261	-0.038
1056	120.119	0.009	-7.305	-27.98	-0.041
1057	134.692	-1.722	-5.706	-23.682	-7.657
1058	119.651	-1.718	5.605	23.366	-7.639
1059	134.533	1.735	-5.588	-23.287	7.552
1060	119.492	1.739	5.724	23.761	7.571
1061	152.184	-0.517	-18.862	-78.432	-2.355
1062	102.048	-0.503	18.844	78.393	-2.294
1063	152.136	0.52	-18.826	-78.314	2.208

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 17 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2064	143.5	2.315	4.013	16.661	0.48
2065	166.39	0.735	-13.197	-54.875	-6.468
2066	131.29	0.745	13.197	54.903	-6.425
2067	166.36	1.461	-13.172	-54.792	-3.274
2068	131.26	1.471	13.222	54.986	-3.231
2069	158.45	0.207	-3.037	-12.603	-8.983
2070	150.43	0.209	2.996	12.489	-8.974
2071	158.37	2.039	-2.974	-12.393	-0.922
2072	150.35	2.041	3.059	12.699	-0.913
2073	167.7	0.844	-9.991	-41.542	-6.181
2074	141.13	0.851	9.993	41.575	-6.149
2075	167.67	1.397	-9.972	-41.479	-3.747
2076	141.1	1.404	10.012	41.638	-3.715
2077	158.05	0.207	-3.035	-12.596	-8.98
2078	150.03	0.21	2.998	12.496	-8.97
2079	157.96	2.04	-2.972	-12.386	-0.919
2080	149.94	2.042	3.061	12.706	-0.91
2081	167.3	0.844	-9.989	-41.535	-6.178
2082	140.72	0.852	9.995	41.582	-6.146
2083	167.27	1.397	-9.97	-41.472	-3.744
2084	140.7	1.405	10.014	41.645	-3.712
2085	84.473	0.035	0.007	0.031	-0.153
2086	84.473	-0.014	0.007	0.031	0.063
2087	88.593	0.006	3.955	17.04	-0.026
2088	80.354	0.006	-4.565	-17.486	-0.027
2089	90.061	-1.206	-3.995	-16.579	-5.358
2090	79.532	-1.203	3.923	16.354	-5.346
2091	89.949	1.214	-3.912	-16.302	5.288
2092	79.421	1.217	4.007	16.631	5.301
2093	102.3	-0.345	-13.203	-54.902	-1.571
2094	67.209	-0.335	13.191	54.875	-1.528
2095	102.27	0.346	-13.179	-54.823	1.471
2096	67.177	0.356	13.215	54.955	1.513
2097	89.526	-1.205	-3.993	-16.57	-5.354
2098	78.997	-1.202	3.926	16.363	-5.342
2099	89.414	1.215	-3.91	-16.293	5.292
2100	78.886	1.218	4.009	16.64	5.305
2101	101.77	-0.344	-13.201	-54.893	-1.567
2102	66.674	-0.334	13.193	54.884	-1.524
2103	101.74	0.347	-13.177	-54.814	1.475
2104	66.642	0.357	13.217	54.963	1.517
2105	217.64	0.039	0.017	0.076	-0.172
2106	63.342	0.036	0	0.002	-0.16



1064	102	0.534	18.88	78.512	2.269
1065	133.928	-1.721	-5.703	-23.669	-7.651
1066	118.887	-1.717	5.609	23.378	-7.633
1067	133.769	1.736	-5.585	-23.274	7.558
1068	118.728	1.74	5.727	23.774	7.576
1069	151.42	-0.516	-18.859	-78.42	-2.349
1070	101.284	-0.502	18.847	78.406	-2.288
1071	151.372	0.521	-18.823	-78.301	2.213
1072	101.236	0.535	18.883	78.524	2.274
1073	259.8	0.041	0.021	0.092	-0.181
1074	74.649	0.038	0	0.002	-0.166

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 18 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

Ejes 22 al 30. Apoyo 4



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	141.75	0.006	-0.012	-0.051	-0.027
2002	146.39	0.007	-0.012	-0.051	-0.032
2003	141.75	0.035	-0.012	-0.051	-0.153
2004	141.75	-0.014	-0.012	-0.051	0.062
2005	137.63	0.007	4.561	17.527	-0.029
2006	145.87	0.006	-3.959	-16.999	-0.027
2007	145.23	0.028	-0.012	-0.051	-0.125
2008	145.23	-0.008	-0.012	-0.051	0.036
2009	142.14	0.007	3.418	13.132	-0.032
2010	148.32	0.007	-2.972	-12.762	-0.031
2011	147.34	-0.844	-4.013	-16.66	-3.771
2012	136.81	-0.842	3.905	16.273	-3.758
2013	147.22	0.853	-3.93	-16.384	3.699
2014	136.69	0.856	3.988	16.55	3.711
2015	159.58	-0.254	-13.222	-54.986	-1.171
2016	124.49	-0.244	13.172	54.792	-1.13
2017	159.54	0.256	-13.197	-54.903	1.07
2018	124.45	0.265	13.197	54.875	1.111
2019	146.81	-0.843	-4.011	-16.652	-3.766
2020	136.29	-0.841	3.907	16.282	-3.754
2021	146.7	0.854	-3.928	-16.375	3.704
2022	136.17	0.857	3.99	16.558	3.716
2023	159.05	-0.253	-13.22	-54.977	-1.166
2024	123.96	-0.243	13.174	54.801	-1.125
2025	159.02	0.257	-13.195	-54.894	1.075
2026	123.93	0.266	13.199	54.884	1.116
2027	149.49	-0.637	-3.06	-12.705	-2.865
2028	141.46	-0.635	2.973	12.387	-2.856
2029	149.4	0.648	-2.997	-12.496	2.79
2030	141.38	0.65	3.035	12.596	2.8
2031	158.73	-0.191	-10.014	-41.645	-0.902
2032	132.16	-0.184	9.97	41.473	-0.871
2033	158.7	0.197	-9.995	-41.582	0.805
2034	132.13	0.204	9.989	41.536	0.836
2035	149.09	-0.636	-3.059	-12.699	-2.862
2036	141.07	-0.634	2.974	12.394	-2.852
2037	149	0.649	-2.996	-12.489	2.794
2038	140.98	0.651	3.037	12.603	2.803
2039	158.33	-0.19	-10.012	-41.638	-0.898
2040	131.76	-0.183	9.972	41.479	-0.867
2041	158.31	0.198	-9.993	-41.575	0.809
2042	131.74	0.205	9.991	41.543	0.84
2043	148.85	1.102	-0.012	-0.051	-4.849
2044	153.49	1.103	-0.012	-0.051	-4.854
2045	148.85	1.131	-0.012	-0.051	-4.975

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	198.453	0.009	-0.016	-0.071	-0.038
1002	177.528	0.009	-0.014	-0.061	-0.04
1003	170.103	0.03	-0.014	-0.061	-0.133
1004	170.103	-0.009	-0.014	-0.061	0.039
1005	166.807	0.008	3.644	14.001	-0.034
1006	173.398	0.007	-3.172	-13.619	-0.032
1007	174.743	0.054	-0.014	-0.061	-0.239
1008	174.743	-0.024	-0.014	-0.061	0.106
1009	168.152	0.009	7.302	28.063	-0.04
1010	181.334	0.008	-6.33	-27.177	-0.037
1011	182.718	-1.207	-5.731	-23.789	-5.385
1012	167.681	-1.203	5.581	23.258	-5.367
1013	182.553	1.218	-5.612	-23.394	5.286
1014	167.515	1.222	5.7	23.654	5.303
1015	200.205	-0.363	-18.886	-78.54	-1.671
1016	150.078	-0.349	18.82	78.286	-1.612
1017	200.155	0.365	-18.851	-78.421	1.53
1018	150.029	0.378	18.855	78.404	1.589
1019	181.971	-1.205	-5.728	-23.776	-5.378
1020	166.933	-1.201	5.584	23.271	-5.361
1021	181.806	1.22	-5.609	-23.381	5.292
1022	166.768	1.224	5.703	23.666	5.31
1023	199.458	-0.361	-18.883	-78.527	-1.664
1024	149.331	-0.348	18.823	78.298	-1.606
1025	199.408	0.366	-18.848	-78.408	1.537
1026	149.282	0.38	18.858	78.417	1.596
1027	208.389	1.543	-0.016	-0.072	-6.788
1028	186.045	1.324	-0.014	-0.062	-5.826
1029	178.62	1.345	-0.014	-0.061	-5.919
1030	178.62	1.306	-0.014	-0.061	-5.747
1031	175.324	1.323	3.644	14.001	-5.82
1032	181.915	1.322	-3.172	-13.619	-5.818
1033	183.26	1.369	-0.014	-0.062	-6.025
1034	183.26	1.291	-0.014	-0.062	-5.68
1035	176.669	1.324	7.302	28.063	-5.825
1036	189.851	1.323	-6.33	-27.178	-5.822
1037	191.235	0.108	-5.731	-23.789	-11.171
1038	176.198	0.112	5.581	23.258	-11.153
1039	191.07	2.533	-5.612	-23.394	-0.5
1040	176.032	2.537	5.7	23.654	-0.483
1041	208.722	0.952	-18.886	-78.54	-7.457
1042	158.595	0.966	18.82	78.285	-7.398
1043	208.672	1.68	-18.851	-78.421	-4.255
1044	158.546	1.693	18.855	78.404	-4.197
1045	190.488	0.11	-5.728	-23.777	-11.164

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 19 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2046	148.85	1.082	-0.012	-0.051	-4.759
2047	144.73	1.102	4.561	17.527	-4.85
2048	152.97	1.102	-3.959	-16.999	-4.848
2049	152.33	1.124	-0.012	-0.051	-4.947
2050	152.33	1.088	-0.012	-0.051	-4.785
2051	149.24	1.103	3.417	13.132	-4.853
2052	155.42	1.103	-2.972	-12.762	-4.852
2053	154.43	0.251	-4.013	-16.661	-8.592
2054	143.91	0.254	3.905	16.273	-8.58
2055	154.32	1.949	-3.93	-16.384	-1.123
2056	143.79	1.952	3.988	16.549	-1.11
2057	166.67	0.842	-13.222	-54.986	-5.992
2058	131.58	0.852	13.172	54.792	-5.951
2059	166.64	1.351	-13.197	-54.903	-3.751
2060	131.55	1.361	13.197	54.875	-3.71
2061	153.91	0.252	-4.011	-16.652	-8.587
2062	143.38	0.255	3.907	16.282	-8.575
2063	153.79	1.95	-3.928	-16.375	-1.118
2064	143.27	1.953	3.99	16.558	-1.106
2065	166.15	0.843	-13.22	-54.977	-5.987
2066	131.06	0.853	13.174	54.801	-5.946
2067	166.12	1.353	-13.195	-54.894	-3.747
2068	131.03	1.362	13.199	54.884	-3.706
2069	156.58	0.459	-3.06	-12.705	-7.687
2070	148.56	0.461	2.972	12.387	-7.677
2071	156.49	1.744	-2.998	-12.496	-2.031
2072	148.47	1.746	3.035	12.596	-2.022
2073	165.83	0.905	-10.014	-41.645	-5.723
2074	139.26	0.912	9.97	41.472	-5.692
2075	165.8	1.293	-9.995	-41.582	-4.016
2076	139.23	1.3	9.989	41.536	-3.985
2077	156.19	0.46	-3.059	-12.699	-7.683
2078	148.17	0.462	2.974	12.393	-7.674
2079	156.1	1.745	-2.996	-12.489	-2.028
2080	148.08	1.747	3.037	12.603	-2.018
2081	165.43	0.906	-10.012	-41.638	-5.72
2082	138.86	0.913	9.972	41.479	-5.689
2083	165.4	1.294	-9.993	-41.575	-4.013
2084	138.84	1.301	9.991	41.542	-3.981
2085	85.051	0.032	-0.007	-0.031	-0.142
2086	85.051	-0.017	-0.007	-0.031	0.073
2087	80.932	0.004	4.565	17.547	-0.018
2088	89.171	0.004	-3.955	-16.978	-0.016
2089	90.634	-0.847	-4.009	-16.64	-3.76
2090	80.107	-0.844	3.91	16.293	-3.747
2091	90.518	0.851	-3.926	-16.363	3.71
2092	79.992	0.853	3.993	16.57	3.722
2093	102.87	-0.244	-13.217	-54.963	-1.106

1046	175.45	0.114	5.584	23.271	-11.147
1047	190.323	2.535	-5.609	-23.381	-0.494
1048	175.285	2.539	5.703	23.666	-0.476
1049	207.975	0.954	-18.883	-78.527	-7.45
1050	157.848	0.967	18.823	78.298	-7.391
1051	207.925	1.681	-18.848	-78.408	-4.249
1052	157.799	1.695	18.858	78.417	-4.19
1053	127.577	0.051	-0.01	-0.046	-0.226
1054	127.577	-0.027	-0.01	-0.046	0.119
1055	120.986	0.006	7.305	28.079	-0.027
1056	134.168	0.005	-6.327	-27.162	-0.024
1057	135.552	-1.21	-5.727	-23.774	-5.372
1058	120.514	-1.206	5.585	23.274	-5.354
1059	135.387	1.215	-5.609	-23.378	5.299
1060	120.349	1.219	5.703	23.669	5.316
1061	153.038	-0.366	-18.883	-78.524	-1.658
1062	102.912	-0.352	18.823	78.301	-1.599
1063	152.989	0.362	-18.847	-78.406	1.543
1064	102.863	0.375	18.859	78.42	1.602
1065	134.805	-1.208	-5.724	-23.761	-5.365
1066	119.767	-1.204	5.588	23.287	-5.348
1067	134.64	1.217	-5.605	-23.366	5.305
1068	119.602	1.221	5.706	23.682	5.323
1069	152.291	-0.364	-18.88	-78.511	-1.651
1070	102.165	-0.351	18.826	78.314	-1.593
1071	152.242	0.363	-18.844	-78.393	1.55
1072	102.115	0.377	18.862	78.432	1.609
1073	258.639	0.009	-0.021	-0.091	-0.038
1074	71.904	0.006	0	-0.002	-0.025



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 20 de 126

2094	67.785	-0.235	13.177	54.814	-1.065
2095	102.84	0.241	-13.193	-54.884	1.028
2096	67.752	0.25	13.201	54.893	1.069
2097	90.111	-0.846	-4.007	-16.631	-3.755
2098	79.584	-0.843	3.912	16.302	-3.743
2099	89.995	0.852	-3.923	-16.354	3.714
2100	79.469	0.854	3.995	16.579	3.727
2101	102.35	-0.243	-13.215	-54.955	-1.102
2102	67.262	-0.234	13.179	54.823	-1.061
2103	102.32	0.242	-13.191	-54.875	1.032
2104	67.229	0.251	13.203	54.902	1.073
2105	216.31	0.007	-0.017	-0.076	-0.033
2106	60.693	0.005	0	-0.002	-0.021

Ejes 22 al 30. Apoyo 5



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	137.90	-7.42	0.01	0.05	-0.05
2002	150.29	-6.74	0.01	0.05	-0.17
2003	136.96	-6.44	0.01	0.05	-0.16
2004	138.93	-8.30	0.01	0.05	0.05
2005	141.96	-7.69	3.84	16.93	-0.04
2006	133.91	-7.19	-4.63	-16.67	-0.05
2007	146.49	-6.18	0.01	0.05	-0.23
2008	147.97	-7.57	0.01	0.05	-0.07
2009	150.24	-7.11	2.88	12.71	-0.14
2010	144.21	-6.74	-3.47	-12.49	-0.14
2011	205.17	-56.17	-4.31	-18.23	-5.32
2012	192.03	-55.61	4.16	17.77	-5.31
2013	84.25	40.70	-4.14	-17.67	5.21
2014	71.11	41.26	4.33	18.32	5.22
2015	178.19	-22.92	-14.13	-60.02	-1.65
2016	134.37	-21.05	14.10	59.95	-1.61
2017	141.91	6.14	-14.08	-59.85	1.51
2018	98.09	8.01	14.15	60.11	1.55
2019	204.69	-56.10	-4.30	-18.21	-5.31
2020	191.54	-55.54	4.16	17.78	-5.30
2021	83.77	40.76	-4.14	-17.66	5.22
2022	70.62	41.32	4.33	18.33	5.23
2023	177.70	-22.85	-14.13	-60.01	-1.64
2024	133.88	-20.99	14.10	59.96	-1.60
2025	141.43	6.21	-14.08	-59.84	1.52
2026	97.60	8.07	14.15	60.12	1.56
2027	198.16	-43.82	-3.28	-13.87	-4.13
2028	188.14	-43.39	3.17	13.55	-4.12
2029	106.61	29.52	-3.15	-13.45	3.84

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	193.05	-10.39	0.02	0.07	-0.06
1002	185.31	-7.82	0.01	0.06	-0.26
1003	164.72	-8.12	0.01	0.06	-0.14
1004	166.31	-9.61	0.01	0.06	0.02
1005	168.73	-9.12	3.08	13.56	-0.05
1006	162.29	-8.72	-3.70	-13.31	-0.05
1007	176.37	-6.65	0.01	0.06	-0.36
1008	179.53	-9.62	0.01	0.06	-0.04
1009	184.37	-8.66	6.14	27.06	-0.18
1010	171.50	-7.85	-7.42	-26.69	-0.18
1011	273.98	-77.86	-6.16	-26.05	-7.71
1012	255.20	-77.06	5.94	25.37	-7.70
1013	101.24	60.52	-5.92	-25.26	7.33
1014	82.45	61.32	6.18	26.16	7.35
1015	235.43	-30.36	-20.19	-85.75	-2.47
1016	172.83	-27.70	20.14	85.63	-2.41
1017	183.61	11.15	-20.11	-85.52	2.04
1018	121.00	13.82	20.21	85.86	2.10
1019	273.28	-77.77	-6.15	-26.03	-7.71
1020	254.50	-76.97	5.95	25.38	-7.69
1021	100.54	60.61	-5.91	-25.24	7.33
1022	81.76	61.41	6.18	26.17	7.35
1023	234.74	-30.27	-20.18	-85.74	-2.47
1024	172.13	-27.60	20.14	85.64	-2.40
1025	182.91	11.25	-20.11	-85.50	2.05
1026	120.31	13.91	20.21	85.88	2.11
1027	137.98	50.33	0.02	0.07	-6.68
1028	138.10	44.23	0.02	0.06	-5.93
1029	117.52	43.93	0.01	0.06	-5.81

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 21 de 126
	ESTE - OESTE				1	1	

2030	96.59	29.95	3.30	13.97	3.85
2031	177.79	-18.71	-10.69	-45.43	-1.36
2032	144.61	-17.30	10.68	45.40	-1.33
2033	150.15	3.43	-10.66	-45.31	1.05
2034	116.97	4.84	10.72	45.53	1.08
2035	197.79	-43.77	-3.28	-13.86	-4.13
2036	187.78	-43.34	3.18	13.56	-4.12
2037	106.24	29.57	-3.15	-13.45	3.84
2038	96.22	30.00	3.30	13.98	3.85
2039	177.42	-18.66	-10.69	-45.42	-1.36
2040	144.24	-17.25	10.68	45.41	-1.33
2041	149.78	3.48	-10.65	-45.30	1.05
2042	116.60	4.89	10.72	45.54	1.08
2043	98.56	35.95	0.01	0.05	-4.77
2044	110.95	36.63	0.01	0.05	-4.90
2045	97.62	36.93	0.01	0.05	-4.88
2046	99.60	35.08	0.01	0.05	-4.68
2047	102.62	35.68	3.84	16.93	-4.77
2048	94.58	36.19	-4.63	-16.67	-4.77
2049	107.15	37.20	0.01	0.05	-4.95
2050	108.63	35.81	0.01	0.05	-4.80
2051	110.90	36.26	2.88	12.71	-4.86
2052	104.87	36.64	-3.47	-12.49	-4.87
2053	165.84	-12.79	-4.31	-18.22	-10.04
2054	152.69	-12.23	4.16	17.77	-10.03
2055	44.92	84.07	-4.14	-17.67	0.49
2056	31.77	84.63	4.33	18.32	0.50
2057	138.85	20.46	-14.13	-60.02	-6.37
2058	95.03	22.32	14.10	59.95	-6.33
2059	102.58	49.52	-14.08	-59.85	-3.21
2060	58.75	51.38	14.15	60.11	-3.17
2061	165.35	-12.73	-4.30	-18.21	-10.04
2062	152.20	-12.17	4.17	17.78	-10.03
2063	44.43	84.14	-4.14	-17.66	0.49
2064	31.28	84.70	4.33	18.33	0.50
2065	138.37	20.52	-14.13	-60.01	-6.37
2066	94.54	22.39	14.10	59.96	-6.33
2067	102.09	49.58	-14.08	-59.84	-3.21
2068	58.27	51.45	14.15	60.12	-3.17
2069	158.82	-0.45	-3.28	-13.87	-8.86
2070	148.81	-0.02	3.17	13.55	-8.85
2071	67.27	72.90	-3.15	-13.45	-0.89
2072	57.25	73.32	3.30	13.97	-0.88
2073	138.45	24.66	-10.69	-45.43	-6.09
2074	105.27	26.07	10.68	45.40	-6.05
2075	110.81	46.80	-10.66	-45.30	-3.68
2076	77.63	48.21	10.72	45.53	-3.65
2077	158.46	-0.40	-3.28	-13.86	-8.85

1030	119.10	42.44	0.01	0.06	-5.65
1031	121.52	42.93	3.08	13.56	-5.72
1032	115.09	43.33	-3.70	-13.31	-5.72
1033	129.16	45.40	0.02	0.06	-6.03
1034	132.33	42.43	0.02	0.06	-5.71
1035	137.17	43.39	6.14	27.06	-5.85
1036	124.29	44.20	-7.42	-26.69	-5.85
1037	226.77	-25.81	-6.15	-26.05	-13.38
1038	207.99	-25.01	5.94	25.37	-13.36
1039	54.03	112.57	-5.92	-25.26	1.66
1040	35.25	113.37	6.18	26.16	1.68
1041	188.23	21.69	-20.18	-85.75	-8.14
1042	125.62	24.35	20.14	85.63	-8.08
1043	136.40	63.20	-20.11	-85.52	-3.63
1044	73.80	65.87	20.21	85.86	-3.57
1045	226.08	-25.72	-6.15	-26.03	-13.38
1046	207.30	-24.92	5.95	25.38	-13.36
1047	53.34	112.66	-5.91	-25.24	1.66
1048	34.56	113.46	6.18	26.17	1.68
1049	187.53	21.78	-20.18	-85.74	-8.14
1050	124.93	24.45	20.14	85.64	-8.07
1051	135.71	63.29	-20.11	-85.50	-3.62
1052	73.11	65.96	20.21	85.88	-3.56
1053	122.60	-5.11	0.01	0.05	-0.22
1054	125.77	-8.08	0.01	0.05	0.10
1055	130.61	-7.11	6.14	27.05	-0.04
1056	117.74	-6.30	-7.42	-26.70	-0.04
1057	220.22	-76.32	-6.16	-26.06	-7.57
1058	201.43	-75.52	5.94	25.35	-7.55
1059	47.47	62.06	-5.92	-25.28	7.47
1060	28.69	62.86	6.18	26.14	7.49
1061	181.67	-28.82	-20.19	-85.77	-2.33
1062	119.06	-26.15	20.14	85.61	-2.27
1063	129.84	12.70	-20.12	-85.53	2.18
1064	67.24	15.36	20.21	85.85	2.24
1065	219.52	-76.22	-6.15	-26.05	-7.57
1066	200.74	-75.42	5.94	25.37	-7.55
1067	46.78	62.16	-5.92	-25.26	7.47
1068	28.00	62.96	6.18	26.16	7.49
1069	180.97	-28.72	-20.19	-85.76	-2.32
1070	118.37	-26.06	20.14	85.63	-2.26
1071	129.15	12.79	-20.11	-85.52	2.19
1072	66.55	15.46	20.21	85.86	2.25
1073	259.82	-12.98	0.02	0.09	-0.18
1074	87.74	-2.80	0.00	0.00	-0.17



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 22 de 126
	ESTE - OESTE		1	1	

2078	148.44	0.03	3.18	13.56	-8.84
2079	66.90	72.94	-3.15	-13.45	-0.88
2080	56.89	73.37	3.30	13.98	-0.87
2081	138.08	24.71	-10.69	-45.42	-6.08
2082	104.90	26.12	10.68	45.41	-6.05
2083	110.44	46.85	-10.65	-45.30	-3.68
2084	77.26	48.26	10.72	45.54	-3.64
2085	81.80	-3.47	0.01	0.03	-0.14
2086	83.78	-5.33	0.01	0.03	0.06
2087	86.80	-4.72	3.84	16.91	-0.03
2088	78.76	-4.22	-4.64	-16.69	-0.03
2089	150.01	-53.20	-4.31	-18.25	-5.30
2090	136.87	-52.64	4.16	17.75	-5.29
2091	29.09	43.67	-4.15	-17.69	5.23
2092	15.95	44.23	4.32	18.30	5.24
2093	122.17	-19.26	-14.13	-60.04	-1.55
2094	78.34	-17.39	14.10	59.93	-1.51
2095	87.62	8.42	-14.08	-59.88	1.45
2096	43.80	10.28	14.14	60.09	1.50
2097	149.53	-53.13	-4.31	-18.24	-5.30
2098	136.38	-52.57	4.16	17.76	-5.28
2099	28.61	43.73	-4.14	-17.68	5.23
2100	15.46	44.29	4.33	18.31	5.25
2101	121.68	-19.19	-14.13	-60.03	-1.55
2102	77.86	-17.33	14.10	59.94	-1.51
2103	87.13	8.49	-14.08	-59.87	1.46
2104	43.31	10.35	14.15	60.10	1.50
2105	218.59	-10.71	0.02	0.08	-0.17
2106	75.18	-2.22	0.00	0.00	-0.16

Ejes 22 al 30. Apoyo 6



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	139.26	-7.715	-0.012	-0.051	-0.027
2002	148.99	-8.3	-0.012	-0.051	-0.032
2003	138.32	-6.733	-0.012	-0.051	-0.14
2004	140.3	-8.588	-0.012	-0.051	0.063
2005	135.2	-7.446	4.814	17.393	-0.029
2006	143.24	-7.951	-3.66	-16.203	-0.027
2007	145.85	-7.417	-0.012	-0.051	-0.116
2008	147.33	-8.808	-0.012	-0.051	0.037
2009	143.51	-7.952	3.607	13.032	-0.032
2010	149.54	-8.33	-2.748	-12.165	-0.031
2011	188.41	-41.8	-4.33	-18.327	-3.723
2012	175.26	-41.241	4.138	17.663	-3.71
2013	103.76	25.742	-4.164	-17.775	3.651
2014	90.617	26.3	4.304	18.214	3.663
2015	174.11	-18.812	-14.151	-60.122	-1.156

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	194.961	-10.801	-0.016	-0.071	-0.038
1002	182.677	-10.194	-0.014	-0.061	-0.041
1003	166.359	-8.472	-0.014	-0.061	-0.123
1004	167.94	-9.957	-0.014	-0.061	0.039
1005	163.859	-9.043	3.847	13.894	-0.034
1006	170.295	-9.447	-2.933	-12.983	-0.033
1007	175.337	-8.271	-0.014	-0.061	-0.218
1008	178.5	-11.239	-0.014	-0.061	0.107
1009	170.338	-9.413	7.707	27.85	-0.04
1010	183.21	-10.22	-5.851	-25.904	-0.037
1011	247.051	-58.535	-6.183	-26.17	-5.317
1012	228.276	-57.737	5.914	25.244	-5.299
1013	126.127	37.953	-5.946	-25.382	5.217
1014	107.352	38.751	6.151	26.032	5.235
1015	226.632	-25.695	-20.213	-85.877	-1.65

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES A N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 23 de 126
	ESTE - OESTE				1	1	



2016	130.3	-16.95	14.075	59.844	-1.115
2017	148.72	1.451	-14.101	-59.957	1.056
2018	104.91	3.312	14.125	60.01	1.097
2019	187.9	-41.731	-4.327	-18.316	-3.718
2020	174.76	-41.172	4.141	17.674	-3.706
2021	103.25	25.811	-4.161	-17.765	3.655
2022	90.11	26.369	4.306	18.225	3.668
2023	173.61	-18.743	-14.148	-60.111	-1.152
2024	129.8	-16.881	14.078	59.855	-1.111
2025	148.21	1.52	-14.099	-59.946	1.06
2026	104.4	3.381	14.128	60.02	1.101
2027	183.8	-33.962	-3.301	-13.974	-2.829
2028	173.79	-33.536	3.151	13.447	-2.82
2029	119.71	17.177	-3.176	-13.557	2.754
2030	109.7	17.602	3.276	13.864	2.763
2031	173.01	-16.604	-10.717	-45.534	-0.891
2032	139.84	-15.194	10.654	45.298	-0.86
2033	153.66	-1.166	-10.679	-45.408	0.794
2034	120.49	0.244	10.692	45.424	0.825
2035	183.42	-33.91	-3.299	-13.966	-2.826
2036	173.4	-33.484	3.153	13.455	-2.816
2037	119.33	17.229	-3.174	-13.548	2.757
2038	109.31	17.654	3.278	13.872	2.767
2039	172.62	-16.551	-10.715	-45.526	-0.888
2040	139.45	-15.142	10.656	45.306	-0.857
2041	153.27	-1.113	-10.677	-45.4	0.798
2042	120.11	0.296	10.694	45.432	0.829
2043	98.594	35.891	-0.012	-0.052	-4.768
2044	108.32	35.306	-0.012	-0.052	-4.772
2045	97.655	36.873	-0.012	-0.052	-4.88
2046	99.632	35.018	-0.012	-0.052	-4.677
2047	94.531	36.16	4.813	17.393	-4.769
2048	102.58	35.655	-3.66	-16.204	-4.767
2049	105.19	36.189	-0.012	-0.052	-4.856
2050	106.67	34.798	-0.012	-0.052	-4.703
2051	102.84	35.654	3.607	13.032	-4.772
2052	108.88	35.276	-2.748	-12.166	-4.771
2053	147.74	1.806	-4.33	-18.328	-8.463
2054	134.6	2.365	4.138	17.662	-8.45
2055	63.095	69.348	-4.165	-17.776	-1.089
2056	49.952	69.906	4.303	18.214	-1.077
2057	133.45	24.794	-14.151	-60.123	-5.896
2058	89.64	26.656	14.075	59.843	-5.855
2059	108.05	45.056	-14.102	-59.957	-3.684
2060	64.246	46.918	14.125	60.009	-3.643
2061	147.24	1.875	-4.327	-18.317	-8.458
2062	134.09	2.434	4.14	17.673	-8.446
2063	62.588	69.417	-4.162	-17.765	-1.085

1016	164.048	-23.035	20.11	85.503	-1.592
1017	190.354	3.251	-20.142	-85.641	1.51
1018	127.771	5.911	20.181	85.74	1.568
1019	246.327	-58.436	-6.179	-26.154	-5.31
1020	227.552	-57.638	5.918	25.26	-5.293
1021	125.403	38.051	-5.942	-25.366	5.223
1022	106.628	38.849	6.155	26.048	5.241
1023	225.907	-25.597	-20.209	-85.862	-1.644
1024	163.324	-22.937	20.114	85.519	-1.585
1025	189.63	3.35	-20.138	-85.625	1.516
1026	127.047	6.009	20.185	85.755	1.575
1027	138.031	50.247	-0.017	-0.072	-6.675
1028	133.88	42.133	-0.015	-0.062	-5.729
1029	117.561	43.855	-0.014	-0.062	-5.811
1030	119.143	42.371	-0.014	-0.062	-5.649
1031	115.062	43.284	3.846	13.893	-5.722
1032	121.498	42.881	-2.933	-12.984	-5.721
1033	126.54	44.056	-0.015	-0.062	-5.906
1034	129.703	41.088	-0.015	-0.062	-5.581
1035	121.541	42.915	7.706	27.849	-5.728
1036	134.413	42.108	-5.852	-25.905	-5.725
1037	198.254	-6.208	-6.183	-26.171	-11.005
1038	179.479	-5.41	5.914	25.243	-10.987
1039	77.329	90.28	-5.947	-25.383	-0.471
1040	58.554	91.078	6.15	26.031	-0.453
1041	177.834	26.632	-20.214	-85.878	-7.338
1042	115.251	29.292	20.11	85.502	-7.28
1043	141.557	55.578	-20.143	-85.642	-4.178
1044	78.974	58.238	20.181	85.739	-4.12
1045	197.53	-6.109	-6.179	-26.155	-10.998
1046	178.755	-5.311	5.918	25.259	-10.981
1047	76.605	90.378	-5.943	-25.367	-0.465
1048	57.83	91.176	6.154	26.047	-0.447
1049	177.11	26.731	-20.21	-85.863	-7.332
1050	114.527	29.39	20.113	85.518	-7.273
1051	140.833	55.677	-20.139	-85.626	-4.172
1052	78.25	58.337	20.184	85.754	-4.113
1053	123.83	-5.372	-0.01	-0.046	-0.205
1054	126.993	-8.34	-0.01	-0.046	0.12
1055	118.831	-6.513	7.71	27.865	-0.027
1056	131.703	-7.32	-5.848	-25.889	-0.024
1057	195.544	-55.636	-6.179	-26.154	-5.304
1058	176.769	-54.838	5.918	25.26	-5.286
1059	74.62	40.852	-5.943	-25.367	5.23
1060	55.845	41.65	6.154	26.048	5.248
1061	175.125	-22.796	-20.209	-85.862	-1.637
1062	112.541	-20.136	20.114	85.518	-1.579
1063	138.847	6.15	-20.138	-85.625	1.523

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 24 de 126
	ESTE - OESTE		1	1	

2064	49.445	69.975	4.306	18.224	-1.072
2065	132.94	24.863	-14.149	-60.112	-5.892
2066	89.133	26.725	14.078	59.854	-5.851
2067	107.55	45.126	-14.099	-59.947	-3.68
2068	63.739	46.987	14.127	60.019	-3.639
2069	143.13	9.644	-3.302	-13.975	-7.569
2070	133.12	10.07	3.15	13.446	-7.56
2071	79.044	60.783	-3.176	-13.557	-1.986
2072	69.031	61.208	3.275	13.864	-1.977
2073	132.34	27.002	-10.718	-45.534	-5.631
2074	99.172	28.412	10.654	45.297	-5.6
2075	112.99	42.44	-10.68	-45.408	-3.946
2076	79.824	43.85	10.691	45.423	-3.915
2077	142.75	9.696	-3.3	-13.967	-7.566
2078	132.74	10.122	3.152	13.454	-7.556
2079	78.661	60.835	-3.174	-13.549	-1.983
2080	68.647	61.26	3.277	13.872	-1.973
2081	131.96	27.055	-10.716	-45.526	-5.628
2082	98.788	28.464	10.656	45.305	-5.597
2083	112.61	42.493	-10.678	-45.4	-3.942
2084	79.44	43.902	10.693	45.431	-3.911
2085	82.616	-3.647	-0.007	-0.031	-0.129
2086	84.593	-5.502	-0.007	-0.031	0.074
2087	79.492	-4.36	4.819	17.414	-0.018
2088	87.537	-4.865	-3.655	-16.183	-0.016
2089	132.7	-38.714	-4.325	-18.307	-3.712
2090	119.56	-38.155	4.143	17.683	-3.699
2091	48.056	28.828	-4.159	-17.755	3.662
2092	34.913	29.386	4.308	18.235	3.674
2093	117.81	-15.243	-14.145	-60.098	-1.093
2094	73.996	-13.381	14.081	59.868	-1.052
2095	93.62	4.054	-14.098	-59.94	1.014
2096	49.812	5.916	14.129	60.026	1.055
2097	132.2	-38.645	-4.322	-18.296	-3.707
2098	119.05	-38.086	4.146	17.694	-3.695
2099	47.549	28.897	-4.157	-17.744	3.666
2100	34.407	29.455	4.311	18.246	3.679
2101	117.3	-15.174	-14.142	-60.087	-1.088
2102	73.49	-13.312	14.084	59.879	-1.047
2103	93.113	4.123	-14.095	-59.93	1.019
2104	49.305	5.985	14.131	60.037	1.06
2105	216.59	-12.246	-0.017	-0.076	-0.033
2106	72.324	-3.678	0	-0.001	-0.022



1064	76.264	8.81	20.185	85.755	1.582
1065	194.82	-55.537	-6.175	-26.139	-5.297
1066	176.045	-54.739	5.922	25.275	-5.28
1067	73.896	40.95	-5.939	-25.351	5.236
1068	55.12	41.748	6.158	26.063	5.254
1069	174.4	-22.697	-20.206	-85.847	-1.631
1070	111.817	-20.038	20.118	85.534	-1.572
1071	138.123	6.249	-20.135	-85.61	1.529
1072	75.54	8.909	20.189	85.77	1.588
1073	257.964	-14.578	-0.021	-0.091	-0.039
1074	84.843	-4.297	-0.001	-0.002	-0.025

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 25 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

Ejes 22 al 30. Apoyo 7



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	120.3	0.02	0.012	0.052	-0.089
2002	128.74	0.046	0.012	0.054	-0.202
2003	121.23	0.041	0.012	0.052	-0.179
2004	119.26	0.002	0.012	0.052	-0.007
2005	124.09	0.021	3.987	17.468	-0.09
2006	116.93	0.02	-4.408	-17.202	-0.087
2007	127.33	0.055	0.012	0.054	-0.241
2008	125.85	0.026	0.012	0.054	-0.112
2009	129.47	0.04	2.994	13.116	-0.175
2010	124.11	0.039	-3.303	-12.887	-0.172
2011	186.01	-1.018	-3.583	-15.841	-4.656
2012	176.87	-1.015	3.43	15.342	-4.641
2013	64.238	1.054	-3.409	-15.246	4.46
2014	55.103	1.058	3.604	15.938	4.475
2015	154.04	-0.297	-11.704	-52.013	-1.483
2016	123.6	-0.285	11.674	51.931	-1.433
2017	117.51	0.325	-11.652	-51.835	1.252
2018	87.066	0.336	11.726	52.11	1.302
2019	185.49	-1.017	-3.581	-15.834	-4.653
2020	176.35	-1.014	3.432	15.349	-4.638
2021	63.717	1.055	-3.407	-15.239	4.463
2022	54.583	1.058	3.606	15.945	4.478
2023	153.52	-0.296	-11.703	-52.006	-1.479
2024	123.08	-0.285	11.675	51.938	-1.43
2025	116.99	0.326	-11.65	-51.828	1.255
2026	86.545	0.337	11.728	52.117	1.305
2027	176.4	-0.746	-2.727	-12.054	-3.632
2028	169.44	-0.744	2.617	11.705	-3.62
2029	84.206	0.822	-2.595	-11.603	3.271
2030	77.246	0.825	2.749	12.156	3.282
2031	152.27	-0.202	-8.859	-39.368	-1.236
2032	129.22	-0.193	8.841	39.333	-1.198
2033	124.43	0.272	-8.819	-39.231	0.848
2034	101.38	0.28	8.881	39.469	0.886
2035	176.01	-0.746	-2.725	-12.049	-3.629
2036	169.05	-0.743	2.618	11.71	-3.618
2037	83.811	0.823	-2.594	-11.598	3.273
2038	76.852	0.825	2.75	12.161	3.284
2039	151.87	-0.201	-8.858	-39.362	-1.233
2040	128.82	-0.193	8.843	39.338	-1.196
2041	124.04	0.272	-8.818	-39.226	0.85
2042	100.99	0.281	8.882	39.475	0.888
2043	176.96	0.951	0.012	0.052	-4.185
2044	185.4	0.977	0.012	0.054	-4.298
2045	177.9	0.972	0.012	0.052	-4.275

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	168.413	0.028	0.016	0.072	-0.124
1002	157.863	0.065	0.014	0.066	-0.288
1003	145.105	0.041	0.014	0.062	-0.179
1004	143.524	0.009	0.014	0.062	-0.041
1005	147.387	0.024	3.195	13.995	-0.108
1006	141.663	0.024	-3.522	-13.741	-0.105
1007	154.3	0.083	0.014	0.064	-0.364
1008	151.137	0.02	0.014	0.064	-0.089
1009	158.864	0.05	6.375	27.931	-0.222
1010	147.416	0.049	-7.057	-27.542	-0.217
1011	246.672	-1.433	-5.121	-22.64	-6.744
1012	233.623	-1.428	4.898	21.908	-6.723
1013	72.715	1.527	-4.872	-21.789	6.279
1014	59.667	1.532	5.147	22.759	6.3
1015	201.011	-0.403	-16.723	-74.314	-2.211
1016	157.515	-0.386	16.674	74.178	-2.14
1017	148.824	0.485	-16.648	-74.059	1.696
1018	105.328	0.502	16.749	74.433	1.767
1019	245.928	-1.432	-5.119	-22.63	-6.74
1020	232.879	-1.427	4.9	21.918	-6.718
1021	71.971	1.528	-4.87	-21.779	6.283
1022	58.923	1.533	5.149	22.769	6.305
1023	200.267	-0.402	-16.721	-74.304	-2.207
1024	156.771	-0.385	16.677	74.188	-2.135
1025	148.08	0.486	-16.646	-74.049	1.7
1026	104.584	0.503	16.751	74.443	1.771
1027	247.739	1.332	0.016	0.073	-5.859
1028	225.857	1.183	0.014	0.066	-5.203
1029	213.099	1.158	0.014	0.062	-5.094
1030	211.518	1.126	0.014	0.062	-4.956
1031	215.381	1.142	3.195	13.996	-5.023
1032	209.657	1.141	-3.522	-13.741	-5.021
1033	222.294	1.2	0.014	0.065	-5.28
1034	219.131	1.137	0.014	0.065	-5.004
1035	226.858	1.168	6.375	27.931	-5.138
1036	215.41	1.167	-7.057	-27.542	-5.133
1037	314.666	-0.316	-5.121	-22.639	-11.66
1038	301.617	-0.311	4.898	21.908	-11.638
1039	140.71	2.644	-4.872	-21.789	1.363
1040	127.661	2.649	5.147	22.759	1.385
1041	269.005	0.715	-16.723	-74.314	-7.126
1042	225.509	0.731	16.674	74.178	-7.055
1043	216.818	1.603	-16.648	-74.058	-3.22
1044	173.322	1.619	16.749	74.433	-3.148
1045	313.922	-0.315	-5.119	-22.629	-11.655

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES A N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 26 de 126
	ESTE - OESTE				1	1	

2046	175.92	0.933	0.012	0.052	-4.103
2047	180.75	0.951	3.987	17.469	-4.186
2048	173.59	0.951	-4.408	-17.202	-4.183
2049	183.99	0.986	0.012	0.054	-4.338
2050	182.51	0.957	0.012	0.054	-4.209
2051	186.13	0.971	2.994	13.116	-4.271
2052	180.77	0.97	-3.303	-12.887	-4.269
2053	242.67	-0.087	-3.583	-15.841	-8.752
2054	233.54	-0.084	3.43	15.342	-8.737
2055	120.9	1.985	-3.409	-15.245	0.364
2056	111.77	1.988	3.605	15.938	0.379
2057	210.71	0.634	-11.704	-52.013	-5.579
2058	180.26	0.646	11.674	51.931	-5.529
2059	174.18	1.256	-11.652	-51.834	-2.844
2060	143.73	1.267	11.726	52.11	-2.794
2061	242.15	-0.086	-3.581	-15.834	-8.749
2062	233.01	-0.083	3.432	15.349	-8.734
2063	120.38	1.986	-3.407	-15.238	0.367
2064	111.24	1.989	3.606	15.945	0.382
2065	210.19	0.635	-11.703	-52.006	-5.576
2066	179.74	0.646	11.675	51.938	-5.526
2067	173.65	1.257	-11.65	-51.827	-2.841
2068	143.21	1.268	11.728	52.117	-2.791
2069	233.06	0.184	-2.727	-12.054	-7.728
2070	226.11	0.187	2.617	11.705	-7.716
2071	140.87	1.753	-2.595	-11.603	-0.826
2072	133.91	1.756	2.749	12.156	-0.814
2073	208.93	0.729	-8.859	-39.367	-5.332
2074	185.88	0.738	8.841	39.333	-5.294
2075	181.1	1.203	-8.819	-39.231	-3.248
2076	158.04	1.211	8.881	39.47	-3.21
2077	232.67	0.185	-2.725	-12.048	-7.726
2078	225.71	0.188	2.618	11.71	-7.714
2079	140.47	1.754	-2.593	-11.597	-0.823
2080	133.51	1.756	2.75	12.161	-0.812
2081	208.54	0.73	-8.858	-39.362	-5.329
2082	185.48	0.738	8.843	39.339	-5.292
2083	180.7	1.203	-8.818	-39.226	-3.246
2084	157.65	1.212	8.883	39.475	-3.208
2085	73.116	0.033	0.007	0.031	-0.144
2086	71.139	-0.007	0.007	0.031	0.029
2087	75.969	0.012	3.983	17.448	-0.055
2088	68.814	0.012	-4.413	-17.223	-0.052
2089	137.89	-1.026	-3.588	-15.862	-4.62
2090	128.76	-1.023	3.426	15.321	-4.605
2091	16.12	1.046	-3.414	-15.266	4.496
2092	6.986	1.049	3.6	15.917	4.511
2093	105.06	-0.29	-11.708	-52.03	-1.382

1046	300.873	-0.31	4.901	21.918	-11.634
1047	139.966	2.645	-4.87	-21.778	1.368
1048	126.917	2.65	5.149	22.769	1.389
1049	268.261	0.716	-16.721	-74.304	-7.122
1050	224.765	0.732	16.677	74.188	-7.051
1051	216.074	1.604	-16.646	-74.048	-3.215
1052	172.578	1.62	16.751	74.444	-3.144
1053	109.768	0.051	0.01	0.046	-0.224
1054	106.605	-0.012	0.01	0.046	0.051
1055	114.332	0.019	6.372	27.913	-0.082
1056	102.885	0.018	-7.061	-27.56	-0.077
1057	202.14	-1.465	-5.125	-22.658	-6.604
1058	189.091	-1.46	4.894	21.89	-6.583
1059	28.184	1.495	-4.876	-21.807	6.419
1060	15.135	1.5	5.143	22.741	6.44
1061	156.479	-0.434	-16.727	-74.332	-2.071
1062	112.983	-0.418	16.67	74.16	-2
1063	104.292	0.454	-16.652	-74.077	1.836
1064	60.796	0.47	16.745	74.415	1.907
1065	201.396	-1.464	-5.122	-22.648	-6.6
1066	188.347	-1.459	4.897	21.9	-6.578
1067	27.44	1.496	-4.874	-21.797	6.423
1068	14.391	1.501	5.146	22.751	6.445
1069	155.735	-0.433	-16.724	-74.322	-2.067
1070	112.239	-0.417	16.673	74.17	-1.996
1071	103.548	0.455	-16.65	-74.067	1.84
1072	60.052	0.471	16.748	74.425	1.911
1073	221.707	0.059	0.021	0.094	-0.258
1074	73.111	0.039	0.001	0.005	-0.169



<div></div> <div> Corporación <small>La fuerza que transforma Bolivia</small></div>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 27 de 126

2094	74.609	-0.279	11.67	51.914	-1.332
2095	70.265	0.302	-11.658	-51.86	1.223
2096	39.818	0.313	11.72	52.085	1.272
2097	137.37	-1.025	-3.586	-15.855	-4.617
2098	128.23	-1.022	3.427	15.328	-4.602
2099	15.599	1.047	-3.412	-15.259	4.499
2100	6.465	1.05	3.602	15.924	4.514
2101	104.54	-0.289	-11.706	-52.023	-1.379
2102	74.088	-0.278	11.672	51.922	-1.329
2103	69.744	0.303	-11.656	-51.853	1.226
2104	39.297	0.314	11.722	52.092	1.276
2105	186.16	0.053	0.017	0.079	-0.234
2106	62.333	0.036	0.001	0.005	-0.16

Ejes 22 al 30. Apoyo 8



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	122.13	0.017	-0.012	-0.05	-0.075
2002	130.97	0.019	-0.012	-0.049	-0.082
2003	123.07	0.038	-0.012	-0.05	-0.166
2004	121.1	-0.001	-0.012	-0.05	0.006
2005	118.34	0.017	4.589	17.937	-0.074
2006	125.5	0.018	-3.806	-16.733	-0.077
2007	129.46	0.034	-0.012	-0.049	-0.149
2008	127.98	0.004	-0.012	-0.049	-0.019
2009	125.92	0.018	3.439	13.441	-0.08
2010	131.28	0.019	-2.858	-12.561	-0.082
2011	169.73	-0.707	-3.606	-15.943	-3.263
2012	160.6	-0.704	3.407	15.24	-3.249
2013	84.223	0.738	-3.432	-15.348	3.094
2014	75.09	0.741	3.581	15.836	3.109
2015	150.46	-0.206	-11.728	-52.115	-1.055
2016	120.02	-0.194	11.65	51.829	-1.007
2017	124.81	0.228	-11.675	-51.937	0.852
2018	94.364	0.239	11.703	52.008	0.901
2019	169.18	-0.707	-3.604	-15.936	-3.26
2020	160.05	-0.703	3.409	15.247	-3.245
2021	83.668	0.738	-3.43	-15.341	3.098
2022	74.535	0.742	3.583	15.843	3.113
2023	149.91	-0.205	-11.726	-52.108	-1.052
2024	119.46	-0.194	11.652	51.836	-1.003
2025	124.25	0.229	-11.674	-51.93	0.856
2026	93.808	0.24	11.704	52.015	0.904
2027	164.82	-0.53	-2.75	-12.157	-2.495
2028	157.86	-0.528	2.594	11.602	-2.483
2029	100.08	0.564	-2.618	-11.706	2.319

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	170.988	0.024	-0.016	-0.071	-0.106
1002	160.694	0.023	-0.014	-0.058	-0.102
1003	147.312	0.037	-0.014	-0.06	-0.163
1004	145.731	0.006	-0.014	-0.06	-0.025
1005	143.528	0.02	3.667	14.33	-0.089
1006	149.252	0.021	-3.05	-13.407	-0.092
1007	156.896	0.055	-0.014	-0.059	-0.242
1008	153.733	-0.008	-0.014	-0.059	0.033
1009	149.328	0.022	7.347	28.721	-0.095
1010	160.775	0.023	-6.085	-26.752	-0.1
1011	223.393	-1.013	-5.149	-22.763	-4.652
1012	210.346	-1.008	4.87	21.784	-4.631
1013	101.236	1.051	-4.9	-21.912	4.431
1014	88.188	1.056	5.119	22.635	4.452
1015	195.86	-0.296	-16.751	-74.438	-1.497
1016	152.369	-0.28	16.646	74.054	-1.428
1017	159.213	0.323	-16.677	-74.182	1.227
1018	115.722	0.339	16.721	74.309	1.297
1019	222.6	-1.012	-5.147	-22.753	-4.647
1020	209.553	-1.007	4.872	21.794	-4.626
1021	100.443	1.052	-4.898	-21.902	4.436
1022	87.395	1.057	5.121	22.645	4.457
1023	195.067	-0.295	-16.749	-74.427	-1.492
1024	151.576	-0.279	16.648	74.064	-1.423
1025	158.419	0.324	-16.674	-74.172	1.233
1026	114.929	0.34	16.723	74.32	1.302
1027	248.463	1.331	-0.016	-0.071	-5.856
1028	227.101	1.143	-0.014	-0.059	-5.031
1029	213.719	1.157	-0.014	-0.061	-5.092

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 28 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2030	93.118	0.566	2.725	12.053	2.33
2031	150.27	-0.151	-8.882	-39.47	-0.827
2032	127.22	-0.143	8.818	39.23	-0.79
2033	130.72	0.179	-8.843	-39.334	0.626
2034	107.67	0.187	8.858	39.366	0.663
2035	164.4	-0.53	-2.749	-12.151	-2.492
2036	157.44	-0.527	2.595	11.607	-2.481
2037	99.656	0.564	-2.617	-11.7	2.322
2038	92.698	0.567	2.727	12.058	2.333
2039	149.85	-0.151	-8.881	-39.465	-0.824
2040	126.8	-0.142	8.819	39.236	-0.788
2041	130.3	0.18	-8.841	-39.329	0.629
2042	107.25	0.188	8.859	39.372	0.666
2043	177.47	0.951	-0.012	-0.051	-4.183
2044	186.31	0.952	-0.012	-0.049	-4.19
2045	178.41	0.971	-0.012	-0.051	-4.273
2046	176.44	0.932	-0.012	-0.051	-4.101
2047	173.68	0.95	4.589	17.937	-4.182
2048	180.84	0.951	-3.806	-16.734	-4.185
2049	184.8	0.967	-0.012	-0.05	-4.256
2050	183.32	0.938	-0.012	-0.05	-4.127
2051	181.26	0.952	3.439	13.441	-4.187
2052	186.62	0.952	-2.858	-12.562	-4.189
2053	225.07	0.226	-3.606	-15.944	-7.371
2054	215.94	0.23	3.407	15.24	-7.356
2055	139.56	1.671	-3.432	-15.348	-1.013
2056	130.43	1.674	3.581	15.835	-0.999
2057	205.8	0.728	-11.728	-52.116	-5.163
2058	175.36	0.739	11.65	51.829	-5.114
2059	180.15	1.161	-11.675	-51.937	-3.256
2060	149.7	1.173	11.703	52.007	-3.207
2061	224.52	0.227	-3.605	-15.937	-7.367
2062	215.39	0.23	3.409	15.247	-7.353
2063	139.01	1.672	-3.43	-15.341	-1.01
2064	129.87	1.675	3.583	15.842	-0.995
2065	205.24	0.729	-11.726	-52.109	-5.159
2066	174.8	0.74	11.652	51.836	-5.111
2067	179.59	1.162	-11.674	-51.93	-3.252
2068	149.15	1.173	11.704	52.014	-3.203
2069	220.16	0.403	-2.75	-12.157	-6.602
2070	213.2	0.406	2.593	11.602	-6.591
2071	155.42	1.497	-2.618	-11.706	-1.788
2072	148.46	1.5	2.725	12.053	-1.777
2073	205.61	0.782	-8.883	-39.471	-4.935
2074	182.56	0.791	8.818	39.23	-4.898
2075	186.06	1.113	-8.843	-39.335	-3.481
2076	163.01	1.121	8.858	39.366	-3.445
2077	219.74	0.404	-2.749	-12.152	-6.599

1030	212.138	1.126	-0.014	-0.061	-4.954
1031	209.935	1.141	3.666	14.329	-5.018
1032	215.659	1.141	-3.05	-13.407	-5.021
1033	223.303	1.175	-0.014	-0.059	-5.171
1034	220.14	1.113	-0.014	-0.059	-4.896
1035	215.735	1.142	7.347	28.721	-5.024
1036	227.182	1.143	-6.085	-26.752	-5.029
1037	289.8	0.107	-5.149	-22.764	-9.581
1038	276.753	0.112	4.87	21.784	-9.56
1039	167.643	2.172	-4.901	-21.913	-0.498
1040	154.596	2.176	5.119	22.635	-0.477
1041	262.267	0.824	-16.751	-74.438	-6.426
1042	218.776	0.84	16.646	74.054	-6.357
1043	225.62	1.444	-16.677	-74.183	-3.702
1044	182.129	1.459	16.72	74.309	-3.632
1045	289.007	0.109	-5.147	-22.754	-9.576
1046	275.96	0.113	4.872	21.794	-9.555
1047	166.85	2.173	-4.898	-21.903	-0.493
1048	153.803	2.177	5.121	22.645	-0.472
1049	261.474	0.825	-16.749	-74.428	-6.421
1050	217.983	0.841	16.648	74.064	-6.352
1051	224.827	1.445	-16.674	-74.173	-3.696
1052	181.336	1.461	16.723	74.319	-3.627
1053	111.423	0.048	-0.01	-0.045	-0.213
1054	108.26	-0.014	-0.01	-0.045	0.063
1055	103.854	0.015	7.351	28.735	-0.066
1056	115.302	0.016	-6.082	-26.738	-0.07
1057	177.92	-1.02	-5.146	-22.75	-4.622
1058	164.873	-1.015	4.874	21.798	-4.601
1059	55.762	1.045	-4.897	-21.899	4.46
1060	42.715	1.049	5.122	22.649	4.481
1061	150.387	-0.303	-16.748	-74.424	-1.468
1062	106.896	-0.287	16.65	74.068	-1.398
1063	113.739	0.317	-16.673	-74.169	1.257
1064	70.248	0.332	16.724	74.323	1.327
1065	177.127	-1.018	-5.143	-22.74	-4.617
1066	164.079	-1.014	4.876	21.808	-4.596
1067	54.969	1.046	-4.894	-21.889	4.466
1068	41.922	1.05	5.125	22.659	4.486
1069	149.593	-0.302	-16.745	-74.414	-1.463
1070	106.103	-0.286	16.652	74.078	-1.393
1071	112.946	0.318	-16.67	-74.159	1.262
1072	69.455	0.334	16.727	74.333	1.332
1073	224.005	0.031	-0.021	-0.089	-0.136
1074	74.112	0.011	-0.001	0	-0.047



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 29 de 126

2078	212.78	0.406	2.595	11.607	-6.588
2079	155	1.498	-2.617	-11.701	-1.786
2080	148.04	1.5	2.727	12.058	-1.774
2081	205.19	0.783	-8.881	-39.465	-4.932
2082	182.14	0.791	8.819	39.235	-4.895
2083	185.64	1.113	-8.841	-39.329	-3.479
2084	162.59	1.122	8.859	39.371	-3.442
2085	74.219	0.031	-0.007	-0.03	-0.136
2086	72.243	-0.008	-0.007	-0.03	0.037
2087	69.489	0.01	4.594	17.957	-0.044
2088	76.644	0.011	-3.801	-16.713	-0.047
2089	120.88	-0.714	-3.602	-15.923	-3.233
2090	111.75	-0.711	3.412	15.26	-3.219
2091	35.37	0.731	-3.427	-15.328	3.125
2092	26.237	0.734	3.586	15.856	3.139
2093	101	-0.202	-11.722	-52.091	-0.98
2094	70.552	-0.191	11.656	51.853	-0.931
2095	76.564	0.211	-11.672	-51.921	0.837
2096	46.121	0.222	11.706	52.023	0.886
2097	120.33	-0.713	-3.6	-15.916	-3.23
2098	111.19	-0.71	3.414	15.267	-3.215
2099	34.814	0.731	-3.426	-15.321	3.128
2100	25.681	0.735	3.588	15.863	3.143
2101	100.44	-0.201	-11.72	-52.084	-0.976
2102	69.997	-0.19	11.658	51.86	-0.927
2103	76.009	0.212	-11.67	-51.914	0.84
2104	45.565	0.223	11.708	52.031	0.889
2105	188.14	0.026	-0.017	-0.074	-0.114
2106	63.232	0.009	-0.001	0	-0.04

Ejes 22 al 30. Apoyo 9



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	139.25	0.003	0.012	0.054	-0.014
2002	146.47	0.028	0.012	0.065	-0.124
2003	139.25	0.022	0.012	0.054	-0.098
2004	139.25	-0.017	0.012	0.054	0.074
2005	143.25	0.003	3.921	17.279	-0.014
2006	135.24	0.003	-4.521	-17.617	-0.014
2007	144.66	0.036	0.012	0.063	-0.16
2008	144.66	0.007	0.012	0.063	-0.031
2009	147.66	0.022	2.944	12.981	-0.097
2010	141.66	0.022	-3.388	-13.191	-0.097
2011	144.51	-1.044	-3.809	-16.234	-4.62
2012	134.61	-1.041	3.797	16.23	-4.608
2013	144.47	1.047	-3.775	-16.126	4.577
2014	134.57	1.049	3.831	16.337	4.589
2015	156.05	-0.315	-12.671	-54.07	-1.415

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	194.945	0.004	0.016	0.076	-0.019
1002	178.645	0.044	0.014	0.083	-0.193
1003	167.095	0.019	0.014	0.065	-0.084
1004	167.095	-0.012	0.014	0.065	0.054
1005	170.299	0.004	3.141	13.845	-0.016
1006	163.892	0.004	-3.612	-14.072	-0.016
1007	174.314	0.06	0.014	0.076	-0.262
1008	174.314	-0.003	0.014	0.076	0.013
1009	180.721	0.029	6.269	27.636	-0.127
1010	167.908	0.029	-7.239	-28.198	-0.127
1011	181.835	-1.467	-5.444	-23.192	-6.707
1012	167.693	-1.463	5.422	23.184	-6.69
1013	181.779	1.52	-5.396	-23.039	6.431
1014	167.637	1.523	5.47	23.337	6.449
1015	198.314	-0.426	-18.103	-77.245	-2.129

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES A N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 30 de 126
	ESTE - OESTE				1	1	



2016	123.05	-0.306	12.683	54.141	-1.375
2017	156.03	0.312	-12.661	-54.038	1.344
2018	123.04	0.321	12.693	54.174	1.385
2019	143.92	-1.043	-3.807	-16.229	-4.617
2020	134.02	-1.04	3.798	16.235	-4.605
2021	143.88	1.047	-3.774	-16.121	4.58
2022	133.98	1.05	3.832	16.342	4.593
2023	155.46	-0.315	-12.669	-54.065	-1.412
2024	122.46	-0.305	12.684	54.147	-1.371
2025	155.44	0.312	-12.659	-54.033	1.347
2026	122.45	0.322	12.694	54.179	1.388
2027	148.67	-0.771	-2.899	-12.347	-3.584
2028	141.13	-0.769	2.896	12.387	-3.575
2029	148.64	0.812	-2.874	-12.266	3.379
2030	141.1	0.814	2.921	12.468	3.389
2031	157.38	-0.221	-9.591	-40.917	-1.164
2032	132.4	-0.214	9.605	41.014	-1.133
2033	157.37	0.257	-9.583	-40.893	0.938
2034	132.39	0.264	9.613	41.039	0.969
2035	148.22	-0.77	-2.898	-12.343	-3.582
2036	140.68	-0.768	2.897	12.391	-3.572
2037	148.19	0.813	-2.873	-12.262	3.382
2038	140.65	0.815	2.922	12.472	3.391
2039	156.93	-0.22	-9.59	-40.913	-1.162
2040	131.95	-0.213	9.606	41.018	-1.131
2041	156.92	0.258	-9.582	-40.889	0.94
2042	131.94	0.265	9.614	41.043	0.971
2043	148.03	0.939	0.012	0.055	-4.13
2044	155.25	0.964	0.012	0.066	-4.241
2045	148.03	0.958	0.012	0.055	-4.215
2046	148.03	0.919	0.012	0.055	-4.043
2047	152.03	0.939	3.921	17.28	-4.13
2048	144.03	0.939	-4.521	-17.617	-4.13
2049	153.44	0.972	0.012	0.063	-4.276
2050	153.44	0.943	0.012	0.063	-4.147
2051	156.45	0.958	2.944	12.982	-4.213
2052	150.44	0.958	-3.388	-13.19	-4.213
2053	153.29	-0.108	-3.809	-16.233	-8.736
2054	143.39	-0.105	3.797	16.23	-8.724
2055	153.25	1.982	-3.775	-16.126	0.461
2056	143.36	1.985	3.831	16.337	0.473
2057	164.83	0.62	-12.671	-54.07	-5.532
2058	131.83	0.629	12.683	54.142	-5.491
2059	164.82	1.247	-12.66	-54.038	-2.773
2060	131.82	1.257	12.693	54.174	-2.732
2061	152.7	-0.108	-3.807	-16.228	-8.733
2062	142.8	-0.105	3.799	16.235	-8.721
2063	152.66	1.983	-3.774	-16.121	0.464

1016	151.175	-0.413	18.115	77.344	-2.071
1017	198.297	0.47	-18.089	-77.199	1.813
1018	151.158	0.483	18.13	77.39	1.871
1019	180.991	-1.466	-5.442	-23.185	-6.703
1020	166.849	-1.462	5.424	23.192	-6.685
1021	180.935	1.521	-5.394	-23.032	6.436
1022	166.793	1.524	5.472	23.345	6.453
1023	197.47	-0.425	-18.102	-77.237	-2.124
1024	150.331	-0.412	18.117	77.351	-2.066
1025	197.454	0.471	-18.087	-77.191	1.817
1026	150.314	0.484	18.132	77.397	1.875
1027	207.24	1.314	0.016	0.076	-5.782
1028	189.184	1.167	0.014	0.083	-5.133
1029	177.634	1.142	0.014	0.065	-5.024
1030	177.634	1.111	0.014	0.065	-4.886
1031	180.838	1.126	3.141	13.846	-4.956
1032	174.431	1.126	-3.612	-14.071	-4.956
1033	184.853	1.182	0.014	0.077	-5.202
1034	184.853	1.12	0.014	0.077	-4.927
1035	191.26	1.152	6.269	27.637	-5.067
1036	178.447	1.152	-7.239	-28.197	-5.067
1037	192.374	-0.344	-5.443	-23.192	-11.647
1038	178.232	-0.34	5.422	23.185	-11.63
1039	192.318	2.642	-5.396	-23.039	1.492
1040	178.176	2.646	5.47	23.338	1.509
1041	208.853	0.697	-18.103	-77.244	-7.069
1042	161.714	0.71	18.115	77.344	-7.011
1043	208.836	1.592	-18.089	-77.198	-3.127
1044	161.697	1.606	18.13	77.39	-3.069
1045	191.53	-0.343	-5.442	-23.184	-11.642
1046	177.388	-0.339	5.424	23.192	-11.625
1047	191.474	2.643	-5.394	-23.031	1.496
1048	177.332	2.647	5.472	23.345	1.514
1049	208.009	0.698	-18.101	-77.237	-7.064
1050	160.87	0.711	18.117	77.352	-7.006
1051	207.993	1.593	-18.087	-77.191	-3.123
1052	160.853	1.607	18.132	77.397	-3.065
1053	125.321	0.034	0.01	0.049	-0.148
1054	125.321	-0.029	0.01	0.049	0.128
1055	131.729	0.003	6.265	27.609	-0.012
1056	118.915	0.003	-7.242	-28.225	-0.012
1057	132.842	-1.493	-5.447	-23.22	-6.593
1058	118.7	-1.489	5.418	23.157	-6.575
1059	132.786	1.493	-5.399	-23.067	6.546
1060	118.644	1.497	5.466	23.31	6.563
1061	149.321	-0.452	-18.107	-77.272	-2.014
1062	102.182	-0.439	18.112	77.316	-1.956
1063	149.305	0.444	-18.093	-77.226	1.927

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 31 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2064	142.76	1.986	3.832	16.343	0.476
2065	164.24	0.621	-12.669	-54.065	-5.528
2066	131.24	0.63	12.684	54.147	-5.488
2067	164.23	1.248	-12.659	-54.033	-2.769
2068	131.23	1.257	12.694	54.179	-2.729
2069	157.45	0.165	-2.899	-12.347	-7.701
2070	149.91	0.167	2.896	12.387	-7.691
2071	157.42	1.748	-2.873	-12.265	-0.737
2072	149.88	1.75	2.922	12.469	-0.728
2073	166.16	0.715	-9.59	-40.917	-5.281
2074	141.18	0.722	9.605	41.015	-5.25
2075	166.15	1.193	-9.583	-40.893	-3.179
2076	141.17	1.2	9.613	41.039	-3.148
2077	157.01	0.165	-2.898	-12.343	-7.698
2078	149.46	0.167	2.897	12.391	-7.689
2079	156.98	1.748	-2.872	-12.262	-0.735
2080	149.43	1.75	2.922	12.473	-0.726
2081	165.72	0.715	-9.589	-40.913	-5.278
2082	140.73	0.722	9.606	41.019	-5.248
2083	165.71	1.193	-9.582	-40.889	-3.176
2084	140.72	1.2	9.614	41.043	-3.145
2085	83.548	0.021	0.007	0.033	-0.093
2086	83.548	-0.018	0.007	0.033	0.079
2087	87.552	0.002	3.916	17.258	-0.008
2088	79.544	0.002	-4.526	-17.639	-0.008
2089	88.812	-1.045	-3.813	-16.255	-4.614
2090	78.913	-1.042	3.793	16.208	-4.602
2091	88.773	1.045	-3.78	-16.148	4.583
2092	78.874	1.048	3.826	16.315	4.595
2093	100.35	-0.302	-12.675	-54.091	-1.344
2094	67.35	-0.293	12.678	54.12	-1.303
2095	100.34	0.296	-12.665	-54.061	1.284
2096	67.339	0.305	12.688	54.151	1.324
2097	88.222	-1.044	-3.812	-16.25	-4.611
2098	78.322	-1.042	3.794	16.213	-4.599
2099	88.182	1.046	-3.779	-16.143	4.586
2100	78.283	1.049	3.827	16.321	4.598
2101	99.757	-0.301	-12.674	-54.086	-1.341
2102	66.759	-0.292	12.679	54.126	-1.3
2103	99.746	0.296	-12.664	-54.055	1.287
2104	66.748	0.305	12.689	54.156	1.328
2105	216.98	0.028	0.017	0.09	-0.124
2106	62.209	0.028	0.001	0.016	-0.124



1064	102.165	0.457	18.126	77.362	1.985
1065	131.999	-1.492	-5.445	-23.212	-6.588
1066	117.857	-1.488	5.42	23.164	-6.571
1067	131.943	1.494	-5.397	-23.059	6.551
1068	117.801	1.498	5.468	23.317	6.568
1069	148.478	-0.451	-18.105	-77.265	-2.01
1070	101.338	-0.438	18.114	77.324	-1.952
1071	148.461	0.445	-18.091	-77.219	1.932
1072	101.322	0.458	18.128	77.37	1.99
1073	258.934	0.029	0.021	0.106	-0.127
1074	73.207	0.029	0.001	0.017	-0.127

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 32 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

Ejes 22 al 30. Apoyo 10



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	141.5	0	-0.012	-0.048	0
2002	150.78	0	-0.012	-0.038	0
2003	141.5	0.019	-0.012	-0.048	-0.085
2004	141.5	-0.02	-0.012	-0.048	0.087
2005	137.49	0	4.521	17.745	0
2006	145.5	0	-3.921	-17.151	0
2007	148.46	0.014	-0.012	-0.04	-0.063
2008	148.46	-0.015	-0.012	-0.04	0.066
2009	145.45	0	3.388	13.304	0
2010	151.46	0	-2.944	-12.868	0
2011	146.78	-0.727	-3.832	-16.336	-3.198
2012	136.88	-0.724	3.774	16.128	-3.186
2013	146.74	0.723	-3.798	-16.229	3.182
2014	136.84	0.726	3.807	16.235	3.194
2015	158.31	-0.222	-12.694	-54.172	-0.978
2016	125.32	-0.213	12.659	54.039	-0.939
2017	158.3	0.213	-12.684	-54.14	0.936
2018	125.31	0.222	12.669	54.072	0.975
2019	146.15	-0.726	-3.831	-16.331	-3.194
2020	136.25	-0.723	3.775	16.133	-3.182
2021	146.11	0.724	-3.797	-16.223	3.186
2022	136.21	0.727	3.809	16.24	3.198
2023	157.69	-0.222	-12.693	-54.167	-0.975
2024	124.69	-0.213	12.661	54.045	-0.936
2025	157.67	0.213	-12.683	-54.135	0.939
2026	124.68	0.222	12.671	54.077	0.978
2027	152.48	-0.55	-2.922	-12.45	-2.421
2028	144.94	-0.548	2.873	12.284	-2.412
2029	152.45	0.548	-2.897	-12.369	2.409
2030	144.91	0.55	2.898	12.365	2.418
2031	161.19	-0.169	-9.614	-41.02	-0.745
2032	136.21	-0.163	9.582	40.911	-0.716
2033	161.18	0.162	-9.606	-40.996	0.713
2034	136.2	0.169	9.59	40.936	0.743
2035	152.01	-0.55	-2.921	-12.446	-2.418
2036	144.46	-0.548	2.874	12.288	-2.409
2037	151.98	0.548	-2.896	-12.365	2.412
2038	144.44	0.55	2.899	12.369	2.421
2039	160.72	-0.169	-9.613	-41.016	-0.743
2040	135.73	-0.162	9.583	40.915	-0.713
2041	160.71	0.163	-9.605	-40.992	0.716
2042	135.73	0.169	9.591	40.94	0.745
2043	148.91	0.938	-0.012	-0.048	-4.128
2044	158.2	0.938	-0.012	-0.038	-4.128
2045	148.91	0.957	-0.012	-0.048	-4.212

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	198.096	0	-0.016	-0.067	0
1002	184.646	0	-0.014	-0.041	0
1003	169.796	0.015	-0.014	-0.057	-0.068
1004	169.796	-0.016	-0.014	-0.057	0.07
1005	166.593	0	3.612	14.177	0
1006	173	0	-3.141	-13.74	0
1007	179.078	0.031	-0.014	-0.047	-0.135
1008	179.078	-0.032	-0.014	-0.047	0.14
1009	172.67	0	7.239	28.421	0
1010	185.484	0	-6.269	-27.413	0
1011	186.624	-1.038	-5.472	-23.316	-4.568
1012	172.484	-1.034	5.394	23.06	-4.551
1013	186.568	1.033	-5.424	-23.163	4.546
1014	172.428	1.037	5.442	23.214	4.563
1015	203.101	-0.318	-18.132	-77.368	-1.398
1016	155.967	-0.305	18.087	77.22	-1.342
1017	203.085	0.304	-18.117	-77.322	1.337
1018	155.951	0.316	18.102	77.266	1.393
1019	185.727	-1.037	-5.47	-23.309	-4.563
1020	171.587	-1.033	5.396	23.068	-4.546
1021	185.671	1.034	-5.422	-23.155	4.551
1022	171.531	1.038	5.444	23.221	4.568
1023	202.205	-0.316	-18.13	-77.361	-1.392
1024	155.071	-0.304	18.089	77.227	-1.336
1025	202.188	0.305	-18.115	-77.315	1.342
1026	155.054	0.318	18.103	77.273	1.398
1027	208.48	1.313	-0.016	-0.067	-5.779
1028	193.547	1.126	-0.014	-0.042	-4.953
1029	178.697	1.141	-0.014	-0.058	-5.021
1030	178.697	1.11	-0.014	-0.058	-4.883
1031	175.494	1.126	3.612	14.177	-4.953
1032	181.901	1.126	-3.141	-13.74	-4.953
1033	187.979	1.157	-0.014	-0.048	-5.089
1034	187.979	1.094	-0.014	-0.048	-4.813
1035	181.571	1.126	7.239	28.421	-4.953
1036	194.385	1.126	-6.269	-27.413	-4.953
1037	195.525	0.088	-5.472	-23.316	-9.521
1038	181.385	0.091	5.394	23.06	-9.505
1039	195.469	2.159	-5.424	-23.163	-0.407
1040	181.329	2.163	5.442	23.213	-0.391
1041	212.002	0.808	-18.132	-77.369	-6.351
1042	164.868	0.821	18.087	77.22	-6.295
1043	211.986	1.43	-18.117	-77.323	-3.617
1044	164.852	1.442	18.101	77.266	-3.561
1045	194.628	0.089	-5.47	-23.309	-9.516

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 33 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2046	148.91	0.918	-0.012	-0.048	-4.04
2047	144.91	0.938	4.521	17.745	-4.128
2048	152.92	0.938	-3.921	-17.151	-4.128
2049	155.88	0.953	-0.012	-0.041	-4.191
2050	155.88	0.923	-0.012	-0.041	-4.062
2051	152.87	0.938	3.388	13.304	-4.128
2052	158.88	0.938	-2.944	-12.868	-4.128
2053	154.2	0.211	-3.832	-16.336	-7.325
2054	144.3	0.214	3.774	16.127	-7.314
2055	154.16	1.661	-3.799	-16.229	-0.946
2056	144.26	1.664	3.807	16.235	-0.934
2057	165.73	0.716	-12.694	-54.173	-5.106
2058	132.74	0.725	12.659	54.039	-5.067
2059	165.72	1.151	-12.684	-54.141	-3.192
2060	132.73	1.16	12.669	54.071	-3.153
2061	153.57	0.212	-3.831	-16.331	-7.322
2062	143.67	0.215	3.775	16.133	-7.31
2063	153.53	1.662	-3.797	-16.224	-0.942
2064	143.63	1.665	3.809	16.24	-0.93
2065	165.1	0.717	-12.693	-54.167	-5.103
2066	132.11	0.726	12.66	54.044	-5.063
2067	165.09	1.152	-12.683	-54.135	-3.189
2068	132.1	1.161	12.671	54.076	-3.149
2069	159.9	0.388	-2.922	-12.45	-6.549
2070	152.36	0.39	2.872	12.284	-6.54
2071	159.87	1.486	-2.897	-12.369	-1.718
2072	152.33	1.488	2.898	12.365	-1.709
2073	168.61	0.769	-9.614	-41.021	-4.873
2074	143.63	0.776	9.582	40.911	-4.843
2075	168.6	1.1	-9.606	-40.996	-3.415
2076	143.62	1.107	9.589	40.936	-3.385
2077	159.42	0.389	-2.922	-12.446	-6.546
2078	151.88	0.391	2.873	12.288	-6.537
2079	159.39	1.486	-2.896	-12.365	-1.716
2080	151.85	1.488	2.899	12.369	-1.707
2081	168.13	0.769	-9.613	-41.017	-4.87
2082	143.15	0.776	9.583	40.915	-4.841
2083	168.12	1.101	-9.605	-40.992	-3.412
2084	143.14	1.108	9.59	40.939	-3.382
2085	84.898	0.019	-0.007	-0.029	-0.085
2086	84.898	-0.02	-0.007	-0.029	0.087
2087	80.894	0	4.526	17.764	0
2088	88.902	0	-3.916	-17.132	0
2089	90.181	-0.727	-3.827	-16.317	-3.198
2090	80.283	-0.724	3.779	16.147	-3.186
2091	90.142	0.723	-3.794	-16.209	3.182
2092	80.243	0.726	3.812	16.254	3.194
2093	101.72	-0.212	-12.689	-54.152	-0.933

1046	180.488	0.093	5.396	23.068	-9.499
1047	194.572	2.16	-5.422	-23.156	-0.402
1048	180.432	2.164	5.443	23.221	-0.385
1049	211.106	0.809	-18.13	-77.361	-6.346
1050	163.972	0.822	18.089	77.227	-6.29
1051	211.089	1.431	-18.115	-77.315	-3.612
1052	163.955	1.443	18.103	77.273	-3.556
1053	127.347	0.031	-0.01	-0.043	-0.135
1054	127.347	-0.032	-0.01	-0.043	0.14
1055	120.94	0	7.242	28.426	0
1056	133.754	0	-6.265	-27.408	0
1057	134.894	-1.038	-5.468	-23.312	-4.568
1058	120.754	-1.034	5.397	23.065	-4.551
1059	134.838	1.033	-5.42	-23.158	4.546
1060	120.698	1.037	5.445	23.218	4.563
1061	151.371	-0.318	-18.128	-77.364	-1.398
1062	104.237	-0.305	18.091	77.224	-1.342
1063	151.354	0.304	-18.114	-77.318	1.336
1064	104.22	0.316	18.105	77.27	1.392
1065	133.997	-1.037	-5.466	-23.304	-4.563
1066	119.857	-1.033	5.399	23.072	-4.546
1067	133.941	1.034	-5.418	-23.151	4.551
1068	119.801	1.038	5.447	23.226	4.568
1069	150.474	-0.316	-18.126	-77.356	-1.393
1070	103.34	-0.304	18.093	77.232	-1.337
1071	150.457	0.305	-18.112	-77.31	1.342
1072	103.323	0.318	18.107	77.278	1.398
1073	263.358	0	-0.021	-0.077	0
1074	76.238	0	-0.001	0.012	0



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 34 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2094	68.721	-0.203	12.664	54.059	-0.894
2095	101.7	0.202	-12.679	-54.122	0.89
2096	68.71	0.211	12.674	54.09	0.929
2097	89.553	-0.726	-3.826	-16.311	-3.194
2098	79.655	-0.723	3.78	16.152	-3.182
2099	89.514	0.724	-3.793	-16.204	3.186
2100	79.616	0.727	3.813	16.259	3.198
2101	101.09	-0.211	-12.688	-54.147	-0.929
2102	68.093	-0.202	12.665	54.064	-0.89
2103	101.08	0.203	-12.678	-54.117	0.894
2104	68.082	0.212	12.675	54.095	0.933
2105	221.01	0	-0.017	-0.063	0
2106	65.079	0	-0.001	0.011	0

Ejes 22 al 30. Apoyo 11



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	119.97	-0.014	0.012	0.069	0.061
2002	126.13	0.011	0.013	0.127	-0.047
2003	118.99	0.004	0.012	0.069	-0.018
2004	120.98	-0.035	0.012	0.069	0.155
2005	123.77	-0.014	3.988	17.486	0.063
2006	116.61	-0.014	-4.407	-17.186	0.06
2007	123.85	0.018	0.013	0.112	-0.079
2008	125.34	-0.011	0.013	0.112	0.05
2009	127.43	0.004	2.995	13.175	-0.019
2010	122.07	0.005	-3.302	-12.828	-0.021
2011	185.08	-1.064	-2.875	-12.801	-4.557
2012	177.82	-1.061	2.749	12.411	-4.545
2013	62.686	1.032	-2.727	-12.284	4.665
2014	55.431	1.035	2.897	12.929	4.676
2015	150.7	-0.333	-9.386	-42.035	-1.342
2016	126.52	-0.324	9.363	42.007	-1.305
2017	113.99	0.296	-9.341	-41.88	1.424
2018	89.803	0.304	9.407	42.162	1.461
2019	184.52	-1.063	-2.873	-12.791	-4.553
2020	177.26	-1.06	2.752	12.422	-4.542
2021	62.127	1.033	-2.725	-12.274	4.668
2022	54.871	1.036	2.9	12.939	4.679
2023	150.14	-0.332	-9.383	-42.025	-1.339
2024	125.96	-0.324	9.366	42.017	-1.302
2025	113.43	0.297	-9.339	-41.869	1.428
2026	89.243	0.305	9.41	42.172	1.465
2027	173.9	-0.79	-2.187	-9.692	-3.516
2028	168.37	-0.788	2.099	9.518	-3.508
2029	81.231	0.797	-2.075	-9.3	3.466

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	167.963	-0.019	0.017	0.096	0.086
1002	153.814	0.023	0.016	0.176	-0.099
1003	143.179	-0.002	0.015	0.083	0.01
1004	144.771	-0.034	0.015	0.083	0.148
1005	147.002	-0.017	3.195	14.016	0.075
1006	141.278	-0.016	-3.521	-13.721	0.072
1007	148.544	0.037	0.016	0.141	-0.161
1008	151.727	-0.026	0.016	0.141	0.115
1009	156.188	0.007	6.377	28.008	-0.032
1010	144.74	0.008	-7.056	-27.466	-0.037
1011	243.124	-1.492	-4.109	-18.245	-6.631
1012	232.76	-1.488	3.926	17.773	-6.616
1013	68.283	1.503	-3.898	-17.506	6.542
1014	57.918	1.506	4.137	18.512	6.558
1015	194.022	-0.448	-13.41	-60.007	-2.039
1016	159.473	-0.436	13.374	60.053	-1.987
1017	141.57	0.45	-13.346	-59.786	1.913
1018	107.021	0.462	13.438	60.274	1.965
1019	242.325	-1.491	-4.106	-18.23	-6.627
1020	231.96	-1.487	3.929	17.788	-6.611
1021	67.483	1.504	-3.895	-17.491	6.546
1022	57.119	1.507	4.141	18.526	6.562
1023	193.222	-0.447	-13.406	-59.993	-2.035
1024	158.673	-0.435	13.378	60.067	-1.982
1025	140.77	0.452	-13.343	-59.771	1.917
1026	106.221	0.464	13.441	60.289	1.97
1027	110.944	1.283	0.017	0.097	-5.644
1028	104.94	1.139	0.016	0.176	-5.01
1029	94.306	1.114	0.015	0.083	-4.901

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 35 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2030	75.704	0.799	2.211	9.909	3.474
2031	147.94	-0.238	-7.103	-31.766	-1.089
2032	129.63	-0.232	7.093	31.865	-1.061
2033	119.97	0.241	-7.069	-31.648	1.019
2034	101.66	0.247	7.127	31.984	1.047
2035	173.47	-0.79	-2.185	-9.684	-3.514
2036	167.95	-0.788	2.101	9.525	-3.505
2037	80.808	0.797	-2.073	-9.293	3.468
2038	75.28	0.799	2.213	9.917	3.477
2039	147.52	-0.238	-7.101	-31.759	-1.086
2040	129.21	-0.232	7.095	31.873	-1.058
2041	119.55	0.241	-7.067	-31.64	1.021
2042	101.23	0.247	7.128	31.991	1.049
2043	79.246	0.916	0.012	0.069	-4.031
2044	85.399	0.941	0.013	0.127	-4.139
2045	78.26	0.934	0.012	0.069	-4.11
2046	80.249	0.895	0.012	0.069	-3.938
2047	83.038	0.916	3.988	17.486	-4.03
2048	75.883	0.917	-4.407	-17.185	-4.033
2049	83.121	0.948	0.013	0.113	-4.172
2050	84.613	0.919	0.013	0.113	-4.042
2051	86.705	0.934	2.995	13.176	-4.111
2052	81.338	0.935	-3.302	-12.828	-4.114
2053	144.35	-0.133	-2.875	-12.801	-8.649
2054	137.09	-0.131	2.749	12.412	-8.638
2055	21.959	1.963	-2.727	-12.284	0.572
2056	14.703	1.965	2.897	12.929	0.583
2057	109.98	0.597	-9.386	-42.034	-5.435
2058	85.792	0.606	9.363	42.007	-5.398
2059	73.259	1.226	-9.341	-41.879	-2.668
2060	49.075	1.234	9.408	42.163	-2.631
2061	143.79	-0.133	-2.873	-12.791	-8.646
2062	136.53	-0.13	2.752	12.422	-8.635
2063	21.399	1.963	-2.725	-12.273	0.575
2064	14.144	1.966	2.9	12.939	0.587
2065	109.42	0.598	-9.383	-42.024	-5.431
2066	85.232	0.606	9.366	42.018	-5.394
2067	72.7	1.227	-9.339	-41.869	-2.665
2068	48.515	1.235	9.41	42.173	-2.628
2069	133.17	0.14	-2.187	-9.692	-7.609
2070	127.64	0.142	2.099	9.518	-7.6
2071	40.504	1.727	-2.075	-9.3	-0.627
2072	34.976	1.729	2.211	9.909	-0.618
2073	107.22	0.692	-7.103	-31.766	-5.181
2074	88.905	0.698	7.093	31.866	-5.153
2075	79.241	1.171	-7.069	-31.648	-3.074
2076	60.93	1.177	7.127	31.984	-3.046
2077	132.75	0.141	-2.185	-9.684	-7.606

1030	95.898	1.082	0.015	0.083	-4.763
1031	98.128	1.099	3.195	14.017	-4.836
1032	92.404	1.1	-3.521	-13.721	-4.839
1033	99.671	1.153	0.016	0.141	-5.072
1034	102.854	1.09	0.016	0.141	-4.796
1035	107.315	1.123	6.377	28.008	-4.943
1036	95.867	1.125	-7.056	-27.466	-4.948
1037	194.251	-0.375	-4.109	-18.245	-11.542
1038	183.886	-0.372	3.926	17.773	-11.527
1039	19.41	2.619	-3.898	-17.506	1.631
1040	9.045	2.622	4.137	18.512	1.647
1041	145.149	0.668	-13.41	-60.007	-6.95
1042	110.6	0.68	13.374	60.053	-6.898
1043	92.696	1.567	-13.346	-59.785	-2.998
1044	58.147	1.579	13.438	60.275	-2.946
1045	193.452	-0.374	-4.106	-18.23	-11.538
1046	183.087	-0.371	3.929	17.788	-11.522
1047	18.61	2.62	-3.894	-17.491	1.635
1048	8.245	2.623	4.141	18.527	1.651
1049	144.349	0.669	-13.406	-59.992	-6.946
1050	109.8	0.681	13.378	60.068	-6.893
1051	91.897	1.568	-13.343	-59.771	-2.994
1052	57.348	1.58	13.441	60.289	-2.941
1053	106.398	0.016	0.011	0.062	-0.071
1054	109.582	-0.046	0.011	0.062	0.204
1055	114.043	-0.013	6.372	27.929	0.058
1056	102.595	-0.012	-7.06	-27.545	0.053
1057	200.979	-1.512	-4.114	-18.324	-6.542
1058	190.614	-1.508	3.921	17.694	-6.526
1059	26.138	1.482	-3.903	-17.585	6.632
1060	15.773	1.486	4.132	18.433	6.647
1061	151.877	-0.468	-13.414	-60.086	-1.95
1062	117.328	-0.456	13.369	59.974	-1.897
1063	99.424	0.43	-13.351	-59.864	2.002
1064	64.875	0.442	13.433	60.195	2.055
1065	200.179	-1.511	-4.111	-18.309	-6.537
1066	189.815	-1.507	3.925	17.709	-6.521
1067	25.338	1.483	-3.899	-17.57	6.636
1068	14.973	1.487	4.136	18.448	6.652
1069	151.077	-0.467	-13.411	-60.071	-1.945
1070	116.528	-0.455	13.373	59.988	-1.892
1071	98.625	0.431	-13.348	-59.85	2.007
1072	64.076	0.443	13.436	60.21	2.06
1073	219.032	-0.001	0.022	0.171	0.004
1074	70.433	0.019	0.002	0.082	-0.085



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 36 de 126
	ESTE - OESTE		1	1	

2078	127.22	0.142	2.101	9.526	-7.598
2079	40.08	1.727	-2.073	-9.292	-0.624
2080	34.552	1.729	2.213	9.917	-0.616
2081	106.79	0.692	-7.101	-31.758	-5.179
2082	88.481	0.699	7.095	31.873	-5.151
2083	78.817	1.171	-7.067	-31.64	-3.071
2084	60.506	1.178	7.129	31.992	-3.043
2085	70.998	0.01	0.007	0.041	-0.042
2086	72.988	-0.03	0.007	0.041	0.13
2087	75.776	-0.009	3.983	17.458	0.038
2088	68.621	-0.008	-4.412	-17.213	0.035
2089	137.09	-1.058	-2.88	-12.829	-4.581
2090	129.83	-1.055	2.744	12.384	-4.57
2091	14.697	1.038	-2.732	-12.312	4.64
2092	7.442	1.041	2.892	12.901	4.651
2093	101.84	-0.312	-9.389	-42.059	-1.301
2094	77.656	-0.304	9.359	41.983	-1.264
2095	66.872	0.287	-9.347	-41.911	1.334
2096	42.688	0.295	9.402	42.131	1.371
2097	136.53	-1.057	-2.878	-12.818	-4.578
2098	129.27	-1.055	2.747	12.394	-4.567
2099	14.137	1.039	-2.73	-12.301	4.644
2100	6.882	1.041	2.895	12.911	4.655
2101	101.28	-0.312	-9.387	-42.048	-1.297
2102	77.096	-0.303	9.362	41.993	-1.26
2103	66.312	0.287	-9.345	-41.901	1.337
2104	42.128	0.296	9.404	42.141	1.374
2105	183.55	0.003	0.019	0.152	-0.015
2106	59.72	0.02	0.002	0.078	-0.089

Ejes 22 al 30. Apoyo 12



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	122.13	-0.017	-0.012	-0.035	0.075
2002	131.01	-0.019	-0.013	0.02	0.083
2003	121.15	0.001	-0.012	-0.035	-0.003
2004	123.14	-0.038	-0.012	-0.035	0.169
2005	118.34	-0.017	4.588	17.953	0.074
2006	125.5	-0.018	-3.807	-16.718	0.077
2007	128.05	-0.005	-0.013	0.006	0.022
2008	129.55	-0.034	-0.013	0.006	0.151
2009	125.95	-0.018	3.438	13.497	0.08
2010	131.32	-0.019	-2.859	-12.506	0.082
2011	169.32	-0.741	-2.9	-12.905	-3.11
2012	162.07	-0.739	2.725	12.308	-3.099
2013	82.79	0.704	-2.752	-12.388	3.247
2014	75.536	0.706	2.873	12.825	3.257
2015	147.5	-0.238	-9.41	-42.138	-0.897

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	170.987	-0.024	-0.017	-0.049	0.106
1002	160.769	-0.023	-0.016	0.045	0.102
1003	145.771	-0.006	-0.015	-0.042	0.027
1004	147.363	-0.038	-0.015	-0.042	0.165
1005	143.527	-0.02	3.666	14.349	0.089
1006	149.251	-0.021	-3.05	-13.388	0.092
1007	153.862	0.006	-0.016	0.013	-0.029
1008	157.045	-0.056	-0.016	0.013	0.247
1009	149.374	-0.022	7.345	28.794	0.095
1010	160.822	-0.023	-6.087	-26.681	0.1
1011	222.852	-1.056	-4.141	-18.373	-4.453
1012	212.49	-1.053	3.895	17.645	-4.438
1013	99.235	1.007	-3.929	-17.634	4.628
1014	88.873	1.011	4.106	18.384	4.643
1015	191.675	-0.338	-13.441	-60.135	-1.292

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES A N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 37 de 126
	ESTE - OESTE				1	1	



2016	123.32	-0.23	9.339	41.904	-0.862
2017	121.54	0.195	-9.366	-41.983	1.009
2018	97.36	0.203	9.383	42.059	1.045
2019	168.73	-0.74	-2.897	-12.894	-3.106
2020	161.48	-0.738	2.727	12.318	-3.096
2021	82.199	0.704	-2.749	-12.377	3.25
2022	74.946	0.707	2.875	12.835	3.261
2023	146.91	-0.237	-9.407	-42.128	-0.894
2024	122.73	-0.229	9.341	41.914	-0.859
2025	120.95	0.196	-9.363	-41.973	1.013
2026	96.77	0.204	9.386	42.069	1.048
2027	164.54	-0.566	-2.213	-9.798	-2.331
2028	159.01	-0.565	2.073	9.411	-2.323
2029	99.022	0.527	-2.101	-9.407	2.482
2030	93.496	0.529	2.185	9.803	2.49
2031	148.06	-0.187	-7.128	-31.873	-0.66
2032	129.75	-0.181	7.067	31.759	-0.634
2033	128.28	0.143	-7.095	-31.755	0.793
2034	109.98	0.149	7.101	31.877	0.819
2035	164.09	-0.566	-2.211	-9.791	-2.328
2036	158.57	-0.564	2.075	9.419	-2.32
2037	98.575	0.528	-2.099	-9.399	2.485
2038	93.049	0.53	2.187	9.811	2.493
2039	147.61	-0.186	-7.127	-31.865	-0.658
2040	129.31	-0.18	7.069	31.767	-0.631
2041	127.83	0.144	-7.093	-31.747	0.795
2042	109.53	0.15	7.103	31.885	0.822
2043	80.234	0.916	-0.012	-0.035	-4.029
2044	89.114	0.914	-0.013	0.019	-4.022
2045	79.247	0.934	-0.012	-0.035	-4.108
2046	81.237	0.894	-0.012	-0.035	-3.936
2047	76.442	0.916	4.588	17.953	-4.03
2048	83.597	0.915	-3.807	-16.718	-4.027
2049	86.154	0.928	-0.013	0.006	-4.083
2050	87.646	0.899	-0.013	0.006	-3.954
2051	84.05	0.915	3.437	13.497	-4.025
2052	89.416	0.914	-2.859	-12.507	-4.022
2053	127.42	0.192	-2.9	-12.905	-7.214
2054	120.17	0.194	2.725	12.308	-7.204
2055	40.89	1.636	-2.752	-12.388	-0.858
2056	33.636	1.639	2.873	12.825	-0.847
2057	105.6	0.695	-9.41	-42.139	-5.002
2058	81.42	0.703	9.339	41.903	-4.967
2059	79.638	1.128	-9.366	-41.983	-3.095
2060	55.46	1.136	9.383	42.058	-3.06
2061	126.83	0.193	-2.897	-12.895	-7.211
2062	119.58	0.195	2.727	12.318	-7.2
2063	40.299	1.637	-2.749	-12.378	-0.854

1016	157.135	-0.327	13.343	59.925	-1.242
1017	154.59	0.281	-13.378	-59.914	1.432
1018	120.05	0.292	13.406	60.146	1.482
1019	222.008	-1.055	-4.137	-18.358	-4.448
1020	211.646	-1.052	3.898	17.66	-4.433
1021	98.391	1.008	-3.926	-17.62	4.633
1022	88.029	1.012	4.109	18.398	4.648
1023	190.831	-0.337	-13.438	-60.121	-1.287
1024	156.291	-0.325	13.346	59.939	-1.237
1025	153.746	0.282	-13.374	-59.899	1.437
1026	119.206	0.294	13.41	60.161	1.488
1027	112.327	1.282	-0.017	-0.049	-5.64
1028	110.489	1.096	-0.016	0.045	-4.823
1029	95.491	1.113	-0.015	-0.042	-4.898
1030	97.083	1.082	-0.015	-0.042	-4.76
1031	93.247	1.099	3.666	14.348	-4.836
1032	98.971	1.099	-3.05	-13.389	-4.833
1033	103.582	1.126	-0.016	0.012	-4.954
1034	106.766	1.063	-0.016	0.012	-4.678
1035	99.094	1.098	7.345	28.793	-4.83
1036	110.542	1.097	-6.087	-26.681	-4.825
1037	172.572	0.063	-4.141	-18.373	-9.378
1038	162.21	0.066	3.894	17.645	-9.363
1039	48.955	2.127	-3.929	-17.634	-0.297
1040	38.593	2.13	4.106	18.384	-0.282
1041	141.395	0.781	-13.441	-60.136	-6.217
1042	106.855	0.793	13.343	59.924	-6.167
1043	104.31	1.4	-13.378	-59.914	-3.493
1044	69.77	1.412	13.406	60.146	-3.443
1045	171.728	0.064	-4.137	-18.359	-9.373
1046	161.366	0.068	3.898	17.659	-9.358
1047	48.112	2.128	-3.926	-17.62	-0.292
1048	37.75	2.131	4.109	18.398	-0.277
1049	140.551	0.782	-13.438	-60.121	-6.212
1050	106.012	0.794	13.346	59.939	-6.162
1051	103.466	1.402	-13.374	-59.899	-3.488
1052	68.927	1.413	13.41	60.16	-3.438
1053	108.342	0.013	-0.011	-0.031	-0.058
1054	111.525	-0.049	-0.011	-0.031	0.217
1055	103.853	-0.015	7.35	28.75	0.065
1056	115.301	-0.016	-6.082	-26.725	0.07
1057	177.331	-1.05	-4.136	-18.417	-4.483
1058	166.969	-1.046	3.899	17.601	-4.467
1059	53.715	1.014	-3.925	-17.678	4.598
1060	43.353	1.018	4.111	18.34	4.613
1061	146.154	-0.331	-13.436	-60.179	-1.322
1062	111.615	-0.32	13.348	59.881	-1.272
1063	109.069	0.288	-13.373	-59.958	1.402

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 38 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2064	33.046	1.64	2.875	12.835	-0.844
2065	105.01	0.695	-9.408	-42.128	-4.998
2066	80.829	0.703	9.341	41.913	-4.963
2067	79.048	1.129	-9.363	-41.973	-3.091
2068	54.87	1.137	9.386	42.069	-3.056
2069	122.64	0.366	-2.213	-9.799	-6.435
2070	117.11	0.368	2.073	9.411	-6.427
2071	57.122	1.46	-2.101	-9.407	-1.623
2072	51.596	1.462	2.185	9.803	-1.614
2073	106.16	0.746	-7.129	-31.873	-4.765
2074	87.854	0.752	7.067	31.759	-4.738
2075	86.381	1.076	-7.095	-31.755	-3.312
2076	68.075	1.082	7.101	31.877	-3.285
2077	122.19	0.367	-2.211	-9.791	-6.433
2078	116.67	0.369	2.075	9.419	-6.425
2079	56.675	1.461	-2.099	-9.399	-1.62
2080	51.149	1.463	2.187	9.81	-1.612
2081	105.71	0.747	-7.127	-31.865	-4.762
2082	87.407	0.753	7.069	31.766	-4.735
2083	85.934	1.077	-7.093	-31.747	-3.309
2084	67.628	1.083	7.103	31.885	-3.282
2085	72.294	0.008	-0.007	-0.021	-0.034
2086	74.283	-0.032	-0.007	-0.021	0.139
2087	69.488	-0.01	4.593	17.967	0.044
2088	76.643	-0.011	-3.802	-16.704	0.047
2089	120.47	-0.734	-2.895	-12.891	-3.14
2090	113.22	-0.732	2.73	12.322	-3.129
2091	33.936	0.71	-2.747	-12.374	3.216
2092	26.683	0.713	2.878	12.839	3.227
2093	98.026	-0.221	-9.404	-42.121	-0.882
2094	73.848	-0.213	9.345	41.921	-0.847
2095	73.303	0.192	-9.362	-41.973	0.934
2096	49.125	0.2	9.387	42.069	0.969
2097	119.88	-0.733	-2.892	-12.881	-3.136
2098	112.62	-0.731	2.732	12.332	-3.126
2099	33.346	0.711	-2.744	-12.363	3.22
2100	26.092	0.714	2.88	12.849	3.231
2101	97.435	-0.22	-9.402	-42.111	-0.879
2102	73.258	-0.212	9.347	41.931	-0.843
2103	72.712	0.192	-9.359	-41.963	0.937
2104	48.534	0.2	9.389	42.079	0.973
2105	188.19	-0.026	-0.019	-0.005	0.115
2106	63.276	-0.009	-0.002	0.069	0.04



1064	74.53	0.299	13.411	60.102	1.453
1065	176.488	-1.048	-4.132	-18.402	-4.477
1066	166.126	-1.045	3.903	17.616	-4.462
1067	52.871	1.015	-3.921	-17.664	4.603
1068	42.509	1.019	4.114	18.354	4.618
1069	145.311	-0.33	-13.433	-60.165	-1.317
1070	110.771	-0.319	13.351	59.895	-1.266
1071	108.226	0.289	-13.369	-59.943	1.407
1072	73.686	0.3	13.414	60.117	1.458
1073	224.053	-0.031	-0.022	-0.017	0.136
1074	74.155	-0.011	-0.002	0.072	0.047

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 39 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

Ejes 22 al 30. Apoyo 13



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	136.92	7.717	0.02	0.154	0.013
2002	162.66	9.44	0.035	0.475	-0.121
2003	137.9	8.56	0.02	0.154	-0.074
2004	135.91	6.705	0.02	0.154	0.129
2005	140.98	7.986	3.849	17.031	0.011
2006	132.93	7.482	-4.623	-16.566	0.013
2007	156.96	9.642	0.031	0.395	-0.153
2008	155.47	8.251	0.031	0.395	-0.001
2009	159.27	9.211	2.903	13.052	-0.089
2010	153.23	8.833	-3.452	-12.146	-0.087
2011	203.42	-41.612	-3.256	-14.193	-5.379
2012	192.61	-41.058	3.178	14.108	-5.366
2013	82.339	56.46	-3.145	-13.83	5.388
2014	71.527	57.014	3.289	14.471	5.401
2015	173.66	-7.933	-10.724	-47.084	-1.626
2016	137.62	-6.087	10.724	47.253	-1.582
2017	137.33	21.489	-10.691	-46.975	1.604
2018	101.29	23.335	10.757	47.362	1.648
2019	202.31	-41.58	-3.248	-14.162	-5.375
2020	191.49	-41.026	3.186	14.139	-5.362
2021	81.223	56.492	-3.138	-13.8	5.391
2022	70.412	57.046	3.297	14.501	5.404
2023	172.54	-7.901	-10.716	-47.053	-1.623
2024	136.5	-6.055	10.731	47.284	-1.578
2025	136.22	21.521	-10.683	-46.945	1.607
2026	100.18	23.367	10.764	47.393	1.651
2027	206.6	-28.341	-2.465	-10.536	-4.17
2028	198.36	-27.919	2.437	11.027	-4.16
2029	114.92	45.914	-2.381	-10.261	3.982
2030	106.69	46.336	2.521	11.301	3.992
2031	184.12	-2.91	-8.104	-35.372	-1.336
2032	156.84	-1.512	8.135	36.055	-1.303
2033	156.45	19.507	-8.079	-35.289	1.125
2034	129.16	20.905	8.16	36.138	1.158
2035	205.76	-28.317	-2.459	-10.512	-4.167
2036	197.52	-27.895	2.443	11.05	-4.157
2037	114.08	45.938	-2.375	-10.238	3.984
2038	105.84	46.36	2.527	11.325	3.994
2039	183.28	-2.886	-8.098	-35.349	-1.334
2040	155.99	-1.488	8.141	36.078	-1.3
2041	155.6	19.531	-8.073	-35.266	1.127
2042	128.32	20.929	8.166	36.161	1.161
2043	195.03	52.252	0.02	0.154	-4.723
2044	220.77	53.976	0.034	0.474	-4.857
2045	196.01	53.095	0.02	0.154	-4.81

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	191.683	10.804	0.028	0.216	0.018
1002	205.481	12.018	0.047	0.698	-0.199
1003	165.088	9.935	0.024	0.185	-0.054
1004	163.495	8.451	0.024	0.185	0.108
1005	167.55	9.476	3.087	13.686	0.014
1006	161.114	9.072	-3.691	-13.191	0.016
1007	191.615	12.332	0.039	0.505	-0.258
1008	188.429	9.365	0.039	0.505	0.067
1009	196.54	11.414	6.165	27.508	-0.121
1010	183.666	10.607	-7.391	-26.247	-0.118
1011	285.044	-59.486	-4.642	-19.99	-7.821
1012	269.6	-58.695	4.55	20.44	-7.802
1013	112.07	80.617	-4.484	-19.473	7.56
1014	96.625	81.408	4.708	20.957	7.579
1015	242.522	-11.373	-15.31	-66.978	-2.46
1016	191.04	-8.736	15.329	67.789	-2.397
1017	190.629	30.658	-15.263	-66.822	2.154
1018	139.148	33.295	15.377	67.945	2.218
1019	283.451	-59.441	-4.631	-19.947	-7.816
1020	268.006	-58.649	4.561	20.484	-7.797
1021	110.476	80.663	-4.473	-19.429	7.565
1022	95.032	81.454	4.719	21.001	7.583
1023	240.928	-11.328	-15.299	-66.934	-2.455
1024	189.447	-8.69	15.34	67.833	-2.392
1025	189.036	30.703	-15.252	-66.779	2.159
1026	137.554	33.341	15.388	67.989	2.222
1027	273.036	73.153	0.028	0.215	-6.612
1028	275.213	65.46	0.047	0.697	-5.882
1029	234.819	63.377	0.024	0.185	-5.737
1030	233.227	61.893	0.024	0.185	-5.575
1031	237.282	62.918	3.087	13.686	-5.669
1032	230.845	62.515	-3.691	-13.192	-5.667
1033	261.346	65.775	0.038	0.505	-5.941
1034	258.161	62.807	0.038	0.505	-5.616
1035	266.272	64.857	6.164	27.507	-5.804
1036	253.398	64.05	-7.392	-26.247	-5.801
1037	354.776	-6.044	-4.642	-19.991	-13.504
1038	339.331	-5.253	4.55	20.439	-13.485
1039	181.802	134.059	-4.484	-19.473	1.877
1040	166.357	134.851	4.708	20.957	1.896
1041	312.253	42.069	-15.31	-66.978	-8.143
1042	260.772	44.707	15.329	67.789	-8.08
1043	260.361	84.1	-15.263	-66.823	-3.529
1044	208.88	86.738	15.376	67.944	-3.466
1045	353.182	-5.998	-4.631	-19.947	-13.499

<div></div> <div> Corporación <small>La fuerza que transforma Bolivia</small></div>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 40 de 126

2046	194.02	51.24	0.02	0.154	-4.607
2047	199.09	52.521	3.849	17.03	-4.724
2048	191.04	52.017	-4.624	-16.566	-4.723
2049	215.07	54.177	0.031	0.394	-4.889
2050	213.58	52.786	0.031	0.394	-4.737
2051	217.38	53.747	2.902	13.051	-4.825
2052	211.34	53.368	-3.452	-12.146	-4.823
2053	261.53	2.923	-3.256	-14.193	-10.115
2054	250.72	3.477	3.178	14.108	-10.101
2055	140.45	100.996	-3.146	-13.831	0.652
2056	129.64	101.55	3.288	14.47	0.665
2057	231.77	36.602	-10.724	-47.084	-6.362
2058	195.73	38.449	10.723	47.253	-6.318
2059	195.44	66.024	-10.691	-46.976	-3.132
2060	159.4	67.87	10.756	47.361	-3.088
2061	260.42	2.955	-3.249	-14.163	-10.111
2062	249.6	3.509	3.186	14.138	-10.098
2063	139.33	101.028	-3.138	-13.8	0.655
2064	128.52	101.582	3.296	14.501	0.668
2065	230.65	36.635	-10.717	-47.054	-6.359
2066	194.61	38.481	10.731	47.283	-6.314
2067	194.33	66.056	-10.683	-46.945	-3.129
2068	158.29	67.902	10.764	47.392	-3.084
2069	264.71	16.194	-2.465	-10.536	-8.906
2070	256.47	16.616	2.437	11.027	-8.896
2071	173.03	90.449	-2.381	-10.262	-0.754
2072	164.8	90.871	2.521	11.301	-0.744
2073	242.23	41.626	-8.104	-35.372	-6.072
2074	214.95	43.023	8.135	36.054	-6.039
2075	214.56	64.042	-8.079	-35.29	-3.611
2076	187.27	65.44	8.16	36.137	-3.578
2077	263.86	16.219	-2.459	-10.513	-8.903
2078	255.63	16.641	2.443	11.05	-8.893
2079	172.19	90.473	-2.376	-10.239	-0.752
2080	163.95	90.895	2.527	11.324	-0.741
2081	241.39	41.65	-8.098	-35.349	-6.07
2082	214.1	43.048	8.14	36.078	-6.036
2083	213.71	64.066	-8.073	-35.266	-3.609
2084	186.43	65.464	8.166	36.16	-3.575
2085	83.135	5.473	0.012	0.093	-0.079
2086	81.144	3.618	0.012	0.093	0.124
2087	86.213	4.899	3.841	16.969	0.006
2088	78.167	4.395	-4.632	-16.627	0.008
2089	148.65	-44.699	-3.264	-14.255	-5.384
2090	137.84	-44.145	3.17	14.047	-5.371
2091	27.572	53.373	-3.153	-13.892	5.383
2092	16.761	53.927	3.281	14.409	5.396
2093	118.02	-10.319	-10.731	-47.143	-1.554

1046	337.738	-5.207	4.561	20.483	-13.48
1047	180.208	134.105	-4.473	-19.429	1.881
1048	164.764	134.896	4.719	21.001	1.9
1049	310.66	42.115	-15.3	-66.934	-8.138
1050	259.178	44.752	15.34	67.833	-8.075
1051	258.768	84.146	-15.252	-66.779	-3.524
1052	207.286	86.783	15.387	67.988	-3.461
1053	124.801	8.294	0.018	0.139	-0.128
1054	121.616	5.326	0.018	0.139	0.197
1055	129.727	7.376	6.144	27.141	0.009
1056	116.853	6.569	-7.412	-26.613	0.012
1057	218.231	-63.525	-4.662	-20.357	-7.691
1058	202.786	-62.734	4.53	20.073	-7.672
1059	45.256	76.579	-4.504	-19.839	7.69
1060	29.812	77.37	4.688	20.591	7.709
1061	175.708	-15.412	-15.33	-67.344	-2.33
1062	124.227	-12.774	15.309	67.423	-2.266
1063	123.816	26.619	-15.283	-67.189	2.285
1064	72.334	29.257	15.356	67.578	2.348
1065	216.637	-63.479	-4.651	-20.313	-7.686
1066	201.193	-62.688	4.541	20.117	-7.667
1067	43.663	76.624	-4.493	-19.795	7.695
1068	28.219	77.416	4.699	20.635	7.714
1069	174.115	-15.366	-15.32	-67.3	-2.325
1070	122.633	-12.728	15.32	67.467	-2.262
1071	122.223	26.665	-15.272	-67.145	2.289
1072	70.741	29.303	15.367	67.622	2.353
1073	268.486	15.741	0.046	0.536	-0.118
1074	99.906	5.553	0.025	0.446	-0.132



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 41 de 126
	ESTE - OESTE		1	1	

2094	81.986	-8.473	10.716	47.194	-1.51
2095	83.429	17.701	-10.7	-47.04	1.522
2096	47.392	19.548	10.748	47.297	1.566
2097	147.54	-44.667	-3.256	-14.224	-5.381
2098	136.73	-44.113	3.178	14.077	-5.367
2099	26.457	53.406	-3.146	-13.861	5.386
2100	15.646	53.959	3.288	14.44	5.399
2101	116.91	-10.287	-10.723	-47.112	-1.551
2102	80.871	-8.441	10.724	47.225	-1.507
2103	82.313	17.733	-10.692	-47.009	1.525
2104	46.276	19.58	10.755	47.328	1.57
2105	228.03	13.404	0.04	0.5	-0.121
2106	87.545	4.914	0.023	0.425	-0.133

Ejes 22 al 30. Apoyo 14



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	138.86	7.716	-0.02	0.027	0.027
2002	165.03	8.302	-0.035	0.305	0.032
2003	139.85	8.558	-0.02	0.027	-0.059
2004	137.86	6.704	-0.02	0.027	0.144
2005	134.8	7.447	4.805	17.474	0.029
2006	142.84	7.951	-3.669	-16.127	0.027
2007	159.23	8.788	-0.031	0.236	-0.034
2008	157.73	7.397	-0.031	0.236	0.118
2009	155.44	7.954	3.588	13.321	0.032
2010	161.47	8.332	-2.767	-11.88	0.031
2011	187.47	-26.308	-3.297	-14.32	-3.666
2012	176.66	-25.755	3.138	13.981	-3.653
2013	102.19	41.144	-3.186	-13.958	3.704
2014	91.378	41.697	3.248	14.344	3.717
2015	170.23	-3.345	-10.765	-47.212	-1.101
2016	134.2	-1.501	10.683	47.126	-1.059
2017	144.65	16.89	-10.732	-47.103	1.11
2018	108.62	18.735	10.716	47.235	1.152
2019	186.34	-26.266	-3.289	-14.289	-3.662
2020	175.53	-25.713	3.145	14.012	-3.65
2021	101.06	41.186	-3.178	-13.927	3.708
2022	90.249	41.739	3.256	14.374	3.721
2023	169.11	-3.304	-10.757	-47.181	-1.097
2024	133.07	-1.459	10.691	47.157	-1.055
2025	143.52	16.932	-10.724	-47.072	1.114
2026	107.49	18.776	10.724	47.266	1.156
2027	195.32	-17.606	-2.527	-10.694	-2.765
2028	187.08	-17.185	2.375	10.868	-2.756
2029	130.75	33.464	-2.443	-10.42	2.815

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	194.404	10.802	-0.028	0.038	0.038
1002	208.502	10.198	-0.047	0.478	0.041
1003	167.421	9.933	-0.024	0.033	-0.037
1004	165.828	8.449	-0.024	0.033	0.126
1005	163.381	9.043	3.836	13.99	0.034
1006	169.818	9.447	-2.943	-12.891	0.033
1007	194.378	11.194	-0.039	0.311	-0.101
1008	191.193	8.226	-0.039	0.311	0.224
1009	186.299	9.415	7.682	28.226	0.04
1010	199.173	10.222	-5.876	-25.536	0.037
1011	262.245	-38.759	-4.719	-20.185	-5.239
1012	246.802	-37.969	4.473	20.245	-5.22
1013	140.412	57.6	-4.561	-19.668	5.291
1014	124.969	58.391	4.631	20.763	5.309
1015	237.62	-5.956	-15.388	-67.173	-1.575
1016	186.144	-3.321	15.252	67.595	-1.514
1017	201.07	22.952	-15.341	-67.018	1.584
1018	149.594	25.587	15.299	67.751	1.645
1019	260.633	-38.7	-4.708	-20.141	-5.233
1020	245.19	-37.909	4.484	20.289	-5.215
1021	138.8	57.66	-4.55	-19.624	5.296
1022	123.357	58.45	4.642	20.807	5.314
1023	236.008	-5.896	-15.377	-67.129	-1.569
1024	184.532	-3.261	15.263	67.639	-1.509
1025	199.458	23.012	-15.33	-66.974	1.59
1026	147.982	25.647	15.31	67.795	1.65
1027	273.706	73.22	-0.028	0.039	-6.611
1028	276.476	63.699	-0.047	0.478	-5.658
1029	235.394	63.434	-0.024	0.033	-5.736

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 42 de 126
	ESTE - OESTE				1	1	

2030	122.51	33.886	2.459	11.143	2.825
2031	182.3	-0.267	-8.166	-35.531	-0.829
2032	155.02	1.129	8.073	35.896	-0.797
2033	162.81	15.15	-8.141	-35.448	0.856
2034	135.53	16.547	8.098	35.979	0.888
2035	194.46	-17.575	-2.521	-10.671	-2.763
2036	186.23	-17.153	2.381	10.892	-2.753
2037	129.89	33.496	-2.438	-10.397	2.818
2038	121.66	33.918	2.465	11.166	2.828
2039	181.45	-0.236	-8.16	-35.508	-0.826
2040	154.17	1.161	8.079	35.92	-0.794
2041	161.95	15.182	-8.135	-35.425	0.859
2042	134.67	16.579	8.104	36.003	0.891
2043	195.51	52.3	-0.02	0.028	-4.722
2044	221.67	52.887	-0.034	0.306	-4.717
2045	196.49	53.142	-0.02	0.028	-4.809
2046	194.5	51.288	-0.02	0.028	-4.606
2047	191.44	52.031	4.806	17.474	-4.721
2048	199.49	52.535	-3.668	-16.127	-4.722
2049	215.87	53.372	-0.031	0.236	-4.783
2050	214.38	51.981	-0.031	0.236	-4.631
2051	212.08	52.538	3.588	13.321	-4.717
2052	218.12	52.916	-2.767	-11.88	-4.719
2053	244.12	18.276	-3.296	-14.32	-8.415
2054	233.31	18.83	3.138	13.982	-8.403
2055	158.83	85.728	-3.186	-13.957	-1.045
2056	148.02	86.281	3.249	14.344	-1.032
2057	226.88	41.239	-10.764	-47.211	-5.851
2058	190.84	43.083	10.684	47.127	-5.808
2059	201.29	61.474	-10.731	-47.102	-3.639
2060	165.26	63.319	10.717	47.236	-3.597
2061	242.99	18.318	-3.289	-14.289	-8.412
2062	232.18	18.871	3.146	14.012	-8.399
2063	157.7	85.77	-3.178	-13.926	-1.041
2064	146.89	86.323	3.256	14.375	-1.028
2065	225.75	41.281	-10.757	-47.18	-5.847
2066	189.72	43.125	10.691	47.158	-5.804
2067	200.17	61.516	-10.723	-47.072	-3.636
2068	164.13	63.361	10.725	47.266	-3.593
2069	251.96	26.978	-2.527	-10.694	-7.515
2070	243.73	27.4	2.376	10.869	-7.505
2071	187.39	78.049	-2.443	-10.42	-1.934
2072	179.16	78.47	2.459	11.143	-1.925
2073	238.95	44.317	-8.166	-35.53	-5.578
2074	211.66	45.714	8.073	35.897	-5.546
2075	219.45	59.735	-8.141	-35.448	-3.893
2076	192.17	61.131	8.099	35.98	-3.861
2077	251.11	27.01	-2.521	-10.671	-7.512

1030	233.801	61.95	-0.024	0.033	-5.573
1031	231.354	62.544	3.837	13.991	-5.665
1032	237.791	62.948	-2.942	-12.89	-5.667
1033	262.351	64.695	-0.038	0.311	-5.8
1034	259.166	61.727	-0.038	0.311	-5.476
1035	254.272	62.916	7.683	28.226	-5.659
1036	267.146	63.723	-5.876	-25.536	-5.662
1037	330.218	14.742	-4.719	-20.185	-10.938
1038	314.775	15.532	4.473	20.246	-10.92
1039	208.386	111.101	-4.561	-19.667	-0.409
1040	192.943	111.892	4.631	20.764	-0.39
1041	305.594	47.545	-15.387	-67.172	-7.274
1042	254.117	50.18	15.253	67.596	-7.213
1043	269.044	76.453	-15.34	-67.017	-4.115
1044	217.567	79.088	15.3	67.751	-4.054
1045	328.606	14.801	-4.708	-20.141	-10.932
1046	313.163	15.592	4.484	20.29	-10.914
1047	206.774	111.161	-4.55	-19.623	-0.403
1048	191.331	111.951	4.642	20.807	-0.385
1049	303.982	47.605	-15.377	-67.129	-7.268
1050	252.505	50.24	15.264	67.64	-7.208
1051	267.432	76.513	-15.329	-66.973	-4.11
1052	215.955	79.148	15.311	67.795	-4.049
1053	126.551	8.292	-0.018	0.024	-0.114
1054	123.366	5.325	-0.018	0.024	0.21
1055	118.472	6.514	7.703	27.939	0.027
1056	131.346	7.321	-5.856	-25.823	0.024
1057	194.418	-41.661	-4.699	-20.472	-5.252
1058	178.975	-40.87	4.493	19.959	-5.234
1059	72.585	54.699	-4.541	-19.954	5.278
1060	57.142	55.489	4.651	20.477	5.296
1061	169.793	-8.857	-15.367	-67.459	-1.588
1062	118.317	-6.222	15.273	67.309	-1.527
1063	133.244	20.051	-15.32	-67.304	1.571
1064	81.767	22.686	15.32	67.464	1.632
1065	192.806	-41.601	-4.688	-20.428	-5.246
1066	177.363	-40.811	4.504	20.003	-5.228
1067	70.973	54.758	-4.53	-19.91	5.283
1068	55.53	55.549	4.662	20.521	5.301
1069	168.181	-8.798	-15.357	-67.416	-1.582
1070	116.705	-6.163	15.284	67.353	-1.522
1071	131.631	20.11	-15.309	-67.26	1.576
1072	80.155	22.745	15.331	67.508	1.637
1073	270.964	14.581	-0.046	0.281	0.039
1074	100.802	4.3	-0.025	0.37	0.025



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 43 de 126
	ESTE - OESTE		1	1	

2078	242.87	27.431	2.382	10.892	-7.502
2079	186.54	78.08	-2.437	-10.396	-1.931
2080	178.3	78.502	2.465	11.167	-1.922
2081	238.09	44.349	-8.16	-35.507	-5.575
2082	210.81	45.745	8.079	35.92	-5.543
2083	218.6	59.766	-8.135	-35.424	-3.89
2084	191.32	61.163	8.104	36.003	-3.858
2085	84.302	5.472	-0.012	0.016	-0.07
2086	82.311	3.617	-0.012	0.016	0.133
2087	79.252	4.36	4.813	17.463	0.018
2088	87.298	4.865	-3.66	-16.138	0.016
2089	131.93	-29.394	-3.288	-14.331	-3.677
2090	121.12	-28.841	3.146	13.97	-3.664
2091	46.644	38.058	-3.178	-13.969	3.693
2092	35.834	38.611	3.256	14.333	3.706
2093	114.08	-5.95	-10.756	-47.22	-1.06
2094	78.047	-4.105	10.692	47.118	-1.017
2095	89.714	13.322	-10.724	-47.116	1.046
2096	53.68	15.167	10.724	47.222	1.089
2097	130.8	-29.352	-3.281	-14.3	-3.673
2098	119.99	-28.799	3.154	14.001	-3.66
2099	45.515	38.099	-3.17	-13.938	3.697
2100	34.705	38.653	3.264	14.364	3.71
2101	112.95	-5.908	-10.748	-47.189	-1.056
2102	76.918	-4.064	10.7	47.149	-1.013
2103	88.585	13.364	-10.717	-47.086	1.05
2104	52.552	15.208	10.731	47.252	1.093
2105	230.17	12.248	-0.04	0.28	0.033
2106	88.363	3.681	-0.023	0.355	0.022

Ejes 22 al 30. Apoyo 15



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	160.07	-2.32	-5.21	-0.13	2.66
2002	252.73	-13.45	-27.92	-4.91	15.24
2003	160.07	-2.30	-5.21	-0.13	2.57
2004	160.07	-2.35	-5.21	-0.13	2.79
2005	164.19	-2.32	-1.27	16.89	2.66
2006	155.96	-2.32	-9.79	-17.66	2.66
2007	229.57	-10.65	-22.24	-3.71	12.03
2008	229.56	-10.69	-22.24	-3.71	12.19
2009	232.66	-10.67	-19.28	9.06	12.10
2010	226.48	-10.67	-25.67	-16.86	12.10
2011	167.56	-3.57	-10.07	-20.41	-2.81
2012	153.76	-3.56	-0.44	19.85	-2.80
2013	167.26	-1.08	-9.99	-20.16	8.11
2014	153.46	-1.08	-0.37	20.10	8.13
2015	183.54	-2.70	-21.27	-67.29	1.00

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	224.10	-3.25	-7.30	-0.18	3.72
1002	340.34	-20.58	-42.59	-7.80	23.32
1003	192.09	-2.77	-6.26	-0.16	3.12
1004	192.08	-2.81	-6.26	-0.16	3.29
1005	195.38	-2.79	-3.10	13.46	3.19
1006	188.79	-2.79	-9.91	-14.18	3.19
1007	284.75	-13.88	-28.96	-4.93	15.64
1008	284.74	-13.96	-28.96	-4.93	15.98
1009	291.33	-13.91	-22.65	22.30	15.77
1010	278.16	-13.91	-36.28	-32.98	15.78
1011	295.44	-15.69	-35.90	-33.90	7.96
1012	275.73	-15.68	-22.15	23.62	7.98
1013	295.01	-12.14	-35.79	-33.55	23.57
1014	275.30	-12.14	-22.04	23.96	23.58
1015	318.28	-14.45	-51.90	-100.87	13.40

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 44 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				



2016	137.56	-2.69	10.81	66.91	1.04
2017	183.45	-1.96	-21.25	-67.22	4.27
2018	137.47	-1.95	10.83	66.98	4.32
2019	166.68	-3.57	-10.06	-20.36	-2.81
2020	152.89	-3.56	-0.43	19.90	-2.80
2021	166.38	-1.08	-9.98	-20.12	8.12
2022	152.59	-1.08	-0.36	20.14	8.13
2023	182.67	-2.70	-21.26	-67.24	1.00
2024	136.69	-2.69	10.82	66.96	1.04
2025	182.58	-1.95	-21.23	-67.17	4.28
2026	136.60	-1.94	10.84	67.03	4.32
2027	235.27	-11.61	-25.94	-19.16	7.95
2028	224.76	-11.60	-18.61	11.51	7.96
2029	235.04	-9.73	-25.89	-18.98	16.23
2030	224.53	-9.72	-18.55	11.70	16.24
2031	247.34	-10.95	-34.40	-54.56	10.83
2032	212.53	-10.95	-10.11	47.05	10.86
2033	247.27	-10.39	-34.38	-54.51	13.33
2034	212.46	-10.38	-10.10	47.10	13.36
2035	234.60	-11.61	-25.93	-19.12	7.96
2036	224.10	-11.60	-18.60	11.55	7.97
2037	234.38	-9.73	-25.88	-18.94	16.23
2038	223.87	-9.72	-18.55	11.74	16.24
2039	246.68	-10.95	-34.39	-54.53	10.83
2040	211.86	-10.95	-10.11	47.08	10.87
2041	246.61	-10.39	-34.37	-54.47	13.33
2042	211.80	-10.38	-10.09	47.14	13.36
2043	168.16	-1.23	-5.21	-0.13	-2.16
2044	260.82	-12.35	-27.92	-4.91	10.42
2045	168.16	-1.21	-5.21	-0.13	-2.25
2046	168.16	-1.26	-5.21	-0.13	-2.03
2047	172.28	-1.23	-1.27	16.89	-2.16
2048	164.04	-1.23	-9.79	-17.66	-2.16
2049	237.66	-9.56	-22.24	-3.71	7.21
2050	237.65	-9.59	-22.24	-3.71	7.37
2051	240.74	-9.57	-19.28	9.06	7.28
2052	234.57	-9.57	-25.67	-16.86	7.28
2053	175.64	-2.47	-10.07	-20.41	-7.63
2054	161.85	-2.47	-0.44	19.85	-7.62
2055	175.35	0.01	-9.99	-20.16	3.29
2056	161.55	0.02	-0.37	20.10	3.31
2057	191.63	-1.61	-21.27	-67.29	-3.82
2058	145.65	-1.60	10.81	66.91	-3.78
2059	191.54	-0.86	-21.25	-67.22	-0.55
2060	145.56	-0.85	10.83	66.98	-0.50
2061	174.77	-2.47	-10.06	-20.36	-7.63
2062	160.98	-2.47	-0.43	19.90	-7.62
2063	174.47	0.01	-9.98	-20.12	3.30

1016	252.59	-14.44	-6.08	90.84	13.46
1017	318.15	-13.39	-51.87	-100.77	18.08
1018	252.46	-13.37	-6.04	90.94	18.14
1019	294.19	-15.69	-35.88	-33.83	7.96
1020	274.48	-15.68	-22.13	23.69	7.98
1021	293.76	-12.14	-35.77	-33.48	23.57
1022	274.06	-12.13	-22.03	24.03	23.59
1023	317.03	-14.45	-51.88	-100.81	13.40
1024	251.34	-14.44	-6.06	90.91	13.47
1025	316.90	-13.39	-51.85	-100.70	18.09
1026	251.22	-13.37	-6.03	91.01	18.15
1027	235.43	-1.72	-7.30	-0.18	-3.03
1028	350.05	-19.27	-42.59	-7.80	17.54
1029	201.79	-1.46	-6.26	-0.16	-2.66
1030	201.79	-1.50	-6.26	-0.16	-2.49
1031	205.09	-1.47	-3.10	13.46	-2.59
1032	198.50	-1.47	-9.91	-14.18	-2.59
1033	294.45	-12.57	-28.96	-4.93	9.85
1034	294.45	-12.64	-28.96	-4.93	10.20
1035	301.04	-12.60	-22.65	22.30	9.99
1036	287.86	-12.60	-36.28	-32.98	9.99
1037	305.14	-14.37	-35.90	-33.90	2.18
1038	285.44	-14.37	-22.15	23.62	2.19
1039	304.72	-10.83	-35.79	-33.55	17.78
1040	285.01	-10.82	-22.04	23.96	17.80
1041	327.98	-13.14	-51.90	-100.87	7.62
1042	262.30	-13.12	-6.08	90.84	7.68
1043	327.85	-12.07	-51.87	-100.77	12.30
1044	262.17	-12.06	-6.04	90.94	12.36
1045	303.90	-14.37	-35.88	-33.83	2.18
1046	284.19	-14.37	-22.13	23.69	2.20
1047	303.47	-10.82	-35.77	-33.48	17.79
1048	283.76	-10.82	-22.03	24.03	17.81
1049	326.74	-13.14	-51.88	-100.81	7.62
1050	261.05	-13.12	-6.06	90.91	7.68
1051	326.61	-12.07	-51.85	-100.70	12.30
1052	260.92	-12.06	-6.03	91.01	12.37
1053	144.07	-2.06	-4.69	-0.12	2.26
1054	144.06	-2.14	-4.69	-0.12	2.60
1055	150.65	-2.09	1.63	27.12	2.39
1056	137.48	-2.09	-12.01	-28.17	2.39
1057	154.76	-3.87	-11.63	-29.08	-5.42
1058	135.05	-3.86	2.12	28.43	-5.40
1059	154.33	-0.32	-11.52	-28.74	10.19
1060	134.62	-0.32	2.23	28.78	10.20
1061	177.60	-2.63	-27.63	-96.06	0.02
1062	111.91	-2.62	18.20	95.65	0.08
1063	177.47	-1.57	-27.59	-95.96	4.70

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 45 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2064	160.68	0.02	-0.36	20.15	3.31
2065	190.76	-1.60	-21.26	-67.24	-3.82
2066	144.78	-1.59	10.82	66.96	-3.78
2067	190.67	-0.86	-21.23	-67.17	-0.54
2068	144.69	-0.85	10.84	67.03	-0.50
2069	243.35	-10.51	-25.94	-19.16	3.14
2070	232.84	-10.51	-18.61	11.52	3.15
2071	243.13	-8.63	-25.89	-18.98	11.41
2072	232.62	-8.63	-18.55	11.70	11.42
2073	255.43	-9.86	-34.40	-54.56	6.01
2074	220.61	-9.85	-10.11	47.05	6.04
2075	255.36	-9.29	-34.38	-54.51	8.51
2076	220.55	-9.28	-10.10	47.10	8.54
2077	242.69	-10.51	-25.93	-19.12	3.14
2078	232.18	-10.51	-18.60	11.55	3.15
2079	242.47	-8.63	-25.88	-18.94	11.41
2080	231.96	-8.63	-18.55	11.74	11.42
2081	254.77	-9.86	-34.39	-54.53	6.01
2082	219.95	-9.85	-10.11	47.08	6.05
2083	254.70	-9.29	-34.37	-54.47	8.51
2084	219.88	-9.28	-10.09	47.14	8.54
2085	96.04	-1.37	-3.13	-0.08	1.51
2086	96.04	-1.42	-3.13	-0.08	1.72
2087	100.16	-1.39	0.82	16.94	1.59
2088	91.93	-1.39	-7.70	-17.61	1.60
2089	103.53	-2.64	-7.98	-20.35	-3.88
2090	89.73	-2.63	1.64	19.91	-3.86
2091	103.23	-0.15	-7.91	-20.11	7.05
2092	89.43	-0.15	1.72	20.15	7.06
2093	119.51	-1.75	-19.18	-67.24	0.01
2094	73.53	-1.74	12.89	66.96	0.06
2095	119.43	-1.04	-19.16	-67.17	3.13
2096	73.45	-1.03	12.92	67.03	3.18
2097	102.65	-2.64	-7.97	-20.31	-3.87
2098	88.86	-2.63	1.65	19.95	-3.86
2099	102.35	-0.15	-7.90	-20.06	7.05
2100	88.56	-0.15	1.73	20.20	7.07
2101	118.64	-1.75	-19.17	-67.19	0.01
2102	72.66	-1.74	12.91	67.01	0.06
2103	118.55	-1.04	-19.15	-67.12	3.14
2104	72.57	-1.03	12.93	67.08	3.18
2105	322.52	-13.45	-27.91	-4.88	15.24
2106	168.49	-13.44	-27.93	-4.96	15.23



1064	111.78	-1.55	18.23	95.76	4.76
1065	153.51	-3.87	-11.61	-29.01	-5.42
1066	133.80	-3.86	2.14	28.50	-5.40
1067	153.08	-0.32	-11.50	-28.67	10.19
1068	133.38	-0.31	2.24	28.85	10.21
1069	176.35	-2.63	-27.61	-95.99	0.02
1070	110.66	-2.61	18.21	95.72	0.09
1071	176.22	-1.57	-27.58	-95.89	4.71
1072	110.54	-1.55	18.24	95.82	4.77
1073	368.49	-13.91	-28.96	-4.90	15.77
1074	183.66	-13.91	-28.98	-4.99	15.76

  Corporación La fuerza que transforma Bolivia	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 46 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

Ejes 22 al 30. Apoyo 16



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	133.84	-0.006	0.412	1.467	0.027
2002	136.38	-0.008	1.82	6.323	0.033
2003	133.84	0.013	0.412	1.467	-0.059
2004	133.83	-0.036	0.412	1.467	0.157
2005	129.72	-0.007	4.985	19.058	0.029
2006	137.95	-0.006	-3.535	-15.494	0.027
2007	135.74	0.007	1.468	5.109	-0.033
2008	135.74	-0.029	1.468	5.109	0.129
2009	132.66	-0.008	4.897	18.302	0.032
2010	138.83	-0.007	-1.493	-7.611	0.031
2011	141.27	-0.855	-4.441	-18.805	-3.708
2012	127.49	-0.852	5.18	21.448	-3.695
2013	141.06	0.839	-4.367	-18.563	3.746
2014	127.28	0.842	5.255	21.691	3.759
2015	157.28	-0.266	-15.64	-65.683	-1.114
2016	111.35	-0.256	16.431	68.496	-1.072
2017	157.21	0.243	-15.617	-65.61	1.122
2018	111.28	0.252	16.453	68.569	1.165
2019	140.39	-0.854	-4.43	-18.757	-3.704
2020	126.61	-0.851	5.192	21.497	-3.692
2021	140.18	0.84	-4.355	-18.515	3.75
2022	126.4	0.843	5.266	21.739	3.763
2023	156.39	-0.265	-15.628	-65.635	-1.11
2024	110.46	-0.255	16.442	68.544	-1.068
2025	156.33	0.243	-15.606	-65.562	1.126
2026	110.4	0.253	16.465	68.617	1.169
2027	141.41	-0.65	-2.23	-10.336	-2.797
2028	130.91	-0.648	5.101	20.334	-2.787
2029	141.25	0.633	-2.173	-10.152	2.847
2030	130.75	0.635	5.157	20.517	2.857
2031	153.49	-0.205	-10.686	-45.733	-0.838
2032	118.72	-0.198	13.596	55.859	-0.806
2033	153.44	0.182	-10.669	-45.678	0.866
2034	118.67	0.19	13.613	55.915	0.898
2035	140.74	-0.649	-2.221	-10.299	-2.794
2036	130.24	-0.647	5.109	20.37	-2.784
2037	140.58	0.633	-2.165	-10.116	2.85
2038	130.08	0.635	5.166	20.554	2.86
2039	152.82	-0.204	-10.677	-45.697	-0.835
2040	118.04	-0.197	13.605	55.896	-0.803
2041	152.77	0.183	-10.66	-45.641	0.869
2042	118	0.19	13.622	55.951	0.901
2043	140.8	1.092	0.412	1.467	-4.804
2044	143.34	1.09	1.82	6.323	-4.799
2045	140.8	1.111	0.412	1.467	-4.891

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	187.369	-0.009	0.577	2.054	0.038
1002	164.674	-0.01	2.747	9.53	0.042
1003	160.602	0.008	0.495	1.76	-0.036
1004	160.599	-0.031	0.495	1.76	0.136
1005	157.308	-0.008	4.153	15.833	0.034
1006	163.896	-0.007	-2.663	-11.808	0.032
1007	163.147	0.022	1.902	6.617	-0.1
1008	163.141	-0.056	1.902	6.617	0.245
1009	156.558	-0.009	9.218	34.762	0.04
1010	169.735	-0.009	-4.414	-20.52	0.037
1011	173.773	-1.222	-5.031	-22.344	-5.298
1012	154.089	-1.218	8.713	35.162	-5.28
1013	173.472	1.198	-4.925	-21.997	5.351
1014	153.788	1.203	8.82	35.508	5.369
1015	196.632	-0.379	-21.029	-89.312	-1.592
1016	131.018	-0.366	24.786	102.372	-1.532
1017	196.542	0.347	-20.997	-89.208	1.603
1018	130.928	0.36	24.818	102.476	1.663
1019	172.506	-1.22	-5.015	-22.275	-5.292
1020	152.821	-1.216	8.73	35.231	-5.274
1021	172.205	1.2	-4.908	-21.928	5.357
1022	152.521	1.204	8.836	35.577	5.375
1023	195.365	-0.378	-21.013	-89.243	-1.586
1024	129.751	-0.364	24.802	102.441	-1.526
1025	195.275	0.348	-20.981	-89.139	1.608
1026	129.661	0.362	24.834	102.545	1.669
1027	197.116	1.529	0.577	2.053	-6.726
1028	173.028	1.308	2.747	9.53	-5.756
1029	168.957	1.326	0.495	1.76	-5.834
1030	168.954	1.287	0.495	1.76	-5.662
1031	165.662	1.31	4.153	15.833	-5.764
1032	172.251	1.31	-2.663	-11.809	-5.766
1033	171.502	1.34	1.902	6.616	-5.898
1034	171.496	1.262	1.902	6.616	-5.553
1035	164.913	1.308	9.218	34.762	-5.758
1036	178.09	1.309	-4.414	-20.521	-5.761
1037	182.127	0.096	-5.031	-22.344	-11.096
1038	162.443	0.1	8.713	35.161	-11.078
1039	181.827	2.516	-4.925	-21.998	-0.447
1040	162.143	2.52	8.82	35.508	-0.429
1041	204.987	0.938	-21.029	-89.312	-7.39
1042	139.373	0.952	24.786	102.372	-7.33
1043	204.897	1.664	-20.997	-89.208	-4.195
1044	139.283	1.678	24.818	102.476	-4.135
1045	180.86	0.097	-5.015	-22.275	-11.09

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 47 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2046	140.79	1.062	0.412	1.467	-4.675
2047	136.68	1.092	4.985	19.058	-4.803
2048	144.92	1.092	-3.535	-15.494	-4.805
2049	142.71	1.105	1.468	5.109	-4.865
2050	142.7	1.069	1.468	5.109	-4.703
2051	139.62	1.091	4.897	18.302	-4.799
2052	145.79	1.091	-1.493	-7.612	-4.801
2053	148.24	0.243	-4.441	-18.806	-8.54
2054	134.46	0.246	5.18	21.448	-8.527
2055	148.03	1.937	-4.367	-18.563	-1.085
2056	134.25	1.94	5.255	21.691	-1.073
2057	164.24	0.832	-15.64	-65.683	-5.946
2058	118.31	0.842	16.431	68.496	-5.903
2059	164.17	1.341	-15.617	-65.611	-3.709
2060	118.24	1.35	16.453	68.568	-3.667
2061	147.35	0.244	-4.43	-18.757	-8.536
2062	133.57	0.247	5.192	21.496	-8.523
2063	147.14	1.938	-4.355	-18.515	-1.081
2064	133.36	1.941	5.266	21.739	-1.069
2065	163.35	0.833	-15.628	-65.635	-5.942
2066	117.42	0.843	16.442	68.544	-5.899
2067	163.29	1.342	-15.606	-65.562	-3.705
2068	117.36	1.351	16.465	68.616	-3.663
2069	148.37	0.448	-2.23	-10.336	-7.629
2070	137.87	0.45	5.101	20.334	-7.619
2071	148.21	1.731	-2.173	-10.152	-1.984
2072	137.71	1.733	5.157	20.517	-1.975
2073	160.45	0.893	-10.686	-45.733	-5.67
2074	125.68	0.9	13.596	55.859	-5.638
2075	160.41	1.28	-10.669	-45.678	-3.966
2076	125.63	1.288	13.613	55.915	-3.934
2077	147.7	0.449	-2.221	-10.299	-7.626
2078	137.2	0.451	5.109	20.37	-7.616
2079	147.54	1.731	-2.165	-10.116	-1.981
2080	137.04	1.734	5.166	20.554	-1.972
2081	159.78	0.894	-10.677	-45.697	-5.667
2082	125.01	0.901	13.605	55.896	-5.635
2083	159.73	1.281	-10.66	-45.641	-3.963
2084	124.96	1.288	13.622	55.951	-3.931
2085	80.301	0.016	0.247	0.88	-0.07
2086	80.298	-0.033	0.247	0.88	0.146
2087	76.183	-0.004	4.82	18.471	0.018
2088	84.419	-0.004	-3.7	-16.081	0.016
2089	87.739	-0.853	-4.606	-19.392	-3.719
2090	73.96	-0.85	5.015	20.862	-3.706
2091	87.529	0.841	-4.532	-19.15	3.735
2092	73.75	0.844	5.09	21.104	3.748
2093	103.74	-0.251	-15.804	-66.268	-1.072

1046	161.176	0.101	8.73	35.23	-11.072
1047	180.56	2.517	-4.909	-21.929	-0.441
1048	160.875	2.522	8.836	35.576	-0.423
1049	203.72	0.94	-21.013	-89.243	-7.384
1050	138.106	0.953	24.802	102.441	-7.324
1051	203.63	1.666	-20.981	-89.139	-4.19
1052	138.016	1.679	24.834	102.545	-4.129
1053	120.452	0.026	0.371	1.32	-0.113
1054	120.446	-0.053	0.371	1.32	0.232
1055	113.863	-0.006	7.687	29.466	0.027
1056	127.04	-0.005	-5.945	-25.817	0.024
1057	131.077	-1.218	-6.562	-27.64	-5.312
1058	111.393	-1.214	7.182	29.865	-5.294
1059	130.777	1.202	-6.456	-27.294	5.337
1060	111.092	1.206	7.288	30.211	5.355
1061	153.937	-0.376	-22.56	-94.608	-1.606
1062	88.323	-0.362	23.255	97.076	-1.545
1063	153.847	0.35	-22.529	-94.504	1.589
1064	88.233	0.364	23.287	97.18	1.649
1065	129.81	-1.217	-6.546	-27.571	-5.306
1066	110.126	-1.213	7.199	29.934	-5.288
1067	129.509	1.203	-6.44	-27.225	5.343
1068	109.825	1.207	7.305	30.28	5.361
1069	152.67	-0.375	-22.544	-94.539	-1.6
1070	87.056	-0.361	23.271	97.145	-1.54
1071	152.58	0.351	-22.512	-94.436	1.595
1072	86.966	0.365	23.303	97.249	1.655
1073	243.237	-0.009	1.896	6.587	0.039
1074	65.723	-0.006	1.916	6.676	0.025



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 48 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2094	57.81	-0.241	16.266	67.911	-1.029
2095	103.68	0.233	-15.783	-66.199	1.058
2096	57.749	0.243	16.288	67.98	1.101
2097	86.852	-0.852	-4.595	-19.344	-3.715
2098	73.073	-0.849	5.027	20.91	-3.702
2099	86.642	0.842	-4.52	-19.101	3.739
2100	72.863	0.845	5.101	21.152	3.752
2101	102.85	-0.25	-15.793	-66.22	-1.068
2102	56.923	-0.241	16.278	67.959	-1.025
2103	102.79	0.234	-15.771	-66.151	1.062
2104	56.862	0.244	16.299	68.028	1.104
2105	203.12	-0.008	1.814	6.298	0.034
2106	55.193	-0.005	1.831	6.372	0.022

Ejes 22 al 30. Apoyo 17



2001	134.95	0.00	-0.15	-0.49	0.01
2002	229.33	0.03	-1.26	-4.52	-0.14
2003	134.95	0.02	-0.15	-0.49	-0.08
2004	134.96	-0.65	-0.15	-0.49	0.69
2005	138.07	0.00	2.87	13.15	0.01
2006	131.83	0.00	-3.78	-14.66	0.01
2007	205.74	0.04	-0.98	-3.51	-0.17
2008	205.74	-0.46	-0.98	-3.51	0.41
2009	208.08	0.02	1.28	6.71	-0.11
2010	203.40	0.02	-3.71	-14.14	-0.10
2011	143.74	-1.25	-4.94	-21.12	-5.49
2012	127.10	-1.25	4.58	19.92	-5.48
2013	143.40	1.24	-4.90	-20.96	5.49
2014	126.75	1.25	4.63	20.08	5.51
2015	163.04	-0.38	-16.03	-68.94	-1.66
2016	107.56	-0.37	15.71	67.85	-1.62
2017	162.93	0.37	-16.02	-68.89	1.63
2018	107.46	0.38	15.72	67.90	1.68
2019	143.15	-1.25	-4.92	-21.05	-5.48
2020	126.50	-1.25	4.60	19.99	-5.47
2021	142.80	1.24	-4.88	-20.89	5.50
2022	126.16	1.25	4.65	20.15	5.51
2023	162.45	-0.38	-16.02	-68.87	-1.66
2024	106.97	-0.37	15.73	67.92	-1.61
2025	162.34	0.37	-16.00	-68.82	1.64
2026	106.86	0.38	15.74	67.97	1.68
2027	212.43	-0.92	-4.63	-19.23	-4.27
2028	199.75	-0.92	2.62	12.03	-4.26
2029	212.17	0.97	-4.60	-19.11	4.05

1001	188.93	0.00	-0.21	-0.68	0.02
1002	312.96	0.05	-1.96	-7.04	-0.23
1003	161.94	0.01	-0.18	-0.58	-0.06
1004	161.94	-0.52	-0.18	-0.58	0.56
1005	164.43	0.00	2.23	10.32	0.01
1006	159.45	0.00	-3.08	-11.92	0.01
1007	256.33	0.06	-1.29	-4.62	-0.28
1008	256.33	-1.01	-1.29	-4.62	0.95
1009	261.31	0.03	3.53	17.19	-0.14
1010	251.34	0.03	-7.10	-27.30	-0.14
1011	268.88	-1.75	-8.14	-34.09	-8.00
1012	245.11	-1.75	5.47	24.53	-7.98
1013	268.39	1.81	-8.07	-33.87	7.69
1014	244.61	1.82	5.53	24.76	7.71
1015	296.45	-0.51	-23.98	-102.41	-2.53
1016	217.19	-0.50	21.36	93.01	-2.47
1017	296.30	0.56	-23.97	-102.34	2.18
1018	217.05	0.57	21.38	93.07	2.24
1019	268.04	-1.75	-8.11	-33.99	-7.99
1020	244.26	-1.75	5.49	24.63	-7.97
1021	267.54	1.81	-8.05	-33.77	7.70
1022	243.77	1.82	5.56	24.86	7.72
1023	295.60	-0.51	-23.96	-102.31	-2.52
1024	216.35	-0.50	21.39	93.11	-2.46
1025	295.46	0.56	-23.94	-102.24	2.18
1026	216.20	0.58	21.41	93.17	2.25
1027	196.34	1.54	-0.21	-0.68	-6.79
1028	319.31	1.38	-1.96	-7.04	-6.06
1029	168.29	1.34	-0.18	-0.58	-5.89

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 49 de 126
	ESTE - OESTE				1	1	

2030	199.49	0.97	2.66	12.16	4.06
2031	227.01	-0.27	-13.01	-55.34	-1.38
2032	185.00	-0.26	11.02	48.23	-1.34
2033	226.93	0.31	-13.00	-55.31	1.13
2034	184.92	0.31	11.03	48.26	1.17
2035	211.99	-0.92	-4.62	-19.18	-4.27
2036	199.30	-0.92	2.64	12.09	-4.26
2037	211.72	0.97	-4.59	-19.06	4.05
2038	199.04	0.97	2.67	12.21	4.06
2039	226.56	-0.27	-13.00	-55.29	-1.38
2040	184.55	-0.26	11.04	48.28	-1.34
2041	226.48	0.31	-12.99	-55.25	1.14
2042	184.47	0.31	11.05	48.32	1.17
2043	140.24	1.10	-0.15	-0.49	-4.85
2044	234.63	1.14	-1.26	-4.52	-5.00
2045	140.24	1.12	-0.15	-0.49	-4.93
2046	140.25	0.45	-0.15	-0.49	-4.16
2047	143.36	1.10	2.87	13.15	-4.85
2048	137.13	1.10	-3.78	-14.66	-4.85
2049	211.03	1.14	-0.98	-3.51	-5.03
2050	211.03	0.64	-0.98	-3.51	-4.45
2051	213.37	1.13	1.28	6.71	-4.96
2052	208.69	1.13	-3.71	-14.14	-4.96
2053	149.03	-0.15	-4.94	-21.12	-10.35
2054	132.39	-0.15	4.58	19.92	-10.33
2055	148.69	2.35	-4.89	-20.96	0.63
2056	132.04	2.35	4.63	20.08	0.65
2057	168.33	0.72	-16.03	-68.94	-6.52
2058	112.85	0.73	15.71	67.85	-6.48
2059	168.23	1.47	-16.02	-68.89	-3.23
2060	112.75	1.48	15.72	67.90	-3.18
2061	148.44	-0.15	-4.92	-21.05	-10.34
2062	131.80	-0.14	4.60	19.99	-10.33
2063	148.09	2.35	-4.88	-20.89	0.64
2064	131.45	2.35	4.65	20.15	0.65
2065	167.74	0.72	-16.02	-68.87	-6.52
2066	112.26	0.73	15.73	67.92	-6.47
2067	167.63	1.47	-16.00	-68.82	-3.22
2068	112.15	1.48	15.74	67.97	-3.18
2069	217.73	0.18	-4.63	-19.23	-9.13
2070	205.05	0.18	2.62	12.03	-9.12
2071	217.46	2.07	-4.60	-19.11	-0.81
2072	204.78	2.07	2.66	12.16	-0.80
2073	232.30	0.84	-13.01	-55.34	-6.24
2074	190.29	0.85	11.02	48.23	-6.20
2075	232.22	1.41	-13.00	-55.31	-3.73
2076	190.21	1.42	11.03	48.27	-3.69
2077	217.28	0.18	-4.62	-19.18	-9.12

1030	168.29	0.80	-0.18	-0.58	-5.27
1031	170.78	1.32	2.23	10.32	-5.82
1032	165.80	1.32	-3.08	-11.92	-5.82
1033	262.68	1.39	-1.29	-4.62	-6.11
1034	262.68	0.32	-1.29	-4.62	-4.88
1035	267.66	1.36	3.53	17.19	-5.97
1036	257.69	1.36	-7.10	-27.30	-5.97
1037	275.23	-0.43	-8.14	-34.09	-13.83
1038	251.46	-0.42	5.47	24.53	-13.81
1039	274.74	3.14	-8.07	-33.87	1.86
1040	250.96	3.14	5.53	24.76	1.88
1041	302.80	0.82	-23.98	-102.41	-8.36
1042	223.54	0.83	21.36	93.01	-8.30
1043	302.65	1.88	-23.97	-102.34	-3.65
1044	223.40	1.90	21.38	93.07	-3.59
1045	274.39	-0.43	-8.11	-33.99	-13.82
1046	250.61	-0.42	5.49	24.63	-13.80
1047	273.89	3.14	-8.05	-33.77	1.87
1048	250.12	3.14	5.56	24.86	1.88
1049	301.95	0.82	-23.96	-102.31	-8.35
1050	222.70	0.83	21.39	93.11	-8.29
1051	301.81	1.89	-23.94	-102.24	-3.65
1052	222.55	1.90	21.41	93.17	-3.58
1053	121.46	0.03	-0.13	-0.44	-0.13
1054	121.46	-1.04	-0.13	-0.44	1.10
1055	126.44	0.00	4.69	21.38	0.01
1056	116.47	0.00	-5.95	-23.12	0.01
1057	134.01	-1.79	-6.98	-29.91	-7.85
1058	110.24	-1.78	6.63	28.71	-7.83
1059	133.52	1.78	-6.91	-29.69	7.84
1060	109.74	1.78	6.69	28.94	7.86
1061	161.58	-0.55	-22.83	-98.23	-2.38
1062	82.32	-0.53	22.52	97.19	-2.31
1063	161.43	0.53	-22.81	-98.16	2.33
1064	82.18	0.54	22.54	97.26	2.39
1065	133.17	-1.79	-6.95	-29.81	-7.84
1066	109.39	-1.78	6.65	28.81	-7.82
1067	132.67	1.78	-6.89	-29.58	7.85
1068	108.90	1.78	6.71	29.04	7.87
1069	160.73	-0.54	-22.80	-98.13	-2.37
1070	81.48	-0.53	22.54	97.29	-2.31
1071	160.59	0.53	-22.78	-98.06	2.33
1072	81.33	0.54	22.56	97.36	2.40
1073	326.06	0.03	-1.28	-4.59	-0.14
1074	171.41	0.04	-1.30	-4.68	-0.16



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 50 de 126
	ESTE - OESTE		1	1	

2078	204.60	0.19	2.64	12.09	-9.11
2079	217.02	2.07	-4.59	-19.06	-0.81
2080	204.33	2.07	2.67	12.21	-0.80
2081	231.85	0.84	-13.00	-55.29	-6.23
2082	189.84	0.85	11.04	48.28	-6.20
2083	231.77	1.41	-12.99	-55.25	-3.72
2084	189.76	1.42	11.05	48.32	-3.69
2085	80.97	0.02	-0.09	-0.29	-0.08
2086	80.98	-0.65	-0.09	-0.29	0.69
2087	84.09	0.00	2.92	13.34	0.01
2088	77.85	0.00	-3.72	-14.47	0.01
2089	89.76	-1.25	-4.88	-20.92	-5.49
2090	73.12	-1.25	4.64	20.11	-5.48
2091	89.42	1.25	-4.84	-20.77	5.49
2092	72.77	1.25	4.69	20.27	5.50
2093	109.06	-0.36	-15.98	-68.74	-1.59
2094	53.58	-0.35	15.77	68.05	-1.54
2095	108.96	0.35	-15.96	-68.70	1.55
2096	53.48	0.36	15.78	68.09	1.60
2097	89.17	-1.25	-4.86	-20.85	-5.49
2098	72.52	-1.25	4.66	20.18	-5.48
2099	88.82	1.25	-4.82	-20.70	5.49
2100	72.18	1.25	4.70	20.34	5.51
2101	108.46	-0.36	-15.96	-68.67	-1.58
2102	52.98	-0.35	15.79	68.12	-1.54
2103	108.36	0.35	-15.95	-68.63	1.56
2104	52.89	0.36	15.80	68.16	1.60
2105	287.45	0.03	-1.25	-4.50	-0.14
2106	158.57	0.04	-1.27	-4.57	-0.15

Ejes 22 al 30. Apoyo 18



2001	107.17	-0.006	-0.173	-0.553	0.027
2002	109.19	-0.007	-1.26	-4.415	0.032
2003	107.17	0.013	-0.173	-0.553	-0.059
2004	107.17	-0.657	-0.173	-0.553	0.711
2005	104.05	-0.006	3.46	13.636	0.028
2006	110.28	-0.006	-3.185	-14.171	0.027
2007	108.68	0.008	-0.989	-3.449	-0.033
2008	108.69	-0.495	-0.989	-3.449	0.544
2009	106.35	-0.007	1.736	7.193	0.032
2010	111.02	-0.007	-3.247	-13.663	0.031
2011	115.97	-0.859	-4.964	-21.182	-3.724
2012	99.35	-0.856	4.557	19.848	-3.712
2013	115.62	0.843	-4.92	-21.023	3.762
2014	99.002	0.845	4.601	20.007	3.775
2015	135.24	-0.267	-16.057	-68.995	-1.119

1001	150.035	-0.009	-0.242	-0.774	0.038
1002	131.834	-0.009	-1.947	-6.842	0.041
1003	128.602	0.008	-0.208	-0.663	-0.036
1004	128.606	-0.528	-0.208	-0.663	0.579
1005	126.109	-0.008	2.699	10.688	0.034
1006	131.095	-0.007	-2.617	-11.558	0.032
1007	130.622	0.023	-1.295	-4.525	-0.1
1008	130.63	-1.049	-1.295	-4.525	1.131
1009	125.636	-0.009	4.518	18.177	0.04
1010	135.608	-0.008	-6.114	-26.315	0.037
1011	143.198	-1.227	-8.14	-33.996	-5.322
1012	119.454	-1.222	5.462	24.618	-5.303
1013	142.7	1.204	-8.076	-33.769	5.374
1014	118.956	1.208	5.526	24.845	5.392
1015	170.725	-0.381	-23.986	-102.3	-1.599

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 51 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				



2016	79.837	-0.257	15.681	67.772	-1.077
2017	135.14	0.244	-16.044	-68.947	1.127
2018	79.733	0.253	15.694	67.819	1.169
2019	115.33	-0.858	-4.948	-21.112	-3.72
2020	98.713	-0.855	4.574	19.918	-3.708
2021	114.99	0.844	-4.903	-20.953	3.766
2022	98.365	0.846	4.618	20.077	3.779
2023	134.6	-0.266	-16.04	-68.925	-1.115
2024	79.2	-0.256	15.697	67.842	-1.073
2025	134.5	0.245	-16.027	-68.877	1.131
2026	79.096	0.254	15.711	67.89	1.173
2027	115.39	-0.653	-4.639	-19.167	-2.809
2028	102.72	-0.65	2.615	12.094	-2.8
2029	115.12	0.636	-4.605	-19.046	2.859
2030	102.46	0.638	2.649	12.215	2.869
2031	129.94	-0.206	-13.015	-55.27	-0.842
2032	87.99	-0.198	11.015	48.282	-0.81
2033	129.86	0.183	-13.005	-55.234	0.869
2034	87.91	0.191	11.025	48.318	0.901
2035	114.91	-0.652	-4.626	-19.113	-2.806
2036	102.24	-0.65	2.628	12.148	-2.797
2037	114.64	0.636	-4.592	-18.993	2.862
2038	101.98	0.638	2.662	12.268	2.872
2039	129.46	-0.205	-13.002	-55.217	-0.839
2040	87.508	-0.198	11.028	48.335	-0.807
2041	129.38	0.184	-12.992	-55.18	0.872
2042	87.428	0.191	11.038	48.372	0.904
2043	111.7	1.101	-0.173	-0.553	-4.844
2044	113.72	1.1	-1.26	-4.415	-4.838
2045	111.7	1.12	-0.173	-0.553	-4.93
2046	111.7	0.451	-0.173	-0.553	-4.16
2047	108.58	1.101	3.46	13.636	-4.842
2048	114.82	1.101	-3.185	-14.171	-4.844
2049	113.21	1.115	-0.989	-3.449	-4.904
2050	113.22	0.612	-0.989	-3.449	-4.327
2051	110.88	1.1	1.736	7.193	-4.839
2052	115.55	1.1	-3.248	-13.663	-4.84
2053	120.5	0.248	-4.965	-21.183	-8.595
2054	103.88	0.251	4.557	19.847	-8.583
2055	120.15	1.95	-4.92	-21.023	-1.109
2056	103.53	1.953	4.601	20.007	-1.096
2057	139.77	0.84	-16.057	-68.995	-5.99
2058	84.368	0.85	15.681	67.771	-5.948
2059	139.67	1.351	-16.044	-68.947	-3.744
2060	84.263	1.36	15.694	67.819	-3.702
2061	119.87	0.249	-4.948	-21.112	-8.591
2062	103.24	0.252	4.574	19.918	-8.579
2063	119.52	1.951	-4.903	-20.953	-1.105

1016	91.578	-0.367	21.353	93.081	-1.539
1017	170.576	0.348	-23.967	-102.232	1.609
1018	91.428	0.362	21.372	93.149	1.669
1019	142.287	-1.225	-8.116	-33.896	-5.316
1020	118.543	-1.221	5.486	24.719	-5.298
1021	141.79	1.205	-8.052	-33.668	5.379
1022	118.045	1.209	5.55	24.946	5.397
1023	169.815	-0.379	-23.962	-102.199	-1.594
1024	90.667	-0.366	21.377	93.181	-1.533
1025	169.665	0.35	-23.943	-102.131	1.615
1026	90.518	0.363	21.396	93.25	1.675
1027	156.378	1.541	-0.242	-0.774	-6.781
1028	137.27	1.319	-1.947	-6.843	-5.804
1029	134.039	1.337	-0.208	-0.663	-5.881
1030	134.043	0.801	-0.208	-0.663	-5.266
1031	131.545	1.321	2.699	10.688	-5.811
1032	136.531	1.321	-2.617	-11.558	-5.813
1033	136.059	1.351	-1.295	-4.525	-5.945
1034	136.067	0.279	-1.295	-4.525	-4.714
1035	131.072	1.319	4.518	18.177	-5.805
1036	141.044	1.32	-6.114	-26.315	-5.808
1037	148.634	0.102	-8.14	-33.996	-11.167
1038	124.89	0.106	5.462	24.618	-11.149
1039	148.137	2.532	-8.076	-33.769	-0.472
1040	124.392	2.537	5.526	24.845	-0.454
1041	176.162	0.948	-23.986	-102.3	-7.445
1042	97.014	0.961	21.353	93.081	-7.384
1043	176.012	1.677	-23.967	-102.232	-4.236
1044	96.865	1.691	21.372	93.149	-4.176
1045	147.724	0.103	-8.116	-33.896	-11.161
1046	123.98	0.107	5.486	24.718	-11.143
1047	147.226	2.534	-8.052	-33.668	-0.466
1048	123.482	2.538	5.55	24.946	-0.448
1049	175.252	0.949	-23.962	-102.2	-7.439
1050	96.104	0.963	21.377	93.181	-7.378
1051	175.102	1.678	-23.943	-102.131	-4.23
1052	95.955	1.692	21.396	93.249	-4.17
1053	96.452	0.026	-0.156	-0.497	-0.113
1054	96.46	-1.046	-0.156	-0.497	1.118
1055	91.465	-0.006	5.657	22.205	0.027
1056	101.437	-0.005	-4.975	-22.287	0.024
1057	109.027	-1.224	-7.001	-29.969	-5.335
1058	85.283	-1.219	6.601	28.646	-5.317
1059	108.529	1.207	-6.937	-29.741	5.36
1060	84.785	1.211	6.665	28.873	5.378
1061	136.555	-0.378	-22.847	-98.272	-1.613
1062	57.407	-0.364	22.492	97.109	-1.552
1063	136.405	0.352	-22.828	-98.204	1.596

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 52 de 126
	ESTE - OESTE		1	1	

2064	102.9	1.953	4.618	20.077	-1.092
2065	139.13	0.841	-16.04	-68.925	-5.986
2066	83.731	0.851	15.697	67.842	-5.944
2067	139.03	1.352	-16.027	-68.877	-3.74
2068	83.626	1.361	15.711	67.89	-3.698
2069	119.92	0.454	-4.639	-19.167	-7.68
2070	107.26	0.457	2.615	12.094	-7.671
2071	119.66	1.743	-4.605	-19.046	-2.012
2072	106.99	1.745	2.649	12.215	-2.002
2073	134.47	0.902	-13.015	-55.27	-5.713
2074	92.521	0.909	11.015	48.282	-5.681
2075	134.39	1.29	-13.005	-55.234	-4.002
2076	92.441	1.298	11.025	48.318	-3.97
2077	119.44	0.455	-4.626	-19.113	-7.677
2078	106.77	0.457	2.628	12.148	-7.668
2079	119.17	1.743	-4.592	-18.993	-2.009
2080	106.51	1.746	2.662	12.268	-1.999
2081	133.99	0.902	-13.002	-55.217	-5.71
2082	92.038	0.91	11.028	48.335	-5.678
2083	133.91	1.291	-12.992	-55.18	-3.999
2084	91.958	1.298	11.038	48.371	-3.967
2085	64.301	0.016	-0.104	-0.332	-0.07
2086	64.306	-0.654	-0.104	-0.332	0.7
2087	61.185	-0.004	3.529	13.858	0.018
2088	67.417	-0.004	-3.116	-13.95	0.016
2089	73.104	-0.856	-4.895	-20.961	-3.735
2090	56.483	-0.853	4.626	20.069	-3.723
2091	72.756	0.845	-4.851	-20.802	3.751
2092	56.135	0.848	4.671	20.228	3.764
2093	92.371	-0.252	-15.987	-68.773	-1.076
2094	36.968	-0.242	15.75	67.994	-1.034
2095	92.271	0.234	-15.975	-68.727	1.063
2096	36.868	0.244	15.763	68.039	1.105
2097	72.467	-0.855	-4.878	-20.891	-3.731
2098	55.846	-0.853	4.643	20.139	-3.719
2099	72.118	0.846	-4.834	-20.732	3.755
2100	55.497	0.849	4.688	20.298	3.768
2101	91.734	-0.251	-15.971	-68.702	-1.072
2102	36.33	-0.242	15.767	68.064	-1.03
2103	91.634	0.235	-15.958	-68.657	1.067
2104	36.231	0.245	15.78	68.11	1.109
2105	164.64	-0.008	-1.266	-4.44	0.033
2106	41.481	-0.005	-1.249	-4.365	0.022



1064	57.258	0.365	22.511	97.177	1.656
1065	108.117	-1.222	-6.977	-29.868	-5.329
1066	84.373	-1.218	6.625	28.746	-5.311
1067	107.619	1.208	-6.913	-29.641	5.366
1068	83.875	1.212	6.689	28.974	5.384
1069	135.644	-0.376	-22.823	-98.172	-1.607
1070	56.497	-0.363	22.516	97.209	-1.547
1071	135.495	0.353	-22.804	-98.103	1.601
1072	56.348	0.367	22.536	97.277	1.662
1073	197.158	-0.009	-1.302	-4.555	0.039
1074	49.373	-0.006	-1.282	-4.466	0.025

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 53 de 126
	ESTE - OESTE		1	1	

Ejes G al M. Apoyo 1



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	115.79	-0.01	0.03	0.15	0.06
2002	149.34	-0.02	0.03	0.15	0.07
2003	115.79	0.63	0.03	0.15	-0.61
2004	115.79	-0.03	0.03	0.15	0.12
2005	118.42	-0.01	3.04	13.39	0.06
2006	113.16	-0.01	-3.58	-13.64	0.06
2007	140.95	0.47	0.03	0.15	-0.44
2008	140.95	-0.03	0.03	0.15	0.11
2009	142.93	-0.02	2.29	10.08	0.07
2010	138.98	-0.02	-2.68	-10.19	0.06
2011	119.33	-1.00	-2.57	-11.47	-4.16
2012	112.82	-0.99	2.61	11.66	-4.16
2013	119.30	0.97	-2.54	-11.38	4.28
2014	112.79	0.97	2.63	11.75	4.28
2015	126.91	-0.31	-8.60	-38.42	-1.22
2016	105.21	-0.31	8.65	38.67	-1.20
2017	126.90	0.28	-8.59	-38.39	1.31
2018	105.20	0.28	8.66	38.70	1.33
2019	118.79	-1.00	-2.56	-11.46	-4.16
2020	112.28	-0.99	2.61	11.67	-4.16
2021	118.76	0.97	-2.54	-11.37	4.28
2022	112.25	0.97	2.63	11.76	4.28
2023	126.37	-0.31	-8.59	-38.41	-1.22
2024	104.68	-0.31	8.66	38.68	-1.20
2025	126.36	0.28	-8.59	-38.38	1.32
2026	104.67	0.28	8.66	38.71	1.34
2027	143.65	-0.76	-1.95	-8.70	-3.13
2028	138.69	-0.76	2.00	8.92	-3.13
2029	143.62	0.73	-1.93	-8.63	3.26
2030	138.66	0.73	2.01	8.99	3.26
2031	149.37	-0.24	-6.50	-29.05	-0.91
2032	132.94	-0.24	6.56	29.32	-0.89
2033	149.37	0.21	-6.49	-29.03	1.02
2034	132.94	0.21	6.57	29.34	1.04
2035	143.24	-0.76	-1.95	-8.70	-3.13
2036	138.28	-0.76	2.00	8.92	-3.13
2037	143.22	0.73	-1.93	-8.63	3.26
2038	138.26	0.73	2.02	9.00	3.26
2039	148.97	-0.24	-6.50	-29.05	-0.91
2040	132.54	-0.24	6.56	29.32	-0.89
2041	148.96	0.21	-6.49	-29.02	1.02
2042	132.53	0.21	6.57	29.34	1.04
2043	116.66	1.17	0.03	0.15	-5.04
2044	150.21	1.17	0.03	0.15	-5.04
2045	116.66	1.81	0.03	0.15	-5.71

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	162.11	-0.02	0.05	0.20	0.08
1002	192.63	-0.02	0.04	0.18	0.08
1003	138.95	0.50	0.04	0.17	-0.47
1004	138.95	-0.03	0.04	0.17	0.12
1005	141.05	-0.02	2.45	10.77	0.07
1006	136.84	-0.02	-2.85	-10.85	0.07
1007	172.50	1.01	0.04	0.18	-0.99
1008	172.50	-0.04	0.04	0.18	0.17
1009	176.71	-0.02	4.86	21.36	0.08
1010	168.28	-0.02	-5.74	-21.88	0.08
1011	177.55	-1.42	-3.67	-16.42	-5.96
1012	168.26	-1.42	3.72	16.62	-5.95
1013	177.51	1.38	-3.64	-16.28	6.10
1014	168.21	1.39	3.75	16.76	6.11
1015	188.39	-0.44	-12.29	-54.92	-1.75
1016	157.39	-0.44	12.36	55.21	-1.72
1017	188.37	0.40	-12.28	-54.88	1.87
1018	157.38	0.41	12.37	55.25	1.90
1019	176.79	-1.42	-3.67	-16.41	-5.95
1020	167.49	-1.42	3.72	16.63	-5.95
1021	176.74	1.38	-3.64	-16.27	6.10
1022	167.44	1.39	3.76	16.77	6.11
1023	187.62	-0.44	-12.28	-54.90	-1.74
1024	156.62	-0.44	12.36	55.23	-1.72
1025	187.61	0.40	-12.27	-54.86	1.87
1026	156.61	0.41	12.37	55.27	1.90
1027	163.33	1.64	0.05	0.20	-7.06
1028	193.68	1.41	0.04	0.18	-6.04
1029	140.00	1.92	0.04	0.18	-6.59
1030	140.00	1.40	0.04	0.18	-6.00
1031	142.10	1.41	2.45	10.77	-6.05
1032	137.89	1.41	-2.85	-10.85	-6.05
1033	173.55	2.43	0.04	0.18	-7.12
1034	173.55	1.38	0.04	0.18	-5.95
1035	177.76	1.41	4.86	21.37	-6.04
1036	169.33	1.41	-5.74	-21.88	-6.05
1037	178.60	0.00	-3.67	-16.42	-12.08
1038	169.31	0.01	3.72	16.62	-12.07
1039	178.56	2.81	-3.64	-16.28	-0.02
1040	169.26	2.81	3.75	16.76	-0.01
1041	189.44	0.98	-12.29	-54.91	-7.87
1042	158.44	0.99	12.36	55.21	-7.84
1043	189.42	1.82	-12.28	-54.87	-4.25
1044	158.43	1.83	12.37	55.25	-4.22
1045	177.84	0.00	-3.67	-16.40	-12.08

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES A N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 54 de 126
	ESTE - OESTE				1	1	

2046	116.66	1.16	0.03	0.15	-4.98
2047	119.30	1.17	3.04	13.39	-5.04
2048	114.03	1.17	-3.58	-13.64	-5.04
2049	141.83	1.65	0.03	0.15	-5.54
2050	141.83	1.16	0.03	0.15	-4.99
2051	143.80	1.17	2.29	10.08	-5.04
2052	139.85	1.17	-2.68	-10.19	-5.04
2053	120.20	0.19	-2.57	-11.47	-9.27
2054	113.70	0.19	2.61	11.66	-9.26
2055	120.17	2.15	-2.54	-11.38	-0.83
2056	113.66	2.16	2.63	11.75	-0.82
2057	127.79	0.88	-8.60	-38.42	-6.32
2058	106.09	0.88	8.65	38.67	-6.30
2059	127.78	1.47	-8.59	-38.39	-3.79
2060	106.08	1.47	8.66	38.70	-3.77
2061	119.67	0.19	-2.56	-11.46	-9.27
2062	113.16	0.19	2.61	11.67	-9.26
2063	119.63	2.15	-2.54	-11.37	-0.83
2064	113.12	2.16	2.63	11.76	-0.82
2065	127.25	0.88	-8.59	-38.41	-6.32
2066	105.55	0.88	8.66	38.68	-6.30
2067	127.24	1.47	-8.59	-38.38	-3.79
2068	105.54	1.47	8.66	38.71	-3.77
2069	144.52	0.43	-1.95	-8.70	-8.23
2070	139.56	0.43	2.00	8.92	-8.23
2071	144.50	1.91	-1.93	-8.63	-1.85
2072	139.54	1.92	2.01	8.99	-1.84
2073	150.25	0.95	-6.50	-29.05	-6.01
2074	133.82	0.95	6.56	29.32	-5.99
2075	150.24	1.39	-6.49	-29.03	-4.08
2076	133.81	1.40	6.57	29.34	-4.07
2077	144.12	0.43	-1.95	-8.70	-8.23
2078	139.16	0.43	2.00	8.92	-8.23
2079	144.09	1.91	-1.93	-8.63	-1.84
2080	139.13	1.92	2.02	9.00	-1.84
2081	149.84	0.95	-6.50	-29.05	-6.01
2082	133.41	0.95	6.56	29.32	-5.99
2083	149.83	1.39	-6.49	-29.02	-4.08
2084	133.41	1.40	6.57	29.34	-4.07
2085	69.47	0.63	0.02	0.09	-0.63
2086	69.47	-0.02	0.02	0.09	0.10
2087	72.11	-0.01	3.03	13.33	0.04
2088	66.84	-0.01	-3.60	-13.70	0.03
2089	73.01	-0.99	-2.58	-11.53	-4.19
2090	66.50	-0.99	2.60	11.60	-4.18
2091	72.98	0.97	-2.56	-11.43	4.25
2092	66.47	0.97	2.62	11.69	4.26
2093	80.60	-0.29	-8.61	-38.48	-1.18

1046	168.54	0.01	3.72	16.63	-12.07
1047	177.79	2.81	-3.64	-16.27	-0.02
1048	168.49	2.81	3.76	16.77	-0.01
1049	188.67	0.98	-12.28	-54.90	-7.87
1050	157.67	0.99	12.36	55.23	-7.84
1051	188.66	1.82	-12.27	-54.86	-4.25
1052	157.66	1.83	12.37	55.27	-4.22
1053	104.21	1.01	0.03	0.13	-1.02
1054	104.21	-0.04	0.03	0.13	0.15
1055	108.43	-0.01	4.85	21.32	0.06
1056	100.00	-0.01	-5.75	-21.93	0.05
1057	109.27	-1.42	-3.68	-16.46	-5.98
1058	99.97	-1.41	3.71	16.58	-5.97
1059	109.22	1.39	-3.65	-16.33	6.08
1060	99.92	1.39	3.74	16.71	6.08
1061	120.10	-0.44	-12.30	-54.96	-1.77
1062	89.10	-0.43	12.35	55.17	-1.74
1063	120.09	0.41	-12.29	-54.92	1.85
1064	89.09	0.41	12.36	55.21	1.88
1065	108.50	-1.42	-3.68	-16.45	-5.98
1066	99.20	-1.41	3.71	16.59	-5.97
1067	108.45	1.39	-3.65	-16.32	6.08
1068	99.15	1.39	3.75	16.72	6.09
1069	119.33	-0.44	-12.29	-54.95	-1.77
1070	88.34	-0.43	12.35	55.18	-1.74
1071	119.32	0.41	-12.28	-54.91	1.85
1072	88.32	0.41	12.36	55.22	1.88
1073	235.34	-0.03	0.06	0.26	0.11
1074	85.76	-0.01	0.00	0.01	0.03



<div></div> <div> <i>Corporación</i> <small>La fuerza que transforma Bolivia</small></div>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 55 de 126

2094	58.90	-0.29	8.64	38.61	-1.16
2095	80.59	0.27	-8.60	-38.45	1.23
2096	58.89	0.27	8.65	38.64	1.25
2097	72.48	-0.99	-2.58	-11.52	-4.19
2098	65.97	-0.99	2.60	11.61	-4.18
2099	72.44	0.97	-2.55	-11.43	4.25
2100	65.93	0.97	2.62	11.70	4.26
2101	80.06	-0.29	-8.61	-38.47	-1.18
2102	58.36	-0.29	8.64	38.62	-1.16
2103	80.05	0.27	-8.60	-38.44	1.23
2104	58.35	0.28	8.65	38.65	1.25
2105	201.71	-0.02	0.05	0.22	0.09
2106	77.06	-0.01	0.00	0.01	0.03

Ejes G al M. Apoyo 2



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	112.94	-0.01	-0.03	-0.15	0.06
2002	142.79	-0.02	-0.03	-0.15	0.07
2003	112.94	0.63	-0.03	-0.15	-0.61
2004	112.94	-0.03	-0.03	-0.15	0.12
2005	110.30	-0.01	3.58	13.63	0.06
2006	115.57	-0.01	-3.04	-13.40	0.06
2007	135.33	0.46	-0.03	-0.15	-0.44
2008	135.33	-0.03	-0.03	-0.15	0.11
2009	133.35	-0.02	2.68	10.18	0.06
2010	137.30	-0.02	-2.29	-10.09	0.07
2011	116.47	-0.94	-2.63	-11.76	-3.94
2012	109.96	-0.94	2.54	11.37	-3.94
2013	116.44	0.92	-2.61	-11.67	4.05
2014	109.93	0.92	2.56	11.46	4.06
2015	124.05	-0.30	-8.66	-38.71	-1.15
2016	102.36	-0.29	8.59	38.38	-1.13
2017	124.04	0.26	-8.66	-38.68	1.25
2018	102.35	0.27	8.59	38.41	1.27
2019	115.95	-0.94	-2.63	-11.75	-3.94
2020	109.44	-0.94	2.54	11.38	-3.94
2021	115.91	0.92	-2.61	-11.66	4.05
2022	109.40	0.92	2.57	11.47	4.06
2023	123.53	-0.30	-8.66	-38.70	-1.15
2024	101.83	-0.29	8.59	38.39	-1.13
2025	123.52	0.26	-8.65	-38.67	1.25
2026	101.82	0.27	8.60	38.42	1.27
2027	138.02	-0.72	-2.02	-9.00	-2.96
2028	133.06	-0.72	1.93	8.63	-2.96
2029	137.99	0.69	-2.00	-8.92	3.09

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	158.11	-0.02	-0.05	-0.20	0.08
1002	183.29	-0.02	-0.04	-0.18	0.08
1003	135.53	0.50	-0.04	-0.17	-0.47
1004	135.53	-0.03	-0.04	-0.17	0.12
1005	133.42	-0.02	2.85	10.84	0.07
1006	137.63	-0.02	-2.45	-10.78	0.07
1007	165.38	1.01	-0.04	-0.18	-0.99
1008	165.38	-0.04	-0.04	-0.18	0.18
1009	161.16	-0.02	5.74	21.86	0.08
1010	169.59	-0.02	-4.86	-21.39	0.08
1011	170.42	-1.35	-3.76	-16.77	-5.64
1012	161.12	-1.35	3.64	16.27	-5.63
1013	170.38	1.31	-3.72	-16.63	5.78
1014	161.08	1.31	3.67	16.41	5.79
1015	181.25	-0.42	-12.37	-55.27	-1.65
1016	150.26	-0.41	12.27	54.86	-1.62
1017	181.24	0.38	-12.36	-55.23	1.78
1018	150.25	0.38	12.28	54.90	1.81
1019	169.67	-1.35	-3.75	-16.76	-5.64
1020	160.37	-1.35	3.64	16.28	-5.63
1021	169.63	1.31	-3.72	-16.62	5.78
1022	160.33	1.31	3.67	16.42	5.79
1023	180.50	-0.42	-12.37	-55.25	-1.65
1024	149.51	-0.41	12.28	54.88	-1.62
1025	180.49	0.38	-12.36	-55.21	1.78
1026	149.50	0.38	12.29	54.92	1.81
1027	158.29	1.58	-0.05	-0.20	-6.77
1028	183.44	1.35	-0.04	-0.18	-5.79
1029	135.68	1.86	-0.04	-0.18	-6.34

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 56 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2030	133.03	0.69	1.95	8.70	3.09
2031	143.74	-0.23	-6.57	-29.34	-0.86
2032	127.31	-0.23	6.49	29.02	-0.84
2033	143.73	0.20	-6.56	-29.32	0.97
2034	127.31	0.20	6.50	29.05	0.99
2035	137.62	-0.72	-2.01	-8.99	-2.96
2036	132.66	-0.72	1.93	8.63	-2.96
2037	137.59	0.69	-2.00	-8.92	3.09
2038	132.63	0.69	1.95	8.70	3.09
2039	143.34	-0.23	-6.57	-29.34	-0.86
2040	126.92	-0.23	6.49	29.03	-0.84
2041	143.34	0.20	-6.56	-29.32	0.97
2042	126.91	0.20	6.50	29.05	0.99
2043	113.06	1.13	-0.03	-0.15	-4.84
2044	142.91	1.12	-0.03	-0.15	-4.83
2045	113.06	1.76	-0.03	-0.15	-5.51
2046	113.06	1.11	-0.03	-0.15	-4.78
2047	110.43	1.13	3.58	13.63	-4.84
2048	115.70	1.12	-3.04	-13.40	-4.83
2049	135.45	1.60	-0.03	-0.15	-5.33
2050	135.45	1.11	-0.03	-0.15	-4.78
2051	133.47	1.12	2.68	10.18	-4.83
2052	137.43	1.12	-2.29	-10.09	-4.83
2053	116.60	0.19	-2.63	-11.76	-8.84
2054	110.09	0.20	2.54	11.37	-8.83
2055	116.56	2.05	-2.61	-11.67	-0.84
2056	110.05	2.06	2.56	11.46	-0.84
2057	124.18	0.84	-8.66	-38.71	-6.05
2058	102.48	0.85	8.59	38.38	-6.03
2059	124.17	1.40	-8.66	-38.68	-3.65
2060	102.47	1.41	8.59	38.41	-3.63
2061	116.07	0.20	-2.63	-11.75	-8.84
2062	109.56	0.20	2.54	11.38	-8.83
2063	116.04	2.05	-2.61	-11.66	-0.84
2064	109.53	2.06	2.57	11.47	-0.84
2065	123.65	0.84	-8.66	-38.70	-6.05
2066	101.96	0.85	8.59	38.39	-6.03
2067	123.64	1.40	-8.65	-38.67	-3.65
2068	101.95	1.41	8.60	38.42	-3.63
2069	138.14	0.42	-2.02	-9.00	-7.86
2070	133.18	0.42	1.93	8.63	-7.85
2071	138.12	1.83	-2.00	-8.92	-1.81
2072	133.16	1.83	1.95	8.70	-1.80
2073	143.87	0.91	-6.57	-29.34	-5.75
2074	127.44	0.91	6.49	29.02	-5.74
2075	143.86	1.33	-6.56	-29.32	-3.92
2076	127.43	1.34	6.50	29.05	-3.91
2077	137.74	0.42	-2.01	-8.99	-7.86

1030	135.68	1.34	-0.04	-0.18	-5.76
1031	133.57	1.35	2.85	10.84	-5.81
1032	137.78	1.35	-2.45	-10.78	-5.80
1033	165.53	2.37	-0.04	-0.18	-6.87
1034	165.53	1.33	-0.04	-0.18	-5.70
1035	161.31	1.35	5.74	21.86	-5.80
1036	169.74	1.35	-4.86	-21.39	-5.79
1037	170.57	0.02	-3.76	-16.77	-11.51
1038	161.27	0.02	3.64	16.27	-11.50
1039	170.53	2.67	-3.72	-16.63	-0.09
1040	161.23	2.68	3.67	16.40	-0.08
1041	181.40	0.95	-12.37	-55.27	-7.52
1042	150.41	0.95	12.27	54.86	-7.49
1043	181.39	1.74	-12.36	-55.23	-4.10
1044	150.40	1.75	12.28	54.90	-4.07
1045	169.82	0.02	-3.75	-16.76	-11.51
1046	160.52	0.02	3.64	16.28	-11.50
1047	169.78	2.67	-3.72	-16.62	-0.09
1048	160.48	2.68	3.67	16.42	-0.08
1049	180.65	0.95	-12.37	-55.25	-7.52
1050	149.66	0.95	12.28	54.88	-7.49
1051	180.64	1.74	-12.36	-55.21	-4.10
1052	149.65	1.75	12.29	54.92	-4.07
1053	101.64	1.01	-0.03	-0.13	-1.02
1054	101.64	-0.04	-0.03	-0.13	0.15
1055	97.43	-0.01	5.75	21.91	0.05
1056	105.86	-0.01	-4.85	-21.34	0.06
1057	106.69	-1.34	-3.75	-16.72	-5.66
1058	97.39	-1.34	3.65	16.32	-5.65
1059	106.64	1.32	-3.71	-16.59	5.76
1060	97.35	1.32	3.68	16.45	5.77
1061	117.52	-0.41	-12.36	-55.22	-1.68
1062	86.53	-0.41	12.28	54.91	-1.65
1063	117.51	0.38	-12.35	-55.18	1.75
1064	86.51	0.39	12.29	54.95	1.78
1065	105.94	-1.34	-3.74	-16.71	-5.66
1066	96.64	-1.34	3.65	16.33	-5.65
1067	105.89	1.32	-3.71	-16.58	5.76
1068	96.60	1.32	3.68	16.46	5.77
1069	116.77	-0.41	-12.36	-55.21	-1.68
1070	85.78	-0.41	12.29	54.92	-1.65
1071	116.76	0.38	-12.35	-55.17	1.75
1072	85.77	0.39	12.30	54.96	1.78
1073	227.52	-0.03	-0.06	-0.26	0.11
1074	81.20	-0.01	0.00	-0.01	0.04



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 57 de 126
	ESTE - OESTE		1	1	

2078	132.78	0.42	1.93	8.63	-7.85
2079	137.72	1.83	-2.00	-8.92	-1.81
2080	132.76	1.83	1.95	8.70	-1.80
2081	143.47	0.91	-6.57	-29.34	-5.75
2082	127.04	0.91	6.49	29.03	-5.74
2083	143.46	1.33	-6.56	-29.32	-3.92
2084	127.03	1.34	6.50	29.05	-3.91
2085	67.76	0.63	-0.02	-0.09	-0.64
2086	67.76	-0.02	-0.02	-0.09	0.10
2087	65.13	-0.01	3.60	13.69	0.03
2088	70.40	-0.01	-3.03	-13.34	0.04
2089	71.30	-0.94	-2.62	-11.70	-3.97
2090	64.79	-0.94	2.56	11.43	-3.96
2091	71.26	0.92	-2.60	-11.61	4.03
2092	64.75	0.92	2.58	11.52	4.03
2093	78.88	-0.28	-8.65	-38.65	-1.12
2094	57.18	-0.27	8.60	38.44	-1.10
2095	78.87	0.26	-8.64	-38.62	1.17
2096	57.17	0.26	8.61	38.47	1.19
2097	70.77	-0.94	-2.62	-11.69	-3.97
2098	64.26	-0.94	2.56	11.43	-3.96
2099	70.74	0.92	-2.60	-11.60	4.03
2100	64.23	0.92	2.58	11.53	4.04
2101	78.35	-0.28	-8.65	-38.64	-1.12
2102	56.66	-0.27	8.60	38.45	-1.10
2103	78.34	0.26	-8.64	-38.62	1.17
2104	56.65	0.26	8.61	38.48	1.19
2105	194.57	-0.02	-0.05	-0.22	0.09
2106	72.64	-0.01	0.00	-0.01	0.03

Ejes G al M. Apoyo 3



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	137.52	-0.01	0.03	0.14	0.06
2002	169.13	-0.02	0.03	0.15	0.07
2003	137.52	0.02	0.03	0.14	-0.08
2004	137.52	-0.03	0.03	0.14	0.12
2005	140.91	-0.01	3.83	16.17	0.06
2006	134.13	-0.01	-4.37	-16.48	0.06
2007	161.23	0.01	0.03	0.15	-0.04
2008	161.23	-0.03	0.03	0.15	0.11
2009	163.77	-0.02	2.88	12.17	0.07
2010	158.68	-0.02	-3.27	-12.33	0.06
2011	142.93	-0.98	-4.17	-16.77	-4.09
2012	132.99	-0.98	4.20	16.92	-4.09
2013	142.84	0.95	-4.13	-16.64	4.20
2014	132.89	0.95	4.23	17.05	4.21
2015	154.51	-0.31	-13.91	-56.03	-1.20

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	192.53	-0.02	0.05	0.20	0.08
1002	215.60	-0.02	0.04	0.17	0.08
1003	165.02	0.01	0.04	0.17	-0.04
1004	165.02	-0.03	0.04	0.17	0.12
1005	167.74	-0.02	3.08	13.00	0.07
1006	162.31	-0.02	-3.48	-13.13	0.07
1007	196.63	0.03	0.04	0.17	-0.14
1008	196.63	-0.04	0.04	0.17	0.18
1009	202.06	-0.02	6.11	25.82	0.08
1010	191.21	-0.02	-7.01	-26.43	0.08
1011	204.37	-1.40	-5.96	-23.99	-5.85
1012	190.16	-1.40	5.99	24.14	-5.84
1013	204.23	1.36	-5.91	-23.81	6.00
1014	190.02	1.36	6.04	24.32	6.01
1015	220.90	-0.44	-19.88	-80.08	-1.71

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 58 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				



2016	121.35	-0.30	13.96	56.27	-1.18
2017	154.48	0.27	-13.90	-55.99	1.29
2018	121.32	0.28	13.98	56.31	1.31
2019	142.15	-0.98	-4.16	-16.76	-4.09
2020	132.20	-0.98	4.20	16.93	-4.08
2021	142.05	0.95	-4.13	-16.63	4.20
2022	132.11	0.95	4.23	17.06	4.21
2023	153.72	-0.31	-13.91	-56.02	-1.20
2024	120.56	-0.30	13.97	56.28	-1.18
2025	153.69	0.27	-13.90	-55.98	1.29
2026	120.53	0.28	13.98	56.32	1.31
2027	165.35	-0.75	-3.17	-12.74	-3.08
2028	157.77	-0.75	3.21	12.93	-3.07
2029	165.28	0.72	-3.14	-12.65	3.20
2030	157.70	0.72	3.23	13.02	3.21
2031	174.09	-0.24	-10.52	-42.39	-0.89
2032	148.98	-0.23	10.58	42.64	-0.88
2033	174.07	0.20	-10.52	-42.36	1.00
2034	148.96	0.21	10.59	42.67	1.02
2035	164.75	-0.75	-3.16	-12.73	-3.08
2036	157.17	-0.75	3.21	12.93	-3.07
2037	164.68	0.72	-3.14	-12.64	3.20
2038	157.10	0.72	3.23	13.03	3.21
2039	173.49	-0.24	-10.52	-42.38	-0.89
2040	148.39	-0.23	10.58	42.65	-0.88
2041	173.47	0.20	-10.51	-42.35	1.01
2042	148.36	0.21	10.59	42.68	1.02
2043	141.08	1.15	0.03	0.14	-4.93
2044	172.69	1.15	0.03	0.15	-4.93
2045	141.08	1.18	0.03	0.14	-5.07
2046	141.08	1.13	0.03	0.14	-4.87
2047	144.47	1.15	3.83	16.17	-4.93
2048	137.69	1.15	-4.37	-16.48	-4.93
2049	164.79	1.17	0.03	0.15	-5.03
2050	164.79	1.14	0.03	0.15	-4.88
2051	167.33	1.15	2.88	12.17	-4.93
2052	162.25	1.15	-3.27	-12.33	-4.93
2053	146.50	0.18	-4.17	-16.77	-9.08
2054	136.55	0.18	4.20	16.92	-9.08
2055	146.40	2.11	-4.13	-16.64	-0.79
2056	136.45	2.11	4.23	17.05	-0.78
2057	158.07	0.86	-13.91	-56.03	-6.19
2058	124.91	0.86	13.96	56.27	-6.17
2059	158.04	1.43	-13.90	-55.99	-3.70
2060	124.88	1.44	13.98	56.31	-3.68
2061	145.71	0.18	-4.16	-16.76	-9.08
2062	135.76	0.18	4.20	16.93	-9.08
2063	145.62	2.11	-4.13	-16.63	-0.79

1016	173.53	-0.43	19.94	80.35	-1.69
1017	220.86	0.39	-19.87	-80.02	1.84
1018	173.49	0.40	19.96	80.41	1.87
1019	203.24	-1.40	-5.96	-23.98	-5.85
1020	189.03	-1.40	5.99	24.15	-5.84
1021	203.11	1.36	-5.91	-23.79	6.00
1022	188.90	1.36	6.04	24.34	6.01
1023	219.78	-0.44	-19.88	-80.06	-1.71
1024	172.41	-0.43	19.95	80.37	-1.69
1025	219.74	0.39	-19.86	-80.01	1.84
1026	172.36	0.40	19.96	80.42	1.87
1027	197.51	1.61	0.05	0.20	-6.91
1028	219.87	1.37	0.04	0.17	-5.91
1029	169.30	1.40	0.04	0.17	-6.03
1030	169.30	1.37	0.04	0.17	-5.87
1031	172.01	1.38	3.08	13.00	-5.92
1032	166.59	1.38	-3.48	-13.13	-5.92
1033	200.91	1.43	0.04	0.17	-6.13
1034	200.91	1.35	0.04	0.17	-5.82
1035	206.33	1.37	6.11	25.82	-5.91
1036	195.48	1.38	-7.01	-26.43	-5.92
1037	208.64	0.00	-5.96	-23.99	-11.84
1038	194.43	0.00	5.99	24.14	-11.83
1039	208.51	2.75	-5.91	-23.81	0.01
1040	194.30	2.75	6.04	24.32	0.02
1041	225.18	0.96	-19.88	-80.08	-7.70
1042	177.80	0.97	19.94	80.35	-7.68
1043	225.14	1.79	-19.87	-80.02	-4.15
1044	177.76	1.79	19.96	80.41	-4.12
1045	207.52	0.00	-5.96	-23.98	-11.84
1046	193.31	0.00	5.99	24.15	-11.83
1047	207.38	2.75	-5.91	-23.79	0.01
1048	193.17	2.75	6.04	24.34	0.02
1049	224.05	0.96	-19.88	-80.06	-7.70
1050	176.68	0.97	19.95	80.37	-7.67
1051	224.01	1.79	-19.86	-80.01	-4.15
1052	176.64	1.79	19.96	80.42	-4.12
1053	123.77	0.04	0.03	0.13	-0.17
1054	123.77	-0.04	0.03	0.13	0.15
1055	129.19	-0.01	6.10	25.77	0.06
1056	118.34	-0.01	-7.02	-26.47	0.05
1057	131.50	-1.39	-5.97	-24.03	-5.88
1058	117.29	-1.39	5.98	24.10	-5.87
1059	131.37	1.36	-5.92	-23.85	5.97
1060	117.16	1.37	6.03	24.28	5.98
1061	148.04	-0.43	-19.89	-80.12	-1.74
1062	100.66	-0.42	19.93	80.31	-1.71
1063	147.99	0.40	-19.88	-80.06	1.82

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 59 de 126

2064	135.67	2.11	4.23	17.06	-0.78
2065	157.28	0.86	-13.91	-56.02	-6.19
2066	124.12	0.86	13.97	56.28	-6.17
2067	157.25	1.43	-13.90	-55.98	-3.70
2068	124.09	1.44	13.98	56.32	-3.68
2069	168.91	0.42	-3.17	-12.74	-8.07
2070	161.33	0.42	3.21	12.93	-8.07
2071	168.84	1.88	-3.14	-12.65	-1.79
2072	161.26	1.88	3.23	13.02	-1.79
2073	177.65	0.92	-10.52	-42.39	-5.88
2074	152.54	0.93	10.58	42.64	-5.87
2075	177.63	1.36	-10.52	-42.36	-3.99
2076	152.52	1.37	10.59	42.67	-3.97
2077	168.32	0.42	-3.16	-12.73	-8.07
2078	160.74	0.42	3.21	12.93	-8.06
2079	168.25	1.88	-3.14	-12.64	-1.79
2080	160.67	1.88	3.23	13.03	-1.79
2081	177.06	0.92	-10.52	-42.38	-5.88
2082	151.95	0.93	10.58	42.65	-5.87
2083	177.03	1.37	-10.51	-42.35	-3.99
2084	151.93	1.37	10.59	42.68	-3.97
2085	82.51	0.02	0.02	0.09	-0.10
2086	82.51	-0.02	0.02	0.09	0.10
2087	85.90	-0.01	3.82	16.11	0.04
2088	79.12	-0.01	-4.38	-16.54	0.03
2089	87.93	-0.97	-4.18	-16.83	-4.11
2090	77.98	-0.97	4.18	16.86	-4.11
2091	87.83	0.96	-4.15	-16.70	4.18
2092	77.88	0.96	4.22	16.99	4.18
2093	99.50	-0.29	-13.92	-56.09	-1.16
2094	66.34	-0.28	13.95	56.21	-1.14
2095	99.47	0.27	-13.91	-56.05	1.21
2096	66.31	0.27	13.96	56.25	1.23
2097	87.14	-0.97	-4.18	-16.82	-4.11
2098	77.19	-0.97	4.19	16.87	-4.11
2099	87.05	0.96	-4.14	-16.69	4.18
2100	77.10	0.96	4.22	17.00	4.19
2101	98.71	-0.29	-13.92	-56.08	-1.16
2102	65.55	-0.28	13.95	56.22	-1.14
2103	98.69	0.27	-13.91	-56.04	1.21
2104	65.53	0.27	13.96	56.26	1.23
2105	227.50	-0.02	0.05	0.22	0.09
2106	87.85	-0.01	0.00	0.01	0.03



1064	100.62	0.40	19.95	80.36	1.84
1065	130.38	-1.39	-5.97	-24.02	-5.87
1066	116.17	-1.39	5.98	24.11	-5.87
1067	130.24	1.36	-5.92	-23.84	5.97
1068	116.03	1.37	6.03	24.29	5.98
1069	146.91	-0.43	-19.89	-80.10	-1.74
1070	99.54	-0.42	19.94	80.32	-1.71
1071	146.87	0.40	-19.87	-80.05	1.82
1072	99.50	0.40	19.95	80.38	1.84
1073	266.67	-0.03	0.06	0.26	0.11
1074	99.10	-0.01	0.00	0.01	0.03

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 60 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

Ejes G al M. Apoyo 4



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	135.82	-0.01	-0.03	-0.14	0.06
2002	168.46	-0.02	-0.03	-0.15	0.07
2003	135.82	0.02	-0.03	-0.14	-0.08
2004	135.82	-0.03	-0.03	-0.14	0.12
2005	132.43	-0.01	4.37	16.42	0.06
2006	139.21	-0.01	-3.83	-16.23	0.06
2007	160.30	0.01	-0.03	-0.15	-0.04
2008	160.30	-0.03	-0.03	-0.15	0.11
2009	157.76	-0.02	3.27	12.28	0.06
2010	162.84	-0.02	-2.88	-12.21	0.07
2011	141.26	-0.93	-4.23	-17.06	-3.87
2012	131.31	-0.93	4.13	16.63	-3.87
2013	141.14	0.90	-4.20	-16.93	3.98
2014	131.19	0.90	4.16	16.76	3.99
2015	152.83	-0.29	-13.98	-56.31	-1.13
2016	119.65	-0.29	13.90	55.97	-1.11
2017	152.80	0.26	-13.97	-56.27	1.23
2018	119.62	0.26	13.91	56.01	1.25
2019	140.45	-0.93	-4.23	-17.05	-3.87
2020	130.50	-0.93	4.13	16.64	-3.87
2021	140.33	0.90	-4.20	-16.92	3.98
2022	130.38	0.90	4.17	16.77	3.99
2023	152.02	-0.29	-13.97	-56.30	-1.13
2024	118.84	-0.29	13.90	55.99	-1.11
2025	151.99	0.26	-13.96	-56.26	1.23
2026	118.81	0.26	13.91	56.02	1.25
2027	164.44	-0.71	-3.23	-13.03	-2.91
2028	156.86	-0.71	3.14	12.64	-2.91
2029	164.36	0.68	-3.21	-12.93	3.04
2030	156.77	0.68	3.16	12.73	3.04
2031	173.18	-0.23	-10.59	-42.67	-0.84
2032	148.06	-0.22	10.51	42.35	-0.83
2033	173.16	0.19	-10.58	-42.64	0.96
2034	148.03	0.20	10.52	42.38	0.97
2035	163.83	-0.71	-3.23	-13.02	-2.91
2036	156.25	-0.71	3.14	12.64	-2.91
2037	163.74	0.68	-3.21	-12.93	3.04
2038	156.16	0.68	3.17	12.74	3.04
2039	172.57	-0.23	-10.59	-42.66	-0.84
2040	147.45	-0.22	10.52	42.35	-0.82
2041	172.54	0.19	-10.58	-42.63	0.96
2042	147.42	0.20	10.52	42.38	0.97
2043	138.26	1.10	-0.03	-0.14	-4.73
2044	170.90	1.10	-0.03	-0.15	-4.72
2045	138.26	1.13	-0.03	-0.14	-4.87

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	190.15	-0.02	-0.05	-0.20	0.08
1002	215.21	-0.02	-0.04	-0.17	0.09
1003	162.99	0.01	-0.04	-0.17	-0.04
1004	162.99	-0.03	-0.04	-0.17	0.12
1005	160.27	-0.02	3.48	13.08	0.07
1006	165.70	-0.02	-3.08	-13.04	0.07
1007	195.63	0.03	-0.04	-0.17	-0.14
1008	195.63	-0.04	-0.04	-0.17	0.18
1009	190.20	-0.02	7.01	26.33	0.08
1010	201.05	-0.02	-6.11	-25.91	0.08
1011	203.40	-1.32	-6.04	-24.33	-5.54
1012	189.18	-1.32	5.91	23.79	-5.53
1013	203.23	1.29	-5.99	-24.15	5.68
1014	189.01	1.29	5.96	23.97	5.69
1015	219.93	-0.41	-19.96	-80.41	-1.62
1016	172.53	-0.41	19.86	80.00	-1.59
1017	219.88	0.37	-19.94	-80.36	1.75
1018	172.48	0.38	19.87	80.05	1.78
1019	202.24	-1.32	-6.04	-24.32	-5.54
1020	188.02	-1.32	5.91	23.80	-5.53
1021	202.07	1.29	-5.99	-24.14	5.69
1022	187.85	1.29	5.96	23.99	5.69
1023	218.77	-0.41	-19.95	-80.40	-1.62
1024	171.37	-0.41	19.86	80.01	-1.59
1025	218.72	0.37	-19.94	-80.34	1.75
1026	171.32	0.38	19.88	80.07	1.78
1027	193.56	1.54	-0.05	-0.20	-6.62
1028	218.14	1.32	-0.04	-0.17	-5.66
1029	165.91	1.35	-0.04	-0.17	-5.78
1030	165.91	1.31	-0.04	-0.17	-5.63
1031	163.20	1.32	3.48	13.08	-5.68
1032	168.62	1.32	-3.08	-13.04	-5.67
1033	198.55	1.37	-0.04	-0.17	-5.89
1034	198.55	1.30	-0.04	-0.17	-5.57
1035	193.12	1.32	7.01	26.33	-5.67
1036	203.98	1.32	-6.11	-25.91	-5.66
1037	206.32	0.01	-6.04	-24.33	-11.28
1038	192.10	0.01	5.91	23.79	-11.27
1039	206.15	2.62	-5.99	-24.15	-0.06
1040	191.94	2.62	5.96	23.97	-0.05
1041	222.85	0.92	-19.96	-80.41	-7.36
1042	175.46	0.93	19.86	80.00	-7.33
1043	222.80	1.71	-19.94	-80.36	-4.00
1044	175.41	1.71	19.87	80.05	-3.97
1045	205.17	0.01	-6.04	-24.32	-11.28

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO: OBM 3285 PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				AES A N° 3285-G210-635-4523-DC-001	
	FUNDACIONES PARRAL ESTE - OESTE				Ver. 1	Rev. 1
					Página 61 de 126	

2046	138.26	1.09	-0.03	-0.14	-4.67
2047	134.87	1.10	4.37	16.42	-4.73
2048	141.65	1.10	-3.83	-16.23	-4.73
2049	162.74	1.12	-0.03	-0.15	-4.83
2050	162.74	1.09	-0.03	-0.15	-4.68
2051	160.20	1.10	3.27	12.28	-4.72
2052	165.28	1.10	-2.88	-12.21	-4.72
2053	143.70	0.19	-4.23	-17.06	-8.66
2054	133.75	0.19	4.13	16.63	-8.65
2055	143.58	2.01	-4.20	-16.93	-0.80
2056	133.63	2.01	4.16	16.76	-0.80
2057	155.27	0.82	-13.98	-56.31	-5.92
2058	122.09	0.83	13.90	55.97	-5.90
2059	155.24	1.37	-13.97	-56.27	-3.56
2060	122.06	1.38	13.91	56.01	-3.54
2061	142.89	0.19	-4.23	-17.05	-8.66
2062	132.94	0.19	4.13	16.64	-8.65
2063	142.77	2.01	-4.20	-16.92	-0.80
2064	132.82	2.01	4.17	16.77	-0.80
2065	154.46	0.82	-13.97	-56.30	-5.92
2066	121.28	0.83	13.90	55.99	-5.90
2067	154.42	1.37	-13.96	-56.26	-3.56
2068	121.25	1.38	13.91	56.02	-3.54
2069	166.88	0.41	-3.23	-13.03	-7.70
2070	159.30	0.41	3.14	12.64	-7.69
2071	166.79	1.79	-3.21	-12.93	-1.75
2072	159.21	1.79	3.16	12.73	-1.75
2073	175.62	0.89	-10.59	-42.67	-5.63
2074	150.50	0.89	10.51	42.35	-5.61
2075	175.59	1.31	-10.58	-42.64	-3.83
2076	150.47	1.31	10.52	42.37	-3.82
2077	166.27	0.41	-3.23	-13.02	-7.70
2078	158.69	0.41	3.14	12.64	-7.69
2079	166.18	1.79	-3.21	-12.93	-1.75
2080	158.60	1.79	3.17	12.74	-1.75
2081	175.01	0.89	-10.59	-42.66	-5.63
2082	149.89	0.89	10.52	42.35	-5.61
2083	174.98	1.31	-10.58	-42.63	-3.83
2084	149.86	1.31	10.52	42.38	-3.82
2085	81.49	0.02	-0.02	-0.09	-0.10
2086	81.49	-0.02	-0.02	-0.09	0.10
2087	78.10	-0.01	4.38	16.48	0.03
2088	84.88	-0.01	-3.82	-16.17	0.04
2089	86.93	-0.92	-4.22	-17.00	-3.90
2090	76.98	-0.92	4.14	16.69	-3.89
2091	86.82	0.90	-4.19	-16.87	3.96
2092	76.86	0.91	4.18	16.82	3.97
2093	98.50	-0.27	-13.96	-56.25	-1.10

1046	190.95	0.01	5.91	23.80	-11.27
1047	205.00	2.62	-5.99	-24.14	-0.06
1048	190.78	2.62	5.96	23.99	-0.05
1049	221.70	0.92	-19.95	-80.40	-7.36
1050	174.30	0.93	19.86	80.01	-7.33
1051	221.65	1.71	-19.94	-80.34	-4.00
1052	174.25	1.71	19.88	80.07	-3.97
1053	122.24	0.04	-0.03	-0.13	-0.17
1054	122.24	-0.04	-0.03	-0.13	0.15
1055	116.81	-0.01	7.02	26.37	0.05
1056	127.67	-0.01	-6.10	-25.87	0.06
1057	130.01	-1.32	-6.03	-24.29	-5.56
1058	115.79	-1.32	5.92	23.83	-5.55
1059	129.84	1.29	-5.98	-24.11	5.66
1060	115.62	1.29	5.97	24.02	5.67
1061	146.54	-0.41	-19.95	-80.37	-1.65
1062	99.14	-0.40	19.87	80.04	-1.62
1063	146.49	0.38	-19.93	-80.31	1.72
1064	99.09	0.38	19.88	80.10	1.75
1065	128.85	-1.32	-6.03	-24.28	-5.56
1066	114.63	-1.32	5.92	23.85	-5.55
1067	128.69	1.29	-5.98	-24.09	5.66
1068	114.47	1.29	5.97	24.03	5.67
1069	145.38	-0.41	-19.94	-80.35	-1.65
1070	97.99	-0.40	19.87	80.05	-1.62
1071	145.33	0.38	-19.93	-80.30	1.72
1072	97.94	0.38	19.89	80.11	1.75
1073	264.97	-0.03	-0.06	-0.26	0.11
1074	100.65	-0.01	0.00	-0.01	0.04



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 62 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2094	65.33	-0.27	13.91	56.03	-1.08
2095	98.47	0.25	-13.95	-56.22	1.15
2096	65.29	0.26	13.92	56.07	1.17
2097	86.12	-0.92	-4.22	-16.99	-3.90
2098	76.17	-0.92	4.15	16.70	-3.89
2099	86.01	0.90	-4.18	-16.86	3.96
2100	76.05	0.91	4.18	16.83	3.97
2101	97.69	-0.27	-13.96	-56.24	-1.10
2102	64.52	-0.27	13.91	56.04	-1.08
2103	97.66	0.25	-13.95	-56.21	1.15
2104	64.48	0.26	13.92	56.08	1.17
2105	226.25	-0.02	-0.05	-0.22	0.10
2106	89.31	-0.01	0.00	-0.01	0.03

Ejes G al M. Apoyo 5



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	125.54	-5.34	0.03	0.15	0.06
2002	132.76	-5.61	0.03	0.15	0.07
2003	123.95	-4.58	0.03	0.15	-0.07
2004	126.36	-5.77	0.03	0.15	0.12
2005	128.48	-5.46	3.72	15.98	0.06
2006	122.61	-5.23	-4.82	-16.96	0.06
2007	129.76	-4.97	0.03	0.15	-0.03
2008	131.57	-5.87	0.03	0.15	0.11
2009	133.16	-5.63	2.80	12.03	0.07
2010	128.76	-5.46	-3.60	-12.68	0.06
2011	183.36	-31.66	-2.76	-12.12	-3.94
2012	177.90	-31.44	2.71	12.02	-3.93
2013	73.76	20.74	-2.65	-11.74	4.05
2014	68.30	20.95	2.83	12.40	4.06
2015	151.37	-13.57	-9.10	-40.16	-1.15
2016	133.17	-12.85	9.13	40.33	-1.13
2017	118.49	2.15	-9.07	-40.04	1.25
2018	100.29	2.86	9.17	40.44	1.27
2019	182.79	-31.64	-2.76	-12.11	-3.94
2020	177.33	-31.42	2.71	12.03	-3.93
2021	73.19	20.76	-2.64	-11.73	4.05
2022	67.73	20.97	2.83	12.41	4.06
2023	150.80	-13.55	-9.10	-40.15	-1.15
2024	132.60	-12.83	9.14	40.33	-1.13
2025	117.92	2.17	-9.07	-40.04	1.25
2026	99.72	2.89	9.17	40.45	1.27
2027	174.75	-25.47	-2.09	-9.20	-2.96
2028	170.59	-25.30	2.07	9.20	-2.96
2029	91.76	14.20	-2.01	-8.91	3.09

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	175.76	-7.48	0.05	0.20	0.08
1002	162.20	-6.84	0.04	0.18	0.08
1003	149.37	-5.80	0.04	0.17	-0.03
1004	151.31	-6.76	0.04	0.17	0.12
1005	153.00	-6.50	2.99	12.85	0.07
1006	148.31	-6.32	-3.84	-13.51	0.07
1007	155.31	-5.45	0.04	0.18	-0.12
1008	159.18	-7.37	0.04	0.18	0.18
1009	162.57	-6.86	5.94	25.52	0.08
1010	153.18	-6.49	-7.72	-27.19	0.08
1011	240.47	-44.27	-3.95	-17.35	-5.63
1012	232.66	-43.96	3.86	17.15	-5.62
1013	83.89	30.58	-3.79	-16.81	5.78
1014	76.09	30.89	4.03	17.69	5.79
1015	194.77	-18.43	-13.01	-57.40	-1.65
1016	168.76	-17.41	13.04	57.58	-1.62
1017	147.80	4.02	-12.96	-57.24	1.78
1018	121.79	5.05	13.09	57.74	1.80
1019	239.65	-44.24	-3.95	-17.34	-5.63
1020	231.85	-43.93	3.87	17.16	-5.62
1021	83.08	30.61	-3.78	-16.80	5.78
1022	75.28	30.91	4.03	17.70	5.79
1023	193.96	-18.40	-13.01	-57.39	-1.65
1024	167.95	-17.38	13.04	57.59	-1.62
1025	146.98	4.05	-12.96	-57.23	1.78
1026	120.98	5.08	13.09	57.75	1.81
1027	101.58	36.23	0.05	0.20	-6.60
1028	98.62	30.63	0.04	0.18	-5.64
1029	85.79	31.66	0.04	0.18	-5.75

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 63 de 126
	ESTE - OESTE				1	1	

2030	87.60	14.37	2.16	9.48	3.09
2031	150.59	-11.81	-6.88	-30.37	-0.86
2032	136.81	-11.27	6.92	30.57	-0.84
2033	125.54	0.17	-6.86	-30.28	0.97
2034	111.76	0.71	6.95	30.65	0.99
2035	174.32	-25.45	-2.09	-9.19	-2.96
2036	170.16	-25.29	2.08	9.20	-2.96
2037	91.33	14.22	-2.01	-8.91	3.09
2038	87.17	14.38	2.16	9.49	3.09
2039	150.16	-11.79	-6.88	-30.36	-0.86
2040	136.38	-11.25	6.93	30.57	-0.84
2041	125.11	0.18	-6.86	-30.28	0.97
2042	111.33	0.72	6.95	30.66	0.99
2043	72.56	25.88	0.03	0.15	-4.71
2044	79.78	25.61	0.03	0.15	-4.71
2045	70.96	26.64	0.03	0.15	-4.84
2046	73.37	25.45	0.03	0.15	-4.65
2047	75.49	25.76	3.72	15.99	-4.71
2048	69.62	25.99	-4.82	-16.96	-4.71
2049	76.77	26.25	0.03	0.15	-4.80
2050	78.58	25.35	0.03	0.15	-4.66
2051	80.17	25.59	2.80	12.03	-4.71
2052	75.77	25.76	-3.60	-12.68	-4.71
2053	130.37	-0.44	-2.76	-12.12	-8.71
2054	124.91	-0.22	2.71	12.03	-8.70
2055	20.77	51.95	-2.65	-11.74	-0.72
2056	15.31	52.17	2.83	12.40	-0.72
2057	98.38	17.65	-9.10	-40.16	-5.92
2058	80.18	18.36	9.13	40.33	-5.90
2059	65.50	33.37	-9.07	-40.04	-3.52
2060	47.30	34.08	9.17	40.44	-3.50
2061	129.80	-0.42	-2.76	-12.11	-8.71
2062	124.34	-0.20	2.71	12.03	-8.70
2063	20.20	51.98	-2.64	-11.73	-0.72
2064	14.74	52.19	2.83	12.41	-0.72
2065	97.82	17.67	-9.10	-40.15	-5.92
2066	79.61	18.39	9.14	40.33	-5.90
2067	64.93	33.39	-9.07	-40.03	-3.52
2068	46.73	34.10	9.17	40.45	-3.50
2069	121.76	5.75	-2.09	-9.20	-7.73
2070	117.60	5.92	2.07	9.20	-7.73
2071	38.77	45.42	-2.01	-8.91	-1.69
2072	34.61	45.58	2.16	9.49	-1.68
2073	97.60	19.41	-6.88	-30.37	-5.63
2074	83.82	19.95	6.92	30.57	-5.61
2075	72.55	31.38	-6.86	-30.28	-3.80
2076	58.77	31.93	6.95	30.66	-3.79
2077	121.33	5.77	-2.09	-9.19	-7.73

1030	87.72	30.71	0.04	0.18	-5.61
1031	89.42	30.96	2.99	12.85	-5.65
1032	84.72	31.14	-3.84	-13.51	-5.66
1033	91.73	32.01	0.04	0.18	-5.85
1034	95.59	30.10	0.04	0.18	-5.55
1035	98.98	30.60	5.94	25.52	-5.64
1036	89.59	30.97	-7.72	-27.19	-5.65
1037	176.88	-6.81	-3.95	-17.35	-11.36
1038	169.08	-6.50	3.87	17.15	-11.35
1039	20.31	68.04	-3.79	-16.81	0.05
1040	12.50	68.35	4.03	17.69	0.06
1041	131.18	19.03	-13.01	-57.40	-7.37
1042	105.18	20.06	13.04	57.58	-7.35
1043	84.21	41.48	-12.96	-57.24	-3.95
1044	58.20	42.51	13.09	57.74	-3.92
1045	176.07	-6.78	-3.95	-17.33	-11.36
1046	168.27	-6.47	3.87	17.16	-11.35
1047	19.49	68.07	-3.78	-16.79	0.06
1048	11.69	68.38	4.03	17.70	0.06
1049	130.37	19.06	-13.01	-57.39	-7.37
1050	104.36	20.08	13.04	57.59	-7.35
1051	83.40	41.51	-12.96	-57.22	-3.95
1052	57.39	42.54	13.09	57.75	-3.92
1053	110.43	-3.59	0.03	0.13	-0.15
1054	114.29	-5.50	0.03	0.13	0.15
1055	117.69	-4.99	5.93	25.47	0.06
1056	108.29	-4.63	-7.73	-27.24	0.05
1057	195.59	-42.40	-3.96	-17.39	-5.66
1058	187.78	-42.09	3.85	17.10	-5.65
1059	39.01	32.45	-3.80	-16.85	5.75
1060	31.21	32.75	4.02	17.64	5.76
1061	149.89	-16.56	-13.02	-57.44	-1.67
1062	123.88	-15.54	13.03	57.53	-1.65
1063	102.91	5.89	-12.97	-57.28	1.75
1064	76.91	6.92	13.08	57.69	1.78
1065	194.77	-42.37	-3.96	-17.38	-5.66
1066	186.97	-42.06	3.86	17.11	-5.65
1067	38.20	32.48	-3.79	-16.84	5.76
1068	30.40	32.78	4.02	17.65	5.76
1069	149.07	-16.53	-13.02	-57.43	-1.67
1070	123.07	-15.51	13.03	57.54	-1.64
1071	102.10	5.92	-12.97	-57.27	1.75
1072	76.09	6.95	13.08	57.70	1.78
1073	220.71	-9.18	0.06	0.26	0.11
1074	71.14	-3.21	0.00	0.01	0.03



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 64 de 126
	ESTE - OESTE		1	1	

2078	117.17	5.93	2.08	9.20	-7.73
2079	38.34	45.44	-2.01	-8.91	-1.69
2080	34.18	45.60	2.16	9.49	-1.68
2081	97.17	19.42	-6.88	-30.36	-5.63
2082	83.39	19.97	6.93	30.57	-5.61
2083	72.12	31.40	-6.86	-30.28	-3.80
2084	58.34	31.94	6.95	30.66	-3.79
2085	73.73	-2.44	0.02	0.09	-0.09
2086	76.14	-3.64	0.02	0.09	0.10
2087	78.26	-3.32	3.71	15.93	0.04
2088	72.39	-3.09	-4.83	-17.02	0.03
2089	133.14	-29.52	-2.77	-12.18	-3.96
2090	127.68	-29.31	2.70	11.97	-3.96
2091	23.54	22.87	-2.66	-11.80	4.03
2092	18.08	23.09	2.81	12.35	4.03
2093	100.37	-11.06	-9.11	-40.21	-1.12
2094	82.17	-10.34	9.12	40.27	-1.10
2095	69.06	3.91	-9.08	-40.10	1.17
2096	50.85	4.63	9.15	40.38	1.19
2097	132.57	-29.50	-2.77	-12.17	-3.96
2098	127.11	-29.29	2.70	11.97	-3.96
2099	22.97	22.89	-2.66	-11.79	4.03
2100	17.51	23.11	2.81	12.35	4.03
2101	99.80	-11.04	-9.11	-40.20	-1.12
2102	81.60	-10.32	9.12	40.28	-1.10
2103	68.49	3.93	-9.08	-40.10	1.17
2104	50.28	4.65	9.16	40.39	1.19
2105	185.13	-7.70	0.05	0.22	0.09
2106	60.48	-2.72	0.00	0.01	0.03

Ejes G al M. Apoyo 6



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	124.28	-5.29	-0.03	-0.15	0.06
2002	133.56	-5.64	-0.03	-0.15	0.07
2003	122.68	-4.53	-0.03	-0.15	-0.07
2004	125.09	-5.72	-0.03	-0.15	0.12
2005	121.34	-5.18	4.26	16.24	0.06
2006	127.22	-5.41	-3.90	-16.70	0.06
2007	130.04	-4.98	-0.03	-0.15	-0.03
2008	131.85	-5.87	-0.03	-0.15	0.11
2009	129.04	-5.46	3.19	12.14	0.06
2010	133.44	-5.64	-2.94	-12.56	0.07
2011	179.02	-30.23	-2.83	-12.41	-3.73
2012	173.56	-30.01	2.64	11.73	-3.72
2013	75.64	19.40	-2.71	-12.03	3.84
2014	70.18	19.62	2.76	12.11	3.84
2015	149.20	-13.11	-9.17	-40.45	-1.09

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	173.99	-7.41	-0.05	-0.20	0.08
1002	163.99	-6.90	-0.04	-0.18	0.09
1003	147.86	-5.74	-0.04	-0.17	-0.03
1004	149.79	-6.70	-0.04	-0.17	0.12
1005	146.79	-6.26	3.40	12.93	0.07
1006	151.48	-6.44	-3.14	-13.42	0.07
1007	155.86	-5.47	-0.04	-0.18	-0.12
1008	159.72	-7.38	-0.04	-0.18	0.18
1009	153.72	-6.51	6.83	26.04	0.08
1010	163.11	-6.88	-6.23	-26.67	0.08
1011	236.61	-42.31	-4.03	-17.70	-5.33
1012	228.81	-42.00	3.78	16.80	-5.32
1013	88.93	28.59	-3.87	-17.16	5.48
1014	81.13	28.89	3.95	17.34	5.49
1015	194.02	-17.86	-13.09	-57.75	-1.56

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES A N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 65 de 126
	ESTE - OESTE				1	1	



2016	131.01	-12.39	9.07	40.04	-1.07
2017	118.19	1.78	-9.14	-40.33	1.18
2018	99.99	2.50	9.10	40.15	1.20
2019	178.38	-30.20	-2.83	-12.40	-3.73
2020	172.92	-29.99	2.65	11.74	-3.72
2021	75.00	19.43	-2.71	-12.02	3.84
2022	69.54	19.64	2.76	12.12	3.84
2023	148.57	-13.08	-9.17	-40.44	-1.09
2024	130.37	-12.37	9.07	40.04	-1.07
2025	117.55	1.80	-9.13	-40.33	1.18
2026	99.36	2.52	9.10	40.16	1.20
2027	172.70	-24.43	-2.16	-9.49	-2.80
2028	168.54	-24.26	2.01	8.91	-2.80
2029	94.43	13.15	-2.08	-9.20	2.93
2030	90.27	13.31	2.09	9.19	2.93
2031	150.18	-11.50	-6.95	-30.66	-0.81
2032	136.41	-10.96	6.86	30.28	-0.79
2033	126.56	-0.16	-6.93	-30.57	0.92
2034	112.78	0.39	6.88	30.36	0.94
2035	172.22	-24.41	-2.16	-9.49	-2.80
2036	168.06	-24.25	2.01	8.91	-2.79
2037	93.94	13.17	-2.07	-9.20	2.93
2038	89.79	13.33	2.09	9.20	2.93
2039	149.70	-11.48	-6.95	-30.66	-0.81
2040	135.93	-10.94	6.86	30.28	-0.79
2041	126.07	-0.14	-6.92	-30.57	0.92
2042	112.30	0.40	6.88	30.37	0.94
2043	73.54	24.66	-0.03	-0.15	-4.51
2044	82.82	24.32	-0.03	-0.15	-4.50
2045	71.94	25.43	-0.03	-0.15	-4.63
2046	74.35	24.23	-0.03	-0.15	-4.45
2047	70.60	24.78	4.26	16.24	-4.51
2048	76.47	24.55	-3.90	-16.70	-4.51
2049	79.30	24.98	-0.03	-0.15	-4.60
2050	81.11	24.08	-0.03	-0.15	-4.46
2051	78.30	24.49	3.19	12.14	-4.51
2052	82.70	24.32	-2.94	-12.57	-4.50
2053	128.27	-0.27	-2.83	-12.41	-8.30
2054	122.81	-0.06	2.64	11.73	-8.29
2055	24.90	49.36	-2.71	-12.03	-0.73
2056	19.44	49.57	2.76	12.11	-0.73
2057	98.46	16.85	-9.17	-40.45	-5.66
2058	80.26	17.56	9.07	40.04	-5.64
2059	67.45	31.74	-9.14	-40.33	-3.39
2060	49.25	32.45	9.10	40.15	-3.37
2061	127.64	-0.25	-2.83	-12.40	-8.29
2062	122.18	-0.03	2.65	11.74	-8.29
2063	24.26	49.38	-2.71	-12.03	-0.73

1016	168.03	-16.83	12.96	57.23	-1.53
1017	149.72	3.41	-13.04	-57.59	1.69
1018	123.72	4.44	13.01	57.39	1.71
1019	235.70	-42.28	-4.03	-17.69	-5.33
1020	227.90	-41.97	3.79	16.81	-5.32
1021	88.02	28.62	-3.87	-17.15	5.48
1022	80.22	28.93	3.95	17.35	5.49
1023	193.11	-17.82	-13.09	-57.74	-1.56
1024	167.12	-16.80	12.96	57.24	-1.53
1025	148.81	3.45	-13.04	-57.58	1.69
1026	122.81	4.47	13.01	57.40	1.72
1027	102.95	34.53	-0.05	-0.20	-6.32
1028	103.10	29.05	-0.04	-0.18	-5.40
1029	86.97	30.21	-0.04	-0.18	-5.51
1030	88.90	29.25	-0.04	-0.18	-5.36
1031	85.90	29.69	3.40	12.93	-5.41
1032	90.59	29.50	-3.14	-13.42	-5.41
1033	94.97	30.48	-0.04	-0.18	-5.60
1034	98.83	28.56	-0.04	-0.18	-5.31
1035	92.83	29.44	6.83	26.04	-5.41
1036	102.22	29.07	-6.23	-26.67	-5.40
1037	175.72	-6.37	-4.03	-17.70	-10.81
1038	167.92	-6.06	3.78	16.79	-10.80
1039	28.04	64.53	-3.87	-17.16	-0.01
1040	20.24	64.84	3.95	17.34	0.00
1041	133.13	18.09	-13.09	-57.75	-7.04
1042	107.13	19.11	12.96	57.22	-7.01
1043	88.82	39.36	-13.04	-57.59	-3.80
1044	62.83	40.38	13.01	57.39	-3.77
1045	174.81	-6.33	-4.03	-17.69	-10.81
1046	167.01	-6.03	3.79	16.81	-10.80
1047	27.13	64.56	-3.87	-17.15	-0.01
1048	19.33	64.87	3.95	17.35	0.00
1049	132.22	18.12	-13.09	-57.74	-7.04
1050	106.23	19.15	12.96	57.24	-7.01
1051	87.92	39.39	-13.04	-57.58	-3.80
1052	61.92	40.42	13.01	57.40	-3.77
1053	109.29	-3.54	-0.03	-0.13	-0.15
1054	113.16	-5.45	-0.03	-0.13	0.15
1055	107.16	-4.58	6.85	26.08	0.05
1056	116.55	-4.95	-6.22	-26.62	0.06
1057	190.05	-40.38	-4.02	-17.65	-5.35
1058	182.25	-40.08	3.79	16.84	-5.34
1059	42.36	30.52	-3.86	-17.11	5.45
1060	34.57	30.82	3.96	17.38	5.46
1061	147.45	-15.93	-13.08	-57.70	-1.58
1062	121.46	-14.90	12.97	57.27	-1.55
1063	103.15	5.34	-13.03	-57.54	1.66

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 66 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2064	18.80	49.59	2.76	12.12	-0.73
2065	97.82	16.87	-9.17	-40.44	-5.66
2066	79.63	17.59	9.07	40.04	-5.63
2067	66.81	31.76	-9.13	-40.33	-3.39
2068	48.62	32.48	9.10	40.16	-3.37
2069	121.95	5.53	-2.16	-9.49	-7.37
2070	117.79	5.69	2.01	8.91	-7.36
2071	43.68	43.10	-2.08	-9.20	-1.64
2072	39.52	43.27	2.09	9.19	-1.64
2073	99.44	18.45	-6.95	-30.66	-5.38
2074	85.66	19.00	6.86	30.28	-5.36
2075	75.81	29.80	-6.93	-30.58	-3.65
2076	62.04	30.34	6.88	30.36	-3.63
2077	121.47	5.54	-2.16	-9.49	-7.37
2078	117.31	5.71	2.01	8.91	-7.36
2079	43.20	43.12	-2.07	-9.20	-1.64
2080	39.04	43.28	2.09	9.20	-1.64
2081	98.96	18.47	-6.95	-30.66	-5.38
2082	85.18	19.01	6.86	30.28	-5.36
2083	75.33	29.81	-6.92	-30.57	-3.65
2084	61.56	30.36	6.88	30.37	-3.63
2085	72.97	-2.41	-0.02	-0.09	-0.09
2086	75.38	-3.61	-0.02	-0.09	0.10
2087	71.63	-3.06	4.28	16.30	0.03
2088	77.50	-3.29	-3.89	-16.64	0.04
2089	129.30	-28.11	-2.81	-12.35	-3.75
2090	123.84	-27.89	2.66	11.79	-3.74
2091	25.93	21.52	-2.70	-11.97	3.81
2092	20.47	21.73	2.77	12.17	3.82
2093	98.75	-10.64	-9.16	-40.39	-1.06
2094	80.56	-9.92	9.08	40.10	-1.04
2095	69.22	3.54	-9.12	-40.28	1.11
2096	51.02	4.26	9.11	40.20	1.13
2097	128.67	-28.09	-2.81	-12.35	-3.75
2098	123.21	-27.87	2.66	11.80	-3.74
2099	25.29	21.54	-2.70	-11.97	3.81
2100	19.83	21.76	2.77	12.18	3.82
2101	98.12	-10.61	-9.15	-40.38	-1.06
2102	79.92	-9.90	9.08	40.10	-1.03
2103	68.58	3.57	-9.12	-40.27	1.11
2104	50.38	4.28	9.12	40.21	1.13
2105	185.34	-7.70	-0.05	-0.22	0.10
2106	63.41	-2.83	0.00	-0.01	0.03



1064	77.16	6.37	13.02	57.43	1.69
1065	189.14	-40.35	-4.02	-17.64	-5.35
1066	181.34	-40.04	3.80	16.85	-5.34
1067	41.46	30.55	-3.85	-17.10	5.45
1068	33.66	30.86	3.96	17.39	5.46
1069	146.55	-15.89	-13.08	-57.69	-1.58
1070	120.55	-14.87	12.97	57.28	-1.55
1071	102.24	5.38	-13.03	-57.53	1.66
1072	76.25	6.40	13.02	57.44	1.69
1073	220.56	-9.17	-0.06	-0.26	0.11
1074	74.24	-3.32	0.00	-0.01	0.04

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 67 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

Ejes G al M. Apoyo 7



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	125.54	5.34	0.03	0.15	-0.06
2002	132.76	5.61	0.03	0.15	-0.07
2003	127.14	6.16	0.03	0.15	-0.18
2004	124.73	4.94	0.03	0.15	0.01
2005	128.48	5.46	3.72	15.98	-0.06
2006	122.61	5.23	-4.82	-16.96	-0.06
2007	132.16	6.15	0.03	0.15	-0.15
2008	130.35	5.24	0.03	0.15	-0.02
2009	133.16	5.63	2.80	12.03	-0.07
2010	128.76	5.46	-3.60	-12.68	-0.06
2011	183.46	-20.95	-2.89	-12.52	-4.06
2012	177.80	-20.74	2.84	12.41	-4.05
2013	73.86	31.40	-2.77	-12.13	3.93
2014	68.20	31.62	2.96	12.80	3.94
2015	151.71	-2.88	-9.53	-41.46	-1.27
2016	132.84	-2.16	9.56	41.62	-1.25
2017	118.83	12.82	-9.50	-41.34	1.13
2018	99.95	13.55	9.60	41.74	1.15
2019	182.89	-20.93	-2.89	-12.51	-4.06
2020	177.23	-20.71	2.84	12.42	-4.05
2021	73.29	31.42	-2.77	-12.12	3.94
2022	67.63	31.64	2.96	12.81	3.94
2023	151.13	-2.86	-9.53	-41.45	-1.27
2024	132.26	-2.14	9.57	41.63	-1.25
2025	118.25	12.84	-9.49	-41.33	1.13
2026	99.38	13.57	9.60	41.75	1.15
2027	174.82	-14.37	-2.19	-9.50	-3.09
2028	170.51	-14.20	2.17	9.49	-3.09
2029	91.84	25.27	-2.11	-9.20	2.96
2030	87.53	25.44	2.26	9.79	2.96
2031	150.85	-0.72	-7.21	-31.35	-0.99
2032	136.56	-0.17	7.25	31.55	-0.97
2033	125.79	11.24	-7.18	-31.26	0.84
2034	111.50	11.79	7.28	31.64	0.86
2035	174.39	-14.35	-2.19	-9.49	-3.09
2036	170.08	-14.19	2.17	9.50	-3.09
2037	91.41	25.29	-2.10	-9.20	2.96
2038	87.09	25.45	2.26	9.79	2.97
2039	150.41	-0.71	-7.21	-31.35	-0.99
2040	136.12	-0.16	7.25	31.56	-0.97
2041	125.36	11.26	-7.18	-31.26	0.84
2042	111.07	11.81	7.28	31.65	0.86
2043	194.66	37.16	0.03	0.15	-4.85
2044	201.88	37.42	0.03	0.15	-4.85
2045	196.26	37.97	0.03	0.15	-4.96

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	175.76	7.48	0.05	0.20	-0.08
1002	162.20	6.84	0.04	0.18	-0.08
1003	151.93	7.06	0.04	0.17	-0.16
1004	150.00	6.09	0.04	0.17	-0.02
1005	153.00	6.50	2.99	12.85	-0.07
1006	148.31	6.32	-3.84	-13.51	-0.07
1007	160.43	7.98	0.04	0.18	-0.27
1008	156.57	6.03	0.04	0.18	0.03
1009	162.57	6.86	5.94	25.52	-0.08
1010	153.18	6.49	-7.72	-27.19	-0.08
1011	240.61	-30.89	-4.14	-17.91	-5.79
1012	232.52	-30.58	4.05	17.69	-5.78
1013	84.04	43.90	-3.97	-17.35	5.63
1014	75.95	44.21	4.21	18.25	5.64
1015	195.25	-5.07	-13.63	-59.26	-1.81
1016	168.29	-4.04	13.65	59.42	-1.78
1017	148.27	17.36	-13.58	-59.09	1.62
1018	121.31	18.40	13.70	59.59	1.65
1019	239.79	-30.86	-4.13	-17.90	-5.79
1020	231.71	-30.55	4.05	17.71	-5.78
1021	83.22	43.93	-3.97	-17.34	5.63
1022	75.13	44.24	4.22	18.27	5.64
1023	194.43	-5.04	-13.62	-59.24	-1.81
1024	167.47	-4.01	13.66	59.44	-1.78
1025	147.46	17.39	-13.57	-59.07	1.62
1026	120.50	18.43	13.71	59.61	1.65
1027	272.52	52.02	0.05	0.20	-6.79
1028	245.14	45.01	0.04	0.18	-5.83
1029	234.87	45.24	0.04	0.18	-5.91
1030	232.94	44.26	0.04	0.18	-5.76
1031	235.94	44.68	2.99	12.85	-5.82
1032	231.24	44.50	-3.84	-13.51	-5.82
1033	243.37	46.15	0.04	0.18	-6.01
1034	239.50	44.21	0.04	0.18	-5.72
1035	245.50	45.04	5.94	25.52	-5.83
1036	236.11	44.67	-7.72	-27.19	-5.82
1037	323.55	7.29	-4.14	-17.91	-11.54
1038	315.46	7.60	4.05	17.69	-11.53
1039	166.97	82.08	-3.97	-17.35	-0.12
1040	158.88	82.39	4.21	18.25	-0.11
1041	278.18	33.10	-13.62	-59.26	-7.55
1042	251.22	34.14	13.65	59.43	-7.52
1043	231.21	55.54	-13.57	-59.09	-4.13
1044	204.25	56.57	13.70	59.59	-4.10
1045	322.73	7.32	-4.13	-17.90	-11.54

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 68 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2046	193.84	36.75	0.03	0.15	-4.78
2047	197.59	37.27	3.72	15.99	-4.85
2048	191.72	37.04	-4.82	-16.96	-4.85
2049	201.27	37.96	0.03	0.15	-4.94
2050	199.46	37.05	0.03	0.15	-4.80
2051	202.27	37.44	2.80	12.03	-4.85
2052	197.87	37.27	-3.60	-12.68	-4.85
2053	252.58	10.86	-2.89	-12.52	-8.85
2054	246.91	11.08	2.84	12.41	-8.84
2055	142.97	63.21	-2.77	-12.13	-0.85
2056	137.31	63.43	2.96	12.80	-0.85
2057	220.82	28.93	-9.53	-41.46	-6.06
2058	201.95	29.66	9.56	41.62	-6.04
2059	187.94	44.64	-9.50	-41.34	-3.66
2060	169.07	45.36	9.60	41.74	-3.64
2061	252.00	10.88	-2.89	-12.51	-8.85
2062	246.34	11.10	2.84	12.42	-8.84
2063	142.40	63.23	-2.77	-12.12	-0.85
2064	136.74	63.45	2.96	12.81	-0.85
2065	220.25	28.95	-9.53	-41.45	-6.06
2066	201.38	29.68	9.57	41.63	-6.04
2067	187.37	44.66	-9.49	-41.33	-3.66
2068	168.50	45.38	9.60	41.75	-3.64
2069	243.94	17.45	-2.19	-9.50	-7.88
2070	239.62	17.61	2.17	9.49	-7.88
2071	160.95	57.08	-2.11	-9.20	-1.83
2072	156.64	57.25	2.26	9.79	-1.82
2073	219.96	31.09	-7.21	-31.35	-5.78
2074	205.67	31.64	7.25	31.55	-5.76
2075	194.91	43.06	-7.18	-31.26	-3.95
2076	180.62	43.61	7.28	31.64	-3.93
2077	243.50	17.46	-2.19	-9.49	-7.88
2078	239.19	17.63	2.17	9.50	-7.88
2079	160.52	57.10	-2.10	-9.20	-1.83
2080	156.21	57.27	2.26	9.79	-1.82
2081	219.53	31.11	-7.21	-31.34	-5.78
2082	205.24	31.66	7.25	31.56	-5.76
2083	194.47	43.07	-7.18	-31.26	-3.95
2084	180.18	43.62	7.28	31.65	-3.93
2085	76.93	4.02	0.02	0.09	-0.15
2086	74.51	2.80	0.02	0.09	0.03
2087	78.26	3.32	3.71	15.93	-0.04
2088	72.39	3.09	-4.83	-17.02	-0.03
2089	133.25	-23.09	-2.90	-12.58	-4.04
2090	127.58	-22.87	2.83	12.35	-4.03
2091	23.64	29.26	-2.79	-12.18	3.96
2092	17.98	29.48	2.94	12.74	3.97
2093	100.71	-4.65	-9.55	-41.51	-1.19

1046	314.64	7.63	4.05	17.71	-11.53
1047	166.16	82.11	-3.97	-17.34	-0.12
1048	158.07	82.42	4.22	18.27	-0.11
1049	277.36	33.13	-13.62	-59.24	-7.55
1050	250.41	34.17	13.66	59.44	-7.52
1051	230.39	55.57	-13.57	-59.07	-4.13
1052	203.43	56.61	13.71	59.61	-4.09
1053	115.55	6.11	0.03	0.13	-0.24
1054	111.69	4.16	0.03	0.13	0.05
1055	117.69	4.99	5.93	25.47	-0.06
1056	108.29	4.63	-7.73	-27.24	-0.05
1057	195.73	-32.76	-4.15	-17.96	-5.77
1058	187.64	-32.45	4.04	17.65	-5.76
1059	39.16	42.03	-3.98	-17.40	5.65
1060	31.07	42.34	4.20	18.21	5.66
1061	150.36	-6.94	-13.64	-59.30	-1.78
1062	123.41	-5.91	13.64	59.38	-1.75
1063	103.39	15.49	-13.59	-59.13	1.64
1064	76.43	16.53	13.69	59.55	1.68
1065	194.91	-32.73	-4.14	-17.94	-5.77
1066	186.83	-32.42	4.04	17.66	-5.76
1067	38.34	42.06	-3.98	-17.38	5.65
1068	30.25	42.38	4.21	18.22	5.66
1069	149.55	-6.91	-13.63	-59.29	-1.78
1070	122.59	-5.88	13.65	59.39	-1.75
1071	102.57	15.53	-13.58	-59.12	1.64
1072	75.62	16.56	13.70	59.56	1.68
1073	220.71	9.18	0.06	0.26	-0.11
1074	71.14	3.21	0.00	0.01	-0.03



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 69 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2094	81.83	-3.92	9.55	41.56	-1.17
2095	69.39	10.31	-9.51	-41.40	1.10
2096	50.52	11.04	9.58	41.68	1.12
2097	132.67	-23.07	-2.90	-12.57	-4.04
2098	127.01	-22.85	2.83	12.36	-4.03
2099	23.07	29.28	-2.78	-12.17	3.96
2100	17.41	29.50	2.94	12.75	3.97
2101	100.13	-4.63	-9.54	-41.50	-1.19
2102	81.26	-3.90	9.55	41.57	-1.17
2103	68.82	10.33	-9.51	-41.39	1.10
2104	49.95	11.06	9.59	41.69	1.12
2105	185.13	7.70	0.05	0.22	-0.09
2106	60.48	2.72	0.00	0.01	-0.03

Ejes G al M. Apoyo 8



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	124.28	5.29	-0.03	-0.15	-0.06
2002	133.56	5.64	-0.03	-0.15	-0.07
2003	125.88	6.11	-0.03	-0.15	-0.18
2004	123.46	4.89	-0.03	-0.15	0.01
2005	121.34	5.18	4.26	16.24	-0.06
2006	127.21	5.41	-3.90	-16.70	-0.06
2007	132.44	6.16	-0.03	-0.15	-0.15
2008	130.63	5.25	-0.03	-0.15	-0.02
2009	129.04	5.46	3.19	12.14	-0.06
2010	133.44	5.64	-2.94	-12.56	-0.07
2011	179.12	-19.62	-2.96	-12.81	-3.85
2012	173.46	-19.40	2.77	12.12	-3.84
2013	75.74	29.96	-2.84	-12.42	3.72
2014	70.08	30.18	2.89	12.51	3.73
2015	149.54	-2.52	-9.60	-41.75	-1.21
2016	130.67	-1.79	9.49	41.33	-1.18
2017	118.52	12.36	-9.57	-41.63	1.06
2018	99.66	13.08	9.53	41.45	1.09
2019	178.48	-19.60	-2.96	-12.80	-3.85
2020	172.82	-19.38	2.77	12.13	-3.84
2021	75.10	29.99	-2.84	-12.41	3.72
2022	69.44	30.20	2.89	12.52	3.73
2023	148.90	-2.50	-9.60	-41.74	-1.21
2024	130.03	-1.77	9.50	41.34	-1.18
2025	117.89	12.38	-9.56	-41.62	1.07
2026	99.02	13.11	9.53	41.46	1.09
2027	172.78	-13.31	-2.26	-9.79	-2.93
2028	168.46	-13.15	2.10	9.20	-2.93
2029	94.50	24.23	-2.17	-9.50	2.80

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	173.99	7.41	-0.05	-0.20	-0.08
1002	163.99	6.90	-0.04	-0.18	-0.09
1003	150.41	7.00	-0.04	-0.17	-0.16
1004	148.48	6.03	-0.04	-0.17	-0.02
1005	146.79	6.26	3.40	12.93	-0.07
1006	151.48	6.44	-3.14	-13.42	-0.07
1007	160.98	7.99	-0.04	-0.18	-0.27
1008	157.11	6.05	-0.04	-0.18	0.03
1009	153.72	6.51	6.83	26.04	-0.08
1010	163.11	6.88	-6.23	-26.67	-0.08
1011	236.76	-28.90	-4.22	-18.27	-5.49
1012	228.67	-28.58	3.97	17.34	-5.48
1013	89.07	41.94	-4.05	-17.71	5.32
1014	80.99	42.25	4.13	17.90	5.33
1015	194.50	-4.47	-13.71	-59.61	-1.72
1016	167.55	-3.43	13.57	59.07	-1.69
1017	150.20	16.78	-13.66	-59.44	1.53
1018	123.25	17.82	13.62	59.24	1.56
1019	235.84	-28.86	-4.21	-18.25	-5.49
1020	227.76	-28.55	3.97	17.35	-5.48
1021	88.16	41.97	-4.05	-17.69	5.32
1022	80.08	42.28	4.14	17.91	5.33
1023	193.59	-4.43	-13.70	-59.59	-1.72
1024	166.64	-3.40	13.58	59.09	-1.68
1025	149.28	16.82	-13.65	-59.43	1.53
1026	122.33	17.85	13.63	59.26	1.56
1027	264.46	50.06	-0.05	-0.20	-6.50
1028	241.53	43.46	-0.04	-0.18	-5.59
1029	227.96	43.56	-0.04	-0.18	-5.66

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 70 de 126

2030	90.19	24.39	2.19	9.49	2.80
2031	150.44	-0.40	-7.28	-31.65	-0.94
2032	136.16	0.15	7.18	31.26	-0.92
2033	126.81	10.93	-7.25	-31.56	0.79
2034	112.53	11.48	7.21	31.35	0.81
2035	172.29	-13.30	-2.26	-9.79	-2.93
2036	167.98	-13.13	2.11	9.20	-2.93
2037	94.02	24.25	-2.17	-9.49	2.80
2038	89.71	24.41	2.19	9.50	2.80
2039	149.95	-0.38	-7.28	-31.64	-0.94
2040	135.67	0.17	7.18	31.26	-0.92
2041	126.33	10.95	-7.25	-31.55	0.79
2042	112.04	11.50	7.21	31.35	0.81
2043	188.90	35.76	-0.03	-0.15	-4.64
2044	198.18	36.10	-0.03	-0.15	-4.65
2045	190.50	36.57	-0.03	-0.15	-4.76
2046	188.08	35.35	-0.03	-0.15	-4.58
2047	185.96	35.64	4.26	16.24	-4.64
2048	191.83	35.87	-3.90	-16.70	-4.64
2049	197.06	36.62	-0.03	-0.15	-4.74
2050	195.25	35.71	-0.03	-0.15	-4.60
2051	193.66	35.93	3.19	12.14	-4.65
2052	198.06	36.10	-2.94	-12.56	-4.65
2053	243.74	10.85	-2.96	-12.81	-8.43
2054	238.08	11.06	2.77	12.12	-8.42
2055	140.36	60.43	-2.84	-12.42	-0.86
2056	134.70	60.65	2.89	12.51	-0.85
2057	214.16	27.95	-9.60	-41.75	-5.79
2058	195.29	28.67	9.49	41.33	-5.77
2059	183.14	42.82	-9.57	-41.63	-3.52
2060	164.28	43.55	9.53	41.45	-3.50
2061	243.10	10.87	-2.96	-12.80	-8.43
2062	237.44	11.09	2.77	12.13	-8.42
2063	139.72	60.45	-2.84	-12.41	-0.86
2064	134.06	60.67	2.89	12.52	-0.85
2065	213.52	27.97	-9.60	-41.74	-5.79
2066	194.65	28.70	9.50	41.34	-5.77
2067	182.50	42.84	-9.56	-41.62	-3.52
2068	163.64	43.57	9.53	41.46	-3.49
2069	237.39	17.15	-2.26	-9.79	-7.52
2070	233.08	17.32	2.10	9.20	-7.51
2071	159.12	54.69	-2.17	-9.50	-1.79
2072	154.81	54.86	2.19	9.49	-1.78
2073	215.06	30.06	-7.28	-31.65	-5.52
2074	200.77	30.61	7.18	31.26	-5.51
2075	191.43	41.40	-7.25	-31.56	-3.79
2076	177.14	41.95	7.21	31.34	-3.78
2077	236.91	17.17	-2.26	-9.79	-7.52

1030	226.02	42.59	-0.04	-0.18	-5.52
1031	224.33	42.82	3.40	12.93	-5.57
1032	229.02	43.00	-3.14	-13.42	-5.57
1033	238.52	44.55	-0.04	-0.18	-5.77
1034	234.65	42.61	-0.04	-0.18	-5.48
1035	231.26	43.07	6.83	26.04	-5.58
1036	240.65	43.44	-6.23	-26.67	-5.58
1037	314.30	7.66	-4.22	-18.27	-10.99
1038	306.21	7.97	3.97	17.34	-10.98
1039	166.61	78.49	-4.05	-17.71	-0.18
1040	158.53	78.80	4.13	17.90	-0.17
1041	272.04	32.09	-13.71	-59.61	-7.22
1042	245.09	33.13	13.57	59.07	-7.19
1043	227.74	53.34	-13.66	-59.44	-3.98
1044	200.79	54.38	13.62	59.24	-3.94
1045	313.39	7.70	-4.21	-18.25	-10.99
1046	305.30	8.01	3.97	17.35	-10.98
1047	165.70	78.53	-4.05	-17.69	-0.18
1048	157.62	78.84	4.14	17.91	-0.17
1049	271.13	32.12	-13.70	-59.59	-7.22
1050	244.18	33.16	13.57	59.09	-7.18
1051	226.82	53.37	-13.65	-59.43	-3.97
1052	199.87	54.41	13.63	59.26	-3.94
1053	114.41	6.06	-0.03	-0.13	-0.24
1054	110.55	4.12	-0.03	-0.13	0.05
1055	107.16	4.58	6.85	26.08	-0.05
1056	116.55	4.95	-6.22	-26.62	-0.06
1057	190.19	-30.82	-4.21	-18.22	-5.47
1058	182.11	-30.51	3.98	17.38	-5.46
1059	42.51	40.01	-4.04	-17.66	5.35
1060	34.42	40.32	4.14	17.94	5.36
1061	147.94	-6.40	-13.70	-59.56	-1.69
1062	120.99	-5.36	13.58	59.12	-1.66
1063	103.63	14.85	-13.65	-59.39	1.55
1064	76.68	15.89	13.63	59.29	1.59
1065	189.28	-30.79	-4.20	-18.21	-5.46
1066	181.19	-30.48	3.98	17.40	-5.45
1067	41.59	40.04	-4.04	-17.65	5.35
1068	33.51	40.35	4.15	17.96	5.36
1069	147.02	-6.36	-13.69	-59.55	-1.69
1070	120.07	-5.33	13.59	59.13	-1.66
1071	102.72	14.89	-13.64	-59.38	1.55
1072	75.77	15.92	13.64	59.30	1.59
1073	220.56	9.17	-0.06	-0.26	-0.11
1074	74.24	3.32	0.00	-0.01	-0.04



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 71 de 126
	ESTE - OESTE		1	1	

2078	232.60	17.34	2.11	9.20	-7.51
2079	158.64	54.71	-2.17	-9.49	-1.79
2080	154.32	54.88	2.19	9.50	-1.78
2081	214.57	30.08	-7.28	-31.64	-5.52
2082	200.29	30.63	7.18	31.26	-5.51
2083	190.94	41.41	-7.25	-31.55	-3.79
2084	176.66	41.97	7.21	31.35	-3.78
2085	76.17	3.99	-0.02	-0.09	-0.15
2086	73.75	2.77	-0.02	-0.09	0.03
2087	71.63	3.06	4.28	16.30	-0.03
2088	77.50	3.29	-3.89	-16.64	-0.04
2089	129.41	-21.74	-2.94	-12.75	-3.82
2090	123.75	-21.52	2.78	12.17	-3.82
2091	26.03	27.85	-2.83	-12.36	3.75
2092	20.37	28.06	2.90	12.57	3.75
2093	99.09	-4.28	-9.59	-41.69	-1.13
2094	80.22	-3.56	9.51	41.39	-1.11
2095	69.55	9.88	-9.55	-41.58	1.03
2096	50.69	10.61	9.54	41.50	1.06
2097	128.77	-21.71	-2.94	-12.74	-3.82
2098	123.11	-21.49	2.79	12.18	-3.82
2099	25.39	27.87	-2.83	-12.35	3.75
2100	19.73	28.09	2.90	12.58	3.75
2101	98.45	-4.26	-9.58	-41.68	-1.13
2102	79.58	-3.53	9.51	41.40	-1.10
2103	68.91	9.91	-9.55	-41.56	1.04
2104	50.05	10.63	9.55	41.51	1.06
2105	185.34	7.70	-0.05	-0.22	-0.10
2106	63.41	2.83	0.00	-0.01	-0.03

Ejes G al M. Apoyo 9



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	135.82	0.01	0.03	0.15	-0.06
2002	146.43	0.02	0.03	0.15	-0.07
2003	135.82	0.04	0.03	0.15	-0.17
2004	135.82	0.00	0.03	0.15	0.02
2005	139.21	0.01	3.83	16.17	-0.06
2006	132.43	0.01	-4.37	-16.48	-0.06
2007	143.78	0.04	0.03	0.15	-0.15
2008	143.78	0.00	0.03	0.15	-0.01
2009	146.32	0.02	2.88	12.17	-0.07
2010	141.23	0.02	-3.27	-12.32	-0.06
2011	139.87	-0.95	-3.73	-15.30	-4.22
2012	132.34	-0.95	3.77	15.45	-4.21
2013	139.77	0.98	-3.70	-15.17	4.09
2014	132.24	0.98	3.80	15.58	4.10
2015	148.62	-0.28	-12.47	-51.13	-1.32

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	190.15	0.02	0.05	0.20	-0.08
1002	179.96	0.02	0.04	0.18	-0.08
1003	162.98	0.04	0.04	0.17	-0.16
1004	162.98	0.00	0.04	0.17	-0.01
1005	165.70	0.02	3.08	13.00	-0.07
1006	160.27	0.02	-3.48	-13.13	-0.07
1007	173.59	0.06	0.04	0.18	-0.26
1008	173.59	-0.01	0.04	0.18	0.04
1009	179.02	0.02	6.11	25.82	-0.08
1010	168.17	0.02	-7.01	-26.43	-0.08
1011	179.38	-1.36	-5.34	-21.89	-6.02
1012	168.63	-1.36	5.37	22.04	-6.01
1013	179.24	1.40	-5.29	-21.70	5.85
1014	168.48	1.40	5.42	22.23	5.86
1015	191.88	-0.40	-17.82	-73.07	-1.88

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 72 de 126



2016	123.52	-0.27	12.52	51.37	-1.30
2017	148.59	0.30	-12.46	-51.09	1.18
2018	123.49	0.31	12.53	51.41	1.20
2019	139.40	-0.95	-3.73	-15.29	-4.22
2020	131.87	-0.95	3.77	15.46	-4.21
2021	139.30	0.98	-3.70	-15.16	4.09
2022	131.77	0.98	3.80	15.59	4.10
2023	148.15	-0.28	-12.47	-51.12	-1.32
2024	123.05	-0.27	12.53	51.38	-1.29
2025	148.12	0.30	-12.46	-51.08	1.18
2026	123.02	0.31	12.54	51.42	1.20
2027	146.86	-0.72	-2.84	-11.62	-3.21
2028	141.13	-0.72	2.88	11.81	-3.21
2029	146.79	0.75	-2.81	-11.52	3.08
2030	141.05	0.75	2.90	11.91	3.09
2031	153.47	-0.21	-9.43	-38.68	-1.02
2032	134.46	-0.20	9.49	38.93	-1.01
2033	153.45	0.23	-9.43	-38.65	0.88
2034	134.44	0.24	9.50	38.96	0.89
2035	146.50	-0.72	-2.83	-11.62	-3.21
2036	140.77	-0.72	2.88	11.81	-3.21
2037	146.43	0.75	-2.81	-11.51	3.08
2038	140.69	0.75	2.90	11.91	3.09
2039	153.11	-0.21	-9.43	-38.67	-1.02
2040	134.11	-0.20	9.49	38.94	-1.01
2041	153.09	0.23	-9.42	-38.64	0.88
2042	134.08	0.24	9.50	38.97	0.90
2043	143.88	1.18	0.03	0.15	-5.07
2044	154.49	1.18	0.03	0.15	-5.07
2045	143.88	1.21	0.03	0.15	-5.18
2046	143.88	1.16	0.03	0.15	-4.99
2047	147.27	1.18	3.83	16.17	-5.07
2048	140.49	1.18	-4.37	-16.48	-5.07
2049	151.84	1.20	0.03	0.15	-5.16
2050	151.84	1.17	0.03	0.15	-5.02
2051	154.38	1.18	2.88	12.17	-5.07
2052	149.30	1.18	-3.27	-12.32	-5.07
2053	147.94	0.21	-3.73	-15.30	-9.23
2054	140.41	0.21	3.77	15.45	-9.22
2055	147.83	2.14	-3.70	-15.17	-0.91
2056	140.30	2.15	3.80	15.59	-0.91
2057	156.68	0.89	-12.47	-51.13	-6.33
2058	131.58	0.89	12.52	51.37	-6.30
2059	156.65	1.47	-12.46	-51.09	-3.83
2060	131.55	1.47	12.53	51.41	-3.81
2061	147.46	0.21	-3.73	-15.29	-9.23
2062	139.93	0.21	3.77	15.46	-9.22
2063	147.36	2.14	-3.70	-15.16	-0.91

1016	156.02	-0.39	17.88	73.35	-1.84
1017	191.84	0.43	-17.81	-73.01	1.69
1018	155.98	0.44	17.90	73.41	1.72
1019	178.71	-1.36	-5.34	-21.88	-6.02
1020	167.95	-1.36	5.37	22.05	-6.01
1021	178.56	1.40	-5.29	-21.69	5.86
1022	167.80	1.40	5.42	22.24	5.86
1023	191.21	-0.40	-17.82	-73.06	-1.88
1024	155.35	-0.39	17.89	73.36	-1.84
1025	191.16	0.43	-17.80	-73.00	1.69
1026	155.30	0.44	17.90	73.42	1.72
1027	201.43	1.65	0.05	0.20	-7.09
1028	189.63	1.42	0.04	0.18	-6.09
1029	172.66	1.44	0.04	0.18	-6.17
1030	172.66	1.40	0.04	0.18	-6.02
1031	175.37	1.41	3.08	13.00	-6.08
1032	169.95	1.41	-3.48	-13.13	-6.08
1033	183.27	1.46	0.04	0.18	-6.27
1034	183.27	1.39	0.04	0.18	-5.97
1035	188.69	1.42	6.11	25.82	-6.09
1036	177.84	1.42	-7.01	-26.43	-6.08
1037	189.06	0.03	-5.34	-21.89	-12.03
1038	178.30	0.04	5.37	22.04	-12.02
1039	188.91	2.80	-5.29	-21.70	-0.16
1040	178.15	2.80	5.42	22.23	-0.15
1041	201.56	1.00	-17.82	-73.07	-7.89
1042	165.70	1.01	17.88	73.35	-7.85
1043	201.51	1.83	-17.81	-73.01	-4.32
1044	165.65	1.83	17.90	73.41	-4.29
1045	188.38	0.03	-5.34	-21.88	-12.03
1046	177.62	0.04	5.37	22.05	-12.02
1047	188.23	2.80	-5.29	-21.69	-0.15
1048	177.48	2.80	5.42	22.24	-0.15
1049	200.88	1.00	-17.82	-73.06	-7.88
1050	165.02	1.01	17.89	73.36	-7.85
1051	200.84	1.83	-17.80	-73.00	-4.32
1052	164.98	1.83	17.90	73.42	-4.29
1053	122.24	0.06	0.03	0.13	-0.24
1054	122.24	-0.02	0.03	0.13	0.07
1055	127.66	0.01	6.10	25.77	-0.06
1056	116.81	0.01	-7.02	-26.47	-0.05
1057	128.03	-1.37	-5.35	-21.94	-6.00
1058	117.27	-1.37	5.36	21.99	-5.99
1059	127.88	1.39	-5.30	-21.74	5.88
1060	117.12	1.39	5.41	22.19	5.89
1061	140.53	-0.41	-17.83	-73.12	-1.85
1062	104.67	-0.40	17.87	73.31	-1.82
1063	140.48	0.42	-17.82	-73.06	1.71

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 73 de 126
	ESTE - OESTE		1	1	

2064	139.83	2.15	3.80	15.59	-0.91
2065	156.21	0.89	-12.47	-51.12	-6.32
2066	131.11	0.89	12.53	51.38	-6.30
2067	156.18	1.47	-12.46	-51.08	-3.83
2068	131.08	1.47	12.54	51.42	-3.81
2069	154.93	0.45	-2.84	-11.62	-8.22
2070	149.19	0.45	2.88	11.81	-8.22
2071	154.85	1.91	-2.81	-11.52	-1.93
2072	149.11	1.91	2.90	11.91	-1.92
2073	161.53	0.96	-9.43	-38.68	-6.03
2074	142.53	0.96	9.49	38.93	-6.01
2075	161.51	1.40	-9.43	-38.64	-4.13
2076	142.50	1.40	9.50	38.96	-4.11
2077	154.57	0.45	-2.83	-11.62	-8.22
2078	148.83	0.45	2.88	11.81	-8.22
2079	154.49	1.91	-2.81	-11.51	-1.93
2080	148.75	1.91	2.90	11.92	-1.92
2081	161.17	0.96	-9.43	-38.67	-6.03
2082	142.17	0.96	9.49	38.94	-6.01
2083	161.15	1.40	-9.42	-38.64	-4.13
2084	142.15	1.40	9.50	38.97	-4.11
2085	81.49	0.04	0.02	0.09	-0.15
2086	81.49	-0.01	0.02	0.09	0.04
2087	84.88	0.01	3.82	16.11	-0.04
2088	78.10	0.01	-4.38	-16.54	-0.03
2089	85.55	-0.96	-3.75	-15.36	-4.20
2090	78.02	-0.96	3.75	15.39	-4.19
2091	85.44	0.97	-3.71	-15.22	4.12
2092	77.91	0.98	3.79	15.53	4.12
2093	94.29	-0.27	-12.48	-51.19	-1.23
2094	69.19	-0.27	12.51	51.31	-1.21
2095	94.26	0.28	-12.47	-51.15	1.14
2096	69.16	0.29	12.52	51.35	1.16
2097	85.07	-0.96	-3.74	-15.35	-4.19
2098	77.54	-0.96	3.75	15.40	-4.19
2099	84.97	0.97	-3.71	-15.22	4.12
2100	77.44	0.98	3.79	15.53	4.12
2101	93.82	-0.27	-12.48	-51.18	-1.23
2102	68.72	-0.27	12.51	51.32	-1.21
2103	93.79	0.28	-12.47	-51.14	1.14
2104	68.69	0.29	12.52	51.36	1.16
2105	204.80	0.02	0.05	0.22	-0.09
2106	65.15	0.01	0.00	0.01	-0.03



1064	104.62	0.43	17.89	73.37	1.74
1065	127.35	-1.37	-5.35	-21.93	-5.99
1066	116.59	-1.37	5.36	22.00	-5.98
1067	127.20	1.39	-5.30	-21.73	5.88
1068	116.45	1.39	5.41	22.20	5.89
1069	139.85	-0.41	-17.83	-73.11	-1.85
1070	103.99	-0.40	17.88	73.32	-1.82
1071	139.81	0.42	-17.81	-73.05	1.71
1072	103.95	0.43	17.89	73.38	1.75
1073	243.63	0.03	0.06	0.26	-0.11
1074	76.06	0.01	0.00	0.01	-0.03

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 74 de 126
	ESTE - OESTE		1	1	

Ejes G al M. Apoyo 10



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
2001	134.11	0.01	-0.03	-0.15	-0.06
2002	145.75	0.02	-0.03	-0.15	-0.07
2003	134.11	0.04	-0.03	-0.15	-0.17
2004	134.11	0.00	-0.03	-0.15	0.02
2005	130.71	0.01	4.37	16.42	-0.06
2006	137.50	0.01	-3.83	-16.23	-0.06
2007	142.84	0.04	-0.03	-0.15	-0.15
2008	142.84	0.00	-0.03	-0.15	-0.01
2009	140.29	0.02	3.27	12.28	-0.06
2010	145.38	0.02	-2.88	-12.21	-0.07
2011	138.17	-0.90	-3.80	-15.59	-4.00
2012	130.65	-0.90	3.70	15.16	-3.99
2013	138.05	0.93	-3.77	-15.46	3.88
2014	130.52	0.93	3.73	15.29	3.88
2015	146.91	-0.26	-12.54	-51.42	-1.25
2016	121.82	-0.26	12.46	51.08	-1.23
2017	146.87	0.29	-12.53	-51.38	1.11
2018	121.78	0.29	12.47	51.12	1.13
2019	137.69	-0.90	-3.80	-15.58	-4.00
2020	130.17	-0.90	3.70	15.17	-3.99
2021	137.57	0.93	-3.77	-15.45	3.88
2022	130.04	0.93	3.73	15.30	3.88
2023	146.43	-0.26	-12.53	-51.41	-1.25
2024	121.34	-0.26	12.46	51.09	-1.23
2025	146.39	0.29	-12.52	-51.37	1.11
2026	121.30	0.29	12.47	51.13	1.14
2027	145.93	-0.68	-2.90	-11.91	-3.05
2028	140.20	-0.68	2.81	11.51	-3.04
2029	145.84	0.71	-2.88	-11.81	2.91
2030	140.10	0.71	2.83	11.62	2.92
2031	152.53	-0.20	-9.50	-38.97	-0.97
2032	133.53	-0.19	9.42	38.64	-0.96
2033	152.50	0.22	-9.49	-38.94	0.83
2034	133.50	0.23	9.43	38.67	0.84
2035	145.57	-0.68	-2.90	-11.91	-3.05
2036	139.84	-0.68	2.81	11.52	-3.04
2037	145.47	0.71	-2.88	-11.81	2.91
2038	139.74	0.71	2.84	11.62	2.92
2039	152.17	-0.20	-9.50	-38.96	-0.97
2040	133.17	-0.19	9.43	38.65	-0.96
2041	152.14	0.22	-9.49	-38.93	0.83
2042	133.14	0.23	9.43	38.68	0.84
2043	141.04	1.13	-0.03	-0.15	-4.86
2044	152.68	1.13	-0.03	-0.15	-4.87
2045	141.04	1.16	-0.03	-0.15	-4.97

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment X (kNm)	Moment Z (kNm)
1001	187.75	0.02	-0.05	-0.20	-0.08
1002	179.55	0.02	-0.04	-0.18	-0.09
1003	160.93	0.04	-0.04	-0.17	-0.16
1004	160.93	0.00	-0.04	-0.17	-0.01
1005	158.21	0.02	3.48	13.08	-0.07
1006	163.64	0.02	-3.08	-13.04	-0.07
1007	172.57	0.06	-0.04	-0.18	-0.26
1008	172.57	-0.01	-0.04	-0.18	0.04
1009	167.14	0.02	7.01	26.33	-0.08
1010	177.99	0.02	-6.11	-25.92	-0.08
1011	178.38	-1.29	-5.42	-22.24	-5.71
1012	167.63	-1.29	5.29	21.69	-5.70
1013	178.20	1.33	-5.37	-22.05	5.54
1014	167.44	1.33	5.34	21.88	5.55
1015	190.86	-0.38	-17.90	-73.42	-1.78
1016	155.01	-0.37	17.80	73.00	-1.75
1017	190.81	0.41	-17.89	-73.36	1.59
1018	154.96	0.42	17.82	73.06	1.63
1019	177.69	-1.29	-5.42	-22.23	-5.71
1020	166.94	-1.29	5.29	21.70	-5.70
1021	177.51	1.33	-5.37	-22.04	5.54
1022	166.76	1.33	5.34	21.89	5.55
1023	190.18	-0.38	-17.90	-73.41	-1.78
1024	154.33	-0.37	17.81	73.02	-1.75
1025	190.12	0.41	-17.88	-73.35	1.59
1026	154.27	0.42	17.82	73.07	1.63
1027	197.46	1.58	-0.05	-0.20	-6.80
1028	187.88	1.36	-0.04	-0.18	-5.85
1029	169.25	1.38	-0.04	-0.18	-5.92
1030	169.25	1.34	-0.04	-0.18	-5.77
1031	166.54	1.36	3.48	13.08	-5.83
1032	171.97	1.36	-3.08	-13.05	-5.83
1033	180.89	1.40	-0.04	-0.18	-6.02
1034	180.89	1.33	-0.04	-0.18	-5.72
1035	175.47	1.36	7.01	26.33	-5.84
1036	186.32	1.36	-6.11	-25.92	-5.84
1037	186.70	0.05	-5.42	-22.24	-11.47
1038	175.95	0.05	5.29	21.69	-11.46
1039	186.52	2.67	-5.37	-22.05	-0.22
1040	175.77	2.67	5.34	21.88	-0.21
1041	199.19	0.96	-17.90	-73.42	-7.54
1042	163.34	0.97	17.80	73.00	-7.51
1043	199.13	1.75	-17.89	-73.36	-4.17
1044	163.28	1.75	17.82	73.06	-4.14
1045	186.02	0.05	-5.42	-22.23	-11.47

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 75 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

2046	141.04	1.11	-0.03	-0.15	-4.78
2047	137.65	1.13	4.37	16.42	-4.86
2048	144.43	1.13	-3.83	-16.23	-4.86
2049	149.77	1.15	-0.03	-0.15	-4.95
2050	149.77	1.12	-0.03	-0.15	-4.81
2051	147.23	1.13	3.27	12.28	-4.86
2052	152.32	1.13	-2.88	-12.21	-4.87
2053	145.11	0.21	-3.80	-15.59	-8.80
2054	137.58	0.22	3.70	15.16	-8.79
2055	144.98	2.05	-3.77	-15.46	-0.93
2056	137.46	2.05	3.73	15.29	-0.92
2057	153.85	0.85	-12.54	-51.42	-6.05
2058	128.76	0.86	12.46	51.08	-6.03
2059	153.81	1.40	-12.53	-51.38	-3.69
2060	128.72	1.41	12.47	51.12	-3.67
2061	144.63	0.21	-3.80	-15.59	-8.80
2062	137.10	0.22	3.70	15.17	-8.79
2063	144.50	2.05	-3.77	-15.45	-0.92
2064	136.98	2.05	3.73	15.30	-0.92
2065	153.37	0.85	-12.53	-51.41	-6.05
2066	128.28	0.86	12.46	51.09	-6.03
2067	153.33	1.40	-12.52	-51.37	-3.69
2068	128.24	1.41	12.47	51.13	-3.67
2069	152.87	0.44	-2.90	-11.92	-7.85
2070	147.14	0.44	2.81	11.51	-7.84
2071	152.78	1.82	-2.88	-11.81	-1.89
2072	147.04	1.83	2.83	11.62	-1.88
2073	159.47	0.92	-9.50	-38.97	-5.77
2074	140.47	0.92	9.42	38.64	-5.76
2075	159.44	1.34	-9.49	-38.94	-3.98
2076	140.44	1.34	9.43	38.67	-3.96
2077	152.51	0.44	-2.90	-11.91	-7.85
2078	146.77	0.44	2.81	11.52	-7.84
2079	152.41	1.82	-2.88	-11.81	-1.89
2080	146.68	1.83	2.84	11.62	-1.88
2081	159.11	0.92	-9.50	-38.96	-5.77
2082	140.11	0.92	9.43	38.64	-5.76
2083	159.08	1.34	-9.49	-38.93	-3.97
2084	140.08	1.34	9.43	38.68	-3.96
2085	80.46	0.04	-0.02	-0.09	-0.15
2086	80.46	-0.01	-0.02	-0.09	0.04
2087	77.07	0.01	4.38	16.48	-0.03
2088	83.86	0.01	-3.82	-16.18	-0.04
2089	84.53	-0.91	-3.79	-15.53	-3.98
2090	77.00	-0.91	3.71	15.22	-3.97
2091	84.40	0.92	-3.75	-15.40	3.90
2092	76.88	0.93	3.74	15.35	3.91
2093	93.27	-0.26	-12.52	-51.36	-1.17

1046	175.26	0.05	5.29	21.70	-11.46
1047	185.84	2.67	-5.37	-22.04	-0.22
1048	175.08	2.67	5.34	21.89	-0.21
1049	198.50	0.96	-17.90	-73.41	-7.54
1050	162.65	0.97	17.81	73.01	-7.51
1051	198.45	1.75	-17.88	-73.35	-4.17
1052	162.60	1.75	17.82	73.07	-4.13
1053	120.70	0.06	-0.03	-0.13	-0.24
1054	120.70	-0.02	-0.03	-0.13	0.07
1055	115.27	0.01	7.02	26.37	-0.05
1056	126.12	0.01	-6.10	-25.87	-0.06
1057	126.51	-1.30	-5.41	-22.20	-5.68
1058	115.75	-1.30	5.30	21.73	-5.67
1059	126.32	1.32	-5.36	-22.00	5.57
1060	115.57	1.32	5.35	21.93	5.58
1061	138.99	-0.38	-17.89	-73.38	-1.76
1062	103.14	-0.38	17.81	73.05	-1.72
1063	138.94	0.40	-17.88	-73.32	1.62
1064	103.09	0.41	17.83	73.11	1.65
1065	125.82	-1.30	-5.41	-22.19	-5.68
1066	115.07	-1.30	5.30	21.74	-5.67
1067	125.64	1.32	-5.36	-21.99	5.57
1068	114.88	1.32	5.35	21.94	5.58
1069	138.30	-0.38	-17.89	-73.37	-1.76
1070	102.46	-0.38	17.82	73.06	-1.72
1071	138.25	0.40	-17.87	-73.31	1.62
1072	102.40	0.41	17.83	73.12	1.65
1073	241.91	0.03	-0.06	-0.26	-0.11
1074	77.59	0.01	0.00	-0.01	-0.04



<div></div> <div> <i>Corporación</i> <small>La fuerza que transforma Bolivia</small></div>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 76 de 126

2094	68.18	-0.25	12.47	51.14	-1.15
2095	93.23	0.27	-12.51	-51.32	1.08
2096	68.14	0.27	12.48	51.18	1.10
2097	84.05	-0.91	-3.79	-15.53	-3.98
2098	76.52	-0.91	3.71	15.22	-3.97
2099	83.92	0.92	-3.75	-15.39	3.90
2100	76.40	0.93	3.75	15.36	3.91
2101	92.79	-0.26	-12.52	-51.35	-1.17
2102	67.69	-0.25	12.47	51.15	-1.15
2103	92.75	0.27	-12.51	-51.31	1.08
2104	67.66	0.27	12.48	51.19	1.10
2105	203.53	0.02	-0.05	-0.22	-0.10
2106	66.60	0.01	0.00	-0.01	-0.03

Ejes G al M. Apoyo 11



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment (kNm)	Moment (kNm)
2001	114.25	0.01	0.03	0.15	-0.06
2002	135.25	0.02	0.03	0.15	-0.07
2003	114.25	0.04	0.03	0.15	-0.17
2004	114.25	-0.61	0.03	0.15	0.54
2005	116.88	0.01	3.04	13.39	-0.06
2006	111.62	0.01	-3.58	-13.64	-0.06
2007	130.00	0.04	0.03	0.15	-0.15
2008	130.00	-0.45	0.03	0.15	0.39
2009	131.98	0.02	2.29	10.08	-0.07
2010	128.02	0.02	-2.68	-10.19	-0.06
2011	117.31	-0.97	-2.55	-11.31	-4.29
2012	111.65	-0.97	2.60	11.52	-4.29
2013	117.27	1.00	-2.53	-11.24	4.17
2014	111.61	1.00	2.61	11.59	4.18
2015	123.90	-0.28	-8.54	-37.91	-1.34
2016	105.03	-0.28	8.60	38.18	-1.32
2017	123.89	0.31	-8.54	-37.89	1.20
2018	105.02	0.31	8.61	38.20	1.22
2019	116.89	-0.97	-2.55	-11.30	-4.29
2020	111.23	-0.97	2.60	11.53	-4.29
2021	116.85	1.00	-2.53	-11.23	4.17
2022	111.19	1.00	2.61	11.60	4.18
2023	123.48	-0.28	-8.54	-37.91	-1.34
2024	104.61	-0.28	8.61	38.18	-1.32
2025	123.47	0.31	-8.54	-37.89	1.20
2026	104.60	0.31	8.61	38.20	1.22
2027	132.33	-0.73	-1.93	-8.58	-3.27
2028	128.02	-0.73	1.99	8.81	-3.27
2029	132.30	0.76	-1.92	-8.53	3.14

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment (kNm)	Moment (kNm)
1001	159.95	0.02	0.05	0.20	-0.08
1002	170.70	0.02	0.04	0.18	-0.08
1003	137.10	0.04	0.04	0.17	-0.16
1004	137.10	-0.48	0.04	0.17	0.41
1005	139.21	0.02	2.45	10.77	-0.07
1006	134.99	0.02	-2.85	-10.85	-0.07
1007	158.10	0.06	0.04	0.18	-0.26
1008	158.10	-0.98	0.04	0.18	0.88
1009	162.31	0.02	4.86	21.36	-0.08
1010	153.88	0.02	-5.74	-21.88	-0.08
1011	162.47	-1.39	-3.65	-16.18	-6.13
1012	154.38	-1.39	3.70	16.43	-6.12
1013	162.42	1.42	-3.62	-16.09	5.96
1014	154.33	1.43	3.73	16.53	5.97
1015	171.89	-0.41	-12.21	-54.19	-1.91
1016	144.93	-0.40	12.28	54.51	-1.88
1017	171.87	0.44	-12.20	-54.17	1.72
1018	144.91	0.44	12.29	54.54	1.75
1019	161.87	-1.39	-3.64	-16.18	-6.13
1020	153.78	-1.39	3.71	16.44	-6.12
1021	161.82	1.42	-3.62	-16.08	5.96
1022	153.73	1.43	3.73	16.53	5.97
1023	171.28	-0.41	-12.21	-54.19	-1.91
1024	144.33	-0.40	12.29	54.51	-1.87
1025	171.27	0.44	-12.20	-54.16	1.72
1026	144.31	0.44	12.29	54.54	1.75
1027	167.47	1.69	0.05	0.20	-7.25
1028	177.15	1.45	0.04	0.18	-6.22
1029	143.55	1.47	0.04	0.18	-6.30

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 77 de 126
	ESTE - OESTE				1	1	

2030	127.99	0.76	2.00	8.87	3.14
2031	137.31	-0.21	-6.46	-28.67	-1.04
2032	123.02	-0.21	6.52	28.94	-1.02
2033	137.30	0.24	-6.46	-28.65	0.89
2034	123.01	0.24	6.53	28.96	0.91
2035	132.01	-0.73	-1.93	-8.57	-3.27
2036	127.70	-0.73	1.99	8.82	-3.27
2037	131.98	0.76	-1.92	-8.52	3.14
2038	127.67	0.76	2.00	8.87	3.14
2039	136.99	-0.21	-6.46	-28.67	-1.04
2040	122.70	-0.21	6.52	28.95	-1.02
2041	136.98	0.24	-6.46	-28.65	0.90
2042	122.69	0.24	6.53	28.96	0.91
2043	119.62	1.20	0.03	0.15	-5.18
2044	140.62	1.21	0.03	0.15	-5.18
2045	119.62	1.23	0.03	0.15	-5.29
2046	119.62	0.58	0.03	0.15	-4.58
2047	122.26	1.20	3.04	13.39	-5.18
2048	116.99	1.20	-3.58	-13.64	-5.17
2049	135.37	1.23	0.03	0.15	-5.27
2050	135.37	0.74	0.03	0.15	-4.73
2051	137.35	1.21	2.29	10.08	-5.18
2052	133.40	1.21	-2.68	-10.19	-5.18
2053	122.68	0.22	-2.55	-11.31	-9.41
2054	117.02	0.22	2.60	11.52	-9.41
2055	122.65	2.19	-2.53	-11.24	-0.95
2056	116.99	2.19	2.61	11.59	-0.94
2057	129.28	0.91	-8.54	-37.91	-6.46
2058	110.41	0.91	8.60	38.18	-6.43
2059	129.27	1.50	-8.54	-37.89	-3.92
2060	110.39	1.50	8.61	38.20	-3.90
2061	122.26	0.22	-2.55	-11.30	-9.41
2062	116.60	0.22	2.60	11.53	-9.40
2063	122.23	2.19	-2.53	-11.23	-0.95
2064	116.57	2.19	2.61	11.60	-0.94
2065	128.85	0.91	-8.54	-37.91	-6.46
2066	109.98	0.91	8.61	38.18	-6.43
2067	128.84	1.50	-8.54	-37.89	-3.92
2068	109.97	1.50	8.61	38.20	-3.89
2069	137.70	0.46	-1.93	-8.58	-8.39
2070	133.39	0.46	1.99	8.81	-8.38
2071	137.68	1.95	-1.92	-8.53	-1.98
2072	133.36	1.95	2.00	8.87	-1.98
2073	142.68	0.98	-6.46	-28.67	-6.16
2074	128.39	0.98	6.52	28.94	-6.14
2075	142.67	1.43	-6.46	-28.65	-4.22
2076	128.39	1.43	6.53	28.96	-4.21
2077	137.38	0.46	-1.93	-8.57	-8.39

1030	143.55	0.95	0.04	0.18	-5.73
1031	145.66	1.45	2.45	10.77	-6.21
1032	141.44	1.44	-2.85	-10.85	-6.21
1033	164.55	1.49	0.04	0.18	-6.40
1034	164.55	0.45	0.04	0.18	-5.26
1035	168.76	1.45	4.86	21.37	-6.22
1036	160.33	1.45	-5.74	-21.88	-6.22
1037	168.92	0.04	-3.65	-16.18	-12.27
1038	160.83	0.04	3.70	16.43	-12.26
1039	168.87	2.85	-3.62	-16.09	-0.18
1040	160.78	2.85	3.73	16.53	-0.17
1041	178.34	1.02	-12.21	-54.19	-8.05
1042	151.38	1.03	12.28	54.51	-8.02
1043	178.32	1.86	-12.20	-54.16	-4.42
1044	151.36	1.87	12.29	54.54	-4.39
1045	168.32	0.04	-3.64	-16.18	-12.27
1046	160.23	0.04	3.71	16.44	-12.26
1047	168.27	2.85	-3.62	-16.08	-0.18
1048	160.18	2.85	3.73	16.53	-0.17
1049	177.73	1.02	-12.21	-54.19	-8.05
1050	150.78	1.03	12.29	54.52	-8.02
1051	177.72	1.86	-12.20	-54.16	-4.42
1052	150.76	1.87	12.29	54.54	-4.39
1053	102.82	0.06	0.03	0.13	-0.24
1054	102.82	-0.99	0.03	0.13	0.91
1055	107.04	0.01	4.85	21.32	-0.06
1056	98.61	0.01	-5.75	-21.93	-0.05
1057	107.19	-1.40	-3.66	-16.23	-6.10
1058	99.11	-1.39	3.69	16.38	-6.09
1059	107.15	1.42	-3.63	-16.13	5.99
1060	99.06	1.42	3.72	16.48	6.00
1061	116.61	-0.41	-12.22	-54.24	-1.88
1062	89.65	-0.41	12.27	54.46	-1.85
1063	116.60	0.43	-12.22	-54.21	1.74
1064	89.64	0.44	12.28	54.49	1.78
1065	106.59	-1.40	-3.65	-16.22	-6.10
1066	98.50	-1.39	3.70	16.39	-6.09
1067	106.54	1.42	-3.63	-16.12	5.99
1068	98.45	1.42	3.72	16.49	6.00
1069	116.01	-0.41	-12.22	-54.23	-1.88
1070	89.05	-0.41	12.28	54.47	-1.85
1071	115.99	0.43	-12.21	-54.20	1.75
1072	89.04	0.44	12.28	54.50	1.78
1073	220.94	0.03	0.06	0.26	-0.11
1074	71.37	0.01	0.00	0.01	-0.03



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 78 de 126
	ESTE - OESTE		1	1	

2078	133.07	0.46	1.99	8.82	-8.38
2079	137.36	1.95	-1.92	-8.52	-1.98
2080	133.05	1.95	2.00	8.87	-1.97
2081	142.36	0.98	-6.46	-28.67	-6.16
2082	128.07	0.98	6.52	28.95	-6.14
2083	142.35	1.43	-6.46	-28.65	-4.22
2084	128.07	1.43	6.53	28.96	-4.21
2085	68.55	0.04	0.02	0.09	-0.15
2086	68.55	-0.62	0.02	0.09	0.56
2087	71.18	0.01	3.03	13.33	-0.04
2088	65.92	0.01	-3.60	-13.70	-0.03
2089	71.61	-0.98	-2.56	-11.36	-4.27
2090	65.95	-0.98	2.58	11.46	-4.26
2091	71.57	0.99	-2.55	-11.30	4.19
2092	65.91	0.99	2.60	11.53	4.20
2093	78.20	-0.28	-8.56	-37.97	-1.26
2094	59.33	-0.27	8.59	38.12	-1.23
2095	78.19	0.29	-8.55	-37.95	1.16
2096	59.32	0.29	8.60	38.14	1.19
2097	71.19	-0.98	-2.56	-11.36	-4.27
2098	65.53	-0.98	2.59	11.47	-4.26
2099	71.15	0.99	-2.54	-11.29	4.19
2100	65.49	0.99	2.60	11.54	4.20
2101	77.78	-0.28	-8.55	-37.97	-1.26
2102	58.91	-0.27	8.59	38.13	-1.23
2103	77.77	0.29	-8.55	-37.95	1.16
2104	58.90	0.29	8.60	38.15	1.19
2105	187.62	0.02	0.05	0.22	-0.09
2106	62.97	0.01	0.00	0.01	-0.03

Ejes G al M. Apoyo 12



LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment (kNm)	Moment (kNm)
2001	112.01	0.01	-0.03	-0.15	-0.06
2002	133.01	0.02	-0.03	-0.15	-0.07
2003	112.01	0.04	-0.03	-0.15	-0.17
2004	112.01	-0.61	-0.03	-0.15	0.54
2005	109.38	0.01	3.58	13.63	-0.06
2006	114.65	0.01	-3.04	-13.40	-0.06
2007	127.76	0.04	-0.03	-0.15	-0.15
2008	127.76	-0.45	-0.03	-0.15	0.38
2009	125.79	0.02	2.68	10.18	-0.06
2010	129.74	0.02	-2.29	-10.09	-0.07
2011	115.06	-0.92	-2.61	-11.60	-4.07
2012	109.40	-0.92	2.53	11.23	-4.07
2013	115.02	0.95	-2.60	-11.53	3.95
2014	109.36	0.95	2.55	11.30	3.96
2015	121.65	-0.27	-8.61	-38.20	-1.27

LC	Axial (kN)	Corte X (kN)	Corte Z (kN)	Moment (kNm)	Moment (kNm)
1001	156.82	0.02	-0.05	-0.20	-0.08
1002	168.02	0.02	-0.04	-0.18	-0.08
1003	134.42	0.04	-0.04	-0.17	-0.16
1004	134.42	-0.48	-0.04	-0.17	0.41
1005	132.31	0.02	2.85	10.84	-0.07
1006	136.52	0.02	-2.45	-10.78	-0.07
1007	155.42	0.06	-0.04	-0.18	-0.26
1008	155.42	-0.98	-0.04	-0.18	0.88
1009	151.20	0.02	5.74	21.86	-0.08
1010	159.63	0.02	-4.86	-21.39	-0.08
1011	159.77	-1.32	-3.73	-16.53	-5.81
1012	151.68	-1.31	3.62	16.08	-5.80
1013	159.72	1.35	-3.71	-16.44	5.65
1014	151.63	1.35	3.64	16.18	5.66
1015	169.18	-0.39	-12.29	-54.54	-1.82

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 79 de 126
	ESTE - OESTE				1	1	



2016	102.78	-0.26	8.54	37.89	-1.25
2017	121.64	0.29	-8.61	-38.18	1.13
2018	102.77	0.30	8.54	37.91	1.16
2019	114.66	-0.92	-2.61	-11.59	-4.07
2020	109.00	-0.92	2.53	11.24	-4.06
2021	114.63	0.95	-2.60	-11.52	3.95
2022	108.97	0.95	2.55	11.31	3.96
2023	121.25	-0.27	-8.61	-38.20	-1.27
2024	102.38	-0.26	8.54	37.89	-1.25
2025	121.24	0.29	-8.60	-38.18	1.13
2026	102.37	0.30	8.54	37.91	1.16
2027	130.08	-0.69	-2.00	-8.87	-3.10
2028	125.77	-0.69	1.92	8.52	-3.10
2029	130.06	0.72	-1.99	-8.82	2.97
2030	125.74	0.72	1.93	8.57	2.97
2031	135.06	-0.20	-6.53	-28.96	-0.99
2032	120.77	-0.20	6.46	28.65	-0.97
2033	135.05	0.23	-6.52	-28.95	0.84
2034	120.77	0.23	6.46	28.67	0.86
2035	129.78	-0.69	-2.00	-8.87	-3.10
2036	125.47	-0.69	1.92	8.53	-3.10
2037	129.76	0.72	-1.99	-8.81	2.97
2038	125.44	0.72	1.93	8.58	2.98
2039	134.76	-0.20	-6.53	-28.96	-0.99
2040	120.47	-0.20	6.46	28.65	-0.97
2041	134.75	0.23	-6.52	-28.94	0.84
2042	120.46	0.23	6.46	28.67	0.86
2043	116.64	1.16	-0.03	-0.15	-4.97
2044	137.64	1.16	-0.03	-0.15	-4.98
2045	116.64	1.18	-0.03	-0.15	-5.08
2046	116.64	0.53	-0.03	-0.15	-4.37
2047	114.00	1.15	3.58	13.63	-4.96
2048	119.27	1.16	-3.04	-13.40	-4.97
2049	132.39	1.18	-0.03	-0.15	-5.06
2050	132.39	0.69	-0.03	-0.15	-4.52
2051	130.41	1.16	2.68	10.18	-4.97
2052	134.36	1.16	-2.29	-10.09	-4.97
2053	119.68	0.22	-2.61	-11.60	-8.98
2054	114.02	0.22	2.53	11.23	-8.97
2055	119.65	2.09	-2.60	-11.53	-0.96
2056	113.99	2.09	2.55	11.30	-0.95
2057	126.28	0.87	-8.61	-38.20	-6.18
2058	107.41	0.88	8.54	37.89	-6.16
2059	126.27	1.43	-8.61	-38.18	-3.78
2060	107.40	1.44	8.54	37.91	-3.75
2061	119.29	0.22	-2.61	-11.59	-8.98
2062	113.63	0.22	2.53	11.24	-8.97
2063	119.25	2.09	-2.60	-11.52	-0.96

1016	142.23	-0.38	12.20	54.16	-1.78
1017	169.17	0.41	-12.29	-54.51	1.62
1018	142.21	0.42	12.21	54.19	1.66
1019	159.20	-1.32	-3.73	-16.53	-5.81
1020	151.11	-1.31	3.62	16.09	-5.80
1021	159.15	1.35	-3.70	-16.43	5.65
1022	151.06	1.35	3.65	16.18	5.66
1023	168.62	-0.39	-12.29	-54.54	-1.81
1024	141.66	-0.38	12.20	54.17	-1.78
1025	168.60	0.41	-12.28	-54.51	1.62
1026	141.65	0.42	12.21	54.19	1.66
1027	163.29	1.62	-0.05	-0.20	-6.95
1028	173.57	1.39	-0.04	-0.18	-5.97
1029	139.97	1.41	-0.04	-0.18	-6.05
1030	139.97	0.89	-0.04	-0.18	-5.48
1031	137.86	1.39	2.85	10.84	-5.96
1032	142.07	1.39	-2.45	-10.78	-5.96
1033	160.97	1.43	-0.04	-0.18	-6.15
1034	160.97	0.39	-0.04	-0.18	-5.01
1035	156.75	1.39	5.74	21.86	-5.97
1036	165.18	1.39	-4.86	-21.39	-5.97
1037	165.32	0.05	-3.73	-16.53	-11.70
1038	157.23	0.06	3.62	16.08	-11.69
1039	165.27	2.72	-3.71	-16.44	-0.25
1040	157.18	2.72	3.64	16.18	-0.24
1041	174.73	0.98	-12.29	-54.54	-7.71
1042	147.78	0.99	12.20	54.16	-7.67
1043	174.72	1.78	-12.29	-54.52	-4.27
1044	147.76	1.79	12.21	54.19	-4.23
1045	164.75	0.06	-3.73	-16.53	-11.70
1046	156.66	0.06	3.62	16.09	-11.69
1047	164.70	2.72	-3.70	-16.43	-0.24
1048	156.61	2.72	3.65	16.18	-0.23
1049	174.17	0.99	-12.29	-54.54	-7.70
1050	147.21	0.99	12.20	54.16	-7.67
1051	174.15	1.78	-12.28	-54.51	-4.27
1052	147.20	1.79	12.21	54.19	-4.23
1053	100.81	0.06	-0.03	-0.13	-0.24
1054	100.81	-0.99	-0.03	-0.13	0.91
1055	96.60	0.01	5.76	21.91	-0.05
1056	105.03	0.01	-4.85	-21.34	-0.06
1057	105.16	-1.32	-3.72	-16.49	-5.79
1058	97.08	-1.32	3.63	16.12	-5.78
1059	105.11	1.34	-3.70	-16.39	5.67
1060	97.03	1.35	3.65	16.22	5.68
1061	114.58	-0.39	-12.28	-54.50	-1.79
1062	87.63	-0.38	12.21	54.20	-1.76
1063	114.57	0.41	-12.28	-54.47	1.65

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:				AES N°		3285-G210-635-4523-DC-001
	OBM 3285						
	PLANTA DE SEPARACIÓN DE LIQUIDOS						
	RIO GRANDE						
	FUNDACIONES PARRAL				Ver.	Rev.	Página 80 de 126
	ESTE - OESTE				1	1	

2064	113.59	2.09	2.55	11.31	-0.95
2065	125.88	0.87	-8.61	-38.20	-6.18
2066	107.01	0.88	8.54	37.89	-6.16
2067	125.87	1.43	-8.60	-38.18	-3.77
2068	107.00	1.44	8.54	37.91	-3.75
2069	134.71	0.45	-2.00	-8.87	-8.01
2070	130.40	0.45	1.92	8.52	-8.01
2071	134.68	1.86	-1.99	-8.82	-1.94
2072	130.37	1.86	1.93	8.57	-1.93
2073	139.69	0.94	-6.53	-28.96	-5.90
2074	125.40	0.95	6.46	28.65	-5.88
2075	139.68	1.37	-6.52	-28.95	-4.07
2076	125.39	1.37	6.46	28.67	-4.05
2077	134.41	0.45	-2.00	-8.87	-8.01
2078	130.09	0.45	1.92	8.53	-8.01
2079	134.38	1.86	-1.99	-8.81	-1.94
2080	130.07	1.86	1.93	8.58	-1.93
2081	139.38	0.94	-6.53	-28.96	-5.90
2082	125.10	0.95	6.46	28.65	-5.88
2083	139.38	1.37	-6.52	-28.94	-4.07
2084	125.09	1.37	6.46	28.67	-4.05
2085	67.21	0.04	-0.02	-0.09	-0.15
2086	67.21	-0.62	-0.02	-0.09	0.56
2087	64.57	0.01	3.60	13.69	-0.03
2088	69.84	0.01	-3.03	-13.34	-0.04
2089	70.25	-0.93	-2.60	-11.54	-4.05
2090	64.59	-0.92	2.54	11.29	-4.04
2091	70.22	0.94	-2.59	-11.47	3.97
2092	64.56	0.94	2.56	11.36	3.98
2093	76.85	-0.26	-8.60	-38.15	-1.19
2094	57.98	-0.26	8.55	37.95	-1.17
2095	76.84	0.27	-8.59	-38.13	1.10
2096	57.97	0.28	8.56	37.97	1.12
2097	69.86	-0.93	-2.60	-11.53	-4.05
2098	64.20	-0.92	2.55	11.30	-4.04
2099	69.82	0.94	-2.58	-11.46	3.97
2100	64.16	0.94	2.56	11.36	3.98
2101	76.45	-0.26	-8.60	-38.14	-1.19
2102	57.58	-0.26	8.55	37.95	-1.17
2103	76.44	0.27	-8.59	-38.12	1.10
2104	57.57	0.28	8.56	37.97	1.12
2105	184.80	0.02	-0.05	-0.22	-0.09
2106	62.87	0.01	0.00	-0.01	-0.03

1064	87.61	0.42	12.22	54.23	1.68
1065	104.59	-1.32	-3.72	-16.48	-5.79
1066	96.51	-1.32	3.63	16.13	-5.78
1067	104.55	1.34	-3.69	-16.38	5.67
1068	96.46	1.35	3.66	16.23	5.68
1069	114.01	-0.39	-12.28	-54.49	-1.79
1070	87.06	-0.38	12.22	54.21	-1.75
1071	114.00	0.41	-12.27	-54.46	1.65
1072	87.04	0.42	12.22	54.24	1.68
1073	217.56	0.03	-0.06	-0.26	-0.11
1074	71.24	0.01	0.00	-0.01	-0.04

<div></div> <div></div>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1	Página 81 de 126

2.2. PARÁMETROS DE DISEÑO

Las características de los materiales, datos geotécnicos y factores de seguridad ingresados en el programa fueron los mostrados en los puntos 1.5 al 1.9 de esta memoria de cálculo.

Adicionalmente se agregó una sobrecarga de 5 kN/m².

El pedestal fue tomado en cuenta como macizo, con una sección de 0.90 x 0.90 m para considerar una pared del tintero de 0.20 m y un espacio entre la columna y el tintero de 0.05 m. Esto con la finalidad de que el programa estime el peso total.

La geometría considerada se muestra a continuación:

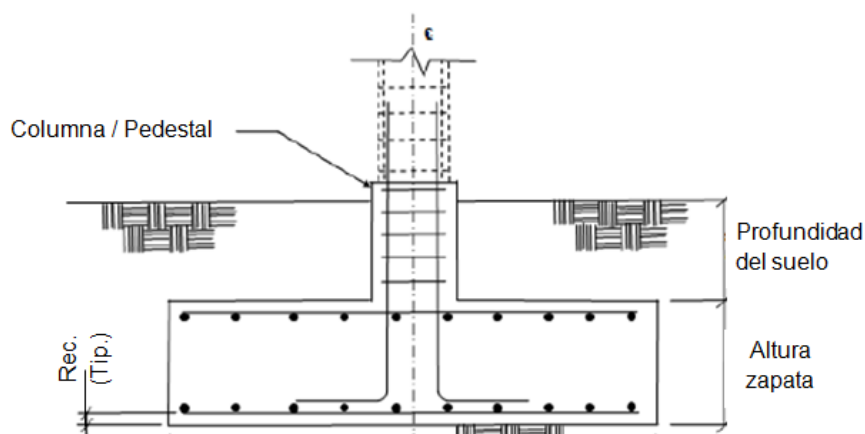


Figura 3. Elevación de fundación

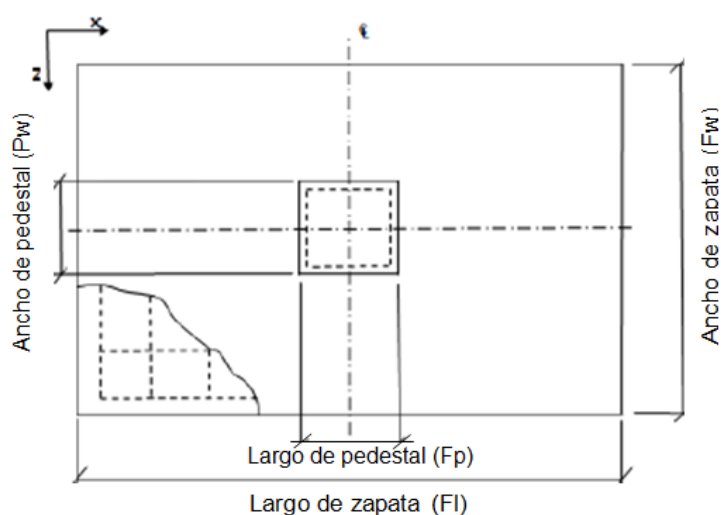




Figura 4. Planta de fundación

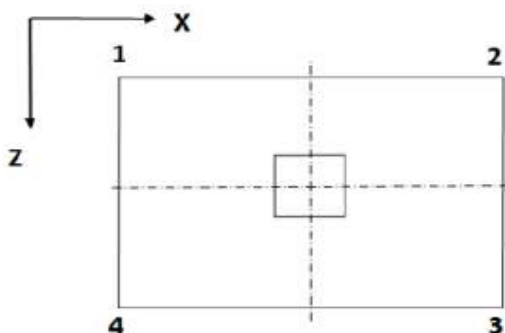
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	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 82 de 126

	Tipo de fund.	Fw (m)	FI (m)	Fh (m)	Pw (m)	PI (m)	Ph (m)	Prof. Suelo (m)
Ejes 22 al 30	F1	2.10	2.10	0.40	0.90	0.90	1.40	1.40
	F2	2.20	2.80	0.40				
	F5	2.40	2.40	0.40	0.90	0.90	1.90	1.90
Ejes G al M	F3	2.10	2.10	0.40	0.90	0.90	1.40	1.40
	F4	2.20	2.80	0.40				

La fundación F-5 fue profundaizada para evitar interferencia con tanquillas, la cual requería una profundidad libre mínima de 1.8 m desde el nivel de terreno.

3. ESFUERZO EN EL SUELO

Para las dimensiones presentadas se obtuvieron los siguientes esfuerzos en el terreno:





Ejes 22 al 30. Apoyo 1 (F1)

Comb. De Carga	Esfuerzo esquina 1 (q_1) (kN/m ²)	Esfuerzo esquina 2 (q_2) (kN/m ²)	Esfuerzo esquina 3 (q_3) (kN/m ²)	Esfuerzo esquina 4 (q_4) (kN/m ²)
2017	99.72	98.59	38.30	39.42
2057	95.35	105.52	45.12	34.94
2058	31.10	41.24	101.72	91.57
2018	35.47	34.31	94.90	96.06

Ejes 22 al 30. Apoyo 2 (F1)

Comb. De Carga	Esfuerzo esquina 1 (q_1) (kN/m ²)	Esfuerzo esquina 2 (q_2) (kN/m ²)	Esfuerzo esquina 3 (q_3) (kN/m ²)	Esfuerzo esquina 4 (q_4) (kN/m ²)
2017	99.97	99.18	38.69	39.49
2057	95.78	105.59	44.99	35.19
2058	31.53	41.30	101.59	91.82
2018	35.72	34.89	95.30	96.12

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO: OBM 3285 PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE		AES A N° 		3285-G210-635-4523-DC-001
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 83 de 126

Ejes 22 al 30. Apoyo 3 (F1)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	129.61	128.49	26.75	27.88
2057	125.98	136.07	34.17	24.07
2058	16.13	26.20	128.10	118.04
2018	19.77	18.61	120.68	121.84

Ejes 22 al 30. Apoyo 4 (F1)



Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	129.76	128.97	27.04	27.83
2057	126.20	135.93	33.84	24.11
2058	16.35	26.05	127.77	118.07
2018	19.91	19.09	120.98	121.80

Ejes 22 al 30. Apoyo 5 (F2)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	122.58	95.03	19.36	46.92
2059	64.14	128.68	52.94	0.00
2060	0.00	46.55	123.95	55.80
2012	95.01	29.06	51.43	117.37

Ejes 22 al 30. Apoyo 6 (F2)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	119.58	96.83	21.04	43.79
2059	67.82	126.91	51.24	0.00
2060	0.00	45.06	121.65	59.44
2016	35.71	15.26	90.69	111.14

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 84 de 126
	ESTE - OESTE		1	1	

Ejes 22 al 30. Apoyo 7 (F2)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2057	106.27	110.95	46.23	41.56
2057	106.27	110.95	46.23	41.56
2058	36.69	41.34	105.93	101.28
2058	36.69	41.34	105.93	101.28

Ejes 22 al 30. Apoyo 8 (F2)



Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2057	105.62	110.13	45.29	40.78
2057	105.62	110.13	45.29	40.78
2058	36.04	40.52	104.99	100.50
2058	36.04	40.52	104.99	100.50

Ejes 22 al 30. Apoyo 9 (F1)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	127.89	126.87	27.32	28.34
2057	125.10	133.71	34.10	25.48
2058	17.96	26.54	126.28	117.69
2018	20.75	19.70	119.50	120.55

Ejes 22 al 30. Apoyo 10 (F1)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	128.35	127.63	27.89	28.61
2057	125.56	133.85	34.05	25.76
2058	18.42	26.68	126.22	117.97
2018	21.20	20.46	120.07	120.82

<div></div> <div> Corporación <small>La fuerza que transforma Bolivia</small></div>	PROYECTO:	OBM 3285		AESA N°	3285-G210-635-4523-DC-001
	PLANTA DE SEPARACIÓN DE LIQUIDOS	RIO GRANDE			
	FUNDACIONES PARRAL	ESTE - OESTE	Ver.	Rev.	Página 85 de 126
		1	1		

Ejes 22 al 30. Apoyo 11 (F2)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	92.34	92.86	40.68	40.16
2015	92.34	92.86	40.68	40.16
2016	36.27	36.78	88.90	88.39
2016	36.27	36.78	88.90	88.39

Ejes 22 al 30. Apoyo 12 (F2)



Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	91.98	92.31	40.00	39.67
2015	91.98	92.31	40.00	39.67
2016	35.91	36.23	88.22	87.90
2016	35.91	36.23	88.22	87.90

Ejes 22 al 30. Apoyo 13 (F2)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2011	108.13	59.76	42.01	90.37
2059	60.66	145.52	86.89	2.02
2060	0.00	81.95	141.06	53.89
2012	88.38	40.69	58.25	105.94

Ejes 22 al 30. Apoyo 14 (F2)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	100.87	97.45	38.49	41.91
2059	64.37	143.89	85.08	5.56
2060	0.00	80.32	139.23	57.43
2012	76.89	47.18	64.56	94.27

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 86 de 126
	ESTE - OESTE		1	1	

Ejes 22 al 30. Apoyo 15 (F5)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2033	169.06	136.76	20.80	53.10
2073	166.81	141.91	25.87	50.77
2058	37.41	37.50	117.16	117.07
2018	39.80	32.17	111.93	119.56

Ejes 22 al 30. Apoyo 16 (F1)



Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	139.04	138.15	16.71	17.60
2057	135.44	145.08	23.49	13.85
2058	0.70	10.32	137.40	127.78
2018	4.31	3.38	130.61	131.53

Ejes 22 al 30. Apoyo 17 (F5)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2033	128.56	128.19	54.23	54.60
2073	125.79	132.88	58.86	51.78
2074	49.56	56.63	120.51	113.44
2034	52.33	51.94	115.87	116.26

Ejes 22 al 30. Apoyo 18 (F1)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	136.69	135.80	9.04	9.93
2057	132.48	142.20	15.35	5.63
2058	0.00	0.00	128.51	118.71
2018	0.00	0.00	122.15	123.07

<div></div> <div></div>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 87 de 126

Para el grupo de fundaciones F1 Esf.max = 145.1 kN/m² < 180 kN/m² OK

Para el grupo de fundaciones F2 Esf.max = 145.5 kN/m² < 180 kN/m² OK

Para el grupo de fundaciones F5 Esf.max = 169.1 kN/m² < 180 kN/m² OK

En algunos apoyos se muestra Esf. = 0, lo cual indica que hay tracción para esa combinación de carga. Esto se controló colocando la condición de mantener un área mínima de contacto de 75%.

Ejes G al M. Apoyo 1 (F3)



Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	106.41	105.36	35.58	36.64
2057	101.00	111.23	41.40	31.17
2058	26.02	36.24	106.53	96.32
2018	31.44	30.37	100.72	101.79

Ejes G al M. Apoyo 2 (F3)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	106.01	105.00	34.69	35.70
2057	100.66	110.46	40.10	30.30
2058	25.69	35.47	105.23	95.49
2018	31.03	30.02	99.83	100.85

Ejes G al M. Apoyo 3 (F3)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	130.26	129.22	24.25	25.28
2057	125.58	135.60	30.55	20.54
2058	12.81	22.80	128.29	118.29
2018	17.48	16.43	121.99	123.04

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 88 de 126
	ESTE - OESTE		1	1	

Ejes G al M. Apoyo 4 (F3)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	130.1	129.12	23.63	24.62
2057	125.42	135.01	29.44	19.86
2058	12.65	22.22	127.16	117.59
2018	17.34	16.34	121.35	122.36

Ejes G al M. Apoyo 5 (F4)



Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
99.75	83.55	33.49	49.68	99.75
55.52	99.75	49.84	5.61	55.52
1.95	47.07	97.49	52.37	1.95
81.76	45.12	60.09	96.73	81.76

Ejes G al M. Apoyo 6 (F4)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	99.31	83.65	33.22	48.88
2059	57.08	99.18	48.91	6.81
2060	3.52	46.50	96.56	53.58
2016	45.75	30.98	80.88	95.65

Ejes G al M. Apoyo 7 (F4)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	93.99	91.26	39.36	42.09
2059	69.20	127.65	75.91	17.46
2060	13.70	73.03	125.29	65.95
2016	38.48	36.65	88.74	90.57

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 89 de 126
	ESTE - OESTE		1	1	

Ejes G al M. Apoyo 8 (F4)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2015	93.61	91.30	39.03	41.35
2059	69.80	125.87	73.76	17.69
2060	14.29	71.25	123.14	66.18
2016	38.11	36.68	88.41	89.84

Ejes G al M. Apoyo 9 (F3)



Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	123.96	123.13	27.88	28.70
2057	120.29	130.55	35.22	24.95
2058	19.05	29.29	125.07	114.83
2018	22.72	21.88	117.73	118.57

Ejes G al M. Apoyo 10 (F3)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	123.81	123.04	27.25	28.019
2057	120.13	129.96	34.09	24.26
2058	18.89	28.71	123.95	114.13
2018	22.57	21.78	117.10	117.89

Ejes G al M. Apoyo 11 (F3)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	105.24	104.40	35.39	36.23
2057	100.82	111.30	42.25	31.77
2058	27.26	37.72	107.26	96.80
2018	31.68	30.82	100.40	101.25

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 90 de 126
	ESTE - OESTE		1	1	

Ejes G al M. Apoyo 12 (F3)

Comb. De Carga	Esfuerzo esquina 1 (q ₁) (kN/m ²)	Esfuerzo esquina 2 (q ₂) (kN/m ²)	Esfuerzo esquina 3 (q ₃) (kN/m ²)	Esfuerzo esquina 4 (q ₄) (kN/m ²)
2017	104.98	104.18	34.64	35.43
2057	100.63	110.67	41.09	31.04
2058	27.06	37.09	106.09	96.07
2018	31.41	30.60	99.64	100.45

Para el grupo de fundaciones F3 Esf.max = 135.6 kN/m² < 180 kN/m² OK

Para el grupo de fundaciones F4 Esf.max = 127.7 kN/m² < 180 kN/m² OK

4. ESTABILIDAD AL DESLIZAMIENTO Y AL VOLCAMIENTO

Estabilidad al deslizamiento

Fuerza estabilizante Fest. = Fz + Peso fundación + Peso terreno + Sobrecarga

Fuerza desestabilizante Fdesl. = Fuerza horizontal en el sentido analizado

$$FS_{desl} = \frac{F_{est}}{F_{desl}}$$

Estabilidad al volcamiento

Momento estabilizante

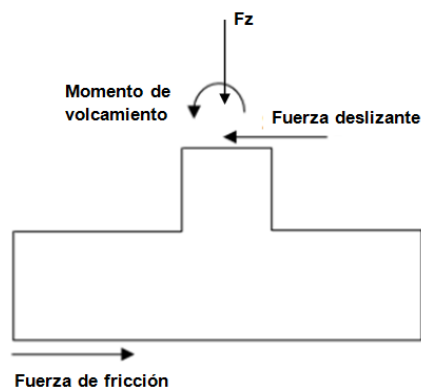
Mest. = Momento en el borde de la zapata producido por la acción de la carga vertical y peso de los elementos



Momento de volcamiento

Mvol = Momento en la dirección analizada + momento en la base de la fundación producido por cargas horizontales

$$FS_{vol} = \frac{M_{est}}{M_{vol}}$$

A continuación se presentan los factores más desfavorables para cada fundación:



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AESA N°	3285-G210-635-4523-DC-001
	OBM 3285		
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE		
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1
			Página 91 de 126

Ejes 22 al 30. Apoyo 1

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 2.329 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 149.239 \text{ kN}$
 $FS_{desl} = 64.09$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 46.732 \text{ kNm}$
 Momento estabilizante $M_{est.} = 184.914 \text{ kNm}$
 $FS_{vol} = 3.96$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 7.501 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 88.056 \text{ kN}$
 $FS_{desl} = 11.74$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -10.046 \text{ kNm}$
 Momento estabilizante $M_{est.} = 313.482 \text{ kNm}$
 $FS_{vol} = 31.21$

Ejes 22 al 30. Apoyo 2

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 1.966 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 149.591 \text{ kN}$
 $FS_{desl} = 76.10$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 46.646 \text{ kNm}$
 Momento estabilizante $M_{est.} = 185.835 \text{ kNm}$
 $FS_{vol} = 3.98$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 92 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 7.487 \text{ kN}$
Fuerza estabilizante $F_{est.} = 88.494 \text{ kN}$
 $FS_{desl} = 11.82$
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -9.100 \text{ kNm}$
Momento estabilizante $M_{est.} = 314.222 \text{ kNm}$
 $FS_{vol} = 34.53$



Ejes 22 al 30. Apoyo 3

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
Fuerza desestabilizante $F_{desl.} = 2.315 \text{ kN}$
Fuerza estabilizante $F_{est.} = 164.854 \text{ kN}$
 $FS_{desl} = 71.23$
Comb. de carga crítica al Volcamiento X = 2104
Momento de volcamiento $M_{vol.} = 78.754 \text{ kNm}$
Momento estabilizante $M_{est.} = 194.839 \text{ kNm}$
 $FS_{vol} = 2.47$

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 13.217 \text{ kN}$
Fuerza estabilizante $F_{est.} = 92.782 \text{ kN}$
 $FS_{desl} = 7.02$
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -9.977 \text{ kNm}$
Momento estabilizante $M_{est.} = 346.304 \text{ kNm}$
 $FS_{vol} = 34.71$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 93 de 126
		1	1	

Ejes 22 al 30. Apoyo 4

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 1.953 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 164.736 \text{ kN}$
 $FS_{desl} = 84.36$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 78.667 \text{ kNm}$
 Momento estabilizante $M_{est.} = 195.455 \text{ kNm}$
 $FS_{vol} = 2.49$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 13.203 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 93.076 \text{ kN}$
 $FS_{desl} = 7.05$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -9.034 \text{ kNm}$
 Momento estabilizante $M_{est.} = 346.060 \text{ kNm}$
 $FS_{vol} = 38.31$

Ejes 22 al 30. Apoyo 5

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 84.697 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 145.142 \text{ kN}$
 $FS_{desl} = 1.71$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 85.559 \text{ kNm}$
 Momento estabilizante $M_{est.} = 230.347 \text{ kNm}$
 $FS_{vol} = 2.69$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 94 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104

Fuerza desestabilizante $F_{desl.} = 14.145 \text{ kN}$

Fuerza estabilizante $F_{est.} = 104.705 \text{ kN}$

FS_{desl} = 7.40

Comb. de carga crítica al Volcamiento Z = 2064

Momento de volcamiento $M_{vol.} = -151.949 \text{ kNm}$

Momento estabilizante $M_{est.} = 406.391 \text{ kNm}$

FS_{vol} = 2.68

Ejes 22 al 30. Apoyo 6

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064

Fuerza desestabilizante $F_{desl.} = 69.975 \text{ kN}$

Fuerza estabilizante $F_{est.} = 154.224 \text{ kN}$

FS_{desl} = 2.20

Comb. de carga crítica al Volcamiento X = 2104

Momento de volcamiento $M_{vol.} = 85.472 \text{ kNm}$

Momento estabilizante $M_{est.} = 236.942 \text{ kNm}$

FS_{vol} = 2.77

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104

Fuerza desestabilizante $F_{desl.} = 14.131 \text{ kN}$

Fuerza estabilizante $F_{est.} = 107.703 \text{ kN}$



FS_{desl} = 7.62

Comb. de carga crítica al Volcamiento Z = 2064

Momento de volcamiento $M_{vol.} = -127.025 \text{ kNm}$

Momento estabilizante $M_{est.} = 431.818 \text{ kNm}$

FS_{vol} = 3.40

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AESA N°	3285-G210-635-4523-DC-001
	OBM 3285		
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE		
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1
			Página 95 de 126

Ejes 22 al 30. Apoyo 7

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2100
 Fuerza desestabilizante $F_{desl.} = 1.050 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 86.283 \text{ kN}$
 $FS_{desl} = 82.16$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 73.190 \text{ kNm}$
 Momento estabilizante $M_{est.} = 225.934 \text{ kNm}$
 $FS_{vol} = 3.09$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 11.722 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 102.699 \text{ kN}$
 $FS_{desl} = 8.76$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -8.585 \text{ kNm}$
 Momento estabilizante $M_{est.} = 688.809 \text{ kNm}$
 $FS_{vol} = 80.24$

Ejes 22 al 30. Apoyo 8

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 1.675 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 194.438 \text{ kN}$
 $FS_{desl} = 116.07$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 73.104 \text{ kNm}$
 Momento estabilizante $M_{est.} = 232.829 \text{ kNm}$
 $FS_{vol} = 3.19$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 96 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 11.708 \text{ kN}$
Fuerza estabilizante $F_{est.} = 105.833 \text{ kN}$
FS_{desl} = 9.04
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -7.767 \text{ kNm}$
Momento estabilizante $M_{est.} = 664.129 \text{ kNm}$
FS_{vol} = 85.50



Ejes 22 al 30. Apoyo 9

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
Fuerza desestabilizante $F_{desl.} = 1.986 \text{ kN}$
Fuerza estabilizante $F_{est.} = 164.484 \text{ kN}$
FS_{desl} = 82.84
Comb. de carga crítica al Volcamiento X = 2104
Momento de volcamiento $M_{vol.} = 76.996 \text{ kNm}$
Momento estabilizante $M_{est.} = 194.950 \text{ kNm}$
FS_{vol} = 2.53

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 12.689 \text{ kN}$
Fuerza estabilizante $F_{est.} = 92.835 \text{ kN}$
FS_{desl} = 7.32
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -8.532 \text{ kNm}$
Momento estabilizante $M_{est.} = 345.451 \text{ kNm}$
FS_{vol} = 40.49

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285 PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1	Página 97 de 126

Ejes 22 al 30 Apoyo 10

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 1.665 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 164.918 \text{ kN}$
 $FS_{desl} = 99.06$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 76.910 \text{ kNm}$
 Momento estabilizante $M_{est.} = 196.351 \text{ kNm}$
 $FS_{vol} = 2.55$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 12.675 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 93.502 \text{ kN}$
 $FS_{desl} = 7.38$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -7.697 \text{ kNm}$
 Momento estabilizante $M_{est.} = 346.363 \text{ kNm}$
 $FS_{vol} = 45.00$

Ejes 22 al 30. Apoyo 11

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 1.966 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 136.573 \text{ kN}$
 $FS_{desl} = 69.47$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 59.068 \text{ kNm}$
 Momento estabilizante $M_{est.} = 229.048 \text{ kNm}$
 $FS_{vol} = 3.88$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 98 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 9.404 \text{ kN}$
Fuerza estabilizante $F_{est.} = 104.115 \text{ kN}$
 $FS_{desl} = 11.07$
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -8.401 \text{ kNm}$
Momento estabilizante $M_{est.} = 553.738 \text{ kNm}$
 $FS_{vol} = 65.92$



Ejes 22 al 30. Apoyo 12

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
Fuerza desestabilizante $F_{desl.} = 1.640 \text{ kN}$
Fuerza estabilizante $F_{est.} = 146.024 \text{ kN}$
 $FS_{desl} = 89.06$
Comb. de carga crítica al Volcamiento X = 2104
Momento de volcamiento $M_{vol.} = 58.980 \text{ kNm}$
Momento estabilizante $M_{est.} = 236.095 \text{ kNm}$
 $FS_{vol} = 4.00$

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 9.389 \text{ kN}$
Fuerza estabilizante $F_{est.} = 107.318 \text{ kN}$
 $FS_{desl} = 11.43$
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -7.551 \text{ kNm}$
Momento estabilizante $M_{est.} = 530.001 \text{ kNm}$
 $FS_{vol} = 70.19$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AESA N°	3285-G210-635-4523-DC-001
	OBM 3285		
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE		
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1
			Página 100 de 126

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 10.731 \text{ kN}$
Fuerza estabilizante $F_{est.} = 109.326 \text{ kN}$

FS_{desl} = 10.19

Comb. de carga crítica al Volcamiento Z = 2064

Momento de volcamiento $M_{vol.} = -156.407 \text{ kNm}$
Momento estabilizante $M_{est.} = 568.244 \text{ kNm}$

FS_{vol} = 3.63

Ejes 22 al 30. Apoyo 15

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2106
Fuerza desestabilizante $F_{desl.} = -13.443 \text{ kN}$
Fuerza estabilizante $F_{est.} = 234.000 \text{ kN}$

FS_{desl} = 17.41

Comb. de carga crítica al Volcamiento X = 2104

Momento de volcamiento $M_{vol.} = 96.809 \text{ kNm}$
Momento estabilizante $M_{est.} = 314.611 \text{ kNm}$

FS_{vol} = 3.25

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z



Comb. de carga crítica al Deslizamiento Z = 2039
Fuerza desestabilizante $F_{desl.} = -34.390 \text{ kN}$
Fuerza estabilizante $F_{est.} = 273.094 \text{ kN}$

FS_{desl} = 7.94

Comb. de carga crítica al Volcamiento Z = 2106

Momento de volcamiento $M_{vol.} = 46.149 \text{ kNm}$
Momento estabilizante $M_{est.} = 561.590 \text{ kNm}$

FS_{vol} = 12.17

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 101 de 126
		1	1	

Ejes 22 al 30. Apoyo 16

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 1.941 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 159.781 \text{ kN}$
 $FS_{desl} = 82.33$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 97.366 \text{ kNm}$
 Momento estabilizante $M_{est.} = 184.571 \text{ kNm}$
 $FS_{vol} = 1.90$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 16.299 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 87.892 \text{ kN}$
 $FS_{desl} = 5.39$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -8.967 \text{ kNm}$
 Momento estabilizante $M_{est.} = 335.756 \text{ kNm}$
 $FS_{vol} = 37.44$

Ejes 22 al 30. Apoyo 17

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 2.352 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 215.481 \text{ kN}$
 $FS_{desl} = 91.63$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 104.498 \text{ kNm}$
 Momento estabilizante $M_{est.} = 290.984 \text{ kNm}$
 $FS_{vol} = 2.79$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 102 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 15.798 \text{ kN}$
Fuerza estabilizante $F_{est.} = 121.245 \text{ kN}$
FS_{desl} = 7.68
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -9.998 \text{ kNm}$
Momento estabilizante $M_{est.} = 517.558 \text{ kNm}$
FS_{vol} = 51.77



Ejes 22 al 30. Apoyo 18

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
Fuerza desestabilizante $F_{desl.} = 1.953 \text{ kN}$
Fuerza estabilizante $F_{est.} = 144.550 \text{ kN}$
FS_{desl} = 74.00
Comb. de carga crítica al Volcamiento X = 2104
Momento de volcamiento $M_{vol.} = 96.513 \text{ kNm}$
Momento estabilizante $M_{est.} = 162.908 \text{ kNm}$
FS_{vol} = 1.69

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 15.780 \text{ kN}$
Fuerza estabilizante $F_{est.} = 77.577 \text{ kN}$
FS_{desl} = 4.92
Comb. de carga crítica al Volcamiento Z = 2062
Momento de volcamiento $M_{vol.} = -9.032 \text{ kNm}$
Momento estabilizante $M_{est.} = 303.915 \text{ kNm}$
FS_{vol} = 33.65

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	OBM 3285		
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE		
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1
			Página 103 de 126

Ejes G al M. Apoyo 1

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 2.155 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 149.664 \text{ kN}$
 $FS_{desl} = 69.46$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 54.218 \text{ kNm}$
 Momento estabilizante $M_{est.} = 186.134 \text{ kNm}$
 $FS_{vol} = 3.43$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 8.649 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 88.637 \text{ kN}$
 $FS_{desl} = 10.25$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -9.604 \text{ kNm}$
 Momento estabilizante $M_{est.} = 314.324 \text{ kNm}$
 $FS_{vol} = 32.73$

Ejes G al M. Apoyo 2

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 2.055 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 147.866 \text{ kN}$
 $FS_{desl} = 71.95$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 53.971 \text{ kNm}$
 Momento estabilizante $M_{est.} = 184.345 \text{ kNm}$
 $FS_{vol} = 3.42$

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	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 104 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104

Fuerza desestabilizante $F_{desl.} = 8.609 \text{ kN}$

Fuerza estabilizante $F_{est.} = 87.785 \text{ kN}$

FS_{desl} = 10.20

Comb. de carga crítica al Volcamiento Z = 2062

Momento de volcamiento $M_{vol.} = -9.182 \text{ kNm}$

Momento estabilizante $M_{est.} = 310.549 \text{ kNm}$

FS_{vol} = 33.82

Ejes G al M. Apoyo 3

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064

Fuerza desestabilizante $F_{desl.} = 2.112 \text{ kN}$

Fuerza estabilizante $F_{est.} = 160.936 \text{ kN}$

FS_{desl} = 76.19

Comb. de carga crítica al Volcamiento X = 2104

Momento de volcamiento $M_{vol.} = 81.395 \text{ kNm}$

Momento estabilizante $M_{est.} = 193.666 \text{ kNm}$

FS_{vol} = 2.38

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104

Fuerza desestabilizante $F_{desl.} = 13.964 \text{ kN}$

Fuerza estabilizante $F_{est.} = 92.224 \text{ kN}$



FS_{desl} = 6.60

Comb. de carga crítica al Volcamiento Z = 2062

Momento de volcamiento $M_{vol.} = -9.406 \text{ kNm}$

Momento estabilizante $M_{est.} = 338.057 \text{ kNm}$

FS_{vol} = 35.94

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	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 105 de 126
		1	1	

Ejes G al M. Apoyo 4

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 2.014 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 159.511 \text{ kN}$
 $FS_{desl} = 79.22$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 81.140 \text{ kNm}$
 Momento estabilizante $M_{est.} = 192.570 \text{ kNm}$
 $FS_{vol} = 2.37$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 13.922 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 91.702 \text{ kN}$
 $FS_{desl} = 6.59$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -8.988 \text{ kNm}$
 Momento estabilizante $M_{est.} = 335.090 \text{ kNm}$
 $FS_{vol} = 37.28$

Ejes G al M. Apoyo 5

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 52.190 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 136.871 \text{ kN}$
 $FS_{desl} = 2.62$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 56.864 \text{ kNm}$
 Momento estabilizante $M_{est.} = 238.017 \text{ kNm}$
 $FS_{vol} = 4.19$

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	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 106 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 9.155 \text{ kN}$
Fuerza estabilizante $F_{est.} = 108.192 \text{ kN}$
 $FS_{desl} = 11.82$
Comb. de carga crítica al Volcamiento Z = 2064
Momento de volcamiento $M_{vol.} = -94.655 \text{ kNm}$
Momento estabilizante $M_{est.} = 383.231 \text{ kNm}$
 $FS_{vol} = 4.05$



Ejes G al M. Apoyo 6

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
Fuerza desestabilizante $F_{desl.} = 49.594 \text{ kN}$
Fuerza estabilizante $F_{est.} = 138.902 \text{ kN}$
 $FS_{desl} = 2.80$
Comb. de carga crítica al Volcamiento X = 2104
Momento de volcamiento $M_{vol.} = 56.618 \text{ kNm}$
Momento estabilizante $M_{est.} = 238.129 \text{ kNm}$
 $FS_{vol} = 4.21$

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
Fuerza desestabilizante $F_{desl.} = 9.115 \text{ kN}$
Fuerza estabilizante $F_{est.} = 108.243 \text{ kN}$
 $FS_{desl} = 11.88$
Comb. de carga crítica al Volcamiento Z = 2064
Momento de volcamiento $M_{vol.} = -89.994 \text{ kNm}$
Momento estabilizante $M_{est.} = 388.918 \text{ kNm}$
 $FS_{vol} = 4.32$

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	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 107 de 126
		1	1	

Ejes G al M. Apoyo 7

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2100
 Fuerza desestabilizante $F_{desl.} = 29.502 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 91.755 \text{ kN}$
 $FS_{desl} = 3.11$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 58.940 \text{ kNm}$
 Momento estabilizante $M_{est.} = 237.649 \text{ kNm}$
 $FS_{vol} = 4.03$



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 9.585 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 108.024 \text{ kN}$
 $FS_{desl} = 11.27$
 Comb. de carga crítica al Volcamiento Z = 2064
 Momento de volcamiento $M_{vol.} = -115.057 \text{ kNm}$
 Momento estabilizante $M_{est.} = 554.027 \text{ kNm}$
 $FS_{vol} = 4.82$

Ejes G al M. Apoyo 8

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 60.669 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 196.530 \text{ kN}$
 $FS_{desl} = 3.24$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 58.693 \text{ kNm}$
 Momento estabilizante $M_{est.} = 237.759 \text{ kNm}$
 $FS_{vol} = 4.05$

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	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 108 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104

Fuerza desestabilizante $F_{desl.} = 9.545 \text{ kN}$

Fuerza estabilizante $F_{est.} = 108.074 \text{ kN}$

FS_{desl} = 11.32

Comb. de carga crítica al Volcamiento Z = 2064

Momento de volcamiento $M_{vol.} = -110.056 \text{ kNm}$

Momento estabilizante $M_{est.} = 550.273 \text{ kNm}$

FS_{vol} = 5.00

Ejes G al M. Apoyo 9

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064

Fuerza desestabilizante $F_{desl.} = 2.146 \text{ kN}$

Fuerza estabilizante $F_{est.} = 163.016 \text{ kN}$

FS_{desl} = 75.97

Comb. de carga crítica al Volcamiento X = 2104

Momento de volcamiento $M_{vol.} = 73.900 \text{ kNm}$

Momento estabilizante $M_{est.} = 196.989 \text{ kNm}$

FS_{vol} = 2.67

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104

Fuerza desestabilizante $F_{desl.} = 12.523 \text{ kN}$

Fuerza estabilizante $F_{est.} = 93.806 \text{ kN}$



FS_{desl} = 7.49

Comb. de carga crítica al Volcamiento Z = 2062

Momento de volcamiento $M_{vol.} = -9.601 \text{ kNm}$

Momento estabilizante $M_{est.} = 342.435 \text{ kNm}$

FS_{vol} = 35.67

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	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 109 de 126
		1	1	

Ejes G al M. Apoyo 10

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X	=	2064
Fuerza desestabilizante	$F_{desl.}$	= 2.046 kN
Fuerza estabilizante	$F_{est.}$	= 161.589 kN
	FS_{desl}	= 78.96
Comb. de carga crítica al Volcamiento X	=	2104
Momento de volcamiento	$M_{vol.}$	= 73.652 kNm
Momento estabilizante	$M_{est.}$	= 195.906 kNm
	FS_{vol}	= 2.66



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z	=	2104
Fuerza desestabilizante	$F_{desl.}$	= 12.482 kN
Fuerza estabilizante	$F_{est.}$	= 93.290 kN
	FS_{desl}	= 7.47
Comb. de carga crítica al Volcamiento Z	=	2062
Momento de volcamiento	$M_{vol.}$	= -9.179 kNm
Momento estabilizante	$M_{est.}$	= 339.466 kNm
	FS_{vol}	= 36.99

Ejes G al M. Apoyo 11

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X	=	2064
Fuerza desestabilizante	$F_{desl.}$	= 2.189 kN
Fuerza estabilizante	$F_{est.}$	= 151.385 kN
	FS_{desl}	= 69.16
Comb. de carga crítica al Volcamiento X	=	2104
Momento de volcamiento	$M_{vol.}$	= 53.618 kNm
Momento estabilizante	$M_{est.}$	= 186.708 kNm
	FS_{vol}	= 3.48

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 110 de 126
		1	1	

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 8.596 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 88.910 \text{ kN}$
 $FS_{desl} = 10.34$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -9.801 \text{ kNm}$
 Momento estabilizante $M_{est.} = 317.938 \text{ kNm}$
 $FS_{vol} = 32.44$

Ejes G al M. Apoyo 12



Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección X

Comb. de carga crítica al Deslizamiento X = 2064
 Fuerza desestabilizante $F_{desl.} = 2.089 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 149.897 \text{ kN}$
 $FS_{desl} = 71.77$
 Comb. de carga crítica al Volcamiento X = 2104
 Momento de volcamiento $M_{vol.} = 53.371 \text{ kNm}$
 Momento estabilizante $M_{est.} = 185.312 \text{ kNm}$
 $FS_{vol} = 3.47$

Factor de seguridad más desfavorable al Volcamiento y Deslizamiento - Dirección Z

Comb. de carga crítica al Deslizamiento Z = 2104
 Fuerza desestabilizante $F_{desl.} = 8.556 \text{ kN}$
 Fuerza estabilizante $F_{est.} = 88.246 \text{ kN}$
 $FS_{desl} = 10.31$
 Comb. de carga crítica al Volcamiento Z = 2062
 Momento de volcamiento $M_{vol.} = -9.374 \text{ kNm}$
 Momento estabilizante $M_{est.} = 314.815 \text{ kNm}$
 $FS_{vol} = 33.58$

Se observa que en todos los casos $FS_{desl} > 1.5$ OK
 $FS_{vol} > 1.5$ OK

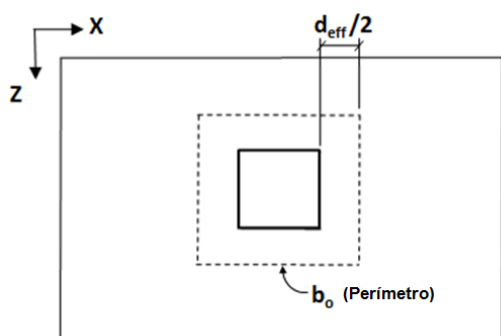
<div></div> <div></div>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 111 de 126

5. DISEÑO DE HORMIGÓN ARMADO

5.1. VERIFICACIÓN DE PUNZONADO EN LA ZAPATA

El corte se verifica según las indicaciones del capítulo 11 del ACI 318.

Los dimensiones del pedestal y altura de zapata son iguales en todas las fundaciones:



Altura total de zapata $D = 0.40 \text{ m}$

Altura efectiva $d_{eff} = D - \text{rec} - 0.025 = 0.325 \text{ m}$ Se resta 1" de manera general para considerar el armado

Para columna rectangular $\beta_c = P_w / P_l = 1.0$

$b_0 = 2 \cdot (P_w + P_l + 2 \cdot d_{eff}) = 4.898 \text{ m}$

Resistencia al corte proporcionada por el concreto

$$V_{c1} = 0.17 \cdot \left(1 + \frac{2}{\beta}\right) \cdot \sqrt{f'_c} \cdot b_0 \cdot d_{eff}$$

$$V_{c2} = 0.083 \cdot \left(\frac{\alpha_s \cdot d}{b_0} + 2\right) \cdot \sqrt{f'_c} \cdot b_0 \cdot d_{eff}$$



$$V_{c3} = 0.33 \cdot \sqrt{f'_c} \cdot b_0 \cdot d_{eff}$$

$$V_{c1} = 3630.139 \text{ kN}$$

$$V_{c2} = 2813.139 \text{ kN}$$

$$V_{c3} = 2420.093 \text{ kN}$$

	Apoyo	Vu (kN)	Comb. Carga	0.75*Vc > Vu
EJES 22 AL 30	1	132.80	1073	OK
	2	134.21	1073	OK
	3	171.45	1073	OK
	4	170.69	1073	OK
	5	207.28	1011	OK
	6	195.16	1073	OK

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 112 de 126
	ESTE - OESTE		1	1	

7	238.06	1037	OK
8	219.25	1037	OK
9	170.88	1073	OK
10	173.80	1073	OK
11	183.94	1011	OK
12	169.51	1073	OK
13	268.41	1037	OK
14	249.83	1037	OK
15	272.55	1073	OK
16	160.52	1073	OK
17	241.17	1073	OK
18	130.11	1073	OK

	Apoyo	Vu (kN)	Comb. Carga	0.75*Vc > Vu
EJES G A L M	1	155.31	1073	OK
	2	150.15	1073	OK
	3	175.99	1073	OK
	4	174.86	1073	OK
	5	181.93	1011	OK
	6	179.01	1011	OK
	7	244.78	1037	OK
	8	237.78	1037	OK
	9	160.78	1073	OK
	10	159.65	1073	OK
	11	145.81	1073	OK
	12	143.57	1073	OK

5.2. VERIFICACIÓN DE CORTE EN LA ZAPATA

El corte se verifica según las indicaciones del capítulo 11 del ACI 318.



La dimensión de altura de zapata es igual en todas las fundaciones:

Altura total de zapata $D = 0.40 \text{ m}$

Altura efectiva $d_{\text{eff}} = D - \text{rec} - 0.025 = 0.325 \text{ m}$ Se resta 1" de manera general para considerar el armado

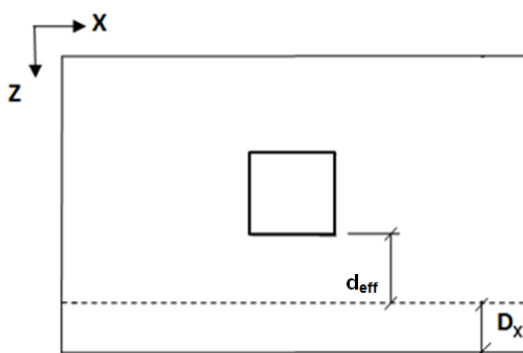
Resistencia al corte proporcionada por el concreto

$$V_c = 0.17 \cdot \sqrt{f'_c} \cdot F_{W,L} \cdot d_{\text{eff}}$$

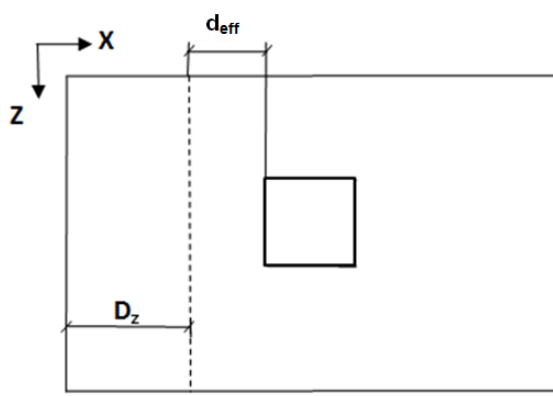
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	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 113 de 126

Fundación		Fw (m)	Vc (kN)	FI (m)	Vc (kN)
Ejes 22 al 30	F1	2.10	518.76	2.10	518.76
	F2	2.20	543.46	3.40	839.90
	F5	2.40	607.65	2.40	607.65
Ejes G al M	F3	2.10	518.76	2.10	518.76
	F4	2.20	543.46	3.40	839.90

Sección a evaluar:



Plano de corte paralelo al eje X
 $D_x = 0.5 * (F_w - P_w) - d_{eff}$





Plano de corte paralelo al eje Z
 $D_z = 0.5 * (F_I - P_I) - d_{eff}$

Se verifica que $0.75 * V_c > V_{u_{x,z}}$.

Donde $V_{u_{x,z}}$ es la fuerza de corte para el caso de carga más desfavorable a una distancia d_{eff} de la cara del pedestal, causado por flexión alrededor del eje x/z.

	Apoyo	Dx (m)	Vux (kN)	Comb. Carga	Dz (m)	Vuz (kN)	Comb. Carga
EJES 22 AL 30	1	0.275	39.09	1043	1.825	26.47	1073
	2	0.275	39.28	1043	1.825	26.69	1073
	3	0.275	54.81	1043	1.825	34.15	1073
	4	0.275	54.04	1043	1.825	33.94	1073
	5	0.625	67.58	1048	2.175	110.42	1011

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001	
	OBM 3285					
	PLANTA DE SEPARACIÓN DE LIQUIDOS					
	RIO GRANDE					
	FUNDACIONES PARRAL		Ver.	Rev.	Página 114 de 126	
	ESTE - OESTE		1	1		



6	0.625	64.74	1015	2.175	92.37	1011
7	0.625	75.39	1041	2.175	74.41	1037
8	0.625	74.23	1041	2.175	68.36	1037
9	0.275	54.33	1043	1.825	34.02	1073
10	0.275	55.24	1043	1.825	34.54	1073
11	0.625	56.27	1015	2.175	55.77	1011
12	0.625	55.79	1015	2.175	50.72	1011
13	0.625	76.92	1041	2.175	129.61	1039
14	0.625	74.98	1041	2.175	121.03	1039
15	0.425	114.63	1041	1.975	86.09	1002
16	0.275	50.96	1043	1.825	41.50	1072
17	0.425	105.75	1041	1.975	59.96	1028
18	0.275	35.88	1043	1.825	55.57	1072

	Apoyo	Dx (m)	Vux (kN)	Comb. Carga	Dz (m)	Vuz (kN)	Comb. Carga
EJES GAL M	1	0.275	48.69	1043	1.825	30.91	1073
	2	0.275	47.22	1015	1.825	29.89	1073
	3	0.275	58.70	1043	1.825	35.02	1073
	4	0.275	58.00	1043	1.825	34.80	1073
	5	0.625	54.34	1015	2.175	81.24	1011
	6	0.625	54.34	1015	2.175	79.18	1011
	7	0.625	68.90	1041	2.175	98.20	1027
	8	0.625	68.03	1041	2.175	94.98	1027
	9	0.275	52.42	1043	1.825	32.00	1073
	10	0.275	51.69	1043	1.825	31.78	1073
	11	0.275	46.24	1043	1.825	29.03	1073
	12	0.275	45.47	1043	1.825	28.58	1073

5.3. CÁLCULO DEL ACERO DE REFUERZO EN LA ZAPATA

Del programa se obtienen los momentos máximos actuantes para el caso de carga más desfavorable. En la siguiente tabla se muestran estos valores para las direcciones "x" y "z".

	Apoyo	Muz (kNm)	Comb. Carga	Mux (kNm)	Comb. Carga
EJES A 22 AL 30	1	108.01	1073	39.33	1072
	2	108.99	1073	39.89	1072
	3	139.38	1073	78.55	1072

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 115 de 126
	ESTE - OESTE		1	1	

4	138.60	1073	78.16	1072
5	264.43	1011	24.28	1073
6	224.25	1011	24.80	1073
7	200.43	1037	83.79	1073
8	184.27	1037	80.45	1072
9	138.86	1073	76.08	1072
10	141.08	1073	75.34	1072
11	151.48	1011	64.74	1052
12	138.06	1011	60.85	1052
13	286.45	1039	25.91	1073
14	274.10	1039	26.06	1073
15	247.27	1002	59.80	1073
16	130.35	1073	109.51	1072
17	188.19	1028	39.96	1073
18	118.12	1041	118.95	1072

	Apoyo	Muz (kNm)	Comb. Carga	Mux (kNm)	Comb. Carga
EJES G A L M	1	126.20	1073	48.71	1072
	2	122.01	1073	49.06	1072
	3	142.98	1073	91.95	1072
	4	157.86	1073	92.07	1072
	5	201.19	1011	55.84	1072
	6	218.31	1011	67.30	1052
	7	240.09	1027	66.38	1072
	8	232.37	1027	65.85	1072
	9	130.64	1073	78.90	1072
	10	129.72	1073	71.10	1072
	11	118.48	1073	47.71	1072
	12	129.64	1073	47.90	1072



Acero mínimo de refuerzo $As_{min} = (1.8/1000) \cdot A_g$
 $As_{min} = (1.8/1000) \cdot 100 \cdot 40 = 7.2 \text{ cm}^2/\text{m}$
Colocando ϕ 12 c/17 cm $\longrightarrow 7.45 \text{ cm}^2/\text{m}$

$$\rho = As/(bd) = 7.45/(100 \cdot 35) = 0.00213$$

$$J_u = 1 - 0.59 \cdot \rho \cdot (f_y/f'_c) = 1 - 0.59 \cdot 0.00213 \cdot (400/21) = 0.976$$

$$M_r = \phi \cdot As \cdot f_y \cdot J_u \cdot d = 0.90 \cdot (7.45 \cdot 100) \cdot 400 \cdot 0.976 \cdot 350/1000 =$$

$$= 91617 \text{ Nm/m} = 91.617 \text{ kNm/m}$$

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 116 de 126
		1	1	

Del análisis se obtiene:

Máxima flexión alrededor de z

Grupo F1 - Apoyo 10 → Muz = 141.08 kNm

$$141.08 \text{ kNm}/2.1\text{m} = 67.18 \text{ kNm/m} < 91.617 \text{ kNm/m} \quad \text{OK}$$

Grupo F2 - Apoyo 13 → Muz = 286.45 kNm

$$286.45 \text{ kNm}/2.2\text{m} = 130.20 \text{ kNm/m} > 91.617 \text{ kNm/m}$$

Grupo F3 - Apoyo 4 → Muz = 157.86 kNm

$$157.86 \text{ kNm}/2.1\text{m} = 75.17 \text{ kNm/m} < 91.617 \text{ kNm/m} \quad \text{OK}$$

Grupo F4 - Apoyo 6 → Muz = 240.09 kNm

$$240.09 \text{ kNm}/2.2\text{m} = 109.13 \text{ kNm/m} > 91.617 \text{ kNm/m}$$

Grupo F5 - Apoyo 6 → Muz = 247.27 kNm

$$247.27 \text{ kNm}/2.4\text{m} = 103.03 \text{ kNm/m} > 91.617 \text{ kNm/m}$$

Máxima flexión alrededor de x

Grupo F1 - Apoyo 18 → Muz = 118.95 kNm

$$118.95 \text{ kNm}/2.1\text{m} = 56.64 \text{ kNm/m} < 91.617 \text{ kNm/m} \quad \text{OK}$$

Grupo F2 - Apoyo 7 → Muz = 83.79 kNm

$$83.79 \text{ kNm}/2.8\text{m} = 29.93 \text{ kNm/m} < 91.617 \text{ kNm/m} \quad \text{OK}$$

Grupo F3 - Apoyo 4 → Muz = 92.07 kNm

$$92.07 \text{ kNm}/2.1\text{m} = 43.84 \text{ kNm/m} < 91.617 \text{ kNm/m} \quad \text{OK}$$

Grupo F4 - Apoyo 7 → Muz = 67.30 kNm

$$67.30 \text{ kNm}/2.8\text{m} = 24.04 \text{ kNm/m} < 91.617 \text{ kNm/m} \quad \text{OK}$$

En los casos donde el momento actuante es menor que 91.617 kN/m, se colocará acero mínimo ($\phi 12$ c/17 cm).

Para las fundaciones F-2, F-4 y F-5 se coloca $\phi 16$ c/17 cm. Con lo que se obtiene un momento resistente:



$$\text{Colocando } \phi 16 \text{ c/17 cm} \longrightarrow 11.64 \text{ cm}^2/\text{m}$$

$$\rho = A_s/(bd) = 11.64/(100 \cdot 35) = 0.0033$$

$$J_u = 1 - 0.59 \cdot \rho \cdot (f_y/f'_c) = 1 - 0.59 \cdot 0.0033 \cdot (400/21) = 0.963$$

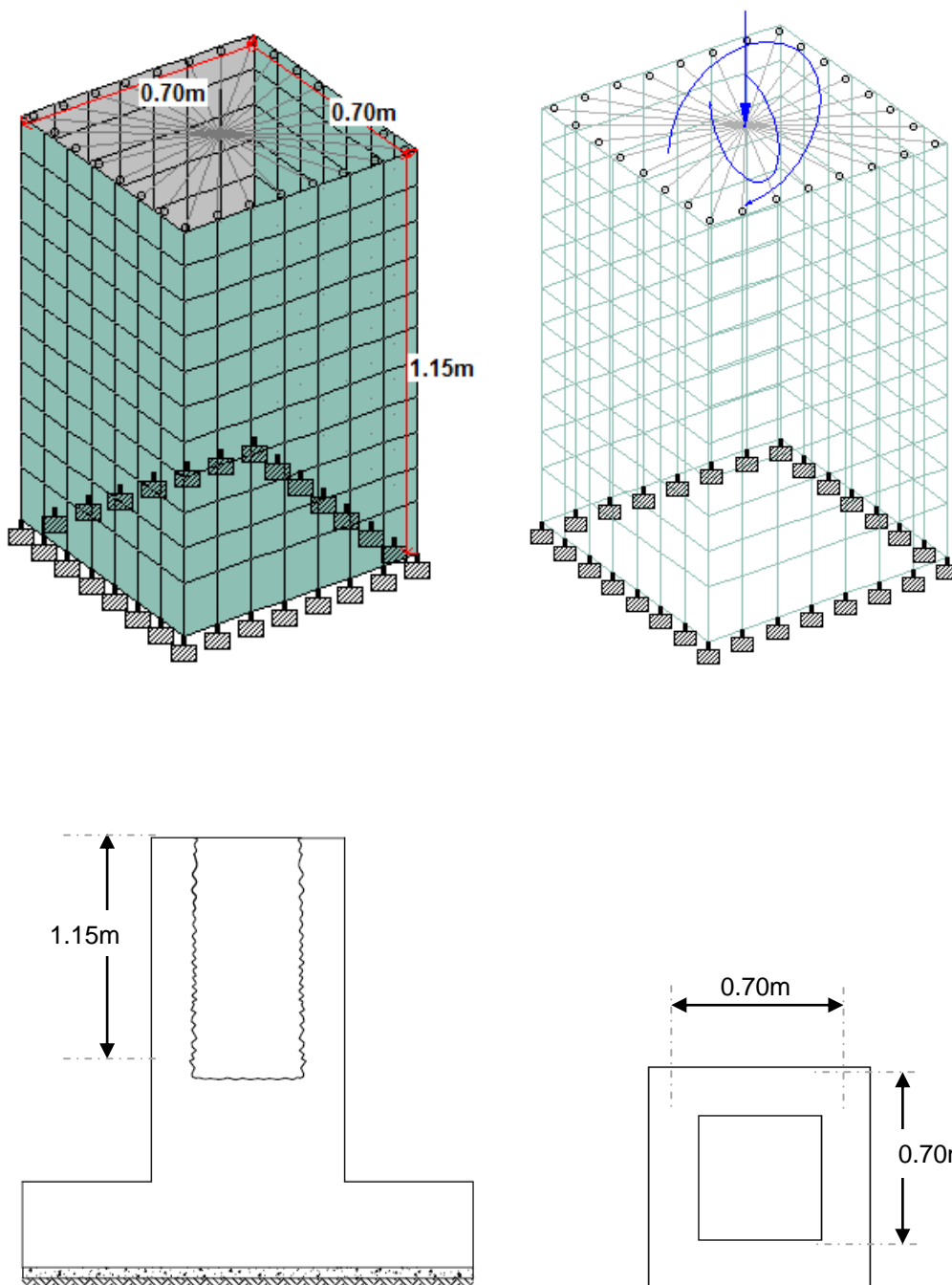
$$M_r = \phi \cdot A_s \cdot f_y \cdot J_u \cdot d = 0.90 \cdot (11.64 \cdot 100) \cdot 400 \cdot 0.963 \cdot 350/1000 =$$



$$= 141237 \text{ Nm/m} = 141.24 \text{ kNm/m} > M_{u_{\max}} (F-2, F-4, F-5) \quad \text{OK}$$

<div></div> <div></div> <div><p>Corporación</p><p>La fuerza que transforma Bolivia</p></div>	PROYECTO:		AES N°		3285-G210-635-4523-DC-001	
	OBM 3285					
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE					
	FUNDACIONES PARRAL ESTE - OESTE		Ver.	Rev.	Página 117 de 126	
			1	1		

5.4. DISEÑO DEL TINTERO

El diseño del tintero de las fundaciones será analizado por el método de elementos finitos con el fin de analizar de una manera adecuada la distribución de esfuerzos. El modelo estructural se evaluará utilizando el programa Staad.pro. Las paredes se modelan con elementos tipo “plate”, con características del material de hormigón y espesor 0.20 m. Las cargas se colocan en un nodo, que es conectado a las paredes del tintero con elementos “beam” ficticios (solo transmiten carga, sin aportar peso).



  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
	FUNDACIONES PARRAL ESTE - OESTE		Ver. 1	Rev. 1	Página 118 de 126

Se tomaron las reacciones más desfavorables de todos los apoyos (ejes 22 al 30 y ejes G al M). Dichas cargas son:



	Node	L/C	Horizontal	Vertical	Horizontal	Moment		
			Fx N	Fy N	Fz N	Mx N-m	My N-m	Mz N-m
Max Fx	6	1011	53406	238368	3608	16274	2	4801
Min Fx	14	1048	-103616	181650	-3603	-15989	-70	834
Max Fy	7	1037	-7287	323548	4136	17913	219	11540
Min Fy	8	1068	-965	44043	-4834	-20502	-2	-4009
Max Fz	3	1056	0	86369	21793	84706	0	0
Min Fz	8	1055	-5	72010	-22028	-86486	3	21
Max Mx	9	1056	9	86368	21791	85235	0	-37
Min Mx	8	1055	-5	72010	-22028	-86486	3	21
Max My	5	1027	-36225	101578	-48	-204	229	6597
Min My	8	1027	-50061	264455	47	204	-234	6499
Max Mz	11	1037	-39	168919	3645	16183	219	12270
Min Mz	1	1022	-1385	167440	-3755	-16767	-23	-6110

Cada grupo de cargas se tomó como un caso de carga:



Caso de carga	Nombre de carga
1	Peso propio
2	Max Fx
3	Min Fx
4	Max Fy
5	Min Fy
6	Max Fz
7	Min Fz
8	Max Mx
9	Min Mx
10	Max My
11	Min My
12	Max Mz
13	Min Mz

5.4.1. ENTRADA DE DATOS DEL PROGRAMA

STAAD SPACE
START JOB INFORMATION
ENGINEER DATE Sep-11
END JOB INFORMATION
INPUT WIDTH 79
UNIT METER NEWTON
JOINT COORDINATES

<div></div> <div></div>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1	Página 119 de 126

1 0 0.05 0; 2 0.7 0.05 0; 3 0 0.65 0; 5 0 0.05 0.7; 6 0.7 0.05 0.7; 9 0 0.15 0;
 12 0 0.25 0; 14 0 0.35 0; 16 0 0.45 0; 18 0 0.55 0; 48 0.5 0.65 0;
 84 0.7 0.15 0; 85 0.7 0.25 0; 86 0.7 0.35 0; 87 0.7 0.45 0; 88 0.7 0.55 0;
 89 0.1 0.05 0.7; 90 0.1 0.15 0.7; 91 0 0.15 0.7; 92 0.2 0.05 0.7;
 93 0.2 0.15 0.7; 94 0.3 0.05 0.7; 95 0.3 0.15 0.7; 96 0.4 0.05 0.7;
 97 0.4 0.15 0.7; 98 0.5 0.05 0.7; 99 0.5 0.15 0.7; 108 0.6 0.05 0.7;
 109 0.6 0.15 0.7; 110 0.7 0.15 0.7; 111 0.1 0.25 0.7; 112 0 0.25 0.7;
 113 0.2 0.25 0.7; 114 0.3 0.25 0.7; 115 0.4 0.25 0.7; 116 0.5 0.25 0.7;
 121 0.6 0.25 0.7; 122 0.7 0.25 0.7; 123 0.1 0.35 0.7; 124 0 0.35 0.7;
 125 0.2 0.35 0.7; 126 0.3 0.35 0.7; 127 0.4 0.35 0.7; 128 0.5 0.35 0.7;
 133 0.6 0.35 0.7; 134 0.7 0.35 0.7; 135 0.1 0.45 0.7; 136 0 0.45 0.7;
 137 0.2 0.45 0.7; 138 0.3 0.45 0.7; 139 0.4 0.45 0.7; 140 0.5 0.45 0.7;
 145 0.6 0.45 0.7; 146 0.7 0.45 0.7; 147 0.1 0.55 0.7; 148 0 0.55 0.7;
 149 0.2 0.55 0.7; 150 0.3 0.55 0.7; 151 0.4 0.55 0.7; 152 0.5 0.55 0.7;
 157 0.6 0.55 0.7; 158 0.7 0.55 0.7; 159 0.1 0.65 0.7; 160 0.2 0.65 0.7;
 162 0.4 0.65 0.7; 163 0.5 0.65 0.7; 168 0.6 0.65 0.7; 169 0 0.05 0.1;
 170 0 0.15 0.1; 171 0 0.05 0.2; 172 0 0.15 0.2; 173 0 0.05 0.3; 174 0 0.15 0.3;
 175 0 0.05 0.4; 176 0 0.15 0.4; 177 0 0.05 0.5; 178 0 0.15 0.5; 183 0 0.05 0.6;
 184 0 0.15 0.6; 185 0 0.25 0.1; 186 0 0.25 0.2; 187 0 0.25 0.3; 188 0 0.25 0.4;
 189 0 0.25 0.5; 192 0 0.25 0.6; 193 0 0.35 0.1; 194 0 0.35 0.2; 195 0 0.35 0.3;
 196 0 0.35 0.4; 197 0 0.35 0.5; 200 0 0.35 0.6; 201 0 0.45 0.1; 202 0 0.45 0.2;
 203 0 0.45 0.3; 204 0 0.45 0.4; 205 0 0.45 0.5; 208 0 0.45 0.6; 209 0 0.55 0.1;
 210 0 0.55 0.2; 211 0 0.55 0.3; 212 0 0.55 0.4; 213 0 0.55 0.5; 216 0 0.55 0.6;
 217 0 0.65 0.1; 218 0 0.65 0.2; 219 0 0.65 0.3; 220 0 0.65 0.4; 221 0 0.65 0.5;
 224 0 0.65 0.6; 229 0.7 0.05 0.6; 230 0.7 0.15 0.6; 231 0.7 0.05 0.5;
 232 0.7 0.15 0.5; 233 0.7 0.05 0.4; 234 0.7 0.15 0.4; 235 0.7 0.05 0.3;
 236 0.7 0.15 0.3; 237 0.7 0.05 0.2; 238 0.7 0.15 0.2; 239 0.7 0.05 0.1;
 240 0.7 0.15 0.1; 243 0.7 0.25 0.6; 244 0.7 0.25 0.5; 245 0.7 0.25 0.4;
 246 0.7 0.25 0.3; 247 0.7 0.25 0.2; 248 0.7 0.25 0.1; 251 0.7 0.35 0.6;
 252 0.7 0.35 0.5; 253 0.7 0.35 0.4; 254 0.7 0.35 0.3; 255 0.7 0.35 0.2;
 256 0.7 0.35 0.1; 259 0.7 0.45 0.6; 260 0.7 0.45 0.5; 261 0.7 0.45 0.4;
 262 0.7 0.45 0.3; 263 0.7 0.45 0.2; 264 0.7 0.45 0.1; 267 0.7 0.55 0.6;
 268 0.7 0.55 0.5; 269 0.7 0.55 0.4; 270 0.7 0.55 0.3; 271 0.7 0.55 0.2;
 272 0.7 0.55 0.1; 275 0.7 0.65 0.6; 276 0.7 0.65 0.5; 278 0.7 0.65 0.3;
 279 0.7 0.65 0.2; 280 0.7 0.65 0.1; 281 0.35 0.75 0.35; 282 0.1 0.05 0;
 283 0.1 0.15 0; 284 0.2 0.05 0; 285 0.2 0.15 0; 286 0.3 0.05 0; 287 0.3 0.15 0;
 288 0.4 0.05 0; 289 0.4 0.15 0; 290 0.5 0.05 0; 291 0.5 0.15 0; 300 0.6 0.05 0;
 301 0.6 0.15 0; 302 0.1 0.25 0; 303 0.2 0.25 0; 304 0.3 0.25 0; 305 0.4 0.25 0;
 306 0.5 0.25 0; 311 0.6 0.25 0; 312 0.1 0.35 0; 313 0.2 0.35 0; 314 0.3 0.35 0;
 315 0.4 0.35 0; 316 0.5 0.35 0; 321 0.6 0.35 0; 322 0.1 0.45 0; 323 0.2 0.45 0;
 324 0.3 0.45 0; 325 0.4 0.45 0; 326 0.5 0.45 0; 331 0.6 0.45 0; 332 0.1 0.55 0;
 333 0.2 0.55 0; 334 0.3 0.55 0; 335 0.4 0.55 0; 336 0.5 0.55 0; 341 0.6 0.55 0;
 342 0.1 0.65 0; 343 0.2 0.65 0; 344 0.3 0.65 0; 345 0.4 0.65 0; 350 0.6 0.65 0;
 351 0.7 0.65 0.4; 352 0.7 0.65 0; 354 0.3 0.65 0.7; 355 0.7 0.65 0.7;
 356 0 0.65 0.7; 357 0 -0.4 0.7; 358 0.1 -0.4 0.7; 359 0.1 -0.25 0.7;
 360 0 -0.25 0.7; 361 0.2 -0.4 0.7; 362 0.2 -0.25 0.7; 363 0.3 -0.4 0.7;
 364 0.3 -0.25 0.7; 365 0.4 -0.4 0.7; 366 0.4 -0.25 0.7; 367 0.5 -0.4 0.7;
 368 0.5 -0.25 0.7; 369 0.6 -0.4 0.7; 370 0.6 -0.25 0.7; 371 0.7 -0.4 0.7;
 372 0.7 -0.25 0.7; 373 0.1 -0.15 0.7; 374 0 -0.15 0.7; 375 0.2 -0.15 0.7;
 376 0.3 -0.15 0.7; 377 0.4 -0.15 0.7; 378 0.5 -0.15 0.7; 379 0.6 -0.15 0.7;
 380 0.7 -0.15 0.7; 381 0.1 -0.05 0.7; 382 0 -0.05 0.7; 383 0.2 -0.05 0.7;
 384 0.3 -0.05 0.7; 385 0.4 -0.05 0.7; 386 0.5 -0.05 0.7; 387 0.6 -0.05 0.7;
 388 0.7 -0.05 0.7; 389 0 -0.4 0; 390 0 -0.4 0.1; 391 0 -0.25 0.1;
 392 0 -0.25 0; 393 0 -0.4 0.2; 394 0 -0.25 0.2; 395 0 -0.4 0.3;
 396 0 -0.25 0.3; 397 0 -0.4 0.4; 398 0 -0.25 0.4; 399 0 -0.4 0.5;
 400 0 -0.25 0.5; 401 0 -0.4 0.6; 402 0 -0.25 0.6; 403 0 -0.15 0.1;

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1	Página 120 de 126



404 0 -0.15 0; 405 0 -0.15 0.2; 406 0 -0.15 0.3; 407 0 -0.15 0.4;
408 0 -0.15 0.5; 409 0 -0.15 0.6; 410 0 -0.05 0.1; 411 0 -0.05 0;
412 0 -0.05 0.2; 413 0 -0.05 0.3; 414 0 -0.05 0.4; 415 0 -0.05 0.5;
416 0 -0.05 0.6; 417 0.7 -0.4 0.6; 418 0.7 -0.25 0.6; 419 0.7 -0.4 0.5;
420 0.7 -0.25 0.5; 421 0.7 -0.4 0.4; 422 0.7 -0.25 0.4; 423 0.7 -0.4 0.3;
424 0.7 -0.25 0.3; 425 0.7 -0.4 0.2; 426 0.7 -0.25 0.2; 427 0.7 -0.4 0.1;
428 0.7 -0.25 0.1; 429 0.7 -0.4 0; 430 0.7 -0.25 0; 431 0.7 -0.15 0.6;
432 0.7 -0.15 0.5; 433 0.7 -0.15 0.4; 434 0.7 -0.15 0.3; 435 0.7 -0.15 0.2;
436 0.7 -0.15 0.1; 437 0.7 -0.15 0; 438 0.7 -0.05 0.6; 439 0.7 -0.05 0.5;
440 0.7 -0.05 0.4; 441 0.7 -0.05 0.3; 442 0.7 -0.05 0.2; 443 0.7 -0.05 0.1;
444 0.7 -0.05 0; 445 0.1 -0.4 0; 446 0.1 -0.25 0; 447 0.2 -0.4 0;
448 0.2 -0.25 0; 449 0.3 -0.4 0; 450 0.3 -0.25 0; 451 0.4 -0.4 0;
452 0.4 -0.25 0; 453 0.5 -0.4 0; 454 0.5 -0.25 0; 455 0.6 -0.4 0;
456 0.6 -0.25 0; 457 0.1 -0.15 0; 458 0.2 -0.15 0; 459 0.3 -0.15 0;
460 0.4 -0.15 0; 461 0.5 -0.15 0; 462 0.6 -0.15 0; 463 0.1 -0.05 0;
464 0.2 -0.05 0; 465 0.3 -0.05 0; 466 0.4 -0.05 0; 467 0.5 -0.05 0;
468 0.6 -0.05 0; 469 0.1 0.75 0.7; 471 0.2 0.75 0.7; 473 0.4 0.75 0.7;
474 0.5 0.75 0.7; 475 0.6 0.75 0.7; 477 0 0.75 0.1; 479 0 0.75 0.2;
481 0 0.75 0.4; 482 0 0.75 0.5; 483 0 0.75 0.6; 484 0.7 0.75 0.6;
485 0.7 0.75 0.5; 487 0.7 0.75 0.3; 488 0.7 0.75 0.2; 489 0.7 0.75 0.1;
491 0.1 0.75 0; 492 0.2 0.75 0; 493 0.3 0.75 0; 495 0.5 0.75 0; 496 0.6 0.75 0;
497 0 0.75 0; 498 0 0.75 0.3; 499 0.4 0.75 0; 500 0.7 0.75 0.4; 501 0.7 0.75 0;
502 0.3 0.75 0.7; 503 0.7 0.75 0.7; 504 0 0.75 0.7;

MEMBER INCIDENCES



245 281 497; 246 281 504; 247 281 503; 248 281 501; 249 281 499; 250 281 502;
251 281 500; 252 281 498; 459 281 488; 460 281 485; 461 281 496; 462 281 495;
463 281 493; 464 281 492; 465 281 491; 466 281 477; 467 281 479; 468 281 481;
469 281 482; 470 281 469; 471 281 471; 472 281 473; 473 281 474; 474 281 475;
475 281 489; 476 281 487; 477 281 484; 478 281 483;

ELEMENT INCIDENCES SHELL

71 5 89 90 91; 72 89 92 93 90; 73 92 94 95 93; 74 94 96 97 95; 75 96 98 99 97;
76 98 108 109 99; 81 108 6 110 109; 82 91 90 111 112; 83 90 93 113 111;
84 93 95 114 113; 85 95 97 115 114; 86 97 99 116 115; 87 99 109 121 116;
92 109 110 122 121; 93 112 111 123 124; 94 111 113 125 123; 95 113 114 126 125;
96 114 115 127 126; 97 115 116 128 127; 98 116 121 133 128;
103 121 122 134 133; 104 124 123 135 136; 105 123 125 137 135;
106 125 126 138 137; 107 126 127 139 138; 108 127 128 140 139;
109 128 133 145 140; 114 133 134 146 145; 115 136 135 147 148;
116 135 137 149 147; 117 137 138 150 149; 118 138 139 151 150;
119 139 140 152 151; 120 140 145 157 152; 125 145 146 158 157;
126 148 147 159 356; 127 147 149 160 159; 128 149 150 354 160;
129 150 151 162 354; 130 151 152 163 162; 131 152 157 168 163;
136 157 158 355 168; 137 1 169 170 9; 138 169 171 172 170; 139 171 173 174 172;
140 173 175 176 174; 141 175 177 178 176; 142 177 183 184 178;
145 183 5 91 184; 146 9 170 185 12; 147 170 172 186 185; 148 172 174 187 186;
149 174 176 188 187; 150 176 178 189 188; 151 178 184 192 189;
154 184 91 112 192; 155 12 185 193 14; 156 185 186 194 193;
157 186 187 195 194; 158 187 188 196 195; 159 188 189 197 196;
160 189 192 200 197; 163 192 112 124 200; 164 14 193 201 16;
165 193 194 202 201; 166 194 195 203 202; 167 195 196 204 203;
168 196 197 205 204; 169 197 200 208 205; 172 200 124 136 208;
173 16 201 209 18; 174 201 202 210 209; 175 202 203 211 210;
176 203 204 212 211; 177 204 205 213 212; 178 205 208 216 213;
181 208 136 148 216; 182 18 209 217 3; 183 209 210 218 217;
184 210 211 219 218; 185 211 212 220 219; 186 212 213 221 220;
187 213 216 224 221; 190 216 148 356 224; 191 6 229 230 110;

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE		Ver.	Rev.	Página 121 de 126
	FUNDACIONES PARRAL		1	1	
	ESTE - OESTE				

194 229 231 232 230; 195 231 233 234 232; 196 233 235 236 234;
 197 235 237 238 236; 198 237 239 240 238; 199 239 2 84 240;
 200 110 230 243 122; 203 230 232 244 243; 204 232 234 245 244;
 205 234 236 246 245; 206 236 238 247 246; 207 238 240 248 247;
 208 240 84 85 248; 209 122 243 251 134; 212 243 244 252 251;
 213 244 245 253 252; 214 245 246 254 253; 215 246 247 255 254;
 216 247 248 256 255; 217 248 85 86 256; 218 134 251 259 146;
 221 251 252 260 259; 222 252 253 261 260; 223 253 254 262 261;
 224 254 255 263 262; 225 255 256 264 263; 226 256 86 87 264;
 227 146 259 267 158; 230 259 260 268 267; 231 260 261 269 268;
 232 261 262 270 269; 233 262 263 271 270; 234 263 264 272 271;
 235 264 87 88 272; 236 158 267 275 355; 239 267 268 276 275;
 240 268 269 351 276; 241 269 270 278 351; 242 270 271 279 278;
 243 271 272 280 279; 244 272 88 352 280; 253 1 282 283 9; 254 282 284 285 283;
 255 284 286 287 285; 256 286 288 289 287; 257 288 290 291 289;
 258 290 300 301 291; 263 300 2 84 301; 264 9 283 302 12; 265 283 285 303 302;
 266 285 287 304 303; 267 287 289 305 304; 268 289 291 306 305;
 269 291 301 311 306; 274 301 84 85 311; 275 12 302 312 14; 276 302 303 313 312;
 277 303 304 314 313; 278 304 305 315 314; 279 305 306 316 315;
 280 306 311 321 316; 285 311 85 86 321; 286 14 312 322 16; 287 312 313 323 322;
 288 313 314 324 323; 289 314 315 325 324; 290 315 316 326 325;
 291 316 321 331 326; 296 321 86 87 331; 297 16 322 332 18; 298 322 323 333 332;
 299 323 324 334 333; 300 324 325 335 334; 301 325 326 336 335;
 302 326 331 341 336; 307 331 87 88 341; 308 18 332 342 3; 309 332 333 343 342;
 310 333 334 344 343; 311 334 335 345 344; 312 335 336 48 345;
 313 336 341 350 48; 318 341 88 352 350; 319 357 358 359 360;
 320 358 361 362 359; 321 361 363 364 362; 322 363 365 366 364;
 323 365 367 368 366; 324 367 369 370 368; 325 369 371 372 370;
 326 360 359 373 374; 327 359 362 375 373; 328 362 364 376 375;
 329 364 366 377 376; 330 366 368 378 377; 331 368 370 379 378;
 332 370 372 380 379; 333 374 373 381 382; 334 373 375 383 381;
 335 375 376 384 383; 336 376 377 385 384; 337 377 378 386 385;
 338 378 379 387 386; 339 379 380 388 387; 340 382 381 89 5; 341 381 383 92 89;
 342 383 384 94 92; 343 384 385 96 94; 344 385 386 98 96; 345 386 387 108 98;
 346 387 388 6 108; 347 389 390 391 392; 348 390 393 394 391;
 349 393 395 396 394; 350 395 397 398 396; 351 397 399 400 398;
 352 399 401 402 400; 353 401 357 360 402; 354 392 391 403 404;
 355 391 394 405 403; 356 394 396 406 405; 357 396 398 407 406;
 358 398 400 408 407; 359 400 402 409 408; 360 402 360 374 409;
 361 404 403 410 411; 362 403 405 412 410; 363 405 406 413 412;
 364 406 407 414 413; 365 407 408 415 414; 366 408 409 416 415;
 367 409 374 382 416; 368 411 410 169 1; 369 410 412 171 169;
 370 412 413 173 171; 371 413 414 175 173; 372 414 415 177 175;
 373 415 416 183 177; 374 416 382 5 183; 375 371 417 418 372;
 376 417 419 420 418; 377 419 421 422 420; 378 421 423 424 422;
 379 423 425 426 424; 380 425 427 428 426; 381 427 429 430 428;
 382 372 418 431 380; 383 418 420 432 431; 384 420 422 433 432;
 385 422 424 434 433; 386 424 426 435 434; 387 426 428 436 435;
 388 428 430 437 436; 389 380 431 438 388; 390 431 432 439 438;
 391 432 433 440 439; 392 433 434 441 440; 393 434 435 442 441;
 394 435 436 443 442; 395 436 437 444 443; 396 388 438 229 6;
 397 438 439 231 229; 398 439 440 233 231; 399 440 441 235 233;
 400 441 442 237 235; 401 442 443 239 237; 402 443 444 2 239;
 403 389 445 446 392; 404 445 447 448 446; 405 447 449 450 448;
 406 449 451 452 450; 407 451 453 454 452; 408 453 455 456 454;
 409 455 429 430 456; 410 392 446 457 404; 411 446 448 458 457;

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver. 1	Rev. 1	Página 122 de 126

412 448 450 459 458; 413 450 452 460 459; 414 452 454 461 460;
415 454 456 462 461; 416 456 430 437 462; 417 404 457 463 411;
418 457 458 464 463; 419 458 459 465 464; 420 459 460 466 465;
421 460 461 467 466; 422 461 462 468 467; 423 462 437 444 468;
424 411 463 282 1; 425 463 464 284 282; 426 464 465 286 284;
427 465 466 288 286; 428 466 467 290 288; 429 467 468 300 290;
430 468 444 2 300; 431 356 159 469 504; 432 159 160 471 469;
433 160 354 502 471; 434 354 162 473 502; 435 162 163 474 473;
436 163 168 475 474; 437 168 355 503 475; 438 3 217 477 497;
439 217 218 479 477; 440 218 219 498 479; 441 219 220 481 498;
442 220 221 482 481; 443 221 224 483 482; 444 224 356 504 483;
445 355 275 484 503; 446 275 276 485 484; 447 276 351 500 485;
448 351 278 487 500; 449 278 279 488 487; 450 279 280 489 488;
451 280 352 501 489; 452 3 342 491 497; 453 342 343 492 491;
454 343 344 493 492; 455 344 345 499 493; 456 345 48 495 499;
457 48 350 496 495; 458 350 352 501 496;

ELEMENT PROPERTY

71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 TO 131 136 TO 142 145 -
146 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 190 191 194 TO 200 -
203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 253 TO 258 -
263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 318 TO 457 -
458 THICKNESS 0.2

DEFINE MATERIAL START

ISOTROPIC CONCRETE

E 2.17185e+010

POISSON 0.17

DENSITY 23561.6

ALPHA 1e-005

DAMP 0.05

ISOTROPIC CONCRETE-2

E 2.17185e+010

POISSON 0.17

DENSITY 23561.6

ALPHA 1e-005

DAMP 0.05

END DEFINE MATERIAL

MEMBER PROPERTY AMERICAN

245 TO 252 459 TO 478 PRIS YD 0.2

CONSTANTS

MATERIAL CONCRETE MEMB 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

MATERIAL CONCRETE-2 MEMB 245 TO 252 459 TO 478

SUPPORTS



357 358 361 363 365 367 369 371 389 390 393 395 397 399 401 417 419 421 423 -
425 427 429 445 447 449 451 453 455 FIXED

MEMBER RELEASE

245 TO 252 459 TO 478 END MY MZ

LOAD 1 PESO PROPIO

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:	AES A N°		3285-G210-635-4523-DC-001
	OBM 3285			
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE			
	FUNDACIONES PARRAL ESTE - OESTE	Ver.	Rev.	Página 123 de 126
		1	1	

LOAD 2 MAX FX

SELFWEIGHT Y -1

JOINT LOAD

281 FX -53406 FY -238368 FZ -3608 MX -16274 MY -2 MZ -4801

LOAD 3 MIN FX

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

JOINT LOAD

281 FX 103616 FY -181650 FZ 3603 MX 15989 MY 70 MZ -834

LOAD 4 MAX FY

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

JOINT LOAD

281 FX 7287 FY -323548 FZ -4136 MX -17913 MY -219 MZ -11540

LOAD 5 MIN FY

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

JOINT LOAD

281 FX 965 FY -44043 FZ 4834 MX 20502 MY 2 MZ 4009

LOAD 6 MAX FZ

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

JOINT LOAD

281 FX 0 FY -86369 FZ -21793 MX -84706 MY 0 MZ 0

LOAD 7 MIN FZ

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

JOINT LOAD

281 FX 5 FY -72010 FZ 22028 MX 86486 MY -3 MZ -21

LOAD 8 MAX MX



SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -
253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -
318 TO 458

JOINT LOAD

281 FX -9 FY -86368 FZ -21791 MX -85235 MY 0 MZ 37

LOAD 9 MIN MX

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -
126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -
190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -

  <small>Corporación</small> <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
	RIO GRANDE				
	FUNDACIONES PARRAL		Ver.	Rev.	Página 124 de 126
	ESTE - OESTE		1	1	

253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -

318 TO 458

JOINT LOAD

281 FX 5 FY -72010 FZ 22028 MX 86486 MY -3 MZ -21

LOAD 10 MAX MY

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -

126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -

190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -

253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -

318 TO 458

JOINT LOAD

281 FX 36225 FY -101578 FZ 48 MX 204 MY -229 MZ -6597

LOAD 11 MIN MY

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -

126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -

190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -

253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -

318 TO 458

JOINT LOAD

281 FX 50061 FY -264455 FZ -47 MX -204 MY 234 MZ -6499

LOAD 12 MAX MZ

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -

126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -

190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -

253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -

318 TO 458

JOINT LOAD

281 FX 39 FY -168919 FZ -3645 MX -16183 MY -219 MZ -12270

LOAD 13 MIN MZ

SELFWEIGHT Y -1 LIST 71 TO 76 81 TO 87 92 TO 98 103 TO 109 114 TO 120 125 -

126 TO 131 136 TO 142 145 TO 151 154 TO 160 163 TO 169 172 TO 178 181 TO 187 -

190 191 194 TO 200 203 TO 209 212 TO 218 221 TO 227 230 TO 236 239 TO 244 -

253 TO 258 263 TO 269 274 TO 280 285 TO 291 296 TO 302 307 TO 313 -


318 TO 458

JOINT LOAD

281 FX 1385 FY -167440 FZ 3755 MX 16767 MY 23 MZ 6110

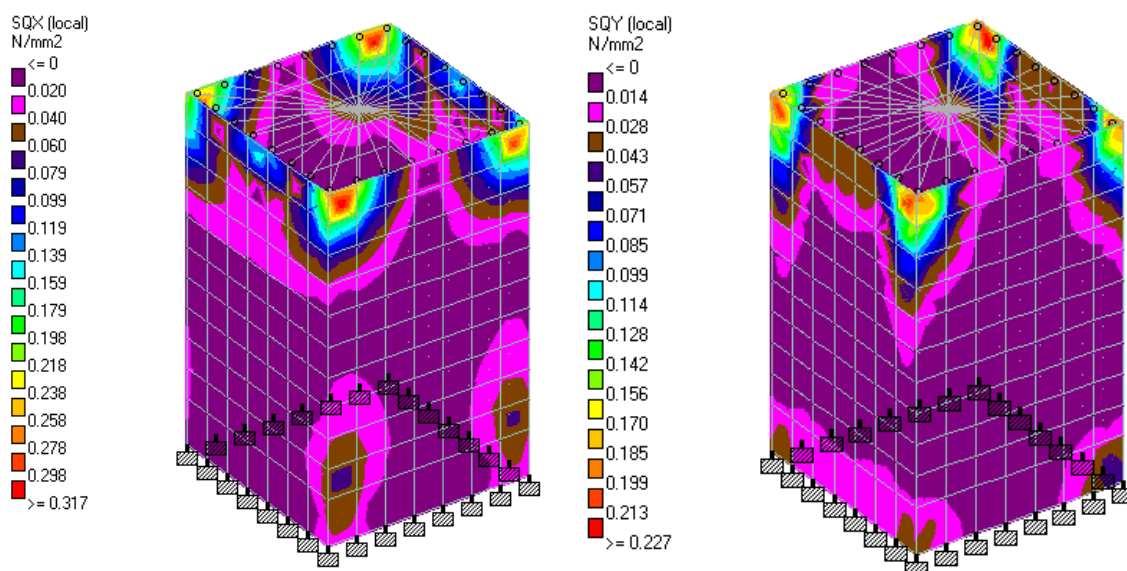
PERFORM ANALYSIS

FINISH

AESA  YPFB Corporación <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AESANº		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS RIO GRANDE				
		FUNDACIONES PARRAL ESTE - OESTE		Ver.	Rev.
				1	1
				Página 125 de 126	

5.4.2. DISEÑO POR CORTE

Se evalúan los esfuerzos más desfavorables en el concreto.





			Corte	
	Plate	L/C	SQX (N/mm2)	SQY (N/mm2)
Max Qx	445	3 MIN FX	0.32	0.06
Min Qx	438	3 MIN FX	-0.30	-0.11
Max Qy	458	8 MAX MX	0.06	0.23
Min Qy	431	7 MIN FZ	0.06	-0.23

$$\phi V_c = \phi 0.17 \sqrt{f'c} = 0.75 \cdot 0.17 \sqrt{21} = 0.58 \text{ N/mm}^2$$

Del análisis se obtiene $SQX_{max} = 0.32 \text{ N/mm}^2 < 0.58 \text{ N/mm}^2$ OK

$SQY_{max} = 0.23 \text{ N/mm}^2 < 0.58 \text{ N/mm}^2$ OK

  Corporación <small>La fuerza que transforma Bolivia</small>	PROYECTO:		AES A N°		3285-G210-635-4523-DC-001
	OBM 3285				
	PLANTA DE SEPARACIÓN DE LIQUIDOS				
		RIO GRANDE			
		FUNDACIONES PARRAL		Ver.	Rev.
		ESTE - OESTE		1	1
				Página 126 de 126	

5.4.3. DISEÑO A FLEXIÓN

Se evalúan los momentos más desfavorables en el concreto.

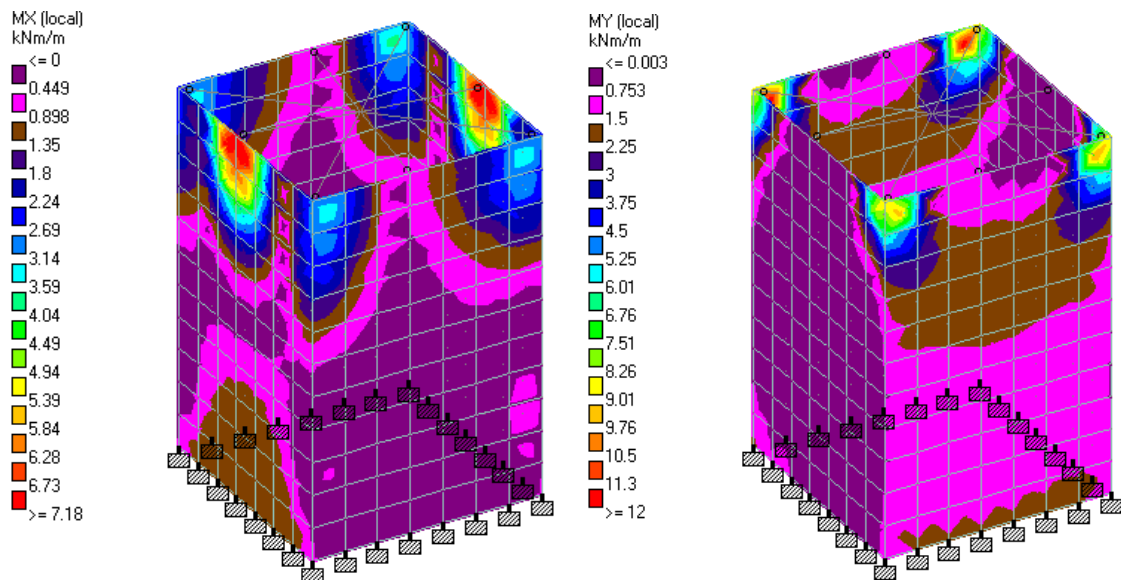


	Plate	L/C	Momento	
			Mx Nm/m	My Nm/m
Max Mx	448	3 MIN FX	2740	-890
Min Mx	441	3 MIN FX	-2820	970
Max My	458	8 MAX MX	-520	5710
Min My	431	7 MIN FZ	520	-5770

Acero mínimo de refuerzo $As_{min} = (1.4/f_y) \cdot b \cdot d$

$$As_{min} = (1.4/400) \cdot 100 \cdot 150 = 525 \text{ mm}^2/\text{m} = 5.25 \text{ cm}^2/\text{m}$$

Colocando $\phi 12 \text{ c}/20 \text{ cm} \longrightarrow 6.78 \text{ cm}^2/\text{m}$

$$\rho = As/(bd) = 6.78/(100 \cdot 15) = 0.00452$$

$$J_u = 1 - 0.59 \cdot \rho \cdot (f_y/f'_c) = 1 - 0.59 \cdot 0.00452 \cdot (400/21) = 0.949$$

$$M_r = \phi \cdot As \cdot f_y \cdot J_u \cdot d = 0.90 \cdot (6.78 \cdot 100) \cdot 400 \cdot 0.949 \cdot 150/1000 = 34745 \text{ Nm/m}$$

Se observa que $M_x \text{ max} < 34745 \text{ Nm/m}$ y $M_y \text{ max} < 34745 \text{ Nm/m}$.

Se colocará $\phi 12 \text{ c}/20 \text{ cm}$ en ambas direcciones.