Base Load Power Hub (BLPH)

BLPH Platform Transition Piece Transportation Analysis

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1 INTRODUCTION

1.1 PROJECT OVERVIEW

Crosswind, a Shell and Eneco joint venture, was awarded the tender to develop the offshore Hollandse Kust Noord (HKN) wind farm, located 18.5km off the coast of Netherlands near the town of Egmond aan Zee. The consortium plans to have HKN operational in 2023 with an installed capacity of 759MW generating at least 3.3TWh per year. This is sufficient renewable power to supply more than 1 million Dutch households with green electricity.

Offshore wind farms produce intermittent electricity and balancing these dips and peaks and integrating this electricity into the national energy system requires new technologies. For this reason, the offshore wind farm will include several new technologies that could be implemented at full-scale in the future. The new technologies being explored include a floating solar park, a short-duration battery storage as well as long-term storage via green hydrogen produced by water electrolysis and subsequently consumed in a fuel cell. The combination of these individual measures, herein referred to as the Base Load Power Hub (BLPH) will ensure a continuous power supply regardless of the wind situation.

1.1.1 Project Location

The Hollandse Kust Noord (HKN) wind farm is located 18.5km off the coast of the Netherlands near the town of Egmond aan Zee.

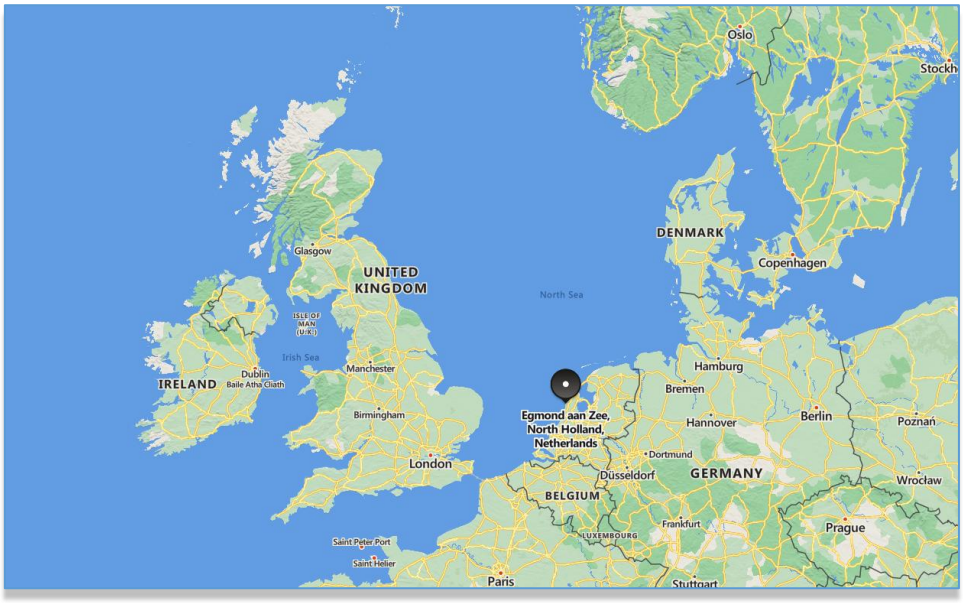


Figure 1.1 HOLLANDSE KUST NOORD WIND PARK Location Map

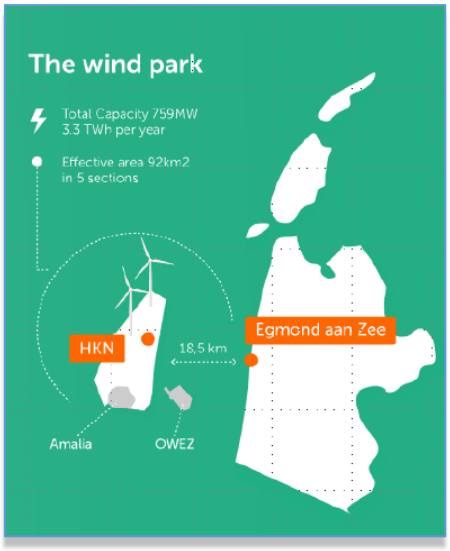


Figure 1.2 - Wind Park Details

The wind farm consist of No. 69 x 11.5MW wind turbine generators each to be installed on a dedicated monopile structure. A 70th monopile located on coordinates E 590719.1, N 5841602.3 is reserved for installing the platform accommodating the BLPH. The monopile structure was designed and installed by Van Oord Offshore Wind (VooW) and therefore not part of the BLPH scope.

1.1.2 Project Concept

All components included in the BLPH will be integrated onshore on a topsides and installed in an offshore location within the boundaries of the HKN wind farm. At its simplest, the BLPH will store energy during periods of high electricity generation from renewable sources (a wind turbine generator and the floating solar PV farm) and release it during periods of low generation. In practice. It is expected that the energy stored will supplement generation from renewable sources to ensure that at least 1.0MW of power is exported to the electrical grid regardless of wind/solar availability.

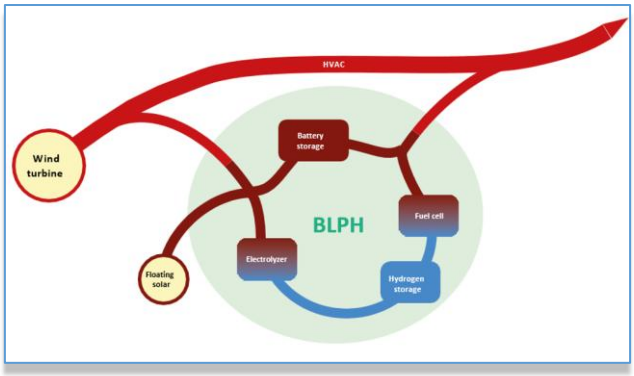


Figure 1.3 – BLPH Concept

Electricity in the BLPH will be stored in the form of electrons in a battery energy storage system (BESS) as well as converted into green hydrogen via water electrolysis. When the power output from the connecting wind turbine drops to below 1 MWe, the BLPH will return its stored energy to supplement the remaining power output. This will be by discharging the BESS, while stored hydrogen will be converted back into electricity using a fuel cell to extend the discharge duration.

The purpose of the BLPH s to function as a testbed for the integration of energy storage technologies with renewable generation. It is expected that equipment installed on the BLPH will operate as Normally Unmanned Installation for at least two (2) years with no or minimal maintenance and it will have its own independent control room with the ability to communicate with Crosswind's control room.

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2 DOCUMENT SCOPE

The objective of this report is to present the results of the Transportation Analysis performed for the Transition Piece (TP) of the BLPH platform.

Structural checks of sea-fastening and grillage are not covered by present document and detailed in a separate dedicated report, ref./27/.

Fatigue checks in transportation conditions are detailed in a separate report, Ref./34/.

The Transition Piece is to be moved on 300ft barge by means of the hydraulic trailers (SPMT) and loaded on board of the cargo barge over preinstalled lower grillage with the Rows A and C aligned with the barge longitudinal axis.

The inertia forces are calculated considering the accelerations according to DNV criteria, Ref./9/.

The analysis has been performed in compliance with the requirements, criteria and parameters reported in the Structural Design Premises, Ref./19/.

Transportation analysis is performed in accordance with DNV-ST-N001, Ref./9/.

Structural Code checks are performed according to EN ISO 19902 for tubular members and tubular joints, Ref./6/, and according to Eurocode 3 for non-tubular structural elements, Ref./8/.

All structural analyses have been carried out using the structural analysis program SACS, the proprietary software developed by Bentley, Ref. /35/.

The International System of Units (SI) has been used in all engineering assessments and calculations.

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3 REFERENCES

3.1 CODES AND STANDARDS

Doc. No.	Description
/1/ BS EN ISO 19900	General requirements for offshore structures - 2019
/2/ BS EN ISO 19901-1	Specific requirements for offshore structures - Part 1: Metocean design and operating considerations - 2015
/3/ BS EN ISO 19901-3	Specific requirements for offshore structures – Part 3: Topsides structure - 2014
/4/ BS EN ISO 19901-5	Specific requirements for offshore structures – Part 5: Weight Management - 2021
/5/ BS EN ISO 19901-6	Specific requirements for offshore structures – Part 6: Marine Operations – 2009
/6/ BS EN ISO 19902	Petroleum and natural gas industries - Fixed steel offshore structures – 2020
/7/ ISO 19906:2019	Petroleum and natural gas industries – Arctic offshore structures
/8/ UNI EN 1993-1-1	Design of steel structures - Part 1-1: General rules and rules for buildings
/9/ DNV-ST-N001	DNV - Marine operation and marine warranty - 2021
/10/ DNV-ST-0145	DNV, Offshore substations
/11/ DNV-RP-C201	DNV, Buckling Strength of Plated Structures, October 2010.
/12/ DNV-RP-C203	DNV, Fatigue design of offshore steel structures, September 2019 and Amendment January 2020
/13/ DNV-RP-C204	DNV-RP-C204 Design against accidental loads – 2019
/14/ DNV-RP-C205	DNV - Environmental conditions and environmental loads - September 2019, amended September 2021.
/15/ DNV-ST-0126	Support structures for wind turbine, 2018

3.2 COMPANY SPECIFICATIONS

Doc. No.	Description
/16/ DEP 37.19.00.12	Gen - Offshore Topsides Structures
/17/ DEP 37.19.00.30	Gen - Fixed Steel Offshore Structures (Adoption of IOGP S-631-11, Amendments / Supplements to ISO 19902:2020).

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/18/ DEP 37.81.10.19	Gen - Marine Operations Requirements – Loadout, Transportation and Installation of Offshore Structures (Amendments / Supplements to ISO 19901-6)

3.3 PROJECT DOCUMENTS

Doc. No.	Description
/19/ 123A90-DDL-ST-SP-90017	Structural Design Basis
/20/ 123A90-DDL-MD-RE-01006	Monthly Weight Report – rev. July 24
/21/ 123A90-DDL-PP-DS-70070	BLPH Platform - Plot Plan Lower & Upper Deck
/22/ 123A90-DDL-ST-SP-90018	Structural Material Specification for Topside and TP
/23/ 123A90-DDL-ST-SP-90118	Structural Material Specification for Flange and Bolts
/24/ 123A90-DDL-TI-SP-99014	Specification for TP, Topside and Caissons Transportation and Installation
/25/ 123A90-DDL-TI-DD-99015	BLPH Platform – Barge Layout
/26/ 123A90-DDL-ST-TN-90119	Evaluating ISO and DNV Approaches
/27/ 123A90-DDL-TI-RE-99004	TP – Grillage and Sea Fastening Design Report
/28/ 123A90-DDL-TI-DD-99036	Base Load Power Hub (BLPH) - TP - Upper Grillage - Plan View
/29/ 123A90-DDL-TI-DD-99037	Base Load Power Hub (BLPH) - TP - Upper Grillage - Sections
/30/ 123A90-DDL-TI-DD-99038	Base Load Power Hub (BLPH) - TP - Upper Grillage - Sections and Details
/31/ 123A90-DDL-TI-DD-99039	TP - Sea Fastening Drawing – Assembly
/32/ 123A90-DDL-TI-DD-99040	TP - Sea Fastening Drawing - Details
/33/ 123A90-DDL-ST-RE-90008	TP – Loadout Analysis
/34/ 123A90-DDL-ST-RE-90010	TP – Transportation Fatigue Analysis

3.4 SOFTWARE

Doc. No.	Description
/35/ SACS	Structural Analysis Computer System – BENTLEY Inc- v15

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4 DEFINITIONS AND ABBREVIATIONS

COMPANY or Client (CPY)	Crosswind
CONTRACTOR (CTR)	ROSETTI MARINO S.p.A.
PROJECT	HOLLANDSE KUST NOORD WIND PARK Project
T&I CONTRACTOR	DEME
ALS	Accidental Limit State
BLPH	Base Load Power Hub
BESS	BATTERY ENERGY STORAGE SYSTEM
BG	Box Girder
BLPH	Base Load Power Hub
Ce	Snow Exposure Coefficient
CF	Caisson Frame
CL	Concentrated Load
CoG	Centre of Gravity
CTV	Crew Transfer Vessel
CW	CrossWind
DAF	Dynamic Amplification Factor
DFF	Damage Fatigue Factors
DLB	Ductility Level Blast
DNV	Det Norske Veritas
DOP	Dropped Object Protection
DP	Dynamic Positioning
El.	Elevation
EPCI	Engineering Procurement Construction and Installation
FEED	Front End Engineering Design
HAT	Highest Astronomical Tide
HKN	Hollandse Kust Noord
ICCP	Impressed Current Corrosion Protection
LAT	Lowest Astronomical Tide

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LRFD	Load and Resistance Factor Design
MSL	Mean Sea Level
NTE	Not-to-Exceed
OD	Outside Diameter
PAU	Pre-Assembled Unit (H2 Vessels)
PG	Plate Girder
SHL	Static Hook Load
T&I	Transport & Installation
ToS	Top of Steel
TP	Transition Piece
UC	Unity Check
UDL	Uniformly Distributed Load
VIV	Vortex Induced Vibration
VOOW	Van Oord Offshore Wind
WTG	Wind Turbine Generator
W2W	Walk to Work

Table 4.1 - Definitions and Abbreviations

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5 SUMMARY AND CONCLUSIONS

The analyses performed show that the Transition Piece can withstand all possible combinations of environmental, operating and transient loads occurring during transportation, according to the applicable codes. The software SACS™, ref./35/, is used for all global analyses of the structures in the SOW.

Structural model of TP includes lower grillage beams, stoppers and seafastening pipes, ref drawings /28/ to/32/.

5.1 WEIGHT RESULTANTS

COG location comparison between current structural model for Transportation Analysis and WCR is reported in following tables. The total weight of Transition Piece, including upper grillage, during transportation operations is 308t according to WCR, ref /20/, assumed 320t in calculation.

SACS-WCR - TP in Transportation conditions - Weight Comparison		
Load Comb.	**Fz [kN]**	**Fz [t]**
SACS (lcomb TPTR)	-2963.3	-302
WCR	-3021	-308
Δ	-	-6
Δ (%)	1.95%	

Table 5.1 – SACS-WCR CoG comparison

COG NOMINAL POSITION			
CASE	**x [m]**	**y [m]**	**z [m]**
COG_SACS (lcomb TPTR)	-0.35	-0.67	5.63
COG_WCR	-0.20	-0.50	5.70
Δ (SACS – WCR)	-0.15	-0.17	0.07
TP Main Dimension	16	16	7.91
Δ (%)	1%	-1%	0.9%

Table 5.2 – SACS -WCR CoG position comparison. X and Y measured form TP center, Z measured from barge Deck in SACS ref. system (ref to section 9.1 for SACS ref system)

BLPH - TRANSITION PIECE (TP) - Summary by Phase

Phase Code	Phase Description	Base Wt. (t)	Center of Gravity			Factored Wt. (t)	Center of Gravity			Design Net Wt. (t)	Center of Gravity			Design Gross (Expected) Wt. (t)	Center of Gravity		
			Northing (m)	Easting (m)	Elevation (m)		Northing (m)	Easting (m)	Elevation (m)		Northing (m)	Easting (m)	Elevation (m)		Northing (m)	Easting (m)	Elevation (m)
LO	Loadout	263	19,8	8,5	20,1	290	19,8	8,5	18,2	290	19,8	8,5	20,1	290	19,8	8,5	20,1
ST	Sea Transport	263	19,8	8,5	20,1	290	19,8	8,5	18,2	290	19,8	8,5	20,1	290	19,8	8,5	20,1
OP	Operating weight (Dry + Contents)	253	19,9	8,5	20,3	280	19,9	8,5	18,3	280	19,9	8,5	20,3	280	19,9	8,5	20,3
L	Lifting	230	19,7	8,6	20,3	254	19,7	8,6	18,4	254	19,7	8,6	20,3	254	19,7	8,6	20,3

Table 5.3 – WCR weight and CoG during transport (ref./20/). X measured towards NORTH, Y measured towards EAST from C1, Z from LAT.

Note: WCR do not consider seafastening and lower grillage weights.

5.2 REACTION FORCES

5.2.1 TP base reaction forces in Transportation Conditions

Maximum and minimum base reaction forces for Transition Piece in transportation conditions, are reported in the following table. Reactions are read in correspondence of sea fastening and lower grillage connections to barge deck in global reference system. Reaction forces for gravity loads, transient loads and their combinations in transportation conditions are fully detailed in sec. 13.1 for all load combinations.

JOINT	Rx [kN]				Ry [kN]				Rz [kN]				MOMENT(X) [kNm]				MOMENT(Y) [kNm]				MOMENT(Z) [kNm]			
	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND
SFA2	454	C210	-429	C213	675	C210	-637	C213	425	C210	-400	C213	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
SFA4	324	C213	-347	C210	517	C210	-482	C213	325	C210	-302	C213	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
SFC2	462	C213	-437	C210	650	C210	-687	C213	433	C213	-408	C210	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
SFC4	361	C206	-393	C201	534	C206	-581	C201	366	C201	-335	C206	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
Z000	153	C206	-149	C203	8	C309	-9	C213	1355	C206	-85	C303	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z001	38	C205	-34	C204	8	C310	-11	C213	237	C213	-10	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z002	91	C206	-81	C203	11	C210	-7	C313	448	C206	-49	C303	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z003	54	C201	-51	C208	8	C309	-9	C213	626	C101	208	C311	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z004	27	C214	-27	C211	8	C310	-10	C213	225	C213	-48	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z005	65	C206	-57	C203	11	C210	-8	C313	365	C206	20	C303	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z006	59	C215	-59	C310	12	C210	-7	C313	453	C210	-10	C315	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z007	139	C303	-142	C206	8	C309	-9	C213	1023	C206	39	C303	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z008	53	C312	-59	C213	8	C310	-11	C213	334	C213	-82	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z009	50	C212	-53	C313	8	C310	-10	C213	253	C213	-90	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z010	62	C208	-66	C301	8	C309	-9	C213	798	C101	103	C308	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z011	52	C315	-60	C201	11	C210	-8	C313	334	C210	-29	C315	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101

Table 5.4 – TP base reaction forces in Transportation Conditions – STEP 3 – Transportation Conditions

5.2.2 TP – Upper Grillage connection forces in Transportation Conditions

The connection between TP main column and Upper Grillage is made effective through dummy elements, simulating stoppers at upper grillage's top flange level. Maximum and minimum internal forces of dummy elements connecting Transition Piece and Upper Grillage in transportation conditions are reported in the following table.
Dummy elements' internal forces for gravity loads, transient loads and their combinations in transportation conditions are fully detailed in sec. 13.1 for all load combinations.

	MEMBER	MEMBER END	GROUP	LOAD CASE	Fx [kN]	Fy [kN]	Fz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]	REMARK
ALL LC	R4L6-F4L6	F4L6	SD1	C315	**355**	83	-392	0	0	0	MAX Fx
	R4L6-F4L6	F4L6	SD1	C210	**-1150**	**-115**	578	0	0	0	min Fx - MAX Fyz - MAX Fxz - MAX Fxy - min Fy
	R4L6-F4L6	F4L6	SD1	C313	313	**103**	-520	0	0	0	MAX Fy
	R4L6-F4L6	F4L6	SD1	C206	-255	-5	**584**	0	0	0	MAX Fz
	R4L6-F4L6	F4L6	SD1	C301	-629	-8	**-525**	0	0	0	min Fz
	R4L6-F4L6	F4L6	SD1	C308	-41	-1	456	0	0	0	min Fxy
	R4L6-F4L6	F4L6	SD1	C116	-38	54	-215	0	0	0	min Fxz
	R4L6-F4L6	F4L6	SD1	C104	-440	-11	-161	0	0	0	min Fyz
	R4L6-F4L6	F4L6	SD1	C101	-688	-8	-371	**0**	**0**	**0**	MAX Mx - min Myz - MAX Myz - min Mxz - MAX Mxz - min Mxy - MAX Mxy - min Mz - MAX Mz - min My - MAX My - min Mx

Table 5.5 – TP – Upper Grillage connection – dummy element internal forces - STEP 3 – Transportation Conditions

5.3 MEMBER CHECKS

Structural members with maximum Unity Check (UC) are detailed in the following table.

MEMBER	GROUP	DESCRIPTION	SECTION	COMBINATION	UC
SS03-SM12	UN2	Stairs stinger UPN220	UPN220	C201	0.35
SS04-SM13	UN2	Stairs stinger UPN220	UPN220	C210	0.33
SU04-SU02	IP3	Stairs beam IPE330	IPE330	C213	0.31
SC09-SM35	HA3	Stairs beam HEA340	HEA340	C201	0.28
SM15-SS08	UN2	Stairs stinger UPN220	UPN220	C206	0.28
SS08-SS06	UN2	Stairs stinger UPN220	UPN220	C209	0.26
SM14-SS07	UN2	Stairs stinger UPN220	UPN220	C205	0.26
SM15-SM14	L15	Stairs beam L 150x100x10	L15	C210	0.26
SS07-SS05	UN2	Stairs stinger UPN220	UPN220	C214	0.24
SU01-SU03	IP3	Stairs beam IPE330	IPE330	C210	0.23

Table 5.6 – Member UC Summary

5.4 PLATE CHECKS

Maximum Von Mises stress of plate elements in the lower part of main column (7m diameter, thickness 65mm) is 145 MPa and results below the design yield stress of 380 MPa (UC= 145 / (380/1.10) = 0.42).

5.5 TUBULAR JOINT CHECKS

Structural tubular joints with maximum Unity Checks (UC) for punching shear are detailed in the following table.

JOINT	DESCRIPTION	CHORD	BRACE	COMBINATION	UC
SL06	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C206	0.12
SM02	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C206	0.10
SM30	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C101	0.09
SM03	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C201	0.09
SU01	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C210	0.08
SL18	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C201	0.07
SM01	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C206	0.07
SU12	Stairs tubular joint	273.1 x 12.7	219.1 x 10.31	C201	0.07
SU11	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C210	0.07
SM05	Stairs tubular joint	219.1 x 10.31	168.3 x 7.11	C213	0.05

Table 5.7 – Tubular joint UC summary

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6 BLPH TRANSITION PIECE DESCRIPTION

The connection of BLPH Topside with Monopile is realized through a Transition Piece (TP) structure. The interface level between the Monopile and the Topsides is at El.+17.050m relative to LAT.

TP is composed by a central column with an outer diameter of 7m and four (4) boxed girders with height ranging from 2.5 m to 1.4 m, oriented along the main diagonals of the TP and accommodating at their ends four (4) tubular receptacles for supporting the Topside. The four diagonal arms of the TP are connected along the perimeter by other four (4) boxed girders forming a stiff deck 16m x 16m with TOS. El. +21.71m from LAT.

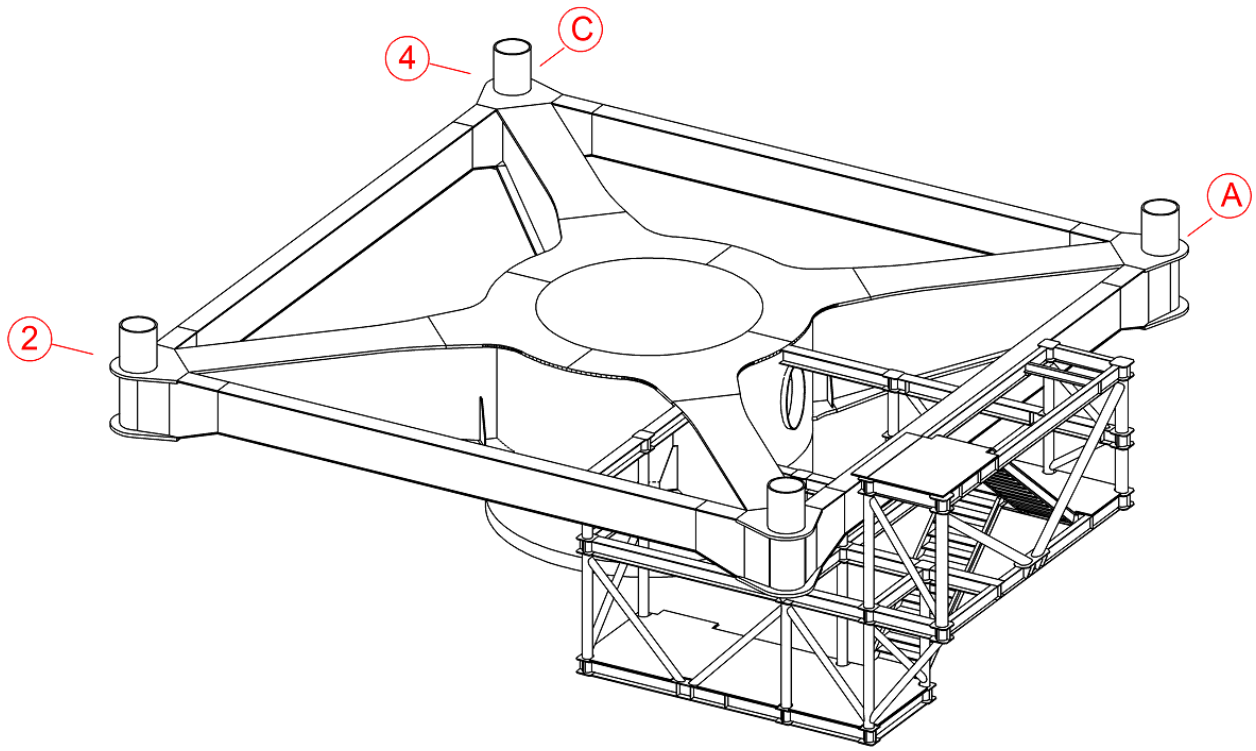


Figure 6.1 - Base Load Power Hub - Transition Piece – 3D View

7 DESIGN DATA

Design loads considered for the transportation include wind loads and transient actions from barge motions as per data reported in the following from Design Basis, Ref./19/.

7.1 WIND DATA

Omni-Directional wind speed data are reported in Table 7.1 , from Ref.**Error! Reference source not found.**and **Error! Reference source not found.**.

Averaging Time	Return period (years)						
	1	2	5	10	50	100	1000
1hr	31.8	33.4	35.1	36.4	39.1	40.1	43.4
10 min	33.7	35.5	37.4	38.8	41.7	42.9	46.5
3s	39.4	41.6	44.1	45.9	49.7	51.1	56.0

Table 7.1 - Omni-Directional Wind velocities [m/s] at 125 m MSL

Wind speeds are provided at 125m MSL. Wind speeds at any specified averaging time or elevation, will be calculated according to following equations, Ref./2/:

$U(z, t) = U(z) * [1 - 0.41 * Iu(z) * \ln(t/t0)]$

$U(z) =$ 1-hour mean wind speed given by:

$U(z) = U0 * [1 + C * \ln(z/zr)]$

$C = 0.0573 * (1 + 0.15 * U0)^{1/2}$

$Iu = 0.06 * [1 + 0.043 * U0] * (z/zr)^{-0.22}$

$U0 =$ 1-hour average at the reference elevation, zr

$zr =$ 10 m above sea level.

Directional exceedance data for wind is presented in Figure 7.1. The wind predominantly blows from the south- west.

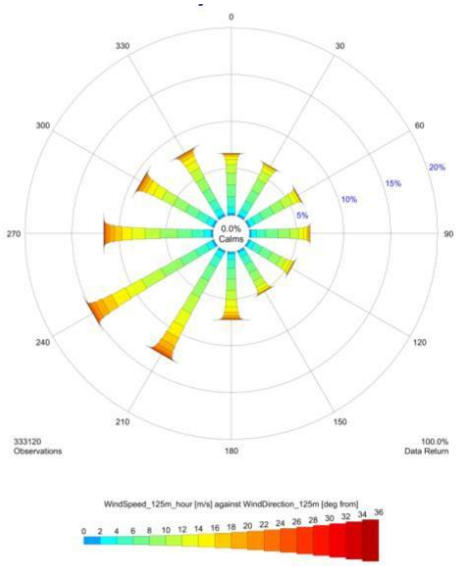


Figure 7.1 - Mean Hourly Wind Speed Distribution at 125 m MSL

7.2 MOTION CRITERIA

Motion criteria are defined according to DNV for unrestricted world-wide tows – CASE 2 ref. /9/, and Design Basis, ref. /19/.

Item	Amplitude	Period
Roll	20 degrees	10 seconds
Pitch	12.5 degrees	10 seconds
Heave	0.20 g	

Table 7.2 - DNV Default Motion Criteria

8 MATERIALS

8.1 STRUCTURAL STEEL PROPERTIES

For the structural analyses, steel types and grades to be used for the platform structures are summarised in Table 8.1 and specified in Ref./22/. The material selection criteria are based on the requirements of ISO 19906:2019, ISO 19902:2020 and ISO 19901-3:2014. The materials are in accordance with the EN standard 10225:2019 and 10025:2019 and are suitable for plates, rolled sections and welded / seamless tubulars.

			EN10025-3	ISO EN 19902:2020						
Design Class	**Complexity**	**SQL**	**Hot rolled bar**	**Plates and Welded Tubular**	**Sections**	**SMLS pipes**	**THK**	**CVN inpact test**	**Material Designation**	**List of Options (EN10225-1 to -4) & EN10025-3**
DC1 TP to monopile flange connection	High	I (Z properties)	EN 10025 S420 NL	NA	NA	NA	t > 50	-40	DC1-I-420-40_Z	1, 2, 3, 4, 6, 12, 18, 24, 30
DC1 Complex lift-nodes and element connection to topside, Lift points, main complex joints	High	I (Z properties)	NA	EN 10225 S420 QLO / ML	NA	NA	25 < t <= 50 t > 50	-40 -40	DC1-I-420-40_Z	2, 7, 8, 11, 12, 17, 18
DC2 simple joints, primary deck girders and beams of Topside and TP, column and diagonal to lift points, main columns, Davit crane support, Bolts	Low	II	NA	EN 10225 S420 QLO / MLO	NA	NA	t < = 12 12 < t <= 25 25 < t <= 50 t > 50	0 -20 -40 -40	NA DC2-II-420-20 DC2-II-420-40	- 2, 7, 8, 11 17 for t > 40mm
DC3 all other columns and diagonals, stiffeners, Secondary deck beams, Grillage and sea fastening	High	II	NA	EN 10225 S355 NLO / MLO	EN 10025 S355 MLO	EN 10225 S355 NLHHO / QLHHO API 5L X52	t < = 12 12 < t <= 25 25 < t <= 50 t > 50	0 -20 -40 -40	DC3-II-355-0 / DC3-II-X52-0 DC3-II-355-20 / DC3-II-X52-20 DC3-II-355-40 / DC3-II-X52-40	2, 7, 8 11 for plate 17 for t > 40mm
DC4 Equipment and vessel supports, modules supports, equipment fixing bolts	Low	III	NA	EN 10025 S355 J2	EN 10025 S355 J2	API 5L X52 EN 10210 S355 J2H	t < = 12 12 < t <= 25	0 0	DC4-III-355-0 / DC4-III-X52-0 / DC4-III-X60-0	-
DC5 floor plating, grating, Walkways, stairs, handrails	Any	IV	NA	EN 10025 S235 JR EN 10025 S275 J0 EN 10025 S355 J0	EN 10025 S235 JR EN 10025 S275 J0 EN 10025 S355 J0	API 5L Gr.B EN 10210 S235 JRH / EN 10210 S275 J0H / EN 10210 S355 J0H	t < = 12 12 < t <= 25	10 10	DC5-IV-235-10 / DC5-IV-275-10 / DC5-IV-355-10 / DC5-IV-GRB-10	-

Table 8.1 - Material Selection, Ref /22/

Mechanical properties for structural materials are presented in Table 8-2, Table 8-3 and Table 8-4.

- Young's Modulus = 205,000 N/mm^2
- Density = 7850 kg/m^3
- Poisson's Ratio = 0.3

Thickness (mm)	Min. Tensile Strength (N/mm^2)	Min. Yield Strength (N/mm2)	Steel Type (1)
t ≤ 16	500	420	I & II
16 < t ≤ 40	500	400	I & II
40 < t ≤ 63	480	390	I & II
63 < t ≤ 100	480	380	I & II
Note: 1) Type I steel has Z (through the thickness) properties.			

Table 8.2 – Mechanical properties of Plates

Thickness (mm)	Min. Tensile Strength (N/mm²)	Min. Yield Strength (N/mm2)	Steel Type
t ≤ 20	460	355	III
20 < t ≤ 40	460	345	III

Table 8.3 – Mechanical properties of Structural Seamless Tubulars

Thickness (mm)	Min. Tensile Strength (N/mm2)	Min. Yield Strength (N/mm2)	Steel Type
t ≤ 16	460/360	355/275	IV
16 < t ≤ 40	460	345	IV

Table 8.4 – Mechanical properties for Structural Sections

8.2 PLATING

Plate thicknesses for primary structural steel starts at a minimum of 10 mm and increase in 5 mm steps Secondary steel lower and upper deck plates are 8 mm thick and 10mm for laydown areas for Dropped Object Protection (DOP).

Blast walls are not to be provided on a hydrogen processing facility, as free ventilation and free explosion venting is more important, and supportable, than obstruction walls.

8.3 GRATING

Gratings are characterized by bearing bars 30 mm x 5 mm and mesh 30 mm x 50 mm.

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9 DESIGN CRITERIA AND REQUIREMENTS

9.1 GENERAL

Structures in SOW are designed in accordance with limit states approach of ISO codes 19901 and 19902, Refs./2/, /3/and /6/. For non-tubular sections, Eurocode, Ref./8/, is adopted. Member forces and moments derived from the global analyses are used for checking member strength and stability, and joint strength.

9.2 PARTIAL RESISTANCE FACTORS

9.2.1 Partial Resistance Factors for Tubular Sections:

The partial resistance factors for tubular sections from ISO 19902, Ref./6/, are listed below.

Resistance factor	Value	Definition
$\gamma_{R,t}$	1.05	Partial resistance factor for axial tensile strength
$\gamma_{R,c}$	1.18	Partial resistance factor for axial compressive strength
$\gamma_{R,b}$	1.05	Partial resistance factor for bending strength
$\gamma_{R,v}$	1.05	Partial resistance factor for shear strength
$\gamma_{R,h}$	1.25	Partial resistance factor for hoop buckling strength

Table 9.1- Resistance Factors for Tubular Sections

9.2.2 Partial Resistance Factors for Non-tubular Sections

Referring to ISO 19901-3, Ref./3/, section 8, to be consistent with ISO 19900 inherent the level of safety, a "building code correspondence factor" is to be applied to the AISC partial factors.

The partial resistance factors for non-tubular sections from Eurocode 3, Ref./8/, are listed below

Resistance factor	Value	Definition
Resistance of members and cross sections		
γ_{M0}	1.10	Cross-section resistance to excessive yield strain including local buckling
γ_{M1}	1.10	Resistance of unstable elements measured during element inspection
γ_{M2}	1.25	Tensile cross-section resistance to mechanical breakdown
Resistance of connections		
γ_{M2}	1.25	Bolts, rivets, pins, welds and slabs on supporting surface
γ_{M3}	1.25	Sliding resistance at Ultimate Limit State Category C
$\gamma_{M3,SER}$	1.10	Sliding resistance at Serviceability Limit State
γ_{M4}	1.10	Injection bolt collapse resistance
γ_{M5}	1.10	Resistance of connections in open lattice trusses

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$\gamma_{M6,SER}$	1.00	Resistance of pins at Serviceability Limit State
γ_{M7}	1.10	Preload of high strength bolts

Table 9.2- Resistance for Non Tubular Section

9.2.3 Partial Resistance Factors for Tubular Joints Check

The partial resistance factors for tubular joints checks are provided in following table according to ISO 19902, Ref./6/.

Resistance factor	Value	Definition
$\gamma_{R,j}$	1.05	Partial resistance factor for joints
$\gamma_{z,j}$	1.17	Additional partial resistance factor for members during joint pre-strain collapse

Table 9.3 - Resistance Factors for Tubular Joints

9.3 LOAD CLASSIFICATIONS

Design loads are classified as either global or local within ISO 19901-3, Ref. /3/ and ISO 19902, Ref./6/ and summarized in Table 9.4.

Load Type	ISO Designation	Description
Permanent (Dead)	G1	Structure self-weight; Equipment & piping dry weight; Any actions due to misalignment of structures such as between the topside and TP
Permanent (Dead)	G2	permanent action imposed on the topsides structure by self-weight of equipment and other objects that remain constant for long periods of time, but which can change from one mode of operation to another, or during a mode of operation, bulk loads
Variable (Live)	Q1	Equipment & piping contents weight; Superimposed area loads; Ice and snow accretions
Environmental Transient	T_{Eo}	1-yr storm wind (wind in transportation conditions is assimilated to a Transient Load)
Transient	T	Transient Loads for Pre-Service Analyses (inertial loads from barge motion)

Table 9.4 - ISO Loads Classification

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9.4 PARTIAL ACTION FACTORS

9.4.1 Partial Action Factors for Pre-Service Analysis

Partial Action Factors for Pre-Service analysis (e.g. Lifting, Transportation, Load-out) conditions are shown in Table 9.5 with reference to three design situations, according to ISO 19902, Ref./6/. where:

- G_T are the permanent actions during the transient situation;
- Q_T are the variable actions during the transient situation;
- T represents the actions from the transient situation being considered.

SITUATION	ACTION		
	Permanent (GT)	**Variable (QT)**	Transient (T)
1	1.3	1.3	1.0
2	1.1	1.1	1.35
3	0.95	0.9	1.35

Table 9.5 – Partial action factors for Pre-service Analyses

9.5 ACCEPTANCE CRITERIA

The maximum member Unity Check (UC) will be less than unity.

10 STRUCTURAL ANALYSIS

10.1 TRANSPORTATION ANALYSIS

The Transition Piece analysis in transportation conditions include permanent, variable and transient actions as wind loads and accelerations from barge motions, according to design data reported in sec.7.

The transportation analysis is performed considering a two steps analysis with different restraint conditions, in order to ensure that the whole mass is reacted by the grillages only and the dynamic loads by grillages and by sea-fastening suitably designed for horizontal loads.

Partial action factors for pre-service analyses as per Table 9.5 will be considered and sixteen (16) basic combinations of wind and inertia loads are therefore defined for each design situation (± Pitch ± Heave ± Wind and ± R ± H ± Wind).

The members and joints of the TP structure are checked in accordance with ISO 19902 and Eurocode 3, Ref./6/ and /8/, respectively for tubular and non-tubular elements.

10.2 TRANSPORTATION ARRANGEMENT

The Transition Piece is to be transported on 300ft cargo barge supported by upper and lower grillages structures with Rows A and C aligned with the barge longitudinal axis. The position of TP is shown in figure 10-1.

The 300ft barge (P-MAK) is characterized by following main dimensions:

- Length: 91.5m
- Breadth: 27.40m
- Side height: 6.10m

The centre of rotation is assumed to be at the centre of the barge at water level.

The barge motion axes are defined as follows:

- the pitch axis (barge transverse axis) corresponds to the model Y-axis;
- the roll axis (barge longitudinal axis) corresponds to the model X-axis;
- along the x axis of TP model, the barge centre of motion is assumed at X=25.875 m;
- along the y axis of TP model, the barge centre of motion is assumed at Y=+0.000 m;
- along the z axis of TP model, the barge centre of motion is assumed at Z=-3.0 m, 3.0 m below the barge deck.

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An overview of the transportation layout is shown in the following figure from Ref./25/.

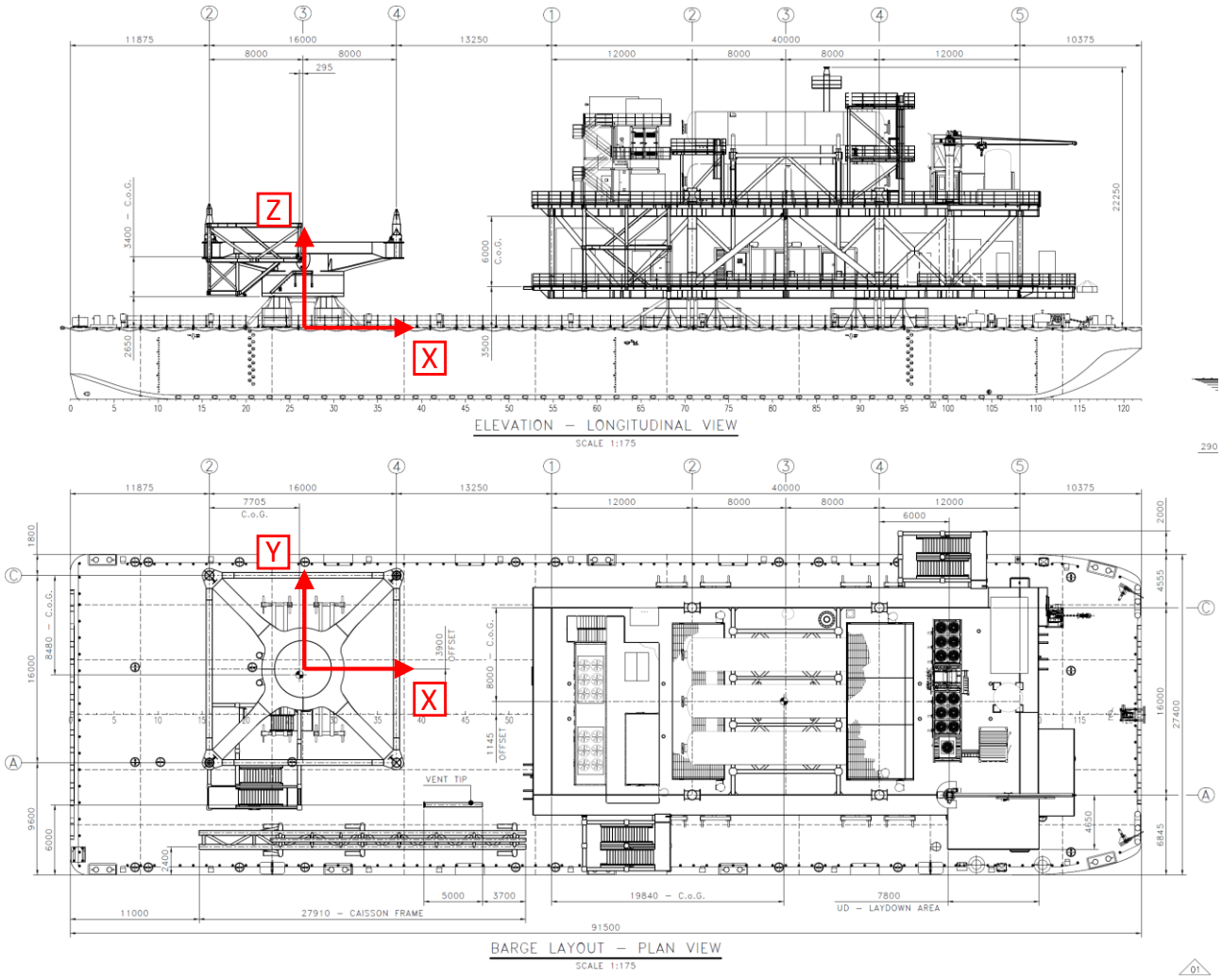


Figure 10.1 – Transportation Arrangement – Side and Plan views

10.3 STRUCTURAL MODEL

10.3.1 Structural Model Description

The software SACS™, ref./35/, is used for all global analyses of the structures in the SoW. The Transition Piece SACS model used for the Transportation analysis is derived from the one used for the Loadout analysis, Ref./33/. The 3D structural model of TP includes the structural elements of the stairs in correspondence or Row A. Sea-fastening, Upper and Lower Grillage are included within structural model to better evaluate force and stress distribution in transportation conditions.

Structural checks of sea-fastening and grillage are not covered by present document and are detailed in a separate dedicated report, ref./27/. The TP main column with 7m diameter has been modelled between el.+17.05 and +18.05m with isotropic shell elements to better evaluate reaction forces at TP contacts with the upper grillage in transportation conditions.

Member groups and section properties are reported in APPENDIX A.

Structural member and plate groups, joints labels and member properties (kyLy, kzLz, Lb and Fy) are detailed in APPENDIX B.

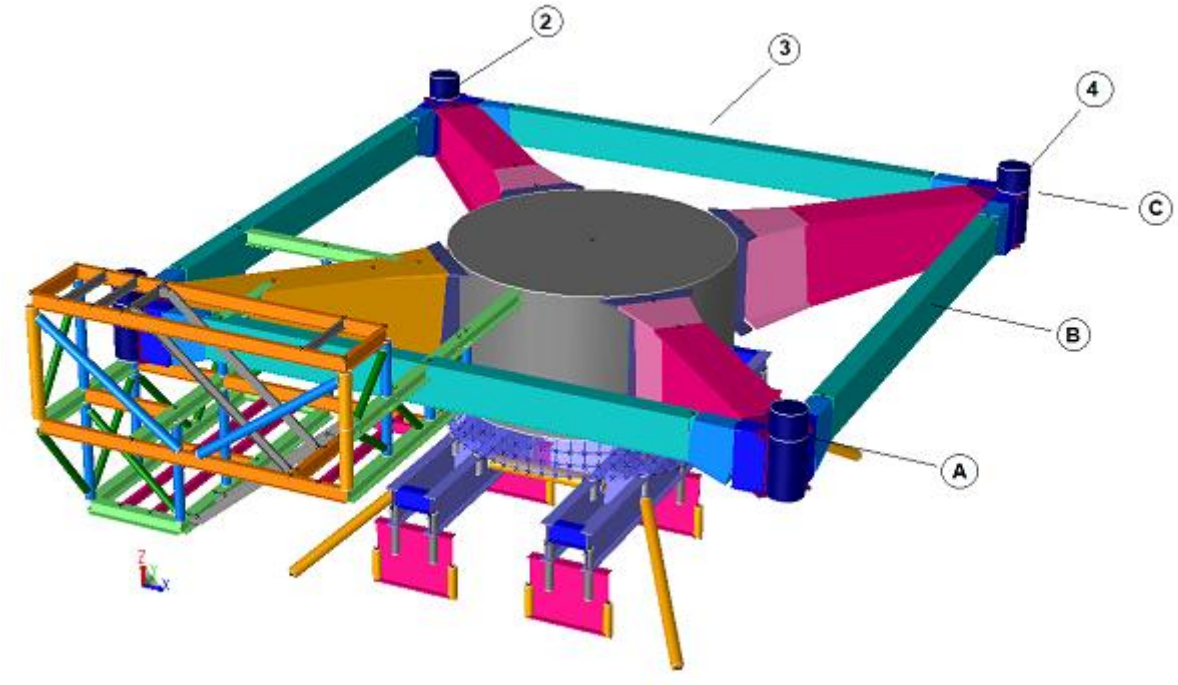


Figure 10.2 - TP structural model in Transportation Conditions

10.3.2 Coordinate System

The model geometry is referred to a right-handed orthogonal Cartesian coordinate system with the origin located at intersection of Rows B and 3 at barge deck TOS. The X-axis is positive toward Row 4, the Y-axis is positive toward Row C and the Z-axis is positive upward, according to following figures and Figure 10.1.

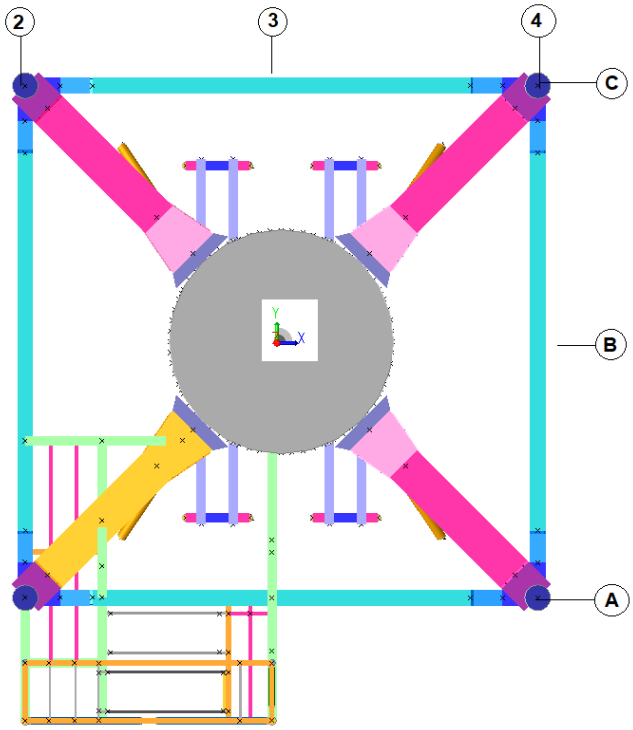


Figure 10.3 - BLPH TP Structural Model - Top View

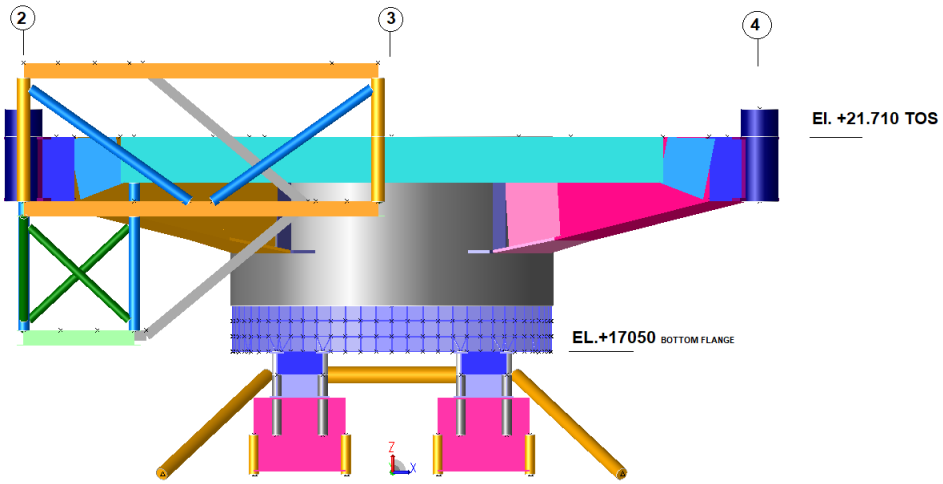


Figure 10.4 - BLPH TP Structural Model – Row A Lateral View

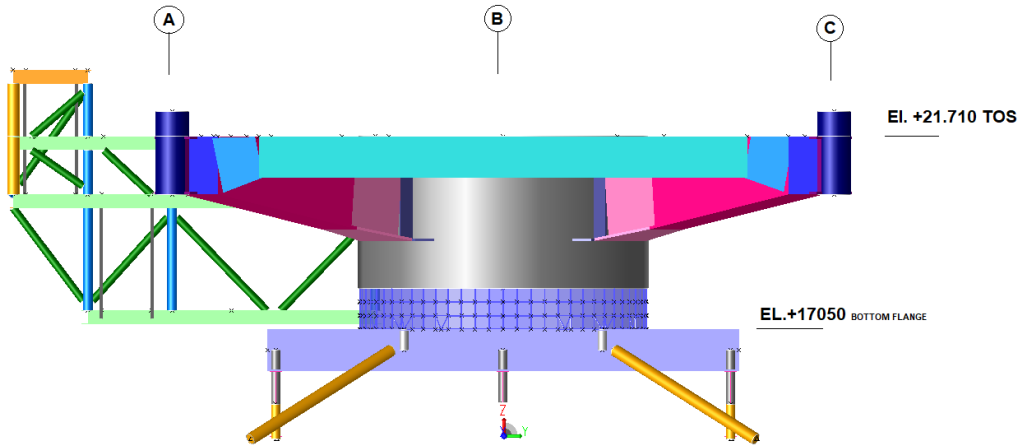


Figure 10.5 - BLPH TP Structural Model – Row 4 Lateral View

10.3.3 Transition Piece – Grillage connection

The connection between TP and Upper Grillage is modelled as per following:

- 4 rigid dummy elements transmitting vertical loads only (Fz) through member release in correspondence of joints connected to shell elements of TP main column (- 011111). Dummy elements are located in correspondence of contact area of TP on upper grillage TOS (BLUE);
- 4 rigid dummy elements transmitting vertical loads and shears (Fz, Fy and Fz) through member release in correspondence of joints connected to shell elements of TP main column (- 000111). Dummy elements are located in correspondence of TP stoppers at upper grillage TOS (RED).

Dummy elements and respective end joints and releases are represented in following figure

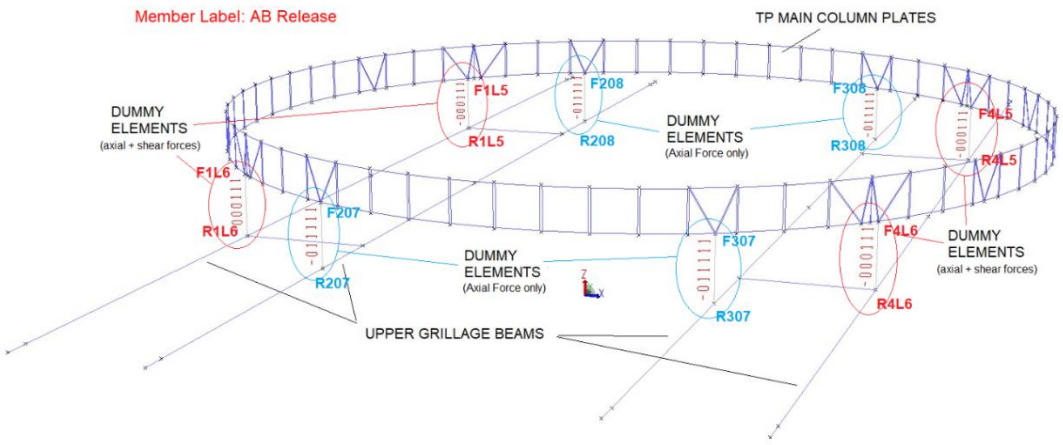


Figure 10.6 - TP-Upper Grillage connection - dummy elements (joint labels and member end release)

The connection between Upper Grillage and Lower Grillage and between Lower Grillage and barge deck is realized through rigid dummy elements to account for proper beam elevations and restraints, as per Sec.10.4. Four sea-fastening tubular elements connect the upper grillage to barge deck, according to a symmetric restraint scheme.

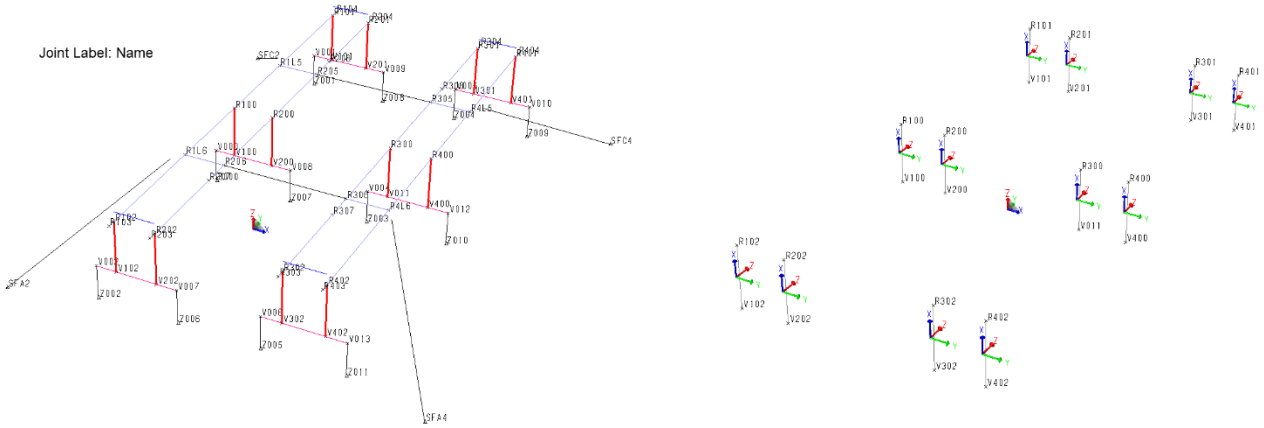


Figure 10.7 - Upper - Lower Grillage connection - dummy elements

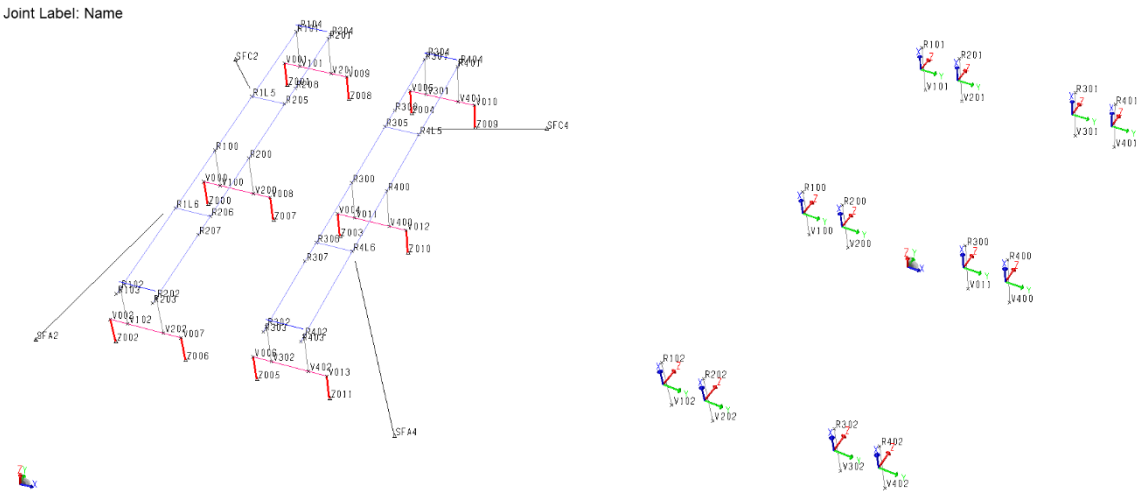


Figure 10.8 - Lower grillage to barge deck connection - dummy elements

10.4 ANALYSIS PROCEDURE

The calculation procedure adopted for transportation analysis is aimed at obtaining the correct distribution on supports of static (dead weight) and transportation loads (inertia forces due to barge motion and wind) properly accounting for grillage and lateral restraints loading sequence.

The distribution of Transition Piece dead weight at the cargo set-up on barge is calculated excluding the lateral restrain contributions of grillage and sea fastenings that are activated in a second phase to resist the transportation transient loads only.

The above loading sequence is therefore analysed by two separate computer runs, with different constraint conditions and applied loads. The actual loads distribution is obtained by suitably combining the two analyses by means of the Combine module of SACS. To ensure the full compatibility and the superposition of the two analyses, the processed models are identical, only loads and constraints are different.

In accordance with the above-described procedure, the transportation analysis is performed through the following three steps.

STEP 1

A first analysis is performed considering the Transition Piece supported in correspondence of the lower grillage. The restraint configuration for step 1 in terms of joint fixities is showed in the following figure (0/1 digits sequences associated with each joint represent the restraint condition referred to the 6 dof, with 0 = free and 1 = fixed). Only permanent and variable loads, including installation aids, rigging and grillages weights (load combination TPTR, sec.11.3) are considered in Step 1 analysis.

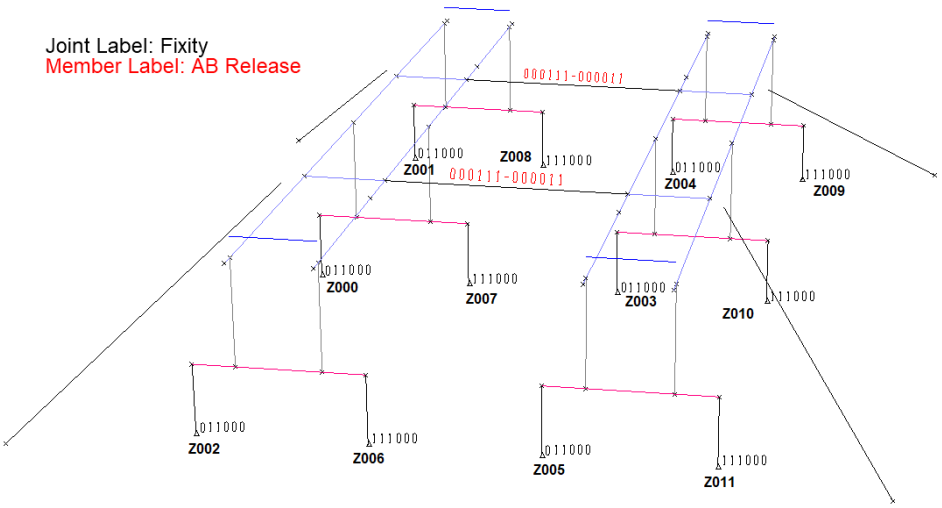


Figure 10.9 – STEP 1 - Restraints scheme

STEP 2

In this analysis the horizontal restraint provided by grillage and sea-fastening are made effective as per following restraint configuration:

- lower grillage joints restrained at barge deck (joints restraint 111100, with 0/1 digits sequences associated with each joint represent the restraint condition referred to the 6 dof - Sx,Sy,Sz,Rx,Ry,Rz - where 0 = free and 1 = fixed);
- hinged ends for sea-fastening members (member release 000111-000011, with 0/1 digits sequences associated with end joint release condition referred to the 6 dof - Sx,Sy,Sz,Rx,Ry,Rz - where 0 = no release and 1 = release);
- dummy elements of upper to lower grillage connection capable of transmitting only vertical loads and shear along global X direction (member release 001111-00000, with 0/1 digits sequences associated with end joint release condition referred to the 6 dof - Sx,Sy,Sz,Rx,Ry,Rz - where 0 = no release and 1 = release);

Only transient loads (wind and inertia forces, sec.11.4) are considered in Step 2 analysis.

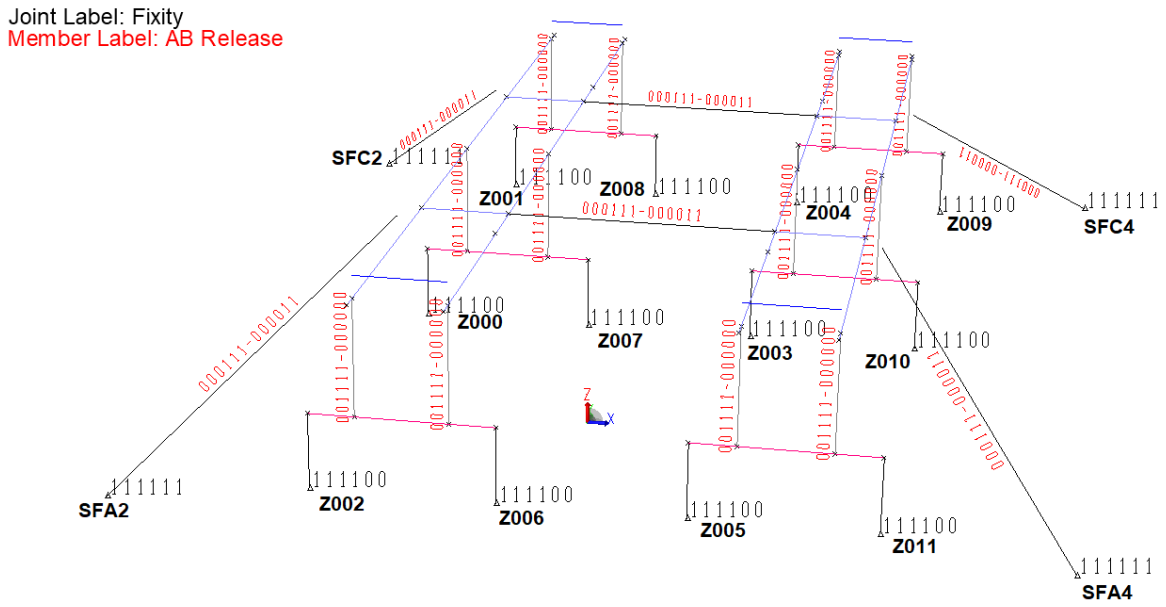


Figure 10.10 - STEP 2 - Restraints scheme

STEP 3

The two analyses above described are superimposed by SACS Combine module.

As per Transportation load combinations described in sec. 12, permanent and variable loads from analysis step 1 and transient loads from analysis step 2 are included and suitably combined. Base reactions and resulting internal forces and stress in structural members are evaluated and processed for the structural checks of the TP structures.

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11 BASIC LOAD CASES

All the design loads have defined according to the Weight Control Report and Plot Plans, respectively Ref./20/ and /21/, in terms of weights, CoG position and contingency factors. The datum for weight reporting is different to that for the SACS structural analysis. The origin for the weight reporting is at gridline intersection C1 at LAT.

11.1 PERMANENT ACTIONS

11.1.1 Modelled structural dead weights

Dead weights of the modelled structures have been automatically evaluated by SACS and included in following basic load conditions.

- Load condition DZTP: dead weight of Transition Piece's modelled structures

The dead weights of modelled structures of Transition Piece are included within basic load condition DZTP.

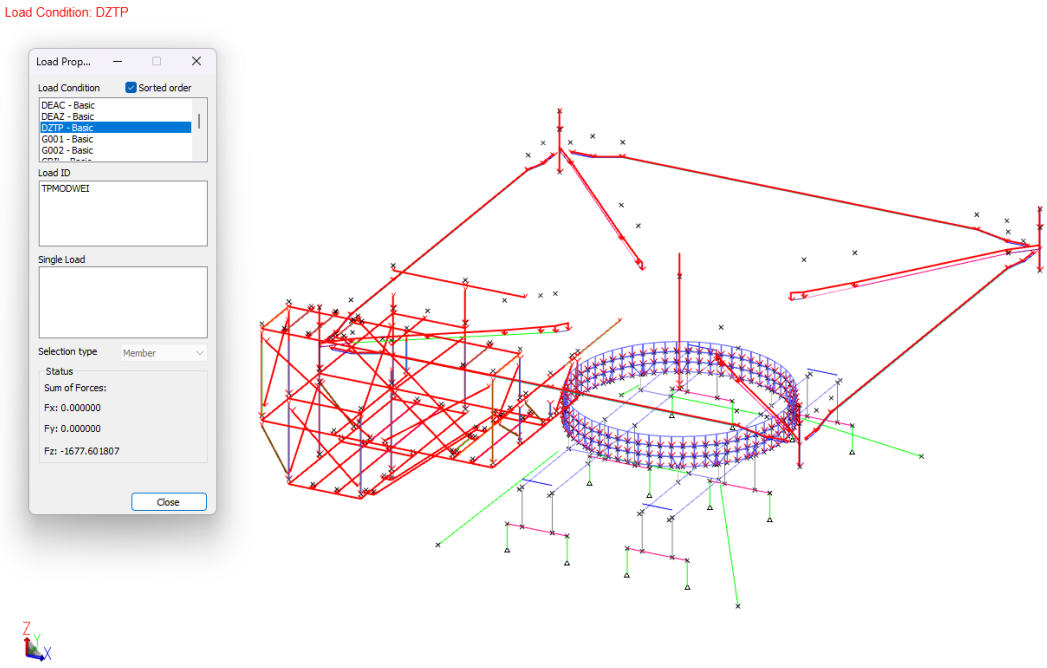


Figure 11.1 – TP basic load condition DZTP

- Load condition LOGR: dead weight of modelled structures of Lower Grillage

The dead weights of modelled structures of lower grillage are included within basic load condition LOGR.

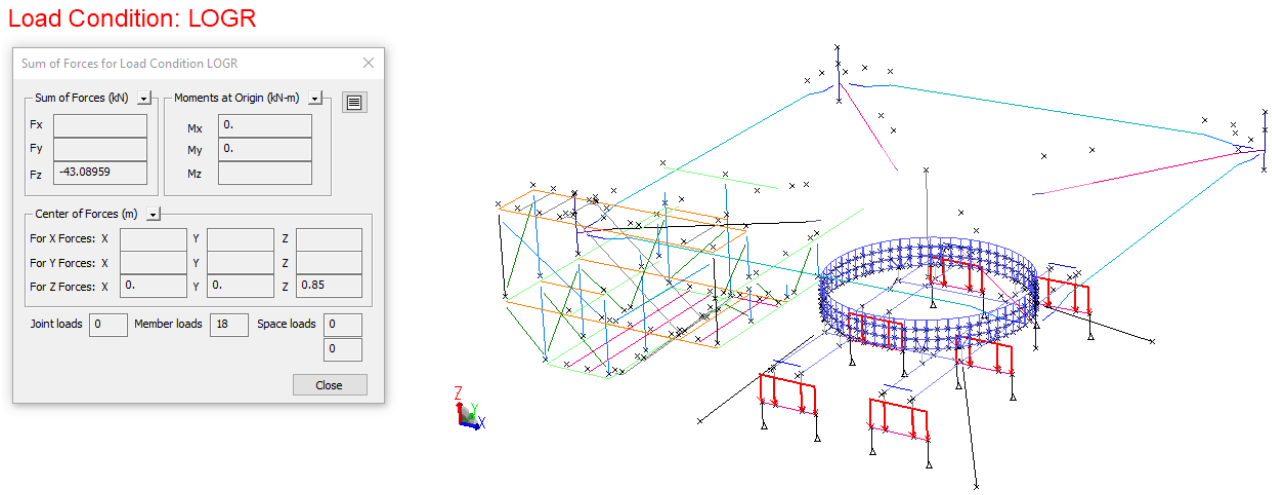


Figure 11.2 – TP basic load condition LOGR

- Load condition UPGR: dead weight of modelled structures of Upper Grillage

The dead weights of modelled structures of upper grillage are included within basic load condition UPGR.

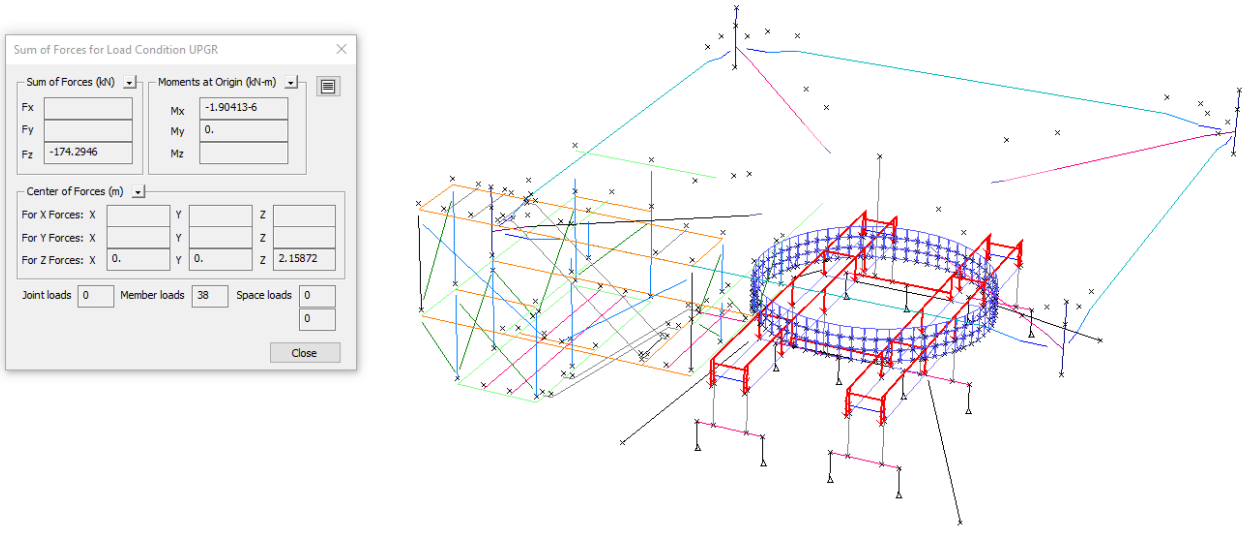


Figure 11.3 – TP basic load condition UPGR

- Load condition SEAF: Sea-fastening dead weight

The dead weights of modelled sea fastening elements are included within basic load condition SEAF.

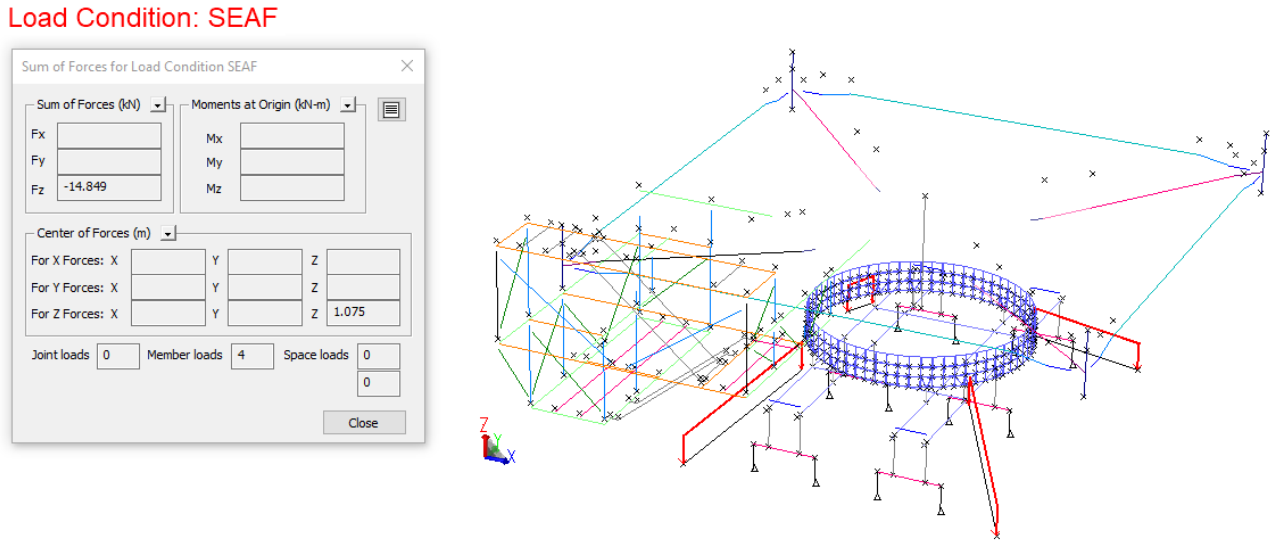


Figure 11.4 - TP basic load conditions SEAF

11.1.2 Not modelled structural dead weights

Following basic Load conditions have been defined for not modelled elements' structural dead weights.

- Load condition WFLO: FLOORING AND GRATING PERMANENT LOADS

Stairs and walkways grating weights have been defined in SACS load combination WFLO.

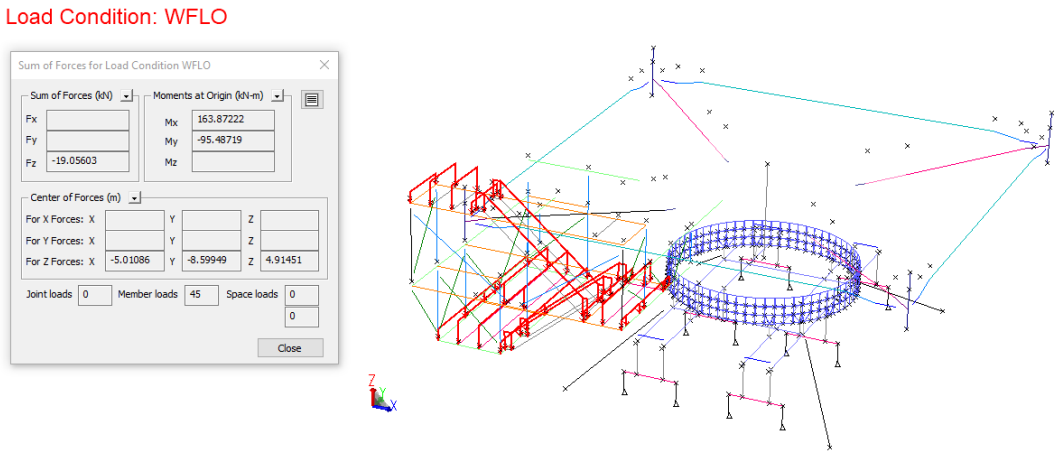


Figure 11.5 – TP basic load conditions WFLO

- Load condition WPER: SECONDARY STRUCTURES PERMANENT LOADS

Not modelled structural weights have been defined in SACS load condition WPER as per following table, based on WCR, ref./20/.

PERMANENT STRUCTURAL WEIGHTS - WPER - TP		
LOAD ID	**W**	**Description**
[-]	**[kN]**	
ST_GUIDE	40	Stabbing Guides
HR_ST_TP	20	Hand Rails
PF_BOTFL	90	Bottom MP Flange Weight
ACCWLK_T	10	access stair to MP pltf
SACS LOAD COND.	**159.6**	**Not Modelled Permanent Structural Weights**

Table 11.1 – Load Condition WPER

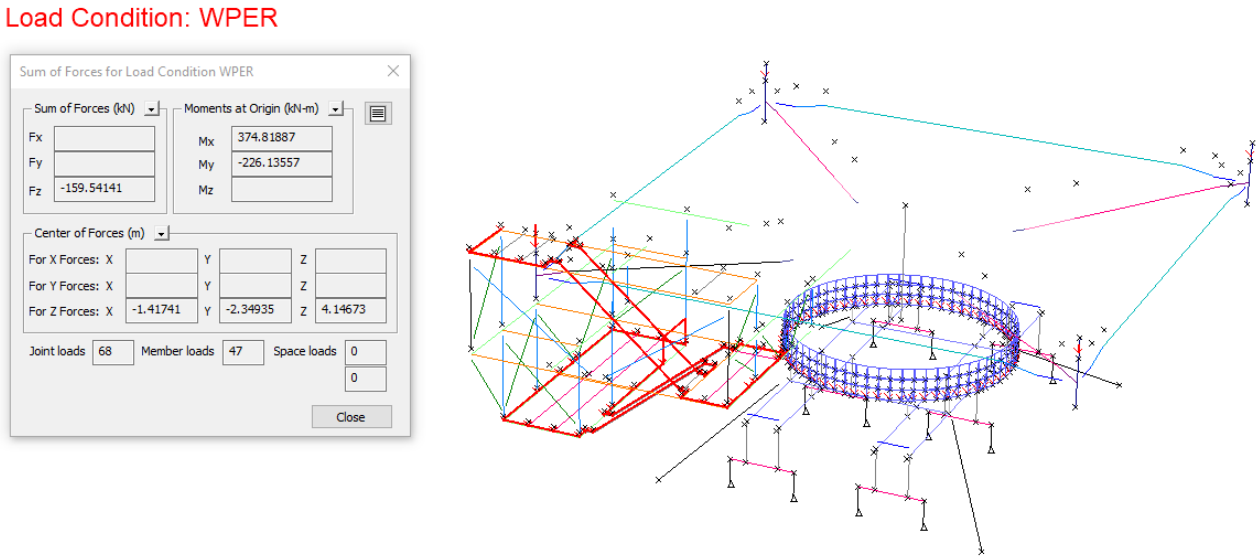


Figure 11.6 – TP basic load conditions WPER

These loads include dry weight TP process/utility equipment and electrical & instrumentation equipment and other object permanently mounted on the structure that do not change with the mode of the operation.

- Load condition MECD: EQUIPMENT DRY WEIGHTS (contingency included)

Transition Piece's Equipment dry weights, already including 12% contingency have been included in load condition MECD.

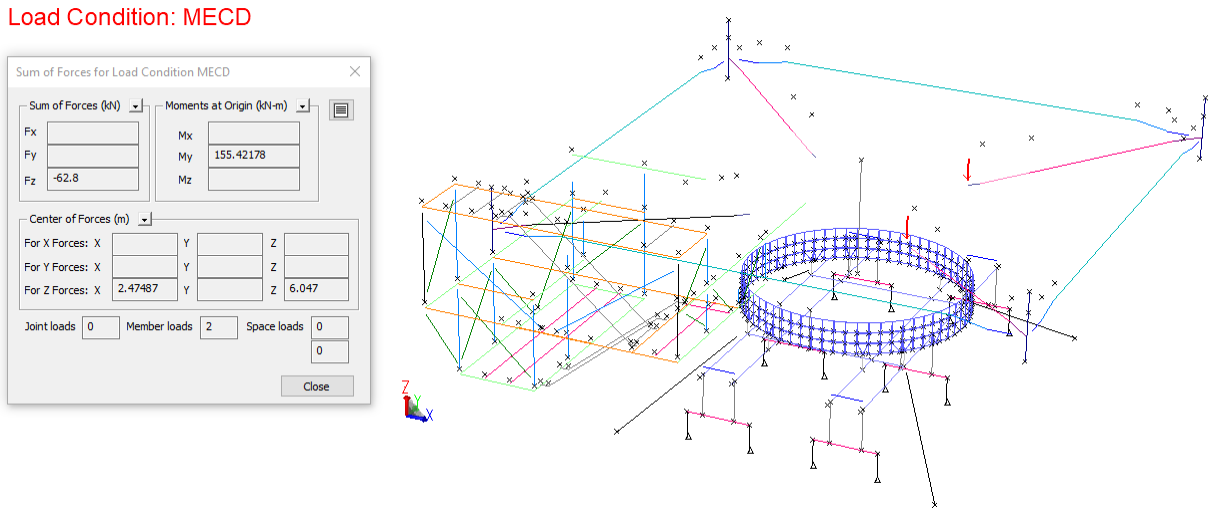


Figure 11.7 - Load Condition MECD

11.1.3 Installation aids and rigging weights

- Load condition RIGG: installation aids and rigging weights

Basic load condition RIGG has been included in the structural model to account for installation aids and rigging weights (slings, shackles, temporary handrails for installation purpose):

Permanent Loads – Basic Load combination RIGG		
Load ID	W [kN]	Description
SHACKLES	12	Shackles
SLINGS	100	Slings
TMP_HANR	40	Temporary handrails and guides on TP for installation purpose

Table 11.2 – Temporary Actions - Basic Load Combination RIGG

Load Condition: RIGG

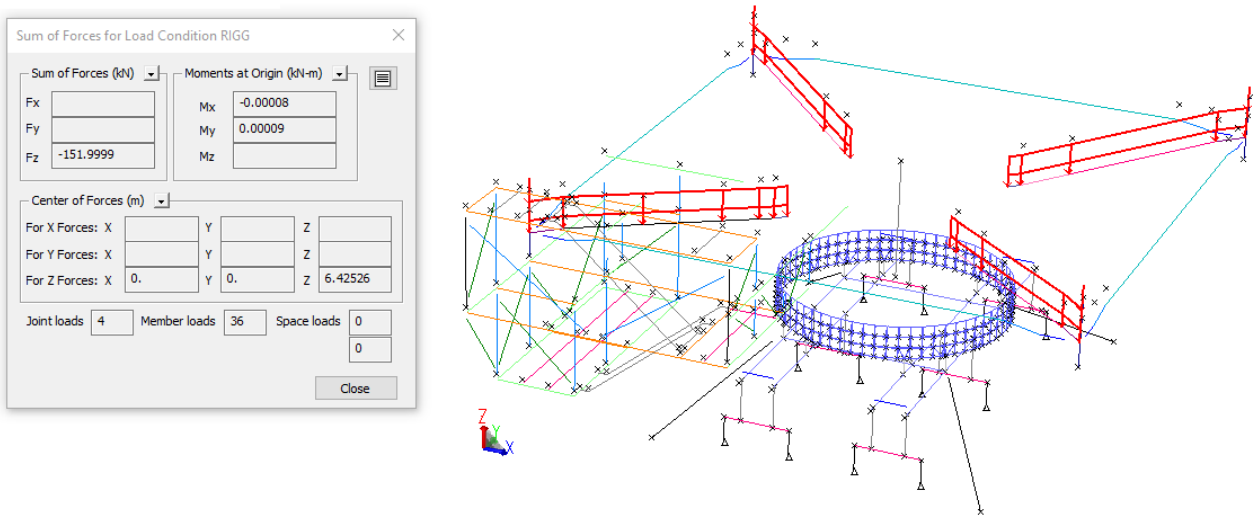


Figure 11.8 - TP basic load conditions RIGG

11.1.4 TP Permanent Actions Basic Load Cases Summary

Permanent actions basic load cases have been combined in load combination G001 accounting for different weight contingencies of basic load conditions.

Permanent Loads – Basic Load combination G001		
Basic Load Cases	Description	Load Factors
DZTP	TP MODELLED STRUCTURE DEAD WEIGHTS	1.30
WFLO	FLOORING AND GRATING PERMANENT LOADS	1.10
WPER	SECONDARY STRUCTURES PERMANENTS LOADS	1.10
MECD	EQUIPMENT DRY WEIGHTS (cont. included)	1.00

Table 11.3 - Permanent Actions - Basic Load Combination G001

Following SACS excerpt details the basic load conditions and load combination G001 resultant, accounting for gross permanent weights.

```
                                  ************* SEASTATE LOAD CASE CENTER REPORT *************
                                                  RELATIVE TO STRUCTURAL ORIGIN
LOAD        ********* X - DIRECTION *********      ********* Y - DIRECTION *********      ********* Z - DIRECTION *********
LABEL       FORCE       X         Y         Z      FORCE       X         Y         Z      FORCE       X         Y         Z
              (KN)      (M)       (M)       (M)      (KN)      (M)       (M)       (M)      (KN)      (M)       (M)       (M)

DZTP          0.00                                   0.00                                -1677.60    -0.35     -0.59      5.97
WFLO          0.00                                   0.00                                  -19.06    -5.01     -8.60      4.91
WPER          0.00                                   0.00                                 -159.54    -1.42     -2.35      4.15
MECD          0.00                                   0.00                                  -62.80     2.47      0.00      6.05

G001          0.00                                   0.00                                -2440.14    -0.39     -0.77      5.84
```

11.2 WCR – STRUCTURAL MODEL COMPARISON

Load combination G002 is first introduced and includes maximum permanent loads summed-up in G001 with grillage, installation aids and rigging weights. It is defined as per following table:

TP in Transportation conditions – Load Combination G002		
Basic Load Cases	Description	Load Factors
G001	TP PERMANENT LOAD BASIC COMBINATION	1.00
RIGG	RIGGING AND INSTALLATION AIDS	1.10
UPGR	UPPER GRILLAGE WEIGHT	1.05

Table 11.4 - Permanent Actions - Basic Load Combination G002

```
                                        ************* SEASTATE LOAD CASE CENTER REPORT *************
                                                        RELATIVE TO STRUCTURAL ORIGIN
LOAD  LOAD       ********* X - DIRECTION *********      ********* Y - DIRECTION *********      ********* Z - DIRECTION *********
CASE  LABEL      FORCE      X        Y        Z         FORCE      X        Y        Z         FORCE      X        Y        Z
                   (KN)     (M)      (M)      (M)         (KN)     (M)      (M)      (M)         (KN)     (M)      (M)      (M)
  22  G001         0.00                                   0.00                                -2440.14    -0.39    -0.77     5.84
   9  RIGG         0.00                                   0.00                                 -152.00     0.00     0.00     6.43
  15  UPGR         0.00                                   0.00                                 -174.29     0.00     0.00     2.16

  23  G002         0.00                                   0.00                                -2790.35    -0.35    -0.67     5.63
```

TPLO combination is generated starting from G002 and it is defined as per following table to cross check the WCR report, using a multiplication factor of 1.062.

TP in Transportation conditions – Load Combination TPLO		
Basic Load Cases	Description	Load Factors
G002	TP LOADOUT COMBINATION	1.062

Table 11.5 – Loadout Combination TPLO

```
                                        ************* SEASTATE LOAD CASE CENTER REPORT *************
                                                        RELATIVE TO STRUCTURAL ORIGIN
LOAD  LOAD       ********* X - DIRECTION *********      ********* Y - DIRECTION *********      ********* Z - DIRECTION *********
CASE  LABEL      FORCE      X        Y        Z         FORCE      X        Y        Z         FORCE      X        Y        Z
                   (KN)     (M)      (M)      (M)         (KN)     (M)      (M)      (M)         (KN)     (M)      (M)      (M)
  23  G002         0.00                                   0.00                                -2790.35    -0.35    -0.67     5.63

  24  TPLO         0.00                                   0.00                                -2963.35    -0.35    -0.67     5.63
```

COG location comparison between current structural model for transportation Analysis and WCR is reported in following table.

SACS-WCR - TP in Transportation conditions - Weight Comparison		
Load Comb.	**Fz [kN]**	**Fz [t]**
SACS (lcomb TPTR)	-2963.3	-302
WCR	-3021	-308
Δ	-	-6
Δ (%)	1.95%	

COG NOMINAL POSITION			
CASE	**x [m]**	**y [m]**	**z [m]**
COG_SACS (lcomb TPTR)	-0.35	-0.67	5.63
COG_WCR	-0.20	-0.50	5.70
Δ (SACS – WCR)	-0.15	-0.17	0.07
TP Main Dimension	16	16	7.91
Δ (%)	1%	-1%	0.9%

Table 11-6 – SACS-to WCR CoG comparison

Final Load combination TPTR for transportation is generated starting from TPLO adding lower grillage and seafastening weights as per following table:

TP in Transportation conditions – Load Combination TPTR		
Basic Load Cases	Description	Load Factors
TPLO	TP LOADOUT COMBINATION	1.00
LOGR	LOWER GRILLAGE WEIGHT	3.70
SEAF	SEAFASTENING WEIGHT	1.30

Table 11.7 – Transportation Combination TPTR

```
                                  ************ SEASTATE LOAD CASE CENTER REPORT *************
                                                RELATIVE TO STRUCTURAL ORIGIN
LOAD        ********* X - DIRECTION *********     ********* Y - DIRECTION *********      ********* Z - DIRECTION *********
LABEL        FORCE      X        Y        Z        FORCE      X        Y        Z         FORCE      X        Y        Z
              (KN)     (M)      (M)      (M)       (KN)     (M)      (M)      (M)         (KN)     (M)      (M)      (M)
TPLO         0.00                                   0.00                                -2963.35    -0.35    -0.67     5.63
LOGR         0.00                                   0.00                                  -43.09     0.00     0.00     0.85
SEAF         0.00                                   0.00                                  -14.85     0.00     0.00     1.08

TPTR         0.00                                   0.00                                -3142.09    -0.33    -0.63     5.36
```

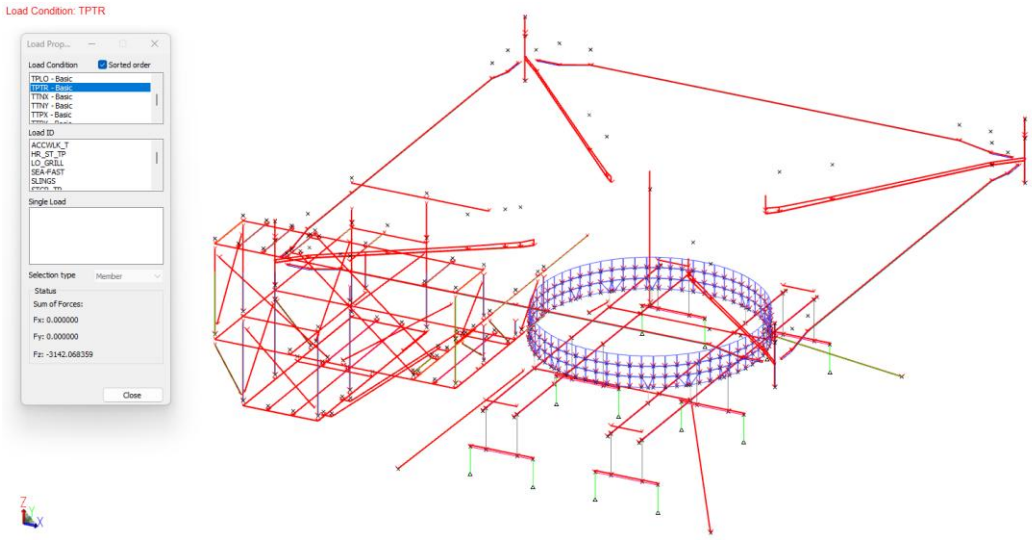


Figure 11-9 - TP basic load combination of permanent actions TPTR

11.3 TRANSIENT LOADS

Transient action considered for the transportation includes:

- Wind loads (1yr wind 5 sec gusts at platform location);
- Inertia forces coming from the motion criteria, defined in DNVL, ref. /9/, for unrestricted world-wide tows (see /9/).

11.3.1 Wind loads

Transportation wind loads have been computed considering 1-year return period, according to design data reported in sec.7, Structural Design Premises, Ref./19/ and requirements of ISO 19902, Ref. /6/.

The 3 s gust wind speed has been conservatively considered for maximum quasi-static global actions on structures. A shape coefficient Cs=1 has been considered for overall projected area of structures in global In-service analyses.

Wind forces have been applied at main structural joints of Transition Piece. Wind forces have been split 50% for upwind and 50% for downwind areas. Since wind loads are assumed concurrent with transportation inertial loads, four load conditions have been defined for wind loads, considering positive and negative X and Y directions (WTPX, WTNX, WTPY and WTNY).

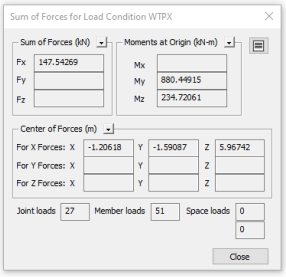
The four load cases are reported in following SACS excerpt and figures.

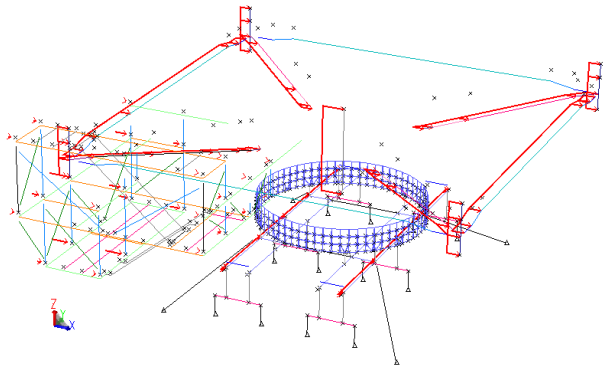
```
                                   ************* SEASTATE LOAD CASE CENTER REPORT *************
                                                   RELATIVE TO STRUCTURAL ORIGIN
LOAD        ********* X - DIRECTION *********      ********* Y - DIRECTION *********      ********* Z - DIRECTION *********
LABEL       FORCE       X         Y         Z      FORCE       X         Y         Z      FORCE       X         Y         Z
              (KN)      (M)       (M)       (M)      (KN)      (M)       (M)       (M)      (KN)      (M)       (M)       (M)

WTPX       147.54    -1.21     -1.59      5.97       0.00                                    0.00
```

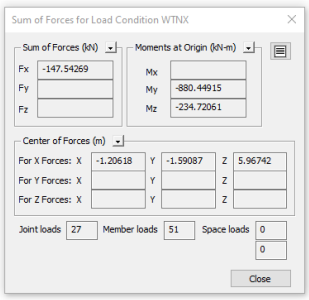
WTNX	-147.54	-1.21	-1.59	5.97	0.00			0.00
WTPY	0.00				150.86	-1.10	-2.23	6.23	0.00
WTNY	0.00				-150.86	-1.10	-2.23	6.23	0.00

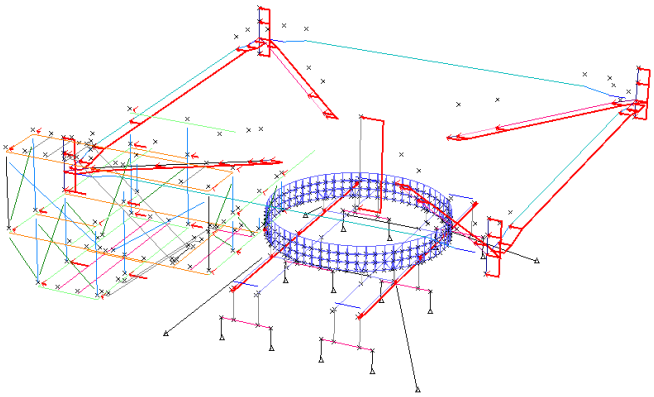
- Load condition WTPX: Transportation Wind Loads Positive X direction



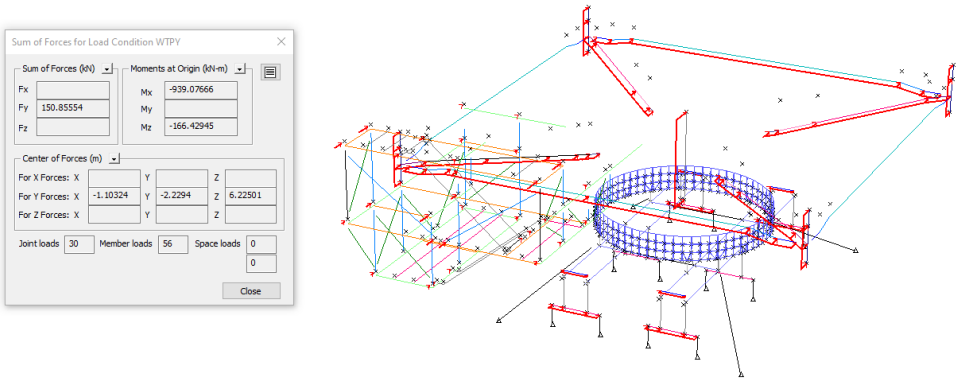


- Load condition WTNX: Transportation Wind Loads Negative X direction





- Load condition WTPY: Transportation Wind Loads Positive Y direction



- Load condition WTNY: Transportation Wind Loads Negative Y direction

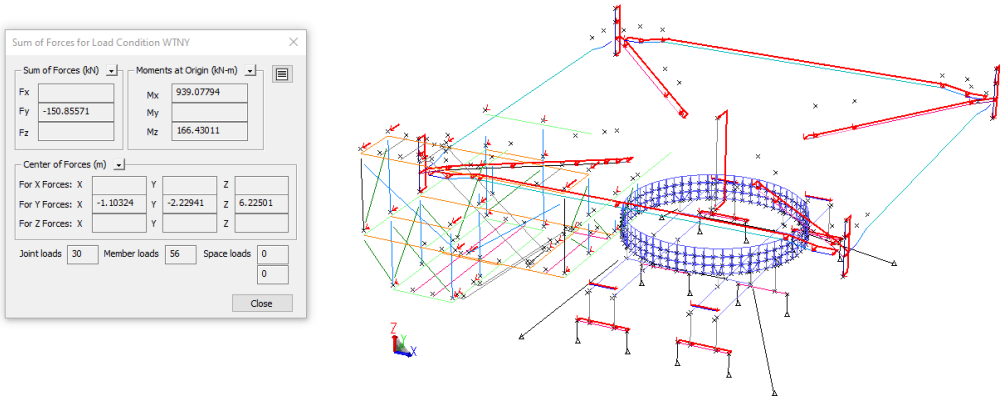


Figure 11-10 -Wind Load Basic Conditions

11.3.2 Inertial Forces

The complete set of towing forces include all the motion effects on the structure. Inertia forces are generated considering the motion criteria defined in the DNV criteria for weather unrestricted, Ref. /9/, according to design data reported in sec.7 and Structural Design Premises, Ref./19/.

The dynamic forces due to the rotations around the roll and pitch axes (respectively global X and Y axis of structural model) are automatically generated by the TOW module of SACS software package, by processing the overall transported weight (load combination TWTR).

The structure is subject to the following combination of the above individual motions/accelerations:

The centre of rotation is assumed to be at the centre of the barge and eight (8) basic combinations of inertia loads are considered in the design (± P ± H and ± R ± H).

The following Table is an excerpt of the SACS output and reports the barge accelerations and the resultant dynamic forces for each generated load case considered in the analysis.

* * * D Y N A M I C L O A D I N G S U M M A T I O N * * *
(MOMENTS ABOUT CENTER OF GRAVITY)
(NOTE: ASTERISK BY LOAD CASE ID INDICATES STRUCTURAL WEIGHT EXCLUDED)

LOAD CASE	* JACKET POSITION * ROLL X	PITCH Y	YAW Z	** ANGULAR ACCEL ** ROLL X	PITCH Y	YAW Z	*** TRANS ACCEL *** SURGE X	SWAY Y	HEAVE Z	**** FORCE SUMMATION **** SURGE X	SWAY Y	HEAVE Z	***** MOMENT SUMMATION ***** ROLL X	PITCH Y	YAW Z
	(DEG)			(DEG/SEC**2)			(G)			(KN)			(KN-M)		
+R+H*	0.0	0.0	0.0	-7.9	0.0	0.0	0.000	0.410	0.128	0.0	-1658.7	-256.8	1144.1	-124.1	22.3
+R-H*	0.0	0.0	0.0	-7.9	0.0	0.0	0.000	0.274	-0.248	0.0	-1228.8	924.2	1053.9	-104.9	15.3
-R+H*	0.0	0.0	0.0	7.9	0.0	0.0	0.000	-0.410	0.128	0.0	1658.7	-545.2	-1049.5	111.1	-22.3
-R-H*	0.0	0.0	0.0	7.9	0.0	0.0	0.000	-0.274	-0.248	0.0	1228.8	635.8	-1234.6	130.2	-15.3
+P+H*	0.0	0.0	0.0	0.0	-4.9	0.0	-0.260	0.000	0.172	1046.8	0.0	184.0	-96.2	586.6	130.5
+P-H*	0.0	0.0	0.0	0.0	-4.9	0.0	-0.173	0.000	-0.219	774.7	0.0	1411.0	-238.4	637.4	99.0
-P+H*	0.0	0.0	0.0	0.0	4.9	0.0	0.260	0.000	0.172	-1046.8	0.0	-1262.1	221.1	-604.4	-130.5
-P-H*	0.0	0.0	0.0	0.0	4.9	0.0	0.173	0.000	-0.219	-774.7	0.0	-35.0	79.0	-615.1	-99.0

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12 LOAD COMBINATIONS

12.1 TRANSPORTATION LOAD COMBINATIONS

Basic Load cases and load combinations, detailed in chapter 11, have been combined together to define the design Load Combinations to be used in the transportation analysis, according to Partial Action Factor as per sec. 9.4.1.

12.2 DESIGN LOAD COMBINATIONS

A total of 48 load combinations, according to ISO 19902 Transportation Design Situations, have been defined as per following tables.

TRANSPORTATION LOAD COMBINATIONS - DESIGN SITUATION 1													
)	LOAD CASES												
).	TWTR	+P+H	+P-H	-P+H	-P-H	+R+H	+R-H	-R+H	-R-H	WTPX	WTNX	WTPY	WTNY
C101	1.30	1.00								1.00			
C102	1.30	1.00									1.00		
C103	1.30		1.00							1.00			
C104	1.30		1.00								1.00		
C105	1.30			1.00						1.00			
C106	1.30			1.00							1.00		
C107	1.30				1.00					1.00			
C108	1.30				1.00						1.00		
C109	1.30					1.00						1.00	
C110	1.30					1.00							1.00
C111	1.30						1.00					1.00	
C112	1.30						1.00						1.00
C113	1.30							1.00				1.00	
C114	1.30							1.00					1.00
C115	1.30								1.00			1.00	
C116	1.30								1.00				1.00

Table 12-1- Transportation Load Combinations – Design situation 1

TRANSPORTATION LOAD COMBINATIONS - DESIGN SITUATION 2													
LOAD COMB.	LOAD CASES												
	TWTR	+P+H	+P-H	-P+H	-P-H	+R+H	+R-H	-R+H	-R-H	WTPX	WTNX	WTPY	WTNY
C201	1.10	1.35								1.35			
C202	1.10	1.35									1.35		
C203	1.10		1.35							1.35			
C204	1.10		1.35								1.35		
C205	1.10			1.35						1.35			
C206	1.10			1.35							1.35		
C207	1.10				1.35					1.35			
C208	1.10				1.35						1.35		
C209	1.10					1.35						1.35	
C210	1.10					1.35							1.35
C211	1.10						1.35					1.35	
C212	1.10						1.35						1.35
C213	1.10							1.35				1.35	
C214	1.10							1.35					1.35
C215	1.10								1.35			1.35	
C216	1.10								1.35				1.35

Table 12-2 - Transportation Load Combinations – Design situation 2

TRANSPORTATION LOAD COMBINATIONS - DESIGN SITUATION 3													
LOAD COMB.	LOAD CASES												
	TWTR	+P+H	+P-H	-P+H	-P-H	+R+H	+R-H	-R+H	-R-H	WTPX	WTNX	WTPY	WTNY
C301	0.90	1.35								1.35			
C302	0.90	1.35									1.35		
C303	0.90		1.35							1.35			
C304	0.90		1.35								1.35		
C305	0.90			1.35						1.35			
C306	0.90			1.35							1.35		
C307	0.90				1.35					1.35			
C308	0.90				1.35						1.35		
C309	0.90					1.35						1.35	
C310	0.90					1.35							1.35
C311	0.90						1.35					1.35	
C312	0.90						1.35						1.35
C313	0.90							1.35				1.35	
C314	0.90							1.35					1.35
C315	0.90								1.35			1.35	
C316	0.90								1.35				1.35

Table 12-3 - Transportation Load Combinations – Design situation 3

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12.3 UNFACTORED LOAD COMBINATIONS

Following further 16 un-factored Load Combinations have been defined to evaluate actual reaction forces, according to Allowable Working Stress design approach. These combinations were not used for structural checks of Transition Piece in Transportation Conditions and have been computed only as a reference for actions comparison.

TRANSPORTATION LOAD COMBINATIONS - UNFACTORED LOADS													
	LOAD CASES												
	TWTR	+P+H	+P-H	-P+H	-P-H	+R+H	+R-H	-R+H	-R-H	WTPX	WTNX	WTPY	WTNY
UN01	1.00	1.00								1.00			
UN02	1.00	1.00									1.00		
UN03	1.00		1.00							1.00			
UN04	1.00		1.00								1.00		
UN05	1.00			1.00						1.00			
UN06	1.00			1.00							1.00		
UN07	1.00				1.00					1.00			
UN08	1.00				1.00						1.00		
UN09	1.00					1.00						1.00	
UN10	1.00					1.00							1.00
UN11	1.00						1.00					1.00	
UN12	1.00						1.00						1.00
UN13	1.00							1.00				1.00	
UN14	1.00							1.00					1.00
UN15	1.00								1.00			1.00	
UN16	1.00								1.00				1.00

Table 12-4 - Transportation Load Combinations – Unfactored

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12.4 LOAD COMBINATIONS SUMMARY

Following excerpt from SACS output provide the Load Combinations resultants.

FORCES AND MOMENTS SUMMARY
*** MOMENTS SUMMED ABOUT ORIGIN ***

LOAD CASE	FORCE(X)	FORCE(Y)	FORCE(Z)	MOMENT(X)	MOMENT(Y)	MOMENT(Z)
	********** KN **********			********** KN-M **********		
C101	-1194.307	0.000	3900.690	-2399.947	-5921.615	-908.128
C102	-899.223	0.000	3900.690	-2399.948	-4160.726	-438.702
C103	-922.281	0.000	2673.658	-1621.421	-4863.529	-735.540
C104	-627.197	0.000	2673.658	-1621.423	-3102.641	-266.114
C105	899.224	0.000	5346.740	-3467.286	7172.276	438.702
C106	1194.309	0.000	5346.741	-3467.289	8933.165	908.128
C107	627.198	0.000	4119.708	-2688.758	5314.884	266.115
C108	922.283	0.000	4119.707	-2688.759	7075.772	735.541
C109	0.000	1507.826	4341.520	-12005.843	1533.625	-369.025
C110	0.000	1809.536	4341.520	-13883.979	1533.625	-701.871
C111	0.000	1077.967	3160.491	-8951.035	1149.072	-229.069
C112	0.000	1379.677	3160.491	-10829.171	1149.072	-561.915
C113	0.000	-1809.529	4629.886	8190.151	1387.722	701.889
C114	0.000	-1507.818	4629.885	6312.013	1387.722	369.042
C115	0.000	-1379.670	3448.858	6635.649	1003.175	561.918
C116	0.000	-1077.959	3448.857	4757.513	1003.175	229.072
C201	-1612.315	0.000	3207.882	-1934.154	-8664.351	-1225.973
C202	-1213.951	0.000	3207.882	-1934.157	-6287.150	-592.248
C203	-1245.080	0.000	1551.389	-883.146	-7235.936	-992.979
C204	-846.715	0.000	1551.389	-883.148	-4858.734	-359.255
C205	1213.953	0.000	5160.050	-3375.063	9012.402	592.248
C206	1612.317	0.000	5160.050	-3375.065	11389.603	1225.973
C207	846.718	0.000	3503.556	-2324.049	6504.925	359.256
C208	1245.082	0.000	3503.556	-2324.052	8882.124	992.981
C209	0.000	2035.564	3803.002	-14902.114	1400.224	-498.184
C210	0.000	2442.874	3803.001	-17437.598	1400.224	-947.525
C211	0.000	1455.255	2208.615	-10778.122	881.078	-309.243
C212	0.000	1862.564	2208.615	-13313.608	881.078	-758.586
C213	0.000	-2442.864	4192.296	12362.479	1203.255	947.549
C214	0.000	-2035.554	4192.296	9826.993	1203.255	498.207
C215	0.000	-1862.554	2597.909	10263.901	684.117	758.589
C216	0.000	-1455.245	2597.909	7728.416	684.117	309.248
C301	-1612.315	0.000	2579.470	-1535.444	-8868.981	-1225.973
C302	-1213.951	0.000	2579.470	-1535.447	-6491.782	-592.248
C303	-1245.080	0.000	922.976	-484.436	-7440.566	-992.979
C304	-846.715	0.000	922.976	-484.438	-5063.366	-359.255
C305	1213.953	0.000	4531.638	-2976.354	8807.771	592.248
C306	1612.317	0.000	4531.639	-2976.355	11184.972	1225.973
C307	846.718	0.000	2875.144	-1925.339	6300.293	359.256
C308	1245.082	0.000	2875.144	-1925.342	8677.493	992.981
C309	0.000	2035.564	3174.589	-14503.404	1195.592	-498.184
C310	0.000	2442.874	3174.589	-17038.889	1195.592	-947.525
C311	0.000	1455.255	1580.203	-10379.413	676.446	-309.243
C312	0.000	1862.564	1580.203	-12914.898	676.446	-758.586
C313	0.000	-2442.864	3563.884	12761.188	998.623	947.549
C314	0.000	-2035.554	3563.884	10225.702	998.623	498.207
C315	0.000	-1862.554	1969.497	10662.609	479.485	758.589
C316	0.000	-1455.245	1969.496	8127.125	479.485	309.248
UN01	-1194.307	0.000	2958.072	-1801.882	-6228.563	-908.128
UN02	-899.223	0.000	2958.072	-1801.884	-4467.674	-438.702
UN03	-922.281	0.000	1731.040	-1023.357	-5170.478	-735.540
UN04	-627.197	0.000	1731.039	-1023.359	-3409.588	-266.114
UN05	899.224	0.000	4404.123	-2869.222	6865.329	438.702
UN06	1194.309	0.000	4404.123	-2869.224	8626.217	908.128
UN07	627.198	0.000	3177.090	-2090.693	5007.936	266.115
UN08	922.283	0.000	3177.089	-2090.695	6768.825	735.541
UN09	0.000	1507.826	3398.901	-11407.778	1226.677	-369.025
UN10	0.000	1809.536	3398.901	-13285.916	1226.677	-701.871
UN11	0.000	1077.967	2217.874	-8352.970	842.124	-229.069
UN12	0.000	1379.677	2217.874	-10231.105	842.124	-561.915
UN13	0.000	-1809.529	3687.267	8788.216	1080.774	701.889
UN14	0.000	-1507.818	3687.267	6910.078	1080.773	369.042
UN15	0.000	-1379.670	2506.240	7233.714	696.228	561.918
UN16	0.000	-1077.959	2506.240	5355.577	696.228	229.072

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13 ANALYSIS RESULTS

This section presents the results of the performed Transportation analysis in terms of:

- Reaction forces at barge deck and internal forces of dummy elements at TP-Upper grillage connections;
- Structural checks of structural members and plates;
- Structural checks of tubular connections.

13.1 REACTION FORCES

Base reactions at TP base and at barge deck are reported in the following paragraphs for the two preliminary analyses (STEP 1 and 2) and final Transportation configuration (STEP 3).

13.1.1 TP in Transportation Conditions - base reaction forces at barge deck

Maximum and minimum base reaction forces for Transition Piece in transportation conditions, are reported in the following tables. Reactions are read in correspondence of sea fastening and lower grillage connections to barge deck in global reference system. Reactions forces for gravity loads (Step 1), transient loads (Step 2) and their combinations in transportation conditions (Step 3) are fully detailed for all load combinations in the following paragraphs. An envelope of base reaction forces at barge deck is also provided for each analysis step. Base joints of TP structural model in transportation conditions are shown in Figure 10.9 and Figure 10.10.

13.1.1.1 Reaction Forces due to TP weight only (STEP 1)

Maximum and minimum reactions' envelope is reported in following table.

JOINT	Rx [kN]				Ry [kN]				Rz [kN]				MOMENT(X) [kNm]				MOMENT(Y) [kNm]				MOMENT(Z) [kNm]			
	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND
Z000	0	TPTR	0	TPTR	-1	TPTR	-1	TPTR	624	TPTR	624	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z001	0	TPTR	0	TPTR	-1	TPTR	-1	TPTR	114	TPTR	114	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z002	0	TPTR	0	TPTR	2	TPTR	2	TPTR	192	TPTR	192	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z003	0	TPTR	0	TPTR	-1	TPTR	-1	TPTR	405	TPTR	405	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z004	0	TPTR	0	TPTR	-1	TPTR	-1	TPTR	85	TPTR	85	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z005	0	TPTR	0	TPTR	2	TPTR	2	TPTR	189	TPTR	189	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z006	0	TPTR	0	TPTR	2	TPTR	2	TPTR	223	TPTR	223	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z007	-2	TPTR	-2	TPTR	-1	TPTR	-1	TPTR	535	TPTR	535	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z008	-1	TPTR	-1	TPTR	-1	TPTR	-1	TPTR	120	TPTR	120	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z009	1	TPTR	1	TPTR	-1	TPTR	-1	TPTR	73	TPTR	73	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z010	1	TPTR	1	TPTR	-1	TPTR	-1	TPTR	432	TPTR	432	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR
Z011	0	TPTR	0	TPTR	1	TPTR	1	TPTR	150	TPTR	150	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR	0	TPTR

Table 13-1 – TP base reaction forces in Transportation Conditions – STEP 1 Permanent Loads – Summary Envelope

Base reaction forces at barge deck for all load combinations are reported in following SACS excerpt with reference to STEP 1 analysis.

```
                        JOINTS REACTION FORCES AND MOMENTS REPORT

            LOAD  ************** kN ******************   ***************** kN-m ******************
      JOINT COND    FORCE(X)        FORCE(Y)        FORCE(Z)        MOMENT(X)       MOMENT(Y)       MOMENT(Z)

      Z000  TPTR       0.000          -0.682         623.952           0.000           0.000           0.000
```

Z001	TPTR	0.000	-1.480	114.066	0.000	0.000	0.000
Z002	TPTR	0.000	2.058	191.579	0.000	0.000	0.000
Z003	TPTR	0.000	-0.769	405.252	0.000	0.000	0.000
Z004	TPTR	0.000	-0.946	85.366	0.000	0.000	0.000
Z005	TPTR	0.000	1.812	189.074	0.000	0.000	0.000
Z006	TPTR	0.455	2.202	223.238	0.000	0.000	0.000
Z007	TPTR	-1.657	-0.771	535.324	0.000	0.000	0.000
Z008	TPTR	-0.733	-1.338	119.532	0.000	0.000	0.000
Z009	TPTR	1.134	-0.899	72.740	0.000	0.000	0.000
Z010	TPTR	0.865	-0.676	431.659	0.000	0.000	0.000
Z011	TPTR	-0.064	1.490	150.279	0.000	0.000	0.000

13.1.1.2 Reaction Forces due to Transportation Transient Loads only (STEP 2)

Maximum and minimum reactions' envelope is reported in following table.

JOINT	Rx [kN]				Ry [kN]				Rz [kN]				MOMENT(X) [kNm]				MOMENT(Y) [kNm]				MOMENT(Z) [kNm]			
	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND
SFA2	302	+R+H	-284	-R+H	450	+R+H	-422	-R+H	283	+R+H	-265	-R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
SFA4	224	-R+H	-242	+R+H	360	+R+H	-334	-R+H	227	+R+H	-210	-R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
SFC2	308	-R+H	-290	+R+H	431	+R+H	-459	-R+H	289	-R+H	-271	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
SFC4	231	+R+H	-249	-R+H	344	+R+H	-370	-R+H	233	-R+H	-216	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z000	108	-P+H	-105	+P-H	6	+R+H	-6	-R+H	466	-P+H	-450	+P-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z001	28	-P+H	-25	+P-H	6	+R+H	-6	-R+H	81	-R+H	-82	+R-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z002	60	-P+H	-53	+P-H	6	+R+H	-6	-R+H	160	-P+H	-148	+P-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z003	34	+P+H	-32	-P-H	6	+R+H	-6	-R+H	86	+P+H	-116	+R-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z004	20	-R+H	-19	+R-H	6	+R+H	-6	-R+H	94	-R+H	-89	+R-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z005	42	-P+H	-36	+P-H	6	+R+H	-6	-R+H	106	-P+H	-101	+P-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z006	38	-R-H	-39	+R+H	6	+R+H	-6	-R+H	138	+R+H	-141	-R-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z007	98	+P-H	-98	-P+H	6	+R+H	-6	-R+H	308	-P+H	-315	+P-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z008	35	+R-H	-38	-R+H	6	+R+H	-6	-R+H	135	-R+H	-125	+R-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z009	31	+R-H	-36	-R+H	6	+R+H	-6	-R+H	115	-R+H	-102	+R-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z010	39	-P-H	-44	+P+H	6	+R+H	-6	-R+H	207	+P+H	-182	-P-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H
Z011	34	-R-H	-37	+P+H	6	+R+H	-6	-R+H	112	+R+H	-108	-R-H	5	-R+H	-5	+R+H	0	+R+H	0	+R+H	0	+R+H	0	+R+H

Table 13-2 – TP base reaction forces in Transportation Conditions – STEP 2 Transient Loads – Summary Envelope

Base reaction forces at barge deck for all load combinations are reported in following SACS excerpt with reference to STEP 2 analysis.

JOINTS REACTION FORCES AND MOMENTS REPORT

JOINT	LOAD COND	FORCE(X) kN	FORCE(Y) kN	FORCE(Z) kN	MOMENT(X) kN-m	MOMENT(Y) kN-m	MOMENT(Z) kN-m
SFA2	+R+H	302.426	449.650	283.047	0.000	0.000	0.000
	+R-H	198.666	295.432	185.147	0.000	0.000	0.000
	-R+H	-283.809	-422.039	-265.028	0.000	0.000	0.000
	-R-H	-234.876	-349.135	-220.193	0.000	0.000	0.000
	+P+H	-179.784	-265.595	-167.624	0.000	0.000	0.000
	+P-H	-163.318	-241.484	-153.369	0.000	0.000	0.000
	-P+H	204.809	302.710	191.844	0.000	0.000	0.000
	-P-H	131.379	194.115	122.457	0.000	0.000	0.000
	WTPX	-18.275	-27.104	-17.083	0.000	0.000	0.000
	WTNX	18.275	27.104	17.083	0.000	0.000	0.000
	WTPY	-33.811	-50.145	-31.606	0.000	0.000	0.000
	WTNY	33.811	50.145	31.606	0.000	0.000	0.000

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SFA4	+R+H	-241.944	359.949	226.510	0.000	0.000	0.000
	+R-H	-155.461	231.354	144.760	0.000	0.000	0.000
	-R+H	224.482	-334.050	-209.570	0.000	0.000	0.000
	-R-H	189.421	-281.720	-177.702	0.000	0.000	0.000
	+P+H	-171.475	253.272	159.588	0.000	0.000	0.000
	+P-H	-99.815	147.301	91.854	0.000	0.000	0.000
	-P+H	148.006	-218.465	-136.822	0.000	0.000	0.000
	-P-H	129.770	-191.729	-120.913	0.000	0.000	0.000
	WTPX	-18.275	27.104	17.083	0.000	0.000	0.000
	WTNX	18.275	-27.104	-17.083	0.000	0.000	0.000
	WTPY	15.294	-22.682	-14.296	0.000	0.000	0.000
	WTNY	-15.294	22.682	14.296	0.000	0.000	0.000
SFC2	+R+H	-289.867	431.025	-270.956	0.000	0.000	0.000
	+R-H	-240.935	358.122	-226.121	0.000	0.000	0.000
	-R+H	308.484	-458.635	288.974	0.000	0.000	0.000
	-R-H	204.724	-304.417	191.074	0.000	0.000	0.000
	+P+H	-254.708	376.717	-237.662	0.000	0.000	0.000
	+P-H	-219.040	324.126	-205.457	0.000	0.000	0.000
	-P+H	279.733	-413.831	261.882	0.000	0.000	0.000
	-P-H	187.102	-276.758	174.545	0.000	0.000	0.000
	WTPX	-44.389	65.834	-41.494	0.000	0.000	0.000
	WTNX	44.389	-65.834	41.494	0.000	0.000	0.000
	WTPY	33.811	-50.145	31.606	0.000	0.000	0.000
	WTNY	-33.811	50.145	-31.606	0.000	0.000	0.000
SFC4	+R+H	231.188	343.997	-216.104	0.000	0.000	0.000
	+R-H	196.126	291.665	-184.235	0.000	0.000	0.000
	-R+H	-248.646	-369.889	233.039	0.000	0.000	0.000
	-R-H	-162.164	-241.295	151.290	0.000	0.000	0.000
	+P+H	-246.399	-364.394	229.625	0.000	0.000	0.000
	+P-H	-155.537	-229.944	143.942	0.000	0.000	0.000
	-P+H	222.930	329.587	-206.859	0.000	0.000	0.000
	-P-H	185.493	274.371	-173.001	0.000	0.000	0.000
	WTPX	-44.389	-65.834	41.494	0.000	0.000	0.000
	WTNX	44.389	65.834	-41.494	0.000	0.000	0.000
	WTPY	-15.294	-22.682	14.296	0.000	0.000	0.000
	WTNY	15.294	22.682	-14.296	0.000	0.000	0.000
Z000	+R+H	14.247	6.172	59.169	-5.246	0.000	0.000
	+R-H	-39.759	4.354	-160.967	-3.701	0.000	0.000
	-R+H	22.429	-6.172	90.325	5.246	0.000	0.000
	-R-H	-31.577	-4.354	-129.810	3.701	0.000	0.000
	+P+H	-58.246	0.000	-264.748	0.000	0.000	0.000
	+P-H	-104.857	0.000	-449.754	0.000	0.000	0.000
	-P+H	107.550	0.000	465.722	0.000	0.000	0.000
	-P-H	41.937	0.000	193.283	0.000	0.000	0.000
	WTPX	-5.837	0.000	-29.311	0.000	0.000	0.000
	WTNX	5.837	0.000	29.311	0.000	0.000	0.000
	WTPY	0.000	0.000	0.000	0.000	0.000	0.000
	WTNY	0.000	0.000	0.000	0.000	0.000	0.000
Z001	+R+H	-12.724	6.172	-56.594	-5.246	0.000	0.000
	+R-H	-20.296	4.354	-81.599	-3.701	0.000	0.000
	-R+H	19.217	-6.172	80.794	5.246	0.000	0.000
	-R-H	7.646	-4.354	34.460	3.701	0.000	0.000
	+P+H	-19.593	0.000	-47.209	0.000	0.000	0.000
	+P-H	-25.211	0.000	-75.781	0.000	0.000	0.000
	-P+H	28.336	0.000	79.789	0.000	0.000	0.000
	-P-H	14.054	0.000	34.205	0.000	0.000	0.000
	WTPX	0.156	0.000	-0.469	0.000	0.000	0.000
	WTNX	-0.156	0.000	0.469	0.000	0.000	0.000
	WTPY	-0.541	-0.650	1.972	0.552	0.000	0.000
	WTNY	0.541	0.650	-1.972	-0.552	0.000	0.000
Z002	+R+H	19.732	6.172	82.342	-5.246	0.000	0.000
	+R-H	-0.923	4.354	6.296	-3.701	0.000	0.000
	-R+H	-7.056	-6.172	-37.918	5.246	0.000	0.000
	-R-H	-23.711	-4.354	-92.635	3.701	0.000	0.000
	+P+H	-43.133	0.000	-100.128	0.000	0.000	0.000
	+P-H	-52.740	0.000	-147.919	0.000	0.000	0.000
	-P+H	60.158	0.000	159.800	0.000	0.000	0.000
	-P-H	31.011	0.000	71.764	0.000	0.000	0.000
	WTPX	-7.240	0.000	-16.268	0.000	0.000	0.000
	WTNX	7.240	0.000	16.268	0.000	0.000	0.000
	WTPY	0.541	-0.650	-1.972	0.552	0.000	0.000
	WTNY	-0.541	0.650	1.972	-0.552	0.000	0.000
Z003	+R+H	5.842	6.172	22.883	-5.246	0.000	0.000

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	+R-H	-32.324	4.354	-116.402	-3.701	0.000	0.000
	-R+H	20.078	-6.172	71.709	5.246	0.000	0.000
	-R-H	-18.088	-4.354	-67.577	3.701	0.000	0.000
	+P+H	34.241	0.000	86.123	0.000	0.000	0.000
	+P-H	-12.088	0.000	-75.651	0.000	0.000	0.000
	-P+H	0.592	0.000	41.002	0.000	0.000	0.000
	-P-H	-32.380	0.000	-86.631	0.000	0.000	0.000
	WTPX	5.553	0.000	13.477	0.000	0.000	0.000
	WTNX	-5.553	0.000	-13.477	0.000	0.000	0.000
	WTPY	0.000	0.000	0.000	0.000	0.000	0.000
	WTNY	0.000	0.000	0.000	0.000	0.000	0.000
Z004	+R+H	-15.803	6.172	-76.831	-5.246	0.000	0.000
	+R-H	-19.340	4.354	-89.247	-3.701	0.000	0.000
	-R+H	19.694	-6.172	93.549	5.246	0.000	0.000
	-R-H	11.751	-4.354	56.644	3.701	0.000	0.000
	+P+H	-4.080	0.000	10.970	0.000	0.000	0.000
	+P-H	-7.900	0.000	-14.361	0.000	0.000	0.000
	-P+H	9.323	0.000	11.555	0.000	0.000	0.000
	-P-H	1.206	0.000	-14.395	0.000	0.000	0.000
	WTPX	2.002	0.000	6.410	0.000	0.000	0.000
	WTNX	-2.002	0.000	-6.410	0.000	0.000	0.000
	WTPY	-0.300	-0.650	3.352	0.552	0.000	0.000
	WTNY	0.300	0.650	-3.352	-0.552	0.000	0.000
Z005	+R+H	18.839	6.172	91.092	-5.246	0.000	0.000
	+R-H	1.806	4.354	15.702	-3.701	0.000	0.000
	-R+H	-8.760	-6.172	-48.179	5.246	0.000	0.000
	-R-H	-21.388	-4.354	-99.080	3.701	0.000	0.000
	+P+H	-28.617	0.000	-47.933	0.000	0.000	0.000
	+P-H	-36.177	0.000	-100.628	0.000	0.000	0.000
	-P+H	42.148	0.000	105.549	0.000	0.000	0.000
	-P-H	18.904	0.000	27.082	0.000	0.000	0.000
	WTPX	-5.741	0.000	-10.693	0.000	0.000	0.000
	WTNX	5.741	0.000	10.693	0.000	0.000	0.000
	WTPY	0.300	-0.650	-3.352	0.552	0.000	0.000
	WTNY	-0.300	0.650	3.352	-0.552	0.000	0.000
Z006	+R+H	-38.879	6.172	138.077	-5.246	0.000	0.000
	+R-H	-12.737	4.354	37.430	-3.701	0.000	0.000
	-R+H	25.751	-6.172	-84.940	5.246	0.000	0.000
	-R-H	38.253	-4.354	-140.700	3.701	0.000	0.000
	+P+H	-22.402	0.000	22.120	0.000	0.000	0.000
	+P-H	5.510	0.000	-71.997	0.000	0.000	0.000
	-P+H	4.767	0.000	49.254	0.000	0.000	0.000
	-P-H	16.996	0.000	-19.092	0.000	0.000	0.000
	WTPX	-5.741	0.000	10.693	0.000	0.000	0.000
	WTNX	5.741	0.000	-10.693	0.000	0.000	0.000
	WTPY	5.190	-0.650	-15.478	0.552	0.000	0.000
	WTNY	-5.190	0.650	15.478	-0.552	0.000	0.000
Z007	+R+H	-14.324	6.172	48.384	-5.246	0.000	0.000
	+R-H	39.870	4.354	-139.086	-3.701	0.000	0.000
	-R+H	-22.479	-6.172	78.927	5.246	0.000	0.000
	-R-H	31.715	-4.354	-108.542	3.701	0.000	0.000
	+P+H	48.655	0.000	-137.094	0.000	0.000	0.000
	+P-H	98.284	0.000	-314.803	0.000	0.000	0.000
	-P+H	-98.131	0.000	308.240	0.000	0.000	0.000
	-P-H	-35.145	0.000	96.389	0.000	0.000	0.000
	WTPX	5.553	0.000	-13.477	0.000	0.000	0.000
	WTNX	-5.553	0.000	13.477	0.000	0.000	0.000
	WTPY	0.000	0.000	0.000	0.000	0.000	0.000
	WTNY	0.000	0.000	0.000	0.000	0.000	0.000
Z008	+R+H	31.088	6.172	-107.877	-5.246	0.000	0.000
	+R-H	34.501	4.354	-125.154	-3.701	0.000	0.000
	-R+H	-38.030	-6.172	134.822	5.246	0.000	0.000
	-R-H	-20.979	-4.354	72.659	3.701	0.000	0.000
	+P+H	-2.510	0.000	-17.117	0.000	0.000	0.000
	+P-H	10.275	0.000	-58.717	0.000	0.000	0.000
	-P+H	-6.836	0.000	53.399	0.000	0.000	0.000
	-P-H	1.652	0.000	12.418	0.000	0.000	0.000
	WTPX	2.002	0.000	-6.410	0.000	0.000	0.000
	WTNX	-2.002	0.000	6.410	0.000	0.000	0.000
	WTPY	-5.190	-0.650	15.478	0.552	0.000	0.000
	WTNY	5.190	0.650	-15.478	-0.552	0.000	0.000
Z009	+R+H	31.133	6.172	-99.357	-5.246	0.000	0.000
	+R-H	31.389	4.354	-102.238	-3.701	0.000	0.000
	-R+H	-35.654	-6.172	114.932	5.246	0.000	0.000

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	-R-H	-22.578	-4.354	71.880	3.701	0.000	0.000
	+P+H	-17.981	0.000	41.097	0.000	0.000	0.000
	+P-H	-6.719	0.000	8.716	0.000	0.000	0.000
	-P+H	11.893	0.000	-20.123	0.000	0.000	0.000
	-P-H	14.491	0.000	-35.493	0.000	0.000	0.000
	WTPX	0.156	0.000	0.469	0.000	0.000	0.000
	WTNX	-0.156	0.000	-0.469	0.000	0.000	0.000
	WTPY	-4.703	-0.650	13.174	0.552	0.000	0.000
	WTNY	4.703	0.650	-13.174	-0.552	0.000	0.000
Z010	+R+H	-5.888	6.172	21.398	-5.246	0.000	0.000
	+R-H	32.323	4.354	-127.368	-3.701	0.000	0.000
	-R+H	-20.062	-6.172	79.633	5.246	0.000	0.000
	-R-H	18.149	-4.354	-69.133	3.701	0.000	0.000
	+P+H	-43.854	0.000	207.169	0.000	0.000	0.000
	+P-H	5.344	0.000	8.904	0.000	0.000	0.000
	-P+H	8.980	0.000	-71.400	0.000	0.000	0.000
	-P-H	39.176	0.000	-182.232	0.000	0.000	0.000
	WTPX	-5.837	0.000	29.311	0.000	0.000	0.000
	WTNX	5.837	0.000	-29.311	0.000	0.000	0.000
	WTPY	0.000	0.000	0.000	0.000	0.000	0.000
	WTNY	0.000	0.000	0.000	0.000	0.000	0.000
Z011	+R+H	-35.065	6.172	111.658	-5.246	0.000	0.000
	+R-H	-12.906	4.354	38.896	-3.701	0.000	0.000
	-R+H	24.363	-6.172	-75.862	5.246	0.000	0.000
	-R-H	33.702	-4.354	-108.454	3.701	0.000	0.000
	+P+H	-36.879	0.000	78.834	0.000	0.000	0.000
	+P-H	-10.753	0.000	4.001	0.000	0.000	0.000
	-P+H	22.509	0.000	-30.768	0.000	0.000	0.000
	-P-H	29.096	0.000	-65.356	0.000	0.000	0.000
	WTPX	-7.240	0.000	16.268	0.000	0.000	0.000
	WTNX	7.240	0.000	-16.268	0.000	0.000	0.000
	WTPY	4.703	-0.650	-13.174	0.552	0.000	0.000
	WTNY	-4.703	0.650	13.174	-0.552	0.000	0.000

13.1.1.3 Reaction Forces in Transportation Conditions (STEP 3)

Maximum and minimum reactions' envelope is reported in following table.

JOINT	Rx [kN]				Ry [kN]				Rz [kN]				MOMENT(X) [kNm]				MOMENT(Y) [kNm]				MOMENT(Z) [kNm]			
	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND	MAX	LCOND	MIN	LCOND
SFA2	454	C210	-429	C213	675	C210	-637	C213	425	C210	-400	C213	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
SFA4	324	C213	-347	C210	517	C210	-482	C213	325	C210	-302	C213	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
SFC2	462	C213	-437	C210	650	C210	-687	C213	433	C213	-408	C210	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
SFC4	361	C206	-393	C201	534	C206	-581	C201	366	C201	-335	C206	0	C101	0	C101	0	C101	0	C101	0	C101	0	C101
Z000	153	C206	-149	C203	8	C309	-9	C213	1355	C206	-85	C303	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z001	38	C205	-34	C204	8	C310	-11	C213	237	C213	-10	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z002	91	C206	-81	C203	11	C210	-7	C313	448	C206	-49	C303	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z003	54	C201	-51	C208	8	C309	-9	C213	626	C101	208	C311	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z004	27	C214	-27	C211	8	C310	-10	C213	225	C213	-48	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z005	65	C206	-57	C203	11	C210	-8	C313	365	C206	20	C303	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z006	59	C215	-59	C310	12	C210	-7	C313	453	C210	-10	C315	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z007	139	C303	-142	C206	8	C309	-9	C213	1023	C206	39	C303	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z008	53	C312	-59	C213	8	C310	-11	C213	334	C213	-82	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z009	50	C212	-53	C313	8	C310	-10	C213	253	C213	-90	C312	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101
Z010	62	C208	-66	C301	8	C309	-9	C213	798	C101	103	C308	7	C213	-7	C209	0	C101	0	C101	0	C101	0	C101
Z011	52	C315	-60	C201	11	C210	-8	C313	334	C210	-29	C315	8	C213	-8	C210	0	C101	0	C101	0	C101	0	C101

Table 13-3 – TP base reaction forces in Transportation Conditions – STEP 3 – Summary Envelope

Base reaction forces at barge deck for all load combinations are reported in following SACS excerpt with reference to STEP 3 analysis, final transportation configuration.

JOINTS REACTION FORCES AND MOMENTS REPORT

JOINT	LOAD COND	FORCE(X)	FORCE(Y)	FORCE(Z)	MOMENT(X)	MOMENT(Y)	MOMENT(Z)
		********** kN **********			********** kN-m **********		
SFA2	C101	-198.059	-292.699	-184.707	0.000	0.000	0.000
	C102	-161.509	-238.492	-150.541	0.000	0.000	0.000
	C103	-181.592	-268.587	-170.452	0.000	0.000	0.000
	C104	-145.043	-214.380	-136.286	0.000	0.000	0.000
	C105	186.534	275.606	174.761	0.000	0.000	0.000

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	C106	223.084	329.814	208.927	0.000	0.000	0.000
	C107	113.105	167.011	105.374	0.000	0.000	0.000
	C108	149.654	221.219	139.540	0.000	0.000	0.000
	C109	268.615	399.505	251.441	0.000	0.000	0.000
	C110	336.236	499.796	314.652	0.000	0.000	0.000
	C111	164.856	245.287	153.542	0.000	0.000	0.000
	C112	232.477	345.578	216.753	0.000	0.000	0.000
	C113	-317.619	-472.184	-296.633	0.000	0.000	0.000
	C114	-249.998	-371.894	-233.422	0.000	0.000	0.000
	C115	-268.686	-399.281	-251.799	0.000	0.000	0.000
	C116	-201.065	-298.990	-188.588	0.000	0.000	0.000
	C201	-267.379	-395.144	-249.354	0.000	0.000	0.000
	C202	-218.038	-321.964	-203.230	0.000	0.000	0.000
	C203	-245.150	-362.593	-230.110	0.000	0.000	0.000
	C204	-195.808	-289.413	-183.986	0.000	0.000	0.000
	C205	251.821	372.069	235.928	0.000	0.000	0.000
	C206	301.163	445.249	282.052	0.000	0.000	0.000
	C207	152.691	225.465	142.255	0.000	0.000	0.000
	C208	202.033	298.645	188.378	0.000	0.000	0.000
	C209	362.630	539.332	339.445	0.000	0.000	0.000
	C210	453.919	674.724	424.780	0.000	0.000	0.000
	C211	222.555	331.138	207.281	0.000	0.000	0.000
	C212	313.844	466.530	292.616	0.000	0.000	0.000
	C213	-428.786	-637.449	-400.455	0.000	0.000	0.000
	C214	-337.497	-502.057	-315.120	0.000	0.000	0.000
	C215	-362.726	-539.029	-339.928	0.000	0.000	0.000
	C216	-271.438	-403.637	-254.593	0.000	0.000	0.000
	C301	-267.379	-395.144	-249.354	0.000	0.000	0.000
	C302	-218.038	-321.964	-203.230	0.000	0.000	0.000
	C303	-245.150	-362.593	-230.110	0.000	0.000	0.000
	C304	-195.808	-289.413	-183.986	0.000	0.000	0.000
	C305	251.821	372.069	235.928	0.000	0.000	0.000
	C306	301.163	445.249	282.052	0.000	0.000	0.000
	C307	152.691	225.465	142.255	0.000	0.000	0.000
	C308	202.033	298.645	188.378	0.000	0.000	0.000
	C309	362.630	539.332	339.445	0.000	0.000	0.000
	C310	453.919	674.724	424.780	0.000	0.000	0.000
	C311	222.555	331.138	207.281	0.000	0.000	0.000
	C312	313.844	466.530	292.616	0.000	0.000	0.000
	C313	-428.786	-637.449	-400.455	0.000	0.000	0.000
	C314	-337.497	-502.057	-315.120	0.000	0.000	0.000
	C315	-362.726	-539.029	-339.928	0.000	0.000	0.000
	C316	-271.438	-403.637	-254.593	0.000	0.000	0.000
	UN01	-198.059	-292.699	-184.707	0.000	0.000	0.000
	UN02	-161.509	-238.492	-150.541	0.000	0.000	0.000
	UN03	-181.592	-268.587	-170.452	0.000	0.000	0.000
	UN04	-145.043	-214.380	-136.286	0.000	0.000	0.000
	UN05	186.534	275.606	174.761	0.000	0.000	0.000
	UN06	223.084	329.814	208.927	0.000	0.000	0.000
	UN07	113.105	167.011	105.374	0.000	0.000	0.000
	UN08	149.654	221.219	139.540	0.000	0.000	0.000
	UN09	268.615	399.505	251.441	0.000	0.000	0.000
	UN10	336.236	499.796	314.652	0.000	0.000	0.000
	UN11	164.856	245.287	153.542	0.000	0.000	0.000
	UN12	232.477	345.578	216.753	0.000	0.000	0.000
	UN13	-317.619	-472.184	-296.633	0.000	0.000	0.000
	UN14	-249.998	-371.894	-233.422	0.000	0.000	0.000
	UN15	-268.686	-399.281	-251.799	0.000	0.000	0.000
	UN16	-201.065	-298.990	-188.588	0.000	0.000	0.000
SFA4	C101	-189.750	280.375	176.670	0.000	0.000	0.000
	C102	-153.200	226.168	142.505	0.000	0.000	0.000
	C103	-118.090	174.405	108.937	0.000	0.000	0.000
	C104	-81.540	120.198	74.771	0.000	0.000	0.000
	C105	129.732	-191.362	-119.739	0.000	0.000	0.000
	C106	166.281	-245.569	-153.905	0.000	0.000	0.000
	C107	111.496	-164.625	-103.830	0.000	0.000	0.000
	C108	148.045	-218.832	-137.996	0.000	0.000	0.000
	C109	-226.651	337.267	212.214	0.000	0.000	0.000
	C110	-257.238	382.632	240.806	0.000	0.000	0.000
	C111	-140.167	208.672	130.463	0.000	0.000	0.000
	C112	-170.755	254.036	159.056	0.000	0.000	0.000
	C113	239.776	-356.733	-223.867	0.000	0.000	0.000
	C114	209.188	-311.368	-195.274	0.000	0.000	0.000
	C115	204.714	-304.402	-191.999	0.000	0.000	0.000
	C116	174.127	-259.037	-163.406	0.000	0.000	0.000
	C201	-256.162	378.507	238.505	0.000	0.000	0.000
	C202	-206.820	305.327	192.381	0.000	0.000	0.000
	C203	-159.421	235.447	147.065	0.000	0.000	0.000
	C204	-110.079	162.267	100.941	0.000	0.000	0.000

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	C205	175.138	-258.338	-161.648	0.000	0.000	0.000
	C206	224.480	-331.518	-207.771	0.000	0.000	0.000
	C207	150.519	-222.244	-140.170	0.000	0.000	0.000
	C208	199.861	-295.424	-186.294	0.000	0.000	0.000
	C209	-305.978	455.310	286.488	0.000	0.000	0.000
	C210	-347.272	516.553	325.088	0.000	0.000	0.000
	C211	-189.226	281.707	176.126	0.000	0.000	0.000
	C212	-230.519	342.949	214.726	0.000	0.000	0.000
	C213	323.697	-481.589	-302.220	0.000	0.000	0.000
	C214	282.404	-420.347	-263.620	0.000	0.000	0.000
	C215	276.364	-410.943	-259.198	0.000	0.000	0.000
	C216	235.071	-349.701	-220.598	0.000	0.000	0.000
	C301	-256.162	378.507	238.505	0.000	0.000	0.000
	C302	-206.820	305.327	192.381	0.000	0.000	0.000
	C303	-159.421	235.447	147.065	0.000	0.000	0.000
	C304	-110.079	162.267	100.941	0.000	0.000	0.000
	C305	175.138	-258.338	-161.648	0.000	0.000	0.000
	C306	224.480	-331.518	-207.771	0.000	0.000	0.000
	C307	150.519	-222.244	-140.170	0.000	0.000	0.000
	C308	199.861	-295.424	-186.294	0.000	0.000	0.000
	C309	-305.978	455.310	286.488	0.000	0.000	0.000
	C310	-347.272	516.553	325.088	0.000	0.000	0.000
	C311	-189.226	281.707	176.126	0.000	0.000	0.000
	C312	-230.519	342.949	214.726	0.000	0.000	0.000
	C313	323.697	-481.589	-302.220	0.000	0.000	0.000
	C314	282.404	-420.347	-263.620	0.000	0.000	0.000
	C315	276.364	-410.943	-259.198	0.000	0.000	0.000
	C316	235.071	-349.701	-220.598	0.000	0.000	0.000
	UN01	-189.750	280.375	176.670	0.000	0.000	0.000
	UN02	-153.200	226.168	142.505	0.000	0.000	0.000
	UN03	-118.090	174.405	108.937	0.000	0.000	0.000
	UN04	-81.540	120.198	74.771	0.000	0.000	0.000
	UN05	129.732	-191.362	-119.739	0.000	0.000	0.000
	UN06	166.281	-245.569	-153.905	0.000	0.000	0.000
	UN07	111.496	-164.625	-103.830	0.000	0.000	0.000
	UN08	148.045	-218.832	-137.996	0.000	0.000	0.000
	UN09	-226.651	337.267	212.214	0.000	0.000	0.000
	UN10	-257.238	382.632	240.806	0.000	0.000	0.000
	UN11	-140.167	208.672	130.463	0.000	0.000	0.000
	UN12	-170.755	254.036	159.056	0.000	0.000	0.000
	UN13	239.776	-356.733	-223.867	0.000	0.000	0.000
	UN14	209.188	-311.368	-195.274	0.000	0.000	0.000
	UN15	204.714	-304.402	-191.999	0.000	0.000	0.000
	UN16	174.127	-259.037	-163.406	0.000	0.000	0.000
SFC2	C101	-299.097	442.551	-279.156	0.000	0.000	0.000
	C102	-210.319	310.883	-196.168	0.000	0.000	0.000
	C103	-263.429	389.960	-246.951	0.000	0.000	0.000
	C104	-174.651	258.292	-163.963	0.000	0.000	0.000
	C105	235.344	-347.997	220.388	0.000	0.000	0.000
	C106	324.122	-479.666	303.376	0.000	0.000	0.000
	C107	142.713	-210.924	133.051	0.000	0.000	0.000
	C108	231.490	-342.592	216.039	0.000	0.000	0.000
	C109	-256.057	380.880	-239.350	0.000	0.000	0.000
	C110	-323.678	481.170	-302.561	0.000	0.000	0.000
	C111	-207.124	307.977	-194.516	0.000	0.000	0.000
	C112	-274.745	408.267	-257.727	0.000	0.000	0.000
	C113	342.294	-508.780	320.580	0.000	0.000	0.000
	C114	274.673	-408.490	257.368	0.000	0.000	0.000
	C115	238.534	-354.562	222.680	0.000	0.000	0.000
	C116	170.913	-254.271	159.469	0.000	0.000	0.000
	C201	-403.781	597.444	-376.860	0.000	0.000	0.000
	C202	-283.931	419.692	-264.826	0.000	0.000	0.000
	C203	-355.629	526.446	-333.383	0.000	0.000	0.000
	C204	-235.778	348.694	-221.350	0.000	0.000	0.000
	C205	317.714	-469.796	297.524	0.000	0.000	0.000
	C206	437.564	-647.549	409.558	0.000	0.000	0.000
	C207	192.662	-284.747	179.619	0.000	0.000	0.000
	C208	312.512	-462.499	291.652	0.000	0.000	0.000
	C209	-345.676	514.187	-323.123	0.000	0.000	0.000
	C210	-436.965	649.579	-408.458	0.000	0.000	0.000
	C211	-279.618	415.768	-262.597	0.000	0.000	0.000
	C212	-370.906	551.160	-347.932	0.000	0.000	0.000
	C213	462.097	-686.853	432.782	0.000	0.000	0.000
	C214	370.809	-551.461	347.447	0.000	0.000	0.000
	C215	322.021	-478.658	300.618	0.000	0.000	0.000
	C216	230.733	-343.266	215.283	0.000	0.000	0.000
	C301	-403.781	597.444	-376.860	0.000	0.000	0.000
	C302	-283.931	419.692	-264.826	0.000	0.000	0.000
	C303	-355.629	526.446	-333.383	0.000	0.000	0.000

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	C304	-235.778	348.694	-221.350	0.000	0.000	0.000
	C305	317.714	-469.796	297.524	0.000	0.000	0.000
	C306	437.564	-647.549	409.558	0.000	0.000	0.000
	C307	192.662	-284.747	179.619	0.000	0.000	0.000
	C308	312.512	-462.499	291.652	0.000	0.000	0.000
	C309	-345.676	514.187	-323.123	0.000	0.000	0.000
	C310	-436.965	649.579	-408.458	0.000	0.000	0.000
	C311	-279.618	415.768	-262.597	0.000	0.000	0.000
	C312	-370.906	551.160	-347.932	0.000	0.000	0.000
	C313	462.097	-686.853	432.782	0.000	0.000	0.000
	C314	370.809	-551.461	347.447	0.000	0.000	0.000
	C315	322.021	-478.658	300.618	0.000	0.000	0.000
	C316	230.733	-343.266	215.283	0.000	0.000	0.000
	UN01	-299.097	442.551	-279.156	0.000	0.000	0.000
	UN02	-210.319	310.883	-196.168	0.000	0.000	0.000
	UN03	-263.429	389.960	-246.951	0.000	0.000	0.000
	UN04	-174.651	258.292	-163.963	0.000	0.000	0.000
	UN05	235.344	-347.997	220.388	0.000	0.000	0.000
	UN06	324.122	-479.666	303.376	0.000	0.000	0.000
	UN07	142.713	-210.924	133.051	0.000	0.000	0.000
	UN08	231.490	-342.592	216.039	0.000	0.000	0.000
	UN09	-256.057	380.880	-239.350	0.000	0.000	0.000
	UN10	-323.678	481.170	-302.561	0.000	0.000	0.000
	UN11	-207.124	307.977	-194.516	0.000	0.000	0.000
	UN12	-274.745	408.267	-257.727	0.000	0.000	0.000
	UN13	342.294	-508.780	320.580	0.000	0.000	0.000
	UN14	274.673	-408.490	257.368	0.000	0.000	0.000
	UN15	238.534	-354.562	222.680	0.000	0.000	0.000
	UN16	170.913	-254.271	159.469	0.000	0.000	0.000
SFC4	C101	-290.788	-430.228	271.120	0.000	0.000	0.000
	C102	-202.010	-298.559	188.131	0.000	0.000	0.000
	C103	-199.926	-295.778	185.436	0.000	0.000	0.000
	C104	-111.148	-164.109	102.448	0.000	0.000	0.000
	C105	178.541	263.752	-165.365	0.000	0.000	0.000
	C106	267.319	395.421	-248.354	0.000	0.000	0.000
	C107	141.104	208.537	-131.507	0.000	0.000	0.000
	C108	229.881	340.206	-214.495	0.000	0.000	0.000
	C109	215.894	321.314	-201.807	0.000	0.000	0.000
	C110	246.482	366.679	-230.400	0.000	0.000	0.000
	C111	180.832	268.983	-169.939	0.000	0.000	0.000
	C112	211.420	314.348	-198.531	0.000	0.000	0.000
	C113	-263.940	-392.572	247.336	0.000	0.000	0.000
	C114	-233.353	-347.207	218.743	0.000	0.000	0.000
	C115	-177.457	-263.977	165.586	0.000	0.000	0.000
	C116	-146.870	-218.612	136.993	0.000	0.000	0.000
	C201	-392.564	-580.807	366.011	0.000	0.000	0.000
	C202	-272.714	-403.055	253.977	0.000	0.000	0.000
	C203	-269.900	-399.300	250.339	0.000	0.000	0.000
	C204	-150.050	-221.548	138.305	0.000	0.000	0.000
	C205	241.031	356.066	-223.243	0.000	0.000	0.000
	C206	360.881	533.818	-335.277	0.000	0.000	0.000
	C207	190.490	281.525	-177.534	0.000	0.000	0.000
	C208	310.340	459.278	-289.568	0.000	0.000	0.000
	C209	291.457	433.774	-272.440	0.000	0.000	0.000
	C210	332.751	495.017	-311.040	0.000	0.000	0.000
	C211	244.124	363.126	-229.417	0.000	0.000	0.000
	C212	285.417	424.369	-268.017	0.000	0.000	0.000
	C213	-356.319	-529.972	333.903	0.000	0.000	0.000
	C214	-315.026	-468.729	295.303	0.000	0.000	0.000
	C215	-239.568	-356.369	223.541	0.000	0.000	0.000
	C216	-198.275	-295.127	184.941	0.000	0.000	0.000
	C301	-392.564	-580.807	366.011	0.000	0.000	0.000
	C302	-272.714	-403.055	253.977	0.000	0.000	0.000
	C303	-269.900	-399.300	250.339	0.000	0.000	0.000
	C304	-150.050	-221.548	138.305	0.000	0.000	0.000
	C305	241.031	356.066	-223.243	0.000	0.000	0.000
	C306	360.881	533.818	-335.277	0.000	0.000	0.000
	C307	190.490	281.525	-177.534	0.000	0.000	0.000
	C308	310.340	459.278	-289.568	0.000	0.000	0.000
	C309	291.457	433.774	-272.440	0.000	0.000	0.000
	C310	332.751	495.017	-311.040	0.000	0.000	0.000
	C311	244.124	363.126	-229.417	0.000	0.000	0.000
	C312	285.417	424.369	-268.017	0.000	0.000	0.000
	C313	-356.319	-529.972	333.903	0.000	0.000	0.000
	C314	-315.026	-468.729	295.303	0.000	0.000	0.000
	C315	-239.568	-356.369	223.541	0.000	0.000	0.000
	C316	-198.275	-295.127	184.941	0.000	0.000	0.000
	UN01	-290.788	-430.228	271.120	0.000	0.000	0.000
	UN02	-202.010	-298.559	188.131	0.000	0.000	0.000

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	UN03	-199.926	-295.778	185.436	0.000	0.000	0.000
	UN04	-111.148	-164.109	102.448	0.000	0.000	0.000
	UN05	178.541	263.752	-165.365	0.000	0.000	0.000
	UN06	267.319	395.421	-248.354	0.000	0.000	0.000
	UN07	141.104	208.537	-131.507	0.000	0.000	0.000
	UN08	229.881	340.206	-214.495	0.000	0.000	0.000
	UN09	215.894	321.314	-201.807	0.000	0.000	0.000
	UN10	246.482	366.679	-230.400	0.000	0.000	0.000
	UN11	180.832	268.983	-169.939	0.000	0.000	0.000
	UN12	211.420	314.348	-198.531	0.000	0.000	0.000
	UN13	-263.940	-392.572	247.336	0.000	0.000	0.000
	UN14	-233.353	-347.207	218.743	0.000	0.000	0.000
	UN15	-177.457	-263.977	165.586	0.000	0.000	0.000
	UN16	-146.870	-218.612	136.993	0.000	0.000	0.000
Z000	C101	-64.083	-0.887	517.078	0.000	0.000	0.000
	C102	-52.408	-0.887	575.700	0.000	0.000	0.000
	C103	-110.694	-0.887	332.072	0.000	0.000	0.000
	C104	-99.019	-0.887	390.694	0.000	0.000	0.000
	C105	101.712	-0.887	1247.549	0.000	0.000	0.000
	C106	113.387	-0.887	1306.170	0.000	0.000	0.000
	C107	36.099	-0.887	975.110	0.000	0.000	0.000
	C108	47.774	-0.887	1033.731	0.000	0.000	0.000
	C109	14.247	5.285	870.307	-5.246	0.000	0.000
	C110	14.247	5.285	870.307	-5.246	0.000	0.000
	C111	-39.759	3.467	650.170	-3.701	0.000	0.000
	C112	-39.759	3.467	650.170	-3.701	0.000	0.000
	C113	22.429	-7.059	901.463	5.246	0.000	0.000
	C114	22.429	-7.059	901.463	5.246	0.000	0.000
	C115	-31.577	-5.241	681.327	3.701	0.000	0.000
	C116	-31.577	-5.241	681.327	3.701	0.000	0.000
	C201	-86.512	-0.751	289.368	0.000	0.000	0.000
	C202	-70.751	-0.751	368.506	0.000	0.000	0.000
	C203	-149.437	-0.751	39.609	0.000	0.000	0.000
	C204	-133.676	-0.751	118.748	0.000	0.000	0.000
	C205	137.312	-0.751	1275.503	0.000	0.000	0.000
	C206	153.072	-0.751	1354.641	0.000	0.000	0.000
	C207	48.734	-0.751	907.710	0.000	0.000	0.000
	C208	64.495	-0.751	986.848	0.000	0.000	0.000
	C209	19.233	7.581	766.226	-7.082	0.000	0.000
	C210	19.233	7.581	766.226	-7.082	0.000	0.000
	C211	-53.675	5.127	469.042	-4.996	0.000	0.000
	C212	-53.675	5.127	469.042	-4.996	0.000	0.000
	C213	30.279	-9.082	808.286	7.082	0.000	0.000
	C214	30.279	-9.082	808.286	7.082	0.000	0.000
	C215	-42.629	-6.629	511.103	4.996	0.000	0.000
	C216	-42.629	-6.629	511.103	4.996	0.000	0.000
	C301	-86.512	-0.614	164.577	0.000	0.000	0.000
	C302	-70.751	-0.614	243.716	0.000	0.000	0.000
	C303	-149.437	-0.614	-85.181	0.000	0.000	0.000
	C304	-133.676	-0.614	-6.042	0.000	0.000	0.000
	C305	137.312	-0.614	1150.712	0.000	0.000	0.000
	C306	153.072	-0.614	1229.851	0.000	0.000	0.000
	C307	48.734	-0.614	782.919	0.000	0.000	0.000
	C308	64.495	-0.614	862.058	0.000	0.000	0.000
	C309	19.233	7.718	641.435	-7.082	0.000	0.000
	C310	19.233	7.718	641.435	-7.082	0.000	0.000
	C311	-53.675	5.264	344.251	-4.996	0.000	0.000
	C312	-53.675	5.264	344.251	-4.996	0.000	0.000
	C313	30.279	-8.946	683.496	7.082	0.000	0.000
	C314	30.279	-8.946	683.496	7.082	0.000	0.000
	C315	-42.629	-6.492	386.313	4.996	0.000	0.000
	C316	-42.629	-6.492	386.313	4.996	0.000	0.000
	UN01	-64.083	-0.682	329.893	0.000	0.000	0.000
	UN02	-52.408	-0.682	388.514	0.000	0.000	0.000
	UN03	-110.694	-0.682	144.887	0.000	0.000	0.000
	UN04	-99.019	-0.682	203.508	0.000	0.000	0.000
	UN05	101.712	-0.682	1060.364	0.000	0.000	0.000
	UN06	113.387	-0.682	1118.985	0.000	0.000	0.000
	UN07	36.099	-0.682	787.924	0.000	0.000	0.000
	UN08	47.774	-0.682	846.545	0.000	0.000	0.000
	UN09	14.247	5.489	683.121	-5.246	0.000	0.000
	UN10	14.247	5.489	683.121	-5.246	0.000	0.000
	UN11	-39.759	3.672	462.985	-3.701	0.000	0.000
	UN12	-39.759	3.672	462.985	-3.701	0.000	0.000
	UN13	22.429	-6.854	714.277	5.246	0.000	0.000
	UN14	22.429	-6.854	714.277	5.246	0.000	0.000
	UN15	-31.577	-5.036	494.141	3.701	0.000	0.000
	UN16	-31.577	-5.036	494.141	3.701	0.000	0.000

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Z001	C101	-19.437	-1.924	100.608	0.000	0.000	0.000
	C102	-19.748	-1.924	101.547	0.000	0.000	0.000
	C103	-25.055	-1.924	72.035	0.000	0.000	0.000
	C104	-25.367	-1.924	72.974	0.000	0.000	0.000
	C105	28.492	-1.924	227.606	0.000	0.000	0.000
	C106	28.180	-1.924	228.545	0.000	0.000	0.000
	C107	14.210	-1.924	182.022	0.000	0.000	0.000
	C108	13.898	-1.924	182.961	0.000	0.000	0.000
	C109	-13.265	3.598	93.664	-4.693	0.000	0.000
	C110	-12.183	4.898	89.720	-5.798	0.000	0.000
	C111	-20.837	1.780	68.659	-3.148	0.000	0.000
	C112	-19.755	3.080	64.715	-4.253	0.000	0.000
	C113	18.676	-8.746	231.052	5.798	0.000	0.000
	C114	19.758	-7.446	227.109	4.693	0.000	0.000
	C115	7.105	-6.928	184.718	4.253	0.000	0.000
	C116	8.187	-5.628	180.775	3.148	0.000	0.000
	C201	-26.240	-1.628	61.107	0.000	0.000	0.000
	C202	-26.660	-1.628	62.375	0.000	0.000	0.000
	C203	-33.824	-1.628	22.534	0.000	0.000	0.000
	C204	-34.245	-1.628	23.802	0.000	0.000	0.000
	C205	38.464	-1.628	232.555	0.000	0.000	0.000
	C206	38.043	-1.628	233.822	0.000	0.000	0.000
	C207	19.183	-1.628	171.016	0.000	0.000	0.000
	C208	18.762	-1.628	172.284	0.000	0.000	0.000
	C209	-17.908	5.826	51.733	-6.336	0.000	0.000
	C210	-16.448	7.581	46.409	-7.828	0.000	0.000
	C211	-28.130	3.372	17.976	-4.250	0.000	0.000
	C212	-26.670	5.127	12.652	-5.742	0.000	0.000
	C213	25.213	-10.837	237.207	7.828	0.000	0.000
	C214	26.673	-9.082	231.883	6.336	0.000	0.000
	C215	9.592	-8.384	174.656	5.742	0.000	0.000
	C216	11.052	-6.629	169.332	4.250	0.000	0.000
	C301	-26.240	-1.332	38.294	0.000	0.000	0.000
	C302	-26.660	-1.332	39.562	0.000	0.000	0.000
	C303	-33.824	-1.332	-0.279	0.000	0.000	0.000
	C304	-34.245	-1.332	0.989	0.000	0.000	0.000
	C305	38.464	-1.332	209.741	0.000	0.000	0.000
	C306	38.043	-1.332	211.009	0.000	0.000	0.000
	C307	19.183	-1.332	148.203	0.000	0.000	0.000
	C308	18.762	-1.332	149.471	0.000	0.000	0.000
	C309	-17.908	6.122	28.920	-6.336	0.000	0.000
	C310	-16.448	7.877	23.596	-7.828	0.000	0.000
	C311	-28.130	3.668	-4.837	-4.250	0.000	0.000
	C312	-26.670	5.423	-10.161	-5.742	0.000	0.000
	C313	25.213	-10.541	214.394	7.828	0.000	0.000
	C314	26.673	-8.786	209.070	6.336	0.000	0.000
	C315	9.592	-8.088	151.843	5.742	0.000	0.000
	C316	11.052	-6.333	146.519	4.250	0.000	0.000
	UN01	-19.437	-1.480	66.388	0.000	0.000	0.000
	UN02	-19.748	-1.480	67.327	0.000	0.000	0.000
	UN03	-25.055	-1.480	37.815	0.000	0.000	0.000
	UN04	-25.367	-1.480	38.754	0.000	0.000	0.000
	UN05	28.492	-1.480	193.386	0.000	0.000	0.000
	UN06	28.180	-1.480	194.325	0.000	0.000	0.000
	UN07	14.210	-1.480	147.802	0.000	0.000	0.000
	UN08	13.898	-1.480	148.741	0.000	0.000	0.000
	UN09	-13.265	4.042	59.444	-4.693	0.000	0.000
	UN10	-12.183	5.342	55.501	-5.798	0.000	0.000
	UN11	-20.837	2.224	34.439	-3.148	0.000	0.000
	UN12	-19.755	3.524	30.495	-4.253	0.000	0.000
	UN13	18.676	-8.302	196.832	5.798	0.000	0.000
	UN14	19.758	-7.002	192.889	4.693	0.000	0.000
	UN15	7.105	-6.484	150.498	4.253	0.000	0.000
	UN16	8.187	-5.184	146.555	3.148	0.000	0.000
Z002	C101	-50.373	2.675	132.657	0.000	0.000	0.000
	C102	-35.893	2.675	165.193	0.000	0.000	0.000
	C103	-59.980	2.675	84.866	0.000	0.000	0.000
	C104	-45.500	2.675	117.403	0.000	0.000	0.000
	C105	52.918	2.675	392.585	0.000	0.000	0.000
	C106	67.398	2.675	425.121	0.000	0.000	0.000
	C107	23.771	2.675	304.549	0.000	0.000	0.000
	C108	38.251	2.675	337.085	0.000	0.000	0.000
	C109	20.272	8.196	329.423	-4.693	0.000	0.000
	C110	19.191	9.496	333.367	-5.798	0.000	0.000
	C111	-0.382	6.379	253.377	-3.148	0.000	0.000
	C112	-1.464	7.679	257.321	-4.253	0.000	0.000
	C113	-6.515	-4.147	209.163	5.798	0.000	0.000
	C114	-7.597	-2.847	213.107	4.693	0.000	0.000
	C115	-23.170	-2.329	154.447	4.253	0.000	0.000

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	C116	-24.252	-1.029	158.390	3.148	0.000	0.000
	C201	-68.003	2.263	53.603	0.000	0.000	0.000
	C202	-48.455	2.263	97.527	0.000	0.000	0.000
	C203	-80.972	2.263	-10.915	0.000	0.000	0.000
	C204	-61.424	2.263	33.009	0.000	0.000	0.000
	C205	71.439	2.263	404.505	0.000	0.000	0.000
	C206	90.987	2.263	448.429	0.000	0.000	0.000
	C207	32.091	2.263	285.657	0.000	0.000	0.000
	C208	51.639	2.263	329.581	0.000	0.000	0.000
	C209	27.368	9.718	319.237	-6.336	0.000	0.000
	C210	25.908	11.473	324.561	-7.828	0.000	0.000
	C211	-0.516	7.264	216.575	-4.250	0.000	0.000
	C212	-1.976	9.019	221.899	-5.742	0.000	0.000
	C213	-8.795	-6.946	156.886	7.828	0.000	0.000
	C214	-10.256	-5.191	162.210	6.336	0.000	0.000
	C215	-31.280	-4.492	83.018	5.742	0.000	0.000
	C216	-32.740	-2.737	88.342	4.250	0.000	0.000
	C301	-68.003	1.852	15.287	0.000	0.000	0.000
	C302	-48.455	1.852	59.211	0.000	0.000	0.000
	C303	-80.972	1.852	-49.231	0.000	0.000	0.000
	C304	-61.424	1.852	-5.307	0.000	0.000	0.000
	C305	71.439	1.852	366.189	0.000	0.000	0.000
	C306	90.987	1.852	410.113	0.000	0.000	0.000
	C307	32.091	1.852	247.341	0.000	0.000	0.000
	C308	51.639	1.852	291.265	0.000	0.000	0.000
	C309	27.368	9.306	280.921	-6.336	0.000	0.000
	C310	25.908	11.061	286.245	-7.828	0.000	0.000
	C311	-0.516	6.852	178.259	-4.250	0.000	0.000
	C312	-1.976	8.607	183.583	-5.742	0.000	0.000
	C313	-8.795	-7.357	118.570	7.828	0.000	0.000
	C314	-10.256	-5.602	123.894	6.336	0.000	0.000
	C315	-31.280	-4.904	44.703	5.742	0.000	0.000
	C316	-32.740	-3.149	50.027	4.250	0.000	0.000
	UN01	-50.373	2.058	75.183	0.000	0.000	0.000
	UN02	-35.893	2.058	107.720	0.000	0.000	0.000
	UN03	-59.980	2.058	27.393	0.000	0.000	0.000
	UN04	-45.500	2.058	59.929	0.000	0.000	0.000
	UN05	52.918	2.058	335.111	0.000	0.000	0.000
	UN06	67.398	2.058	367.647	0.000	0.000	0.000
	UN07	23.771	2.058	247.075	0.000	0.000	0.000
	UN08	38.251	2.058	279.612	0.000	0.000	0.000
	UN09	20.272	7.579	271.949	-4.693	0.000	0.000
	UN10	19.191	8.879	275.893	-5.798	0.000	0.000
	UN11	-0.382	5.762	195.904	-3.148	0.000	0.000
	UN12	-1.464	7.062	199.847	-4.253	0.000	0.000
	UN13	-6.515	-4.764	151.690	5.798	0.000	0.000
	UN14	-7.597	-3.464	155.633	4.693	0.000	0.000
	UN15	-23.170	-2.946	96.973	4.253	0.000	0.000
	UN16	-24.252	-1.647	100.916	3.148	0.000	0.000
Z003	C101	39.793	-1.000	626.427	0.000	0.000	0.000
	C102	28.688	-1.000	599.474	0.000	0.000	0.000
	C103	-6.535	-1.000	464.653	0.000	0.000	0.000
	C104	-17.641	-1.000	437.700	0.000	0.000	0.000
	C105	6.145	-1.000	581.306	0.000	0.000	0.000
	C106	-4.961	-1.000	554.353	0.000	0.000	0.000
	C107	-26.827	-1.000	453.674	0.000	0.000	0.000
	C108	-37.932	-1.000	426.720	0.000	0.000	0.000
	C109	5.842	5.172	549.711	-5.246	0.000	0.000
	C110	5.842	5.172	549.711	-5.246	0.000	0.000
	C111	-32.324	3.354	410.425	-3.701	0.000	0.000
	C112	-32.324	3.354	410.425	-3.701	0.000	0.000
	C113	20.078	-7.171	598.536	5.246	0.000	0.000
	C114	20.078	-7.171	598.536	5.246	0.000	0.000
	C115	-18.088	-5.354	459.251	3.701	0.000	0.000
	C116	-18.088	-5.354	459.251	3.701	0.000	0.000
	C201	53.721	-0.846	580.237	0.000	0.000	0.000
	C202	38.729	-0.846	543.850	0.000	0.000	0.000
	C203	-8.822	-0.846	361.842	0.000	0.000	0.000
	C204	-23.815	-0.846	325.455	0.000	0.000	0.000
	C205	8.296	-0.846	519.324	0.000	0.000	0.000
	C206	-6.697	-0.846	482.937	0.000	0.000	0.000
	C207	-36.216	-0.846	347.019	0.000	0.000	0.000
	C208	-51.209	-0.846	310.632	0.000	0.000	0.000
	C209	7.886	7.486	476.670	-7.082	0.000	0.000
	C210	7.886	7.486	476.670	-7.082	0.000	0.000
	C211	-43.638	5.032	288.634	-4.996	0.000	0.000
	C212	-43.638	5.032	288.634	-4.996	0.000	0.000
	C213	27.105	-9.178	542.584	7.082	0.000	0.000
	C214	27.105	-9.178	542.584	7.082	0.000	0.000

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	C215	-24.419	-6.724	354.548	4.996	0.000	0.000
	C216	-24.419	-6.724	354.548	4.996	0.000	0.000
	C301	53.721	-0.692	499.186	0.000	0.000	0.000
	C302	38.729	-0.692	462.799	0.000	0.000	0.000
	C303	-8.822	-0.692	280.791	0.000	0.000	0.000
	C304	-23.815	-0.692	244.404	0.000	0.000	0.000
	C305	8.296	-0.692	438.273	0.000	0.000	0.000
	C306	-6.697	-0.692	401.886	0.000	0.000	0.000
	C307	-36.216	-0.692	265.969	0.000	0.000	0.000
	C308	-51.209	-0.692	229.582	0.000	0.000	0.000
	C309	7.886	7.640	395.619	-7.082	0.000	0.000
	C310	7.886	7.640	395.619	-7.082	0.000	0.000
	C311	-43.638	5.186	207.584	-4.996	0.000	0.000
	C312	-43.638	5.186	207.584	-4.996	0.000	0.000
	C313	27.105	-9.024	461.534	7.082	0.000	0.000
	C314	27.105	-9.024	461.534	7.082	0.000	0.000
	C315	-24.419	-6.570	273.498	4.996	0.000	0.000
	C316	-24.419	-6.570	273.498	4.996	0.000	0.000
	UN01	39.793	-0.769	504.852	0.000	0.000	0.000
	UN02	28.688	-0.769	477.899	0.000	0.000	0.000
	UN03	-6.535	-0.769	343.078	0.000	0.000	0.000
	UN04	-17.641	-0.769	316.124	0.000	0.000	0.000
	UN05	6.145	-0.769	459.731	0.000	0.000	0.000
	UN06	-4.961	-0.769	432.778	0.000	0.000	0.000
	UN07	-26.827	-0.769	332.098	0.000	0.000	0.000
	UN08	-37.932	-0.769	305.145	0.000	0.000	0.000
	UN09	5.842	5.403	428.135	-5.246	0.000	0.000
	UN10	5.842	5.403	428.135	-5.246	0.000	0.000
	UN11	-32.324	3.585	288.850	-3.701	0.000	0.000
	UN12	-32.324	3.585	288.850	-3.701	0.000	0.000
	UN13	20.078	-6.941	476.961	5.246	0.000	0.000
	UN14	20.078	-6.941	476.961	5.246	0.000	0.000
	UN15	-18.088	-5.123	337.675	3.701	0.000	0.000
	UN16	-18.088	-5.123	337.675	3.701	0.000	0.000
Z004	C101	-2.078	-1.229	128.356	0.000	0.000	0.000
	C102	-6.082	-1.229	115.536	0.000	0.000	0.000
	C103	-5.898	-1.229	103.025	0.000	0.000	0.000
	C104	-9.902	-1.229	90.205	0.000	0.000	0.000
	C105	11.325	-1.229	128.941	0.000	0.000	0.000
	C106	7.321	-1.229	116.121	0.000	0.000	0.000
	C107	3.208	-1.229	102.991	0.000	0.000	0.000
	C108	-0.796	-1.229	90.171	0.000	0.000	0.000
	C109	-16.103	4.292	37.497	-4.693	0.000	0.000
	C110	-15.503	5.592	30.793	-5.798	0.000	0.000
	C111	-19.640	2.475	25.081	-3.148	0.000	0.000
	C112	-19.040	3.775	18.378	-4.253	0.000	0.000
	C113	19.394	-8.051	207.877	5.798	0.000	0.000
	C114	19.994	-6.751	201.174	4.693	0.000	0.000
	C115	11.451	-6.233	170.972	4.253	0.000	0.000
	C116	12.052	-4.933	164.269	3.148	0.000	0.000
	C201	-2.806	-1.040	117.366	0.000	0.000	0.000
	C202	-8.211	-1.040	100.058	0.000	0.000	0.000
	C203	-7.962	-1.040	83.169	0.000	0.000	0.000
	C204	-13.367	-1.040	65.862	0.000	0.000	0.000
	C205	15.288	-1.040	118.156	0.000	0.000	0.000
	C206	9.883	-1.040	100.849	0.000	0.000	0.000
	C207	4.331	-1.040	83.123	0.000	0.000	0.000
	C208	-1.075	-1.040	65.816	0.000	0.000	0.000
	C209	-21.739	6.414	-5.294	-6.336	0.000	0.000
	C210	-20.929	8.169	-14.344	-7.828	0.000	0.000
	C211	-26.514	3.960	-22.056	-4.250	0.000	0.000
	C212	-25.704	5.715	-31.105	-5.742	0.000	0.000
	C213	26.182	-10.249	224.719	7.828	0.000	0.000
	C214	26.992	-8.494	215.670	6.336	0.000	0.000
	C215	15.459	-7.796	174.897	5.742	0.000	0.000
	C216	16.270	-6.041	165.848	4.250	0.000	0.000
	C301	-2.806	-0.851	100.292	0.000	0.000	0.000
	C302	-8.211	-0.851	82.985	0.000	0.000	0.000
	C303	-7.962	-0.851	66.096	0.000	0.000	0.000
	C304	-13.367	-0.851	48.788	0.000	0.000	0.000
	C305	15.288	-0.851	101.083	0.000	0.000	0.000
	C306	9.883	-0.851	83.775	0.000	0.000	0.000
	C307	4.331	-0.851	66.050	0.000	0.000	0.000
	C308	-1.075	-0.851	48.742	0.000	0.000	0.000
	C309	-21.739	6.603	-22.368	-6.336	0.000	0.000
	C310	-20.929	8.358	-31.417	-7.828	0.000	0.000
	C311	-26.514	4.149	-39.129	-4.250	0.000	0.000
	C312	-25.704	5.904	-48.178	-5.742	0.000	0.000
	C313	26.182	-10.060	207.646	7.828	0.000	0.000

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	C314	26.992	-8.305	198.596	6.336	0.000	0.000
	C315	15.459	-7.606	157.824	5.742	0.000	0.000
	C316	16.270	-5.851	148.775	4.250	0.000	0.000
	UN01	-2.078	-0.946	102.746	0.000	0.000	0.000
	UN02	-6.082	-0.946	89.926	0.000	0.000	0.000
	UN03	-5.898	-0.946	77.415	0.000	0.000	0.000
	UN04	-9.902	-0.946	64.595	0.000	0.000	0.000
	UN05	11.325	-0.946	103.331	0.000	0.000	0.000
	UN06	7.321	-0.946	90.511	0.000	0.000	0.000
	UN07	3.208	-0.946	77.381	0.000	0.000	0.000
	UN08	-0.796	-0.946	64.561	0.000	0.000	0.000
	UN09	-16.103	4.576	11.887	-4.693	0.000	0.000
	UN10	-15.503	5.876	5.183	-5.798	0.000	0.000
	UN11	-19.640	2.759	-0.529	-3.148	0.000	0.000
	UN12	-19.040	4.059	-7.232	-4.253	0.000	0.000
	UN13	19.394	-7.767	182.267	5.798	0.000	0.000
	UN14	19.994	-6.467	175.564	4.693	0.000	0.000
	UN15	11.451	-5.950	145.362	4.253	0.000	0.000
	UN16	12.052	-4.650	138.659	3.148	0.000	0.000
Z005	C101	-34.358	2.356	187.170	0.000	0.000	0.000
	C102	-22.876	2.356	208.556	0.000	0.000	0.000
	C103	-41.918	2.356	134.475	0.000	0.000	0.000
	C104	-30.437	2.356	155.860	0.000	0.000	0.000
	C105	36.408	2.356	340.652	0.000	0.000	0.000
	C106	47.889	2.356	362.037	0.000	0.000	0.000
	C107	13.164	2.356	262.185	0.000	0.000	0.000
	C108	24.645	2.356	283.570	0.000	0.000	0.000
	C109	19.139	7.878	333.536	-4.693	0.000	0.000
	C110	18.539	9.178	340.240	-5.798	0.000	0.000
	C111	2.106	6.060	258.146	-3.148	0.000	0.000
	C112	1.506	7.360	264.849	-4.253	0.000	0.000
	C113	-8.460	-4.466	194.265	5.798	0.000	0.000
	C114	-9.060	-3.166	200.968	4.693	0.000	0.000
	C115	-21.088	-2.648	143.364	4.253	0.000	0.000
	C116	-21.688	-1.348	150.067	3.148	0.000	0.000
	C201	-46.383	1.993	128.837	0.000	0.000	0.000
	C202	-30.883	1.993	157.707	0.000	0.000	0.000
	C203	-56.590	1.993	57.698	0.000	0.000	0.000
	C204	-41.089	1.993	86.568	0.000	0.000	0.000
	C205	49.150	1.993	336.037	0.000	0.000	0.000
	C206	64.651	1.993	364.907	0.000	0.000	0.000
	C207	17.771	1.993	230.107	0.000	0.000	0.000
	C208	33.271	1.993	258.977	0.000	0.000	0.000
	C209	25.838	9.448	326.431	-6.336	0.000	0.000
	C210	25.028	11.203	335.480	-7.828	0.000	0.000
	C211	2.843	6.994	224.654	-4.250	0.000	0.000
	C212	2.033	8.749	233.703	-5.742	0.000	0.000
	C213	-11.421	-7.216	138.414	7.828	0.000	0.000
	C214	-12.232	-5.461	147.464	6.336	0.000	0.000
	C215	-28.469	-4.762	69.698	5.742	0.000	0.000
	C216	-29.279	-3.007	78.747	4.250	0.000	0.000
	C301	-46.383	1.631	91.022	0.000	0.000	0.000
	C302	-30.883	1.631	119.892	0.000	0.000	0.000
	C303	-56.590	1.631	19.883	0.000	0.000	0.000
	C304	-41.089	1.631	48.753	0.000	0.000	0.000
	C305	49.150	1.631	298.222	0.000	0.000	0.000
	C306	64.651	1.631	327.092	0.000	0.000	0.000
	C307	17.771	1.631	192.292	0.000	0.000	0.000
	C308	33.271	1.631	221.162	0.000	0.000	0.000
	C309	25.838	9.085	288.616	-6.336	0.000	0.000
	C310	25.028	10.840	297.666	-7.828	0.000	0.000
	C311	2.843	6.632	186.839	-4.250	0.000	0.000
	C312	2.033	8.387	195.889	-5.742	0.000	0.000
	C313	-11.421	-7.578	100.600	7.828	0.000	0.000
	C314	-12.232	-5.823	109.649	6.336	0.000	0.000
	C315	-28.469	-5.124	31.883	5.742	0.000	0.000
	C316	-29.279	-3.369	40.932	4.250	0.000	0.000
	UN01	-34.358	1.812	130.448	0.000	0.000	0.000
	UN02	-22.876	1.812	151.834	0.000	0.000	0.000
	UN03	-41.918	1.812	77.753	0.000	0.000	0.000
	UN04	-30.437	1.812	99.138	0.000	0.000	0.000
	UN05	36.408	1.812	283.930	0.000	0.000	0.000
	UN06	47.889	1.812	305.315	0.000	0.000	0.000
	UN07	13.164	1.812	205.463	0.000	0.000	0.000
	UN08	24.645	1.812	226.848	0.000	0.000	0.000
	UN09	19.139	7.334	276.814	-4.693	0.000	0.000
	UN10	18.539	8.634	283.518	-5.798	0.000	0.000
	UN11	2.106	5.516	201.424	-3.148	0.000	0.000
	UN12	1.506	6.816	208.127	-4.253	0.000	0.000

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	UN13	-8.460	-5.009	137.543	5.798	0.000	0.000
	UN14	-9.060	-3.709	144.246	4.693	0.000	0.000
	UN15	-21.088	-3.192	86.642	4.253	0.000	0.000
	UN16	-21.688	-1.892	93.345	3.148	0.000	0.000
Z006	C101	-27.552	2.863	323.021	0.000	0.000	0.000
	C102	-16.070	2.863	301.636	0.000	0.000	0.000
	C103	0.361	2.863	228.904	0.000	0.000	0.000
	C104	11.842	2.863	207.519	0.000	0.000	0.000
	C105	-0.383	2.863	350.155	0.000	0.000	0.000
	C106	11.099	2.863	328.770	0.000	0.000	0.000
	C107	11.846	2.863	281.809	0.000	0.000	0.000
	C108	23.328	2.863	260.424	0.000	0.000	0.000
	C109	-33.098	8.384	412.808	-4.693	0.000	0.000
	C110	-43.478	9.684	443.764	-5.798	0.000	0.000
	C111	-6.956	6.567	312.161	-3.148	0.000	0.000
	C112	-17.336	7.867	343.117	-4.253	0.000	0.000
	C113	31.532	-3.959	189.791	5.798	0.000	0.000
	C114	21.152	-2.659	220.747	4.693	0.000	0.000
	C115	44.034	-2.141	134.030	4.253	0.000	0.000
	C116	33.655	-0.841	164.987	3.148	0.000	0.000
	C201	-37.493	2.422	289.858	0.000	0.000	0.000
	C202	-21.993	2.422	260.988	0.000	0.000	0.000
	C203	0.189	2.422	162.800	0.000	0.000	0.000
	C204	15.689	2.422	133.930	0.000	0.000	0.000
	C205	-0.814	2.422	326.489	0.000	0.000	0.000
	C206	14.686	2.422	297.619	0.000	0.000	0.000
	C207	15.694	2.422	234.222	0.000	0.000	0.000
	C208	31.194	2.422	205.352	0.000	0.000	0.000
	C209	-44.980	9.877	411.070	-6.336	0.000	0.000
	C210	-58.993	11.632	452.861	-7.828	0.000	0.000
	C211	-9.689	7.423	275.196	-4.250	0.000	0.000
	C212	-23.702	9.178	316.987	-5.742	0.000	0.000
	C213	42.270	-6.787	109.997	7.828	0.000	0.000
	C214	28.257	-5.032	151.789	6.336	0.000	0.000
	C215	59.149	-4.333	34.720	5.742	0.000	0.000
	C216	45.136	-2.578	76.511	4.250	0.000	0.000
	C301	-37.584	1.982	245.210	0.000	0.000	0.000
	C302	-22.083	1.982	216.340	0.000	0.000	0.000
	C303	0.098	1.982	118.153	0.000	0.000	0.000
	C304	15.598	1.982	89.283	0.000	0.000	0.000
	C305	-0.905	1.982	281.841	0.000	0.000	0.000
	C306	14.595	1.982	252.971	0.000	0.000	0.000
	C307	15.603	1.982	189.575	0.000	0.000	0.000
	C308	31.103	1.982	160.705	0.000	0.000	0.000
	C309	-45.071	9.436	366.422	-6.336	0.000	0.000
	C310	-59.084	11.191	408.213	-7.828	0.000	0.000
	C311	-9.780	6.982	230.549	-4.250	0.000	0.000
	C312	-23.793	8.737	272.340	-5.742	0.000	0.000
	C313	42.179	-7.227	65.350	7.828	0.000	0.000
	C314	28.166	-5.472	107.141	6.336	0.000	0.000
	C315	59.058	-4.774	-9.927	5.742	0.000	0.000
	C316	45.045	-3.019	31.864	4.250	0.000	0.000
	UN01	-27.688	2.202	256.050	0.000	0.000	0.000
	UN02	-16.207	2.202	234.665	0.000	0.000	0.000
	UN03	0.224	2.202	161.933	0.000	0.000	0.000
	UN04	11.706	2.202	140.548	0.000	0.000	0.000
	UN05	-0.519	2.202	283.184	0.000	0.000	0.000
	UN06	10.963	2.202	261.799	0.000	0.000	0.000
	UN07	11.710	2.202	214.838	0.000	0.000	0.000
	UN08	23.191	2.202	193.453	0.000	0.000	0.000
	UN09	-33.235	7.724	345.836	-4.693	0.000	0.000
	UN10	-43.614	9.024	376.793	-5.798	0.000	0.000
	UN11	-7.093	5.906	245.189	-3.148	0.000	0.000
	UN12	-17.473	7.206	276.146	-4.253	0.000	0.000
	UN13	31.395	-4.620	122.820	5.798	0.000	0.000
	UN14	21.016	-3.320	153.776	4.693	0.000	0.000
	UN15	43.898	-2.802	67.059	4.253	0.000	0.000
	UN16	33.518	-1.502	98.015	3.148	0.000	0.000
Z007	C101	52.053	-1.002	545.351	0.000	0.000	0.000
	C102	40.948	-1.002	572.305	0.000	0.000	0.000
	C103	101.683	-1.002	367.642	0.000	0.000	0.000
	C104	90.577	-1.002	394.596	0.000	0.000	0.000
	C105	-94.732	-1.002	990.685	0.000	0.000	0.000
	C106	-105.838	-1.002	1017.638	0.000	0.000	0.000
	C107	-31.746	-1.002	778.834	0.000	0.000	0.000
	C108	-42.852	-1.002	805.787	0.000	0.000	0.000
	C109	-16.478	5.170	744.306	-5.246	0.000	0.000
	C110	-16.478	5.170	744.306	-5.246	0.000	0.000

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	C111	37.716	3.352	556.836	-3.701	0.000	0.000
	C112	37.716	3.352	556.836	-3.701	0.000	0.000
	C113	-24.633	-7.173	774.849	5.246	0.000	0.000
	C114	-24.633	-7.173	774.849	5.246	0.000	0.000
	C115	29.561	-5.356	587.380	3.701	0.000	0.000
	C116	29.561	-5.356	587.380	3.701	0.000	0.000
	C201	71.357	-0.848	385.587	0.000	0.000	0.000
	C202	56.365	-0.848	421.974	0.000	0.000	0.000
	C203	138.357	-0.848	145.680	0.000	0.000	0.000
	C204	123.364	-0.848	182.067	0.000	0.000	0.000
	C205	-126.803	-0.848	986.787	0.000	0.000	0.000
	C206	-141.795	-0.848	1023.174	0.000	0.000	0.000
	C207	-41.772	-0.848	700.788	0.000	0.000	0.000
	C208	-56.764	-0.848	737.175	0.000	0.000	0.000
	C209	-21.160	7.484	654.175	-7.082	0.000	0.000
	C210	-21.160	7.484	654.175	-7.082	0.000	0.000
	C211	52.001	5.030	401.091	-4.996	0.000	0.000
	C212	52.001	5.030	401.091	-4.996	0.000	0.000
	C213	-32.169	-9.179	695.408	7.082	0.000	0.000
	C214	-32.169	-9.179	695.408	7.082	0.000	0.000
	C215	40.992	-6.726	442.325	4.996	0.000	0.000
	C216	40.992	-6.726	442.325	4.996	0.000	0.000
	C301	71.689	-0.694	278.522	0.000	0.000	0.000
	C302	56.696	-0.694	314.909	0.000	0.000	0.000
	C303	138.688	-0.694	38.615	0.000	0.000	0.000
	C304	123.696	-0.694	75.002	0.000	0.000	0.000
	C305	-126.471	-0.694	879.722	0.000	0.000	0.000
	C306	-141.464	-0.694	916.109	0.000	0.000	0.000
	C307	-41.440	-0.694	593.723	0.000	0.000	0.000
	C308	-56.433	-0.694	630.110	0.000	0.000	0.000
	C309	-20.829	7.638	547.110	-7.082	0.000	0.000
	C310	-20.829	7.638	547.110	-7.082	0.000	0.000
	C311	52.333	5.184	294.026	-4.996	0.000	0.000
	C312	52.333	5.184	294.026	-4.996	0.000	0.000
	C313	-31.838	-9.025	588.344	7.082	0.000	0.000
	C314	-31.838	-9.025	588.344	7.082	0.000	0.000
	C315	41.324	-6.572	335.260	4.996	0.000	0.000
	C316	41.324	-6.572	335.260	4.996	0.000	0.000
	UN01	52.551	-0.771	384.754	0.000	0.000	0.000
	UN02	41.445	-0.771	411.708	0.000	0.000	0.000
	UN03	102.180	-0.771	207.045	0.000	0.000	0.000
	UN04	91.074	-0.771	233.999	0.000	0.000	0.000
	UN05	-94.235	-0.771	830.087	0.000	0.000	0.000
	UN06	-105.340	-0.771	857.041	0.000	0.000	0.000
	UN07	-31.249	-0.771	618.237	0.000	0.000	0.000
	UN08	-42.355	-0.771	645.190	0.000	0.000	0.000
	UN09	-15.981	5.401	583.708	-5.246	0.000	0.000
	UN10	-15.981	5.401	583.708	-5.246	0.000	0.000
	UN11	38.213	3.583	396.239	-3.701	0.000	0.000
	UN12	38.213	3.583	396.239	-3.701	0.000	0.000
	UN13	-24.136	-6.942	614.252	5.246	0.000	0.000
	UN14	-24.136	-6.942	614.252	5.246	0.000	0.000
	UN15	30.058	-5.125	426.782	3.701	0.000	0.000
	UN16	30.058	-5.125	426.782	3.701	0.000	0.000
Z008	C101	-1.461	-1.740	131.865	0.000	0.000	0.000
	C102	-5.464	-1.740	144.685	0.000	0.000	0.000
	C103	11.325	-1.740	90.265	0.000	0.000	0.000
	C104	7.321	-1.740	103.085	0.000	0.000	0.000
	C105	-5.787	-1.740	202.381	0.000	0.000	0.000
	C106	-9.791	-1.740	215.201	0.000	0.000	0.000
	C107	2.701	-1.740	161.400	0.000	0.000	0.000
	C108	-1.303	-1.740	174.220	0.000	0.000	0.000
	C109	24.946	3.782	62.993	-4.693	0.000	0.000
	C110	35.326	5.082	32.037	-5.798	0.000	0.000
	C111	28.359	1.964	45.717	-3.148	0.000	0.000
	C112	38.738	3.264	14.760	-4.253	0.000	0.000
	C113	-44.173	-8.561	305.692	5.798	0.000	0.000
	C114	-33.793	-7.261	274.736	4.693	0.000	0.000
	C115	-27.121	-6.744	243.530	4.253	0.000	0.000
	C116	-16.741	-5.444	212.573	3.148	0.000	0.000
	C201	-1.492	-1.472	99.724	0.000	0.000	0.000
	C202	-6.897	-1.472	117.032	0.000	0.000	0.000
	C203	15.768	-1.472	43.564	0.000	0.000	0.000
	C204	10.363	-1.472	60.871	0.000	0.000	0.000
	C205	-7.333	-1.472	194.920	0.000	0.000	0.000
	C206	-12.738	-1.472	212.227	0.000	0.000	0.000
	C207	4.126	-1.472	139.596	0.000	0.000	0.000
	C208	-1.279	-1.472	156.903	0.000	0.000	0.000
	C209	34.157	5.982	6.747	-6.336	0.000	0.000

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	C210	48.170	7.737	-35.044	-7.828	0.000	0.000
	C211	38.764	3.528	-16.576	-4.250	0.000	0.000
	C212	52.777	5.283	-58.367	-5.742	0.000	0.000
	C213	-59.153	-10.681	334.391	7.828	0.000	0.000
	C214	-45.141	-8.926	292.599	6.336	0.000	0.000
	C215	-36.133	-8.228	250.471	5.742	0.000	0.000
	C216	-22.121	-6.473	208.680	4.250	0.000	0.000
	C301	-1.345	-1.204	75.818	0.000	0.000	0.000
	C302	-6.751	-1.204	93.125	0.000	0.000	0.000
	C303	15.915	-1.204	19.657	0.000	0.000	0.000
	C304	10.509	-1.204	36.964	0.000	0.000	0.000
	C305	-7.186	-1.204	171.014	0.000	0.000	0.000
	C306	-12.591	-1.204	188.321	0.000	0.000	0.000
	C307	4.273	-1.204	115.689	0.000	0.000	0.000
	C308	-1.132	-1.204	132.997	0.000	0.000	0.000
	C309	34.304	6.250	-17.159	-6.336	0.000	0.000
	C310	48.316	8.005	-58.950	-7.828	0.000	0.000
	C311	38.911	3.796	-40.483	-4.250	0.000	0.000
	C312	52.923	5.551	-82.274	-5.742	0.000	0.000
	C313	-59.007	-10.414	310.484	7.828	0.000	0.000
	C314	-44.994	-8.659	268.693	6.336	0.000	0.000
	C315	-35.987	-7.960	226.565	5.742	0.000	0.000
	C316	-21.974	-6.205	184.773	4.250	0.000	0.000
	UN01	-1.241	-1.338	96.006	0.000	0.000	0.000
	UN02	-5.245	-1.338	108.826	0.000	0.000	0.000
	UN03	11.544	-1.338	54.405	0.000	0.000	0.000
	UN04	7.541	-1.338	67.225	0.000	0.000	0.000
	UN05	-5.567	-1.338	166.521	0.000	0.000	0.000
	UN06	-9.571	-1.338	179.341	0.000	0.000	0.000
	UN07	2.921	-1.338	125.540	0.000	0.000	0.000
	UN08	-1.083	-1.338	138.360	0.000	0.000	0.000
	UN09	25.166	4.183	27.134	-4.693	0.000	0.000
	UN10	35.545	5.483	-3.823	-5.798	0.000	0.000
	UN11	28.579	2.366	9.857	-3.148	0.000	0.000
	UN12	38.958	3.666	-21.099	-4.253	0.000	0.000
	UN13	-43.953	-8.160	269.832	5.798	0.000	0.000
	UN14	-33.573	-6.860	238.876	4.693	0.000	0.000
	UN15	-26.901	-6.342	207.670	4.253	0.000	0.000
	UN16	-16.521	-5.042	176.713	3.148	0.000	0.000
Z009	C101	-16.350	-1.169	136.128	0.000	0.000	0.000
	C102	-16.662	-1.169	135.189	0.000	0.000	0.000
	C103	-5.088	-1.169	103.747	0.000	0.000	0.000
	C104	-5.400	-1.169	102.808	0.000	0.000	0.000
	C105	13.523	-1.169	74.908	0.000	0.000	0.000
	C106	13.212	-1.169	73.969	0.000	0.000	0.000
	C107	16.122	-1.169	59.538	0.000	0.000	0.000
	C108	15.810	-1.169	58.599	0.000	0.000	0.000
	C109	27.905	4.352	8.379	-4.693	0.000	0.000
	C110	37.311	5.652	-17.969	-5.798	0.000	0.000
	C111	28.161	2.535	5.497	-3.148	0.000	0.000
	C112	37.567	3.835	-20.850	-4.253	0.000	0.000
	C113	-38.882	-7.991	222.667	5.798	0.000	0.000
	C114	-29.476	-6.691	196.320	4.693	0.000	0.000
	C115	-25.806	-6.173	179.615	4.253	0.000	0.000
	C116	-16.400	-4.873	153.268	3.148	0.000	0.000
	C201	-22.816	-0.989	136.128	0.000	0.000	0.000
	C202	-23.236	-0.989	134.861	0.000	0.000	0.000
	C203	-7.612	-0.989	92.414	0.000	0.000	0.000
	C204	-8.033	-0.989	91.146	0.000	0.000	0.000
	C205	17.514	-0.989	53.482	0.000	0.000	0.000
	C206	17.093	-0.989	52.214	0.000	0.000	0.000
	C207	21.021	-0.989	32.732	0.000	0.000	0.000
	C208	20.600	-0.989	31.465	0.000	0.000	0.000
	C209	36.929	6.465	-36.333	-6.336	0.000	0.000
	C210	49.627	8.220	-71.902	-7.828	0.000	0.000
	C211	37.275	4.011	-40.223	-4.250	0.000	0.000
	C212	49.973	5.766	-75.792	-5.742	0.000	0.000
	C213	-53.234	-10.199	252.956	7.828	0.000	0.000
	C214	-40.535	-8.444	217.387	6.336	0.000	0.000
	C215	-35.582	-7.745	194.836	5.742	0.000	0.000
	C216	-22.883	-5.990	159.267	4.250	0.000	0.000
	C301	-23.043	-0.810	121.580	0.000	0.000	0.000
	C302	-23.463	-0.810	120.313	0.000	0.000	0.000
	C303	-7.839	-0.810	77.866	0.000	0.000	0.000
	C304	-8.260	-0.810	76.598	0.000	0.000	0.000
	C305	17.287	-0.810	38.934	0.000	0.000	0.000
	C306	16.866	-0.810	37.666	0.000	0.000	0.000
	C307	20.794	-0.810	18.184	0.000	0.000	0.000
	C308	20.373	-0.810	16.917	0.000	0.000	0.000

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	C309	36.702	6.645	-50.881	-6.336	0.000	0.000
	C310	49.400	8.400	-86.450	-7.828	0.000	0.000
	C311	37.048	4.191	-54.771	-4.250	0.000	0.000
	C312	49.746	5.946	-90.340	-5.742	0.000	0.000
	C313	-53.461	-10.019	238.408	7.828	0.000	0.000
	C314	-40.762	-8.264	202.839	6.336	0.000	0.000
	C315	-35.808	-7.565	180.288	5.742	0.000	0.000
	C316	-23.110	-5.810	144.719	4.250	0.000	0.000
	UN01	-16.690	-0.899	114.306	0.000	0.000	0.000
	UN02	-17.002	-0.899	113.367	0.000	0.000	0.000
	UN03	-5.429	-0.899	81.925	0.000	0.000	0.000
	UN04	-5.740	-0.899	80.986	0.000	0.000	0.000
	UN05	13.183	-0.899	53.086	0.000	0.000	0.000
	UN06	12.871	-0.899	52.147	0.000	0.000	0.000
	UN07	15.781	-0.899	37.716	0.000	0.000	0.000
	UN08	15.470	-0.899	36.777	0.000	0.000	0.000
	UN09	27.565	4.622	-13.443	-4.693	0.000	0.000
	UN10	36.971	5.922	-39.791	-5.798	0.000	0.000
	UN11	27.821	2.805	-16.325	-3.148	0.000	0.000
	UN12	37.227	4.105	-42.672	-4.253	0.000	0.000
	UN13	-39.222	-7.721	200.845	5.798	0.000	0.000
	UN14	-29.816	-6.421	174.498	4.693	0.000	0.000
	UN15	-26.147	-5.904	157.793	4.253	0.000	0.000
	UN16	-16.740	-4.604	131.446	3.148	0.000	0.000
Z010	C101	-48.567	-0.879	797.636	0.000	0.000	0.000
	C102	-36.893	-0.879	739.015	0.000	0.000	0.000
	C103	0.631	-0.879	599.371	0.000	0.000	0.000
	C104	12.305	-0.879	540.749	0.000	0.000	0.000
	C105	4.267	-0.879	519.067	0.000	0.000	0.000
	C106	15.941	-0.879	460.446	0.000	0.000	0.000
	C107	34.463	-0.879	408.235	0.000	0.000	0.000
	C108	46.137	-0.879	349.614	0.000	0.000	0.000
	C109	-4.764	5.293	582.554	-5.246	0.000	0.000
	C110	-4.764	5.293	582.554	-5.246	0.000	0.000
	C111	33.447	3.475	433.788	-3.701	0.000	0.000
	C112	33.447	3.475	433.788	-3.701	0.000	0.000
	C113	-18.938	-7.051	640.789	5.246	0.000	0.000
	C114	-18.938	-7.051	640.789	5.246	0.000	0.000
	C115	19.273	-5.233	492.023	3.701	0.000	0.000
	C116	19.273	-5.233	492.023	3.701	0.000	0.000
	C201	-66.132	-0.744	794.072	0.000	0.000	0.000
	C202	-50.372	-0.744	714.934	0.000	0.000	0.000
	C203	0.285	-0.744	526.414	0.000	0.000	0.000
	C204	16.046	-0.744	447.275	0.000	0.000	0.000
	C205	5.194	-0.744	418.004	0.000	0.000	0.000
	C206	20.954	-0.744	338.866	0.000	0.000	0.000
	C207	45.958	-0.744	268.380	0.000	0.000	0.000
	C208	61.719	-0.744	189.242	0.000	0.000	0.000
	C209	-6.997	7.588	503.711	-7.082	0.000	0.000
	C210	-6.997	7.588	503.711	-7.082	0.000	0.000
	C211	44.588	5.134	302.878	-4.996	0.000	0.000
	C212	44.588	5.134	302.878	-4.996	0.000	0.000
	C213	-26.133	-9.076	582.329	7.082	0.000	0.000
	C214	-26.133	-9.076	582.329	7.082	0.000	0.000
	C215	25.452	-6.622	381.495	4.996	0.000	0.000
	C216	25.452	-6.622	381.495	4.996	0.000	0.000
	C301	-66.305	-0.609	707.741	0.000	0.000	0.000
	C302	-50.544	-0.609	628.602	0.000	0.000	0.000
	C303	0.112	-0.609	440.082	0.000	0.000	0.000
	C304	15.873	-0.609	360.943	0.000	0.000	0.000
	C305	5.021	-0.609	331.672	0.000	0.000	0.000
	C306	20.781	-0.609	252.534	0.000	0.000	0.000
	C307	45.785	-0.609	182.049	0.000	0.000	0.000
	C308	61.546	-0.609	102.910	0.000	0.000	0.000
	C309	-7.170	7.723	417.380	-7.082	0.000	0.000
	C310	-7.170	7.723	417.380	-7.082	0.000	0.000
	C311	44.415	5.269	216.546	-4.996	0.000	0.000
	C312	44.415	5.269	216.546	-4.996	0.000	0.000
	C313	-26.306	-8.940	495.997	7.082	0.000	0.000
	C314	-26.306	-8.940	495.997	7.082	0.000	0.000
	C315	25.279	-6.487	295.163	4.996	0.000	0.000
	C316	25.279	-6.487	295.163	4.996	0.000	0.000
	UN01	-48.827	-0.676	668.138	0.000	0.000	0.000
	UN02	-37.152	-0.676	609.517	0.000	0.000	0.000
	UN03	0.371	-0.676	469.873	0.000	0.000	0.000
	UN04	12.046	-0.676	411.252	0.000	0.000	0.000
	UN05	4.007	-0.676	389.570	0.000	0.000	0.000
	UN06	15.682	-0.676	330.948	0.000	0.000	0.000
	UN07	34.203	-0.676	278.737	0.000	0.000	0.000

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	UN08	45.878	-0.676	220.116	0.000	0.000	0.000
	UN09	-5.023	5.496	453.056	-5.246	0.000	0.000
	UN10	-5.023	5.496	453.056	-5.246	0.000	0.000
	UN11	33.188	3.678	304.291	-3.701	0.000	0.000
	UN12	33.188	3.678	304.291	-3.701	0.000	0.000
	UN13	-19.198	-6.848	511.291	5.246	0.000	0.000
	UN14	-19.198	-6.848	511.291	5.246	0.000	0.000
	UN15	19.013	-5.030	362.525	3.701	0.000	0.000
	UN16	19.013	-5.030	362.525	3.701	0.000	0.000
Z011	C101	-44.203	1.937	290.464	0.000	0.000	0.000
	C102	-29.723	1.937	257.928	0.000	0.000	0.000
	C103	-18.076	1.937	215.631	0.000	0.000	0.000
	C104	-3.596	1.937	183.095	0.000	0.000	0.000
	C105	15.186	1.937	180.862	0.000	0.000	0.000
	C106	29.666	1.937	148.326	0.000	0.000	0.000
	C107	21.772	1.937	146.274	0.000	0.000	0.000
	C108	36.252	1.937	113.738	0.000	0.000	0.000
	C109	-30.445	7.458	293.846	-4.693	0.000	0.000
	C110	-39.851	8.758	320.194	-5.798	0.000	0.000
	C111	-8.287	5.641	221.084	-3.148	0.000	0.000
	C112	-17.693	6.941	247.432	-4.253	0.000	0.000
	C113	28.983	-4.885	106.327	5.798	0.000	0.000
	C114	19.576	-3.585	132.674	4.693	0.000	0.000
	C115	38.322	-3.067	73.735	4.253	0.000	0.000
	C116	28.915	-1.767	100.082	3.148	0.000	0.000
	C201	-59.632	1.639	293.694	0.000	0.000	0.000
	C202	-40.084	1.639	249.770	0.000	0.000	0.000
	C203	-24.360	1.639	192.670	0.000	0.000	0.000
	C204	-4.812	1.639	148.746	0.000	0.000	0.000
	C205	20.543	1.639	145.731	0.000	0.000	0.000
	C206	40.091	1.639	101.807	0.000	0.000	0.000
	C207	29.435	1.639	99.037	0.000	0.000	0.000
	C208	48.983	1.639	55.114	0.000	0.000	0.000
	C209	-41.059	9.093	298.260	-6.336	0.000	0.000
	C210	-53.757	10.848	333.829	-7.828	0.000	0.000
	C211	-11.145	6.639	200.031	-4.250	0.000	0.000
	C212	-23.843	8.394	235.600	-5.742	0.000	0.000
	C213	39.169	-7.571	45.109	7.828	0.000	0.000
	C214	26.470	-5.816	80.678	6.336	0.000	0.000
	C215	51.776	-5.117	1.109	5.742	0.000	0.000
	C216	39.078	-3.362	36.678	4.250	0.000	0.000
	C301	-59.619	1.341	263.638	0.000	0.000	0.000
	C302	-40.071	1.341	219.714	0.000	0.000	0.000
	C303	-24.348	1.341	162.614	0.000	0.000	0.000
	C304	-4.800	1.341	118.690	0.000	0.000	0.000
	C305	20.556	1.341	115.675	0.000	0.000	0.000
	C306	40.104	1.341	71.751	0.000	0.000	0.000
	C307	29.448	1.341	68.982	0.000	0.000	0.000
	C308	48.995	1.341	25.058	0.000	0.000	0.000
	C309	-41.046	8.795	268.204	-6.336	0.000	0.000
	C310	-53.744	10.550	303.773	-7.828	0.000	0.000
	C311	-11.132	6.341	169.976	-4.250	0.000	0.000
	C312	-23.830	8.096	205.545	-5.742	0.000	0.000
	C313	39.181	-7.869	15.053	7.828	0.000	0.000
	C314	26.483	-6.114	50.622	6.336	0.000	0.000
	C315	51.789	-5.415	-28.946	5.742	0.000	0.000
	C316	39.091	-3.660	6.623	4.250	0.000	0.000
	UN01	-44.183	1.490	245.380	0.000	0.000	0.000
	UN02	-29.703	1.490	212.844	0.000	0.000	0.000
	UN03	-18.057	1.490	170.548	0.000	0.000	0.000
	UN04	-3.577	1.490	138.011	0.000	0.000	0.000
	UN05	15.205	1.490	135.778	0.000	0.000	0.000
	UN06	29.685	1.490	103.242	0.000	0.000	0.000
	UN07	21.792	1.490	101.190	0.000	0.000	0.000
	UN08	36.272	1.490	68.654	0.000	0.000	0.000
	UN09	-30.426	7.011	248.763	-4.693	0.000	0.000
	UN10	-39.832	8.311	275.110	-5.798	0.000	0.000
	UN11	-8.267	5.194	176.001	-3.148	0.000	0.000
	UN12	-17.674	6.494	202.348	-4.253	0.000	0.000
	UN13	29.002	-5.332	61.243	5.798	0.000	0.000
	UN14	19.596	-4.032	87.591	4.693	0.000	0.000
	UN15	38.341	-3.514	28.651	4.253	0.000	0.000
	UN16	28.935	-2.214	54.998	3.148	0.000	0.000

Table 13-4 - Reaction Forces in Transportation Conditions

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13.1.2 TP – Upper Grillage connection forces in Transportation Conditions

The connection between TP main column and Upper Grillage is made effective through dummy elements, simulating stoppers at upper grillage's top flange level. Dummy elements and respective end joints are showed in Figure 10.6. Dummy elements' internal forces for gravity loads, transient loads and their combinations in transportation conditions are fully detailed for all load combinations in the following paragraphs. An envelope of maximum and minimum internal forces of these dummy elements in transportation conditions is reported in the following, for each analysis step. Internal forces are reported according to member local reference system.

13.1.2.1 TP – Upper Grillage connection – dummy element forces (STEP 1)

Maximum and minimum internal forces' envelope is reported in following table.

	MEMBER	MEMBER END	GROUP	LOAD CASE	Fx [kN]	Fy [kN]	Fz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]	REMARK
ALL LC	R308-F308	F308	SD1	TPTR	**-189**	0	0	0	0	0	MAX Fx - min Fxz - min Fxy
	R1L6-F1L6	F1L6	SD1	TPTR	**-507**	**-17**	26	0	0	0	min Fx - MAX Fxz - MAX Fxy - min Fy
	R4L5-F4L5	F4L5	SD1	TPTR	-209	**4**	**-36**	0	0	0	MAX Fy - min Fz
	R1L5-F1L5	F1L5	SD1	TPTR	-365	2	**38**	**0**	**0**	**0**	MAX Fz - min Myz - MAX Myz - min Mxz - MAX Mxz - min Mxy - MAX Mxy - min Mz - MAX Mz - min My - MAX My - min Mx - MAX Mx - MAX Fyz
	R207-F207	F207	SD1	TPTR	-480	0	0	0	0	0	min Fyz

Table 13-5 – TP – Upper Grillage connection – dummy element internal forces - STEP 1 Permanent Loads

Dummy elements' internal forces for all load combinations are reported in following SACS excerpt with reference to STEP 1 analysis.

MEMBER FORCES AND MOMENTS REPORT

MEMBER NUMBER	MEMBER END	GROUP ID	LOAD COND	FORCE(X) kN	FORCE(Y) kN	FORCE(Z) kN	MOMENT(X) kN-m	MOMENT(Y) kN-m	MOMENT(Z) kN-m
R1L5-F1L5	R1L5	SD1	TPTR	-365.4716	1.9290	37.6603	0.0000	-18.8301	-0.9645
	F1L5		TPTR	-365.4716	1.9290	37.6603	0.0000	0.0000	0.0000
R1L6-F1L6	R1L6	SD1	TPTR	-506.8224	-17.0927	25.6586	0.0000	-12.8293	8.5463
	F1L6		TPTR	-506.8224	-17.0927	25.6586	0.0000	0.0000	0.0000
R207-F207	R207	SD1	TPTR	-479.7618	0.0000	0.0000	0.0000	0.0000	0.0000
	F207		TPTR	-479.7618	0.0000	0.0000	0.0000	0.0000	0.0000
R208-F208	R208	SD1	TPTR	-269.0902	0.0000	0.0000	0.0000	0.0000	0.0000
	F208		TPTR	-269.0902	0.0000	0.0000	0.0000	0.0000	0.0000
R307-F307	R307	SD1	TPTR	-399.7072	0.0000	0.0000	0.0000	0.0000	0.0000
	F307		TPTR	-399.7072	0.0000	0.0000	0.0000	0.0000	0.0000
R308-F308	R308	SD1	TPTR	-189.0021	0.0000	0.0000	0.0000	0.0000	0.0000
	F308		TPTR	-189.0021	0.0000	0.0000	0.0000	0.0000	0.0000
R4L5-F4L5	R4L5	SD1	TPTR	-208.8845	3.8029	-35.7248	0.0000	17.8623	-1.9015
	F4L5		TPTR	-208.8845	3.8029	-35.7248	0.0000	0.0000	0.0000
R4L6-F4L6	R4L6	SD1	TPTR	-350.2299	-3.8919	28.3575	0.0000	-14.1787	1.9459
	F4L6		TPTR	-350.2299	-3.8919	28.3575	0.0000	0.0000	0.0000

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13.1.2.2 TP – Upper Grillage connection – dummy element forces (STEP 2)

Maximum and minimum internal forces' envelope is reported in following table.

	MEMBER	MEMBER END	GROUP	LOAD CASE	Fx [kN]	Fy [kN]	Fz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]	REMARK
ALL LC	R1L6-F1L6	F1L6	SD1	-R-H	**559**	167	-310	0	0	0	MAX Fx
	R1L5-F1L5	F1L5	SD1	-R+H	**-635**	-127	**456**	0	0	0	min Fx - MAX Fyz - MAX Fxz - MAX Fz
	R1L6-F1L6	F1L6	SD1	-P+H	-461	**250**	-234	0	0	0	MAX Fy
	R1L6-F1L6	F1L6	SD1	+P+H	271	**-249**	240	0	0	0	min Fy
	R1L5-F1L5	F1L5	SD1	+R+H	532	125	**-452**	0	0	0	min Fz
	R1L6-F1L6	F1L6	SD1	+R+H	-629	-227	414	**0**	**0**	**0**	MAX Fxy - min Myz - MAX Myz - min Mxz - MAX Mxz - min Mxy - MAX Mxy - min Mz - MAX Mz - min My - MAX My - min Mx - MAX Mx
	R307-F307	F307	SD1	-R+H	1	0	0	0	0	0	min Fxy - min Fxz
	R207-F207	F207	SD1	+R+H	-92	0	0	0	0	0	min Fyz

Table 13-6 – TP – Upper Grillage connection – dummy element internal forces - STEP 2 Transient Loads

Dummy elements' internal forces for all load combinations are reported in following SACS excerpt with reference to STEP 2 analysis.

MEMBER FORCES AND MOMENTS REPORT

MEMBER NUMBER	MEMBER END	GROUP ID	LOAD COND	FORCE(X) kN	FORCE(Y) kN	FORCE(Z) kN	MOMENT(X) kN-m	MOMENT(Y) kN-m	MOMENT(Z) kN-m
R1L5-F1L5	R1L5	SD1	+R+H	531.6765	125.4576	-452.0375	0.0000	226.0183	-62.7287
			+R-H	546.7201	96.1424	-341.4189	0.0000	170.7091	-48.0711
			-R+H	-634.6176	-127.2062	456.1367	0.0000	-228.0679	63.6029
			-R-H	-346.3636	-92.7352	333.4487	0.0000	-166.7240	46.3675
			+P+H	346.5976	68.3779	247.7847	0.0000	-123.8921	-34.1889
			+P-H	432.9329	53.7684	177.5192	0.0000	-88.7594	-26.8841
			-P+H	-485.0774	-70.7327	-242.2771	0.0000	121.1383	35.3663
			-P-H	-256.2191	-50.7636	-184.5487	0.0000	92.2742	25.3817
			WTPX	53.5918	15.8872	27.6559	0.0000	-13.8279	-7.9436
			WTNX	-53.5918	-15.8872	-27.6559	0.0000	13.8279	7.9436
			WTPY	-61.6162	-17.0081	52.6910	0.0000	-26.3454	8.5040
			WTNY	61.6163	17.0081	-52.6911	0.0000	26.3455	-8.5040
	F1L5		+R+H	531.6765	125.4576	-452.0375	0.0000	0.0000	0.0000
			+R-H	546.7201	96.1424	-341.4189	0.0000	0.0000	0.0000
			-R+H	-634.6176	-127.2062	456.1367	0.0000	0.0000	0.0000
			-R-H	-346.3636	-92.7352	333.4487	0.0000	0.0000	0.0000
			+P+H	346.5976	68.3779	247.7847	0.0000	0.0000	0.0000
			+P-H	432.9329	53.7684	177.5192	0.0000	0.0000	0.0000
			-P+H	-485.0774	-70.7327	-242.2771	0.0000	0.0000	0.0000
			-P-H	-256.2191	-50.7636	-184.5487	0.0000	0.0000	0.0000
			WTPX	53.5918	15.8872	27.6559	0.0000	0.0000	0.0000
			WTNX	-53.5918	-15.8872	-27.6559	0.0000	0.0000	0.0000
			WTPY	-61.6162	-17.0081	52.6910	0.0000	0.0000	0.0000
			WTNY	61.6163	17.0081	-52.6911	0.0000	0.0000	0.0000
R1L6-F1L6	R1L6	SD1	+R+H	-629.0322	-226.6996	413.9727	0.0000	-206.9859	113.3496
			+R-H	-284.7318	-169.6366	302.1407	0.0000	-151.0700	84.8181
			-R+H	487.9426	227.8840	-409.7910	0.0000	204.8951	-113.9418
			-R-H	559.0317	167.3395	-310.2721	0.0000	155.1357	-83.6696

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			+P+H	271.4384	-248.8929	240.1143	0.0000	-120.0569	124.4462
			+P-H	438.8723	-187.0038	171.6596	0.0000	-85.8296	93.5017
			-P+H	-461.0230	250.4797	-234.4934	0.0000	117.2464	-125.2396
			-P-H	-196.9304	184.9787	-178.8331	0.0000	89.4164	-92.4892
			WTPX	22.4047	-39.6400	47.2954	0.0000	-23.6477	19.8199
			WTNX	-22.4047	39.6400	-47.2954	0.0000	23.6477	-19.8199
			WTPY	61.6162	24.7012	-49.5526	0.0000	24.7763	-12.3506
			WTNY	-61.6163	-24.7012	49.5527	0.0000	-24.7763	12.3506
	F1L6		+R+H	-629.0322	-226.6996	413.9727	0.0000	0.0000	0.0000
			+R-H	-284.7318	-169.6366	302.1407	0.0000	0.0000	0.0000
			-R+H	487.9426	227.8840	-409.7910	0.0000	0.0000	0.0000
			-R-H	559.0317	167.3395	-310.2721	0.0000	0.0000	0.0000
			+P+H	271.4384	-248.8929	240.1143	0.0000	0.0000	0.0000
			+P-H	438.8723	-187.0038	171.6596	0.0000	0.0000	0.0000
			-P+H	-461.0230	250.4797	-234.4934	0.0000	0.0000	0.0000
			-P-H	-196.9304	184.9787	-178.8331	0.0000	0.0000	0.0000
			WTPX	22.4047	-39.6400	47.2954	0.0000	0.0000	0.0000
			WTNX	-22.4047	39.6400	-47.2954	0.0000	0.0000	0.0000
			WTPY	61.6162	24.7012	-49.5526	0.0000	0.0000	0.0000
			WTNY	-61.6163	-24.7012	49.5527	0.0000	0.0000	0.0000
R207-F207	R207	SD1	+R+H	-92.1548	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	69.4997	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	-19.0276	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	146.5847	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	178.3788	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	316.7488	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	-327.7210	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	-126.1536	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	22.2950	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNX	-22.2950	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	-2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
	F207		+R+H	-92.1548	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	69.4997	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	-19.0276	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	146.5847	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	178.3788	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	316.7488	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	-327.7210	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	-126.1536	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	22.2950	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNX	-22.2950	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	-2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
R208-F208	R208	SD1	+R+H	27.5042	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	116.0331	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	-86.2221	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	-1.6515	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	139.2690	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	202.6158	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	-218.3242	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	-101.7320	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	15.5279	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNX	-15.5279	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	-2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
	F208		+R+H	27.5042	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	116.0331	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	-86.2221	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	-1.6515	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	139.2690	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	202.6158	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	-218.3242	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	-101.7320	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	15.5279	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNX	-15.5279	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	-2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	2.7170	0.0000	0.0000	0.0000	0.0000	0.0000
R307-F307	R307	SD1	+R+H	-91.4191	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	43.7171	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	0.9840	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	132.0095	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	-124.2425	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	45.5738	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	2.8129	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	109.4298	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	-22.2957	0.0000	0.0000	0.0000	0.0000	0.0000

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			WTNX	22.2957	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	-7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
	F307		+R+H	-91.4191	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	43.7171	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	0.9840	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	132.0095	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	-124.2425	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	45.5738	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	2.8129	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	109.4298	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	-22.2957	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNX	22.2957	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	-7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
R308-F308	R308	SD1	+R+H	59.1078	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	113.0504	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	-97.0798	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	-39.0261	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	-124.5208	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	-39.6792	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	73.3777	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	104.9719	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	-15.5283	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNX	15.5283	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	-7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
	F308		+R+H	59.1078	0.0000	0.0000	0.0000	0.0000	0.0000
			+R-H	113.0504	0.0000	0.0000	0.0000	0.0000	0.0000
			-R+H	-97.0798	0.0000	0.0000	0.0000	0.0000	0.0000
			-R-H	-39.0261	0.0000	0.0000	0.0000	0.0000	0.0000
			+P+H	-124.5208	0.0000	0.0000	0.0000	0.0000	0.0000
			+P-H	-39.6792	0.0000	0.0000	0.0000	0.0000	0.0000
			-P+H	73.3777	0.0000	0.0000	0.0000	0.0000	0.0000
			-P-H	104.9719	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPX	-15.5283	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNX	15.5283	0.0000	0.0000	0.0000	0.0000	0.0000
			WTPY	-7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
			WTNY	7.5149	0.0000	0.0000	0.0000	0.0000	0.0000
R4L5-F4L5	R4L5	SD1	+R+H	491.5288	78.8796	375.3085	0.0000	-187.6539	-39.4397
			+R-H	466.5902	60.8909	283.8611	0.0000	-141.9303	-30.4454
			-R+H	-554.6893	-79.9585	-378.7085	0.0000	189.3539	39.9791
			-R-H	-343.6126	-58.7829	-277.2457	0.0000	138.6225	29.3914
			+P+H	-313.7567	-68.0173	249.8149	0.0000	-124.9072	34.0086
			+P-H	-145.7785	-49.0705	191.0177	0.0000	-95.5086	24.5352
			-P+H	228.7952	66.5614	-254.3849	0.0000	127.1922	-33.2806
			-P-H	254.2514	50.9294	-185.1846	0.0000	92.5921	-25.4646
			WTPX	-53.5916	-15.8869	27.6566	0.0000	-13.8282	7.9434
			WTNX	53.5916	15.8869	-27.6566	0.0000	13.8282	-7.9434
			WTPY	-39.5026	-2.3722	-28.6742	0.0000	14.3371	1.1861
			WTNY	39.5026	2.3722	28.6742	0.0000	-14.3371	-1.1861
	F4L5		+R+H	491.5288	78.8796	375.3085	0.0000	0.0000	0.0000
			+R-H	466.5902	60.8909	283.8611	0.0000	0.0000	0.0000
			-R+H	-554.6893	-79.9585	-378.7085	0.0000	0.0000	0.0000
			-R-H	-343.6126	-58.7829	-277.2457	0.0000	0.0000	0.0000
			+P+H	-313.7567	-68.0173	249.8149	0.0000	0.0000	0.0000
			+P-H	-145.7785	-49.0705	191.0177	0.0000	0.0000	0.0000
			-P+H	228.7952	66.5614	-254.3849	0.0000	0.0000	0.0000
			-P-H	254.2514	50.9294	-185.1846	0.0000	0.0000	0.0000
			WTPX	-53.5916	-15.8869	27.6566	0.0000	0.0000	0.0000
			WTNX	53.5916	15.8869	-27.6566	0.0000	0.0000	0.0000
			WTPY	-39.5026	-2.3722	-28.6742	0.0000	0.0000	0.0000
			WTNY	39.5026	2.3722	28.6742	0.0000	0.0000	0.0000
R4L6-F4L6	R4L6	SD1	+R+H	-526.8812	-79.9333	376.6051	0.0000	-188.3021	39.9666
			+R-H	-259.7572	-55.7852	277.9926	0.0000	-138.9960	27.8925
			-R+H	425.5676	76.8292	-375.1391	0.0000	187.5692	-38.4145
			-R-H	456.6771	61.8131	-280.8414	0.0000	140.4204	-30.9065
			+P+H	-209.9554	-8.0419	-346.2696	0.0000	173.1344	4.0209
			+P-H	-6.7438	-1.1871	-259.6055	0.0000	129.8025	0.5935
			-P+H	73.8892	3.8762	348.2388	0.0000	-174.1190	-1.9381
			-P-H	180.4448	6.5047	257.0918	0.0000	-128.5456	-3.2523
			WTPX	-22.4037	4.7523	-61.5290	0.0000	30.7644	-2.3761
			WTNX	22.4037	-4.7523	61.5290	0.0000	-30.7644	2.3761
			WTPY	39.5026	2.3722	-28.6742	0.0000	14.3371	-1.1861
			WTNY	-39.5026	-2.3722	28.6742	0.0000	-14.3371	1.1861
	F4L6		+R+H	-526.8812	-79.9333	376.6051	0.0000	0.0000	0.0000
			+R-H	-259.7572	-55.7852	277.9926	0.0000	0.0000	0.0000

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-R+H	425.5676	76.8292	-375.1391	0.0000	0.0000	0.0000
-R-H	456.6771	61.8131	-280.8414	0.0000	0.0000	0.0000
+P+H	-209.9554	-8.0419	-346.2696	0.0000	0.0000	0.0000
+P-H	-6.7438	-1.1871	-259.6055	0.0000	0.0000	0.0000
-P+H	73.8892	3.8762	348.2388	0.0000	0.0000	0.0000
-P-H	180.4448	6.5047	257.0918	0.0000	0.0000	0.0000
WTPX	-22.4037	4.7523	-61.5290	0.0000	0.0000	0.0000
WTNX	22.4037	-4.7523	61.5290	0.0000	0.0000	0.0000
WTPY	39.5026	2.3722	-28.6742	0.0000	0.0000	0.0000
WTNY	-39.5026	-2.3722	28.6742	0.0000	0.0000	0.0000

13.1.2.3 TP – Upper Grillage connection – dummy element forces (STEP 3)

Maximum and minimum internal forces' envelope is reported in following table.

	MEMBER	MEMBER END	GROUP	LOAD CASE	Fx [kN]	Fy [kN]	Fz [kN]	Mx [kNm]	My [kNm]	Mz [kNm]	REMARK
ALL LC	R4L6-F4L6	F4L6	SD1	C315	**355**	83	-392	0	0	0	MAX Fx
	R4L6-F4L6	F4L6	SD1	C210	**-1150**	**-115**	578	0	0	0	min Fx - MAX Fyz - MAX Fxz - MAX Fxy - min Fy
	R4L6-F4L6	F4L6	SD1	C313	313	**103**	-520	0	0	0	MAX Fy
	R4L6-F4L6	F4L6	SD1	C206	-255	-5	**584**	0	0	0	MAX Fz
	R4L6-F4L6	F4L6	SD1	C301	-629	-8	**-525**	0	0	0	min Fz
	R4L6-F4L6	F4L6	SD1	C308	-41	-1	456	0	0	0	min Fxy
	R4L6-F4L6	F4L6	SD1	C116	-38	54	-215	0	0	0	min Fxz
	R4L6-F4L6	F4L6	SD1	C104	-440	-11	-161	0	0	0	min Fyz
	R4L6-F4L6	F4L6	SD1	C101	-688	-8	-371	**0**	**0**	**0**	MAX Mx - min Myz - MAX Myz - min Mxz - MAX Mxz - min Mxy - MAX Mxy - min Mz - MAX Mz - min My - MAX My - min Mx

Table 13-7 – TP – Upper Grillage connection – dummy element internal forces - STEP 3 – Transportation Conditions

Dummy elements' internal forces for all load combinations are reported in following SACS excerpt with reference to STEP 3 analysis.

MEMBER FORCES AND MOMENTS REPORT

MEMBER NUMBER	MEMBER END	GROUP ID	LOAD COND	FORCE(X) kN	FORCE(Y) kN	FORCE(Z) kN	MOMENT(X) kN-m	MOMENT(Y) kN-m	MOMENT(Z) kN-m
R1L5-F1L5	R1L5	SD1	C101	-74.9237	86.7728	324.3989	0.0000	-162.1991	-43.3863
			C102	-182.1073	54.9984	269.0872	0.0000	-134.5433	-27.4991
			C103	11.4115	72.1633	254.1335	0.0000	-127.0665	-36.0816
			C104	-95.7720	40.3889	198.8217	0.0000	-99.4107	-20.1944
			C105	-906.5988	-52.3378	-165.6628	0.0000	82.8313	26.1688
			C106	-1013.7822	-84.1122	-220.9746	0.0000	110.4871	42.0560
			C107	-677.7405	-32.3687	-107.9345	0.0000	53.9671	16.1843
			C108	-784.9241	-64.1431	-163.2462	0.0000	81.6229	32.0715
			C109	-5.0529	110.9572	-350.3882	0.0000	175.1937	-55.4785
			C110	118.1797	144.9734	-455.7702	0.0000	227.8846	-72.4865
			C111	9.9907	81.6420	-239.7696	0.0000	119.8845	-40.8209
			C112	133.2233	115.6582	-345.1516	0.0000	172.5754	-57.8290

	C113	-1171.3469	-141.7066	557.7861	0.0000	-278.8925	70.8531
	C114	-1048.1144	-107.6904	452.4040	0.0000	-226.2016	53.8451
	C115	-883.0930	-107.2356	435.0980	0.0000	-217.5485	53.6177
	C116	-759.8604	-73.2194	329.7159	0.0000	-164.8576	36.6096
	C201	138.2368	115.8798	413.2710	0.0000	-206.6351	-57.9398
	C202	-6.4609	72.9843	338.6003	0.0000	-169.2998	-36.4921
	C203	254.7894	96.1570	318.4127	0.0000	-159.2060	-48.0784
	C204	110.0917	53.2615	243.7419	0.0000	-121.8707	-26.6307
	C205	-984.5244	-71.9195	-248.3123	0.0000	124.1559	35.9597
	C206	-1129.2222	-114.8150	-322.9831	0.0000	161.4912	57.4074
	C207	-675.5659	-44.9612	-170.3791	0.0000	85.1894	22.4806
	C208	-820.2636	-87.8567	-245.0499	0.0000	122.5247	43.9282
	C209	232.5625	148.5288	-497.6916	0.0000	248.8452	-74.2643
	C210	398.9265	194.4506	-639.9573	0.0000	319.9779	-97.2251
	C211	252.8714	108.9533	-348.3564	0.0000	174.1778	-54.4765
	C212	419.2354	154.8751	-490.6221	0.0000	245.3105	-77.4374
	C213	-1341.9344	-192.5673	728.3437	0.0000	-364.1711	96.2834
	C214	-1175.5706	-146.6455	586.0780	0.0000	-293.0384	73.3226
	C215	-952.7916	-146.0315	562.7148	0.0000	-281.3568	73.0156
	C216	-786.4277	-100.1097	420.4490	0.0000	-210.2241	50.0547
	C301	211.3312	115.4940	405.7390	0.0000	-202.8691	-57.7469
	C302	66.6335	72.5985	331.0682	0.0000	-165.5338	-36.2992
	C303	327.8838	95.7712	310.8806	0.0000	-155.4400	-47.8855
	C304	183.1861	52.8757	236.2098	0.0000	-118.1047	-26.4378
	C305	-911.4301	-72.3053	-255.8444	0.0000	127.9219	36.1526
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	UN16	-650.2190	-73.7981	318.4179	0.0000	-159.2086	36.8990
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	UN05	-945.4408	193.7470	-161.5394	0.0000	0.0000	0.0000
	UN06	-990.2501	273.0269	-256.1302	0.0000	0.0000	0.0000
	UN07	-681.3481	128.2461	-105.8791	0.0000	0.0000	0.0000
	UN08	-726.1574	207.5260	-200.4700	0.0000	0.0000	0.0000
	UN09	-1074.2384	-219.0911	390.0786	0.0000	0.0000	0.0000
	UN10	-1197.4709	-268.4936	489.1840	0.0000	0.0000	0.0000
	UN11	-729.9380	-162.0280	278.2466	0.0000	0.0000	0.0000

			UN12	-853.1706	-211.4305	377.3520	0.0000	0.0000	0.0000
			UN13	42.7364	235.4925	-433.6851	0.0000	0.0000	0.0000
			UN14	-80.4961	186.0900	-334.5797	0.0000	0.0000	0.0000
			UN15	113.8255	174.9480	-334.1661	0.0000	0.0000	0.0000
			UN16	-9.4071	125.5456	-235.0607	0.0000	0.0000	0.0000
R207-F207	R207	SD1	C101	-423.0166	0.0000	0.0000	0.0000	0.0000	0.0000
			C102	-467.6065	0.0000	0.0000	0.0000	0.0000	0.0000
			C103	-284.6465	0.0000	0.0000	0.0000	0.0000	0.0000
			C104	-329.2365	0.0000	0.0000	0.0000	0.0000	0.0000
			C105	-929.1164	0.0000	0.0000	0.0000	0.0000	0.0000
			C106	-973.7064	0.0000	0.0000	0.0000	0.0000	0.0000
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			C110	-718.5622	0.0000	0.0000	0.0000	0.0000	0.0000
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			C114	-645.4349	0.0000	0.0000	0.0000	0.0000	0.0000
			C115	-474.3886	0.0000	0.0000	0.0000	0.0000	0.0000
			C116	-479.8226	0.0000	0.0000	0.0000	0.0000	0.0000
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			C207	-667.9471	0.0000	0.0000	0.0000	0.0000	0.0000
			C208	-728.1436	0.0000	0.0000	0.0000	0.0000	0.0000
			C209	-648.4791	0.0000	0.0000	0.0000	0.0000	0.0000
			C210	-655.8150	0.0000	0.0000	0.0000	0.0000	0.0000
			C211	-430.2455	0.0000	0.0000	0.0000	0.0000	0.0000
			C212	-437.5814	0.0000	0.0000	0.0000	0.0000	0.0000
			C213	-549.7573	0.0000	0.0000	0.0000	0.0000	0.0000
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			C215	-326.1806	0.0000	0.0000	0.0000	0.0000	0.0000
			C216	-333.5166	0.0000	0.0000	0.0000	0.0000	0.0000
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			C304	-34.2729	0.0000	0.0000	0.0000	0.0000	0.0000
			C305	-844.1109	0.0000	0.0000	0.0000	0.0000	0.0000
			C306	-904.3073	0.0000	0.0000	0.0000	0.0000	0.0000
			C307	-571.9948	0.0000	0.0000	0.0000	0.0000	0.0000
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			C313	-453.8049	0.0000	0.0000	0.0000	0.0000	0.0000
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			C315	-230.2283	0.0000	0.0000	0.0000	0.0000	0.0000
			C316	-237.5642	0.0000	0.0000	0.0000	0.0000	0.0000
			UN01	-279.0881	0.0000	0.0000	0.0000	0.0000	0.0000
			UN02	-323.6780	0.0000	0.0000	0.0000	0.0000	0.0000
			UN03	-140.7180	0.0000	0.0000	0.0000	0.0000	0.0000
			UN04	-185.3079	0.0000	0.0000	0.0000	0.0000	0.0000
			UN05	-785.1879	0.0000	0.0000	0.0000	0.0000	0.0000
			UN06	-829.7778	0.0000	0.0000	0.0000	0.0000	0.0000
			UN07	-583.6204	0.0000	0.0000	0.0000	0.0000	0.0000
			UN08	-628.2104	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN15	-330.4601	0.0000	0.0000	0.0000	0.0000	0.0000
			UN16	-335.8941	0.0000	0.0000	0.0000	0.0000	0.0000
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			C104	-329.2365	0.0000	0.0000	0.0000	0.0000	0.0000
			C105	-929.1164	0.0000	0.0000	0.0000	0.0000	0.0000
			C106	-973.7064	0.0000	0.0000	0.0000	0.0000	0.0000
			C107	-727.5490	0.0000	0.0000	0.0000	0.0000	0.0000
			C108	-772.1389	0.0000	0.0000	0.0000	0.0000	0.0000
			C109	-713.1281	0.0000	0.0000	0.0000	0.0000	0.0000
			C110	-718.5622	0.0000	0.0000	0.0000	0.0000	0.0000

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			C202	-317.0249	0.0000	0.0000	0.0000	0.0000	0.0000
			C203	-70.0289	0.0000	0.0000	0.0000	0.0000	0.0000
			C204	-130.2253	0.0000	0.0000	0.0000	0.0000	0.0000
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			C206	-1000.2596	0.0000	0.0000	0.0000	0.0000	0.0000
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			C209	-648.4791	0.0000	0.0000	0.0000	0.0000	0.0000
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			C212	-437.5814	0.0000	0.0000	0.0000	0.0000	0.0000
			C213	-549.7573	0.0000	0.0000	0.0000	0.0000	0.0000
			C214	-557.0933	0.0000	0.0000	0.0000	0.0000	0.0000
			C215	-326.1806	0.0000	0.0000	0.0000	0.0000	0.0000
			C216	-333.5166	0.0000	0.0000	0.0000	0.0000	0.0000
			C301	-160.8761	0.0000	0.0000	0.0000	0.0000	0.0000
			C302	-221.0725	0.0000	0.0000	0.0000	0.0000	0.0000
			C303	25.9235	0.0000	0.0000	0.0000	0.0000	0.0000
			C304	-34.2729	0.0000	0.0000	0.0000	0.0000	0.0000
			C305	-844.1109	0.0000	0.0000	0.0000	0.0000	0.0000
			C306	-904.3073	0.0000	0.0000	0.0000	0.0000	0.0000
			C307	-571.9948	0.0000	0.0000	0.0000	0.0000	0.0000
			C308	-632.1912	0.0000	0.0000	0.0000	0.0000	0.0000
			C309	-552.5267	0.0000	0.0000	0.0000	0.0000	0.0000
			C310	-559.8626	0.0000	0.0000	0.0000	0.0000	0.0000
			C311	-334.2931	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN05	-785.1879	0.0000	0.0000	0.0000	0.0000	0.0000
			UN06	-829.7778	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN08	-628.2104	0.0000	0.0000	0.0000	0.0000	0.0000
			UN09	-569.1996	0.0000	0.0000	0.0000	0.0000	0.0000
			UN10	-574.6337	0.0000	0.0000	0.0000	0.0000	0.0000
			UN11	-407.5451	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN13	-496.0724	0.0000	0.0000	0.0000	0.0000	0.0000
			UN14	-501.5064	0.0000	0.0000	0.0000	0.0000	0.0000
			UN15	-330.4601	0.0000	0.0000	0.0000	0.0000	0.0000
			UN16	-335.8941	0.0000	0.0000	0.0000	0.0000	0.0000
R208-F208	R208	SD1	C101	-195.0204	0.0000	0.0000	0.0000	0.0000	0.0000
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			C103	-131.6735	0.0000	0.0000	0.0000	0.0000	0.0000
			C104	-162.7294	0.0000	0.0000	0.0000	0.0000	0.0000
			C105	-552.6136	0.0000	0.0000	0.0000	0.0000	0.0000
			C106	-583.6694	0.0000	0.0000	0.0000	0.0000	0.0000
			C107	-436.0214	0.0000	0.0000	0.0000	0.0000	0.0000
			C108	-467.0772	0.0000	0.0000	0.0000	0.0000	0.0000
			C109	-325.0301	0.0000	0.0000	0.0000	0.0000	0.0000
			C110	-319.5961	0.0000	0.0000	0.0000	0.0000	0.0000
			C111	-236.5012	0.0000	0.0000	0.0000	0.0000	0.0000
			C112	-231.0672	0.0000	0.0000	0.0000	0.0000	0.0000
			C113	-438.7564	0.0000	0.0000	0.0000	0.0000	0.0000
			C114	-433.3224	0.0000	0.0000	0.0000	0.0000	0.0000
			C115	-354.1858	0.0000	0.0000	0.0000	0.0000	0.0000
			C116	-348.7518	0.0000	0.0000	0.0000	0.0000	0.0000
			C201	-87.0234	0.0000	0.0000	0.0000	0.0000	0.0000
			C202	-128.9489	0.0000	0.0000	0.0000	0.0000	0.0000
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			C205	-569.7742	0.0000	0.0000	0.0000	0.0000	0.0000
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	C210	-255.2007	0.0000	0.0000	0.0000	0.0000	0.0000
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	C215	-301.8967	0.0000	0.0000	0.0000	0.0000	0.0000
	C216	-294.5609	0.0000	0.0000	0.0000	0.0000	0.0000
	C301	-33.2054	0.0000	0.0000	0.0000	0.0000	0.0000
	C302	-75.1308	0.0000	0.0000	0.0000	0.0000	0.0000
	C303	52.3129	0.0000	0.0000	0.0000	0.0000	0.0000
	C304	10.3875	0.0000	0.0000	0.0000	0.0000	0.0000
	C305	-515.9562	0.0000	0.0000	0.0000	0.0000	0.0000
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	C307	-358.5567	0.0000	0.0000	0.0000	0.0000	0.0000
	C308	-400.4821	0.0000	0.0000	0.0000	0.0000	0.0000
	C309	-208.7185	0.0000	0.0000	0.0000	0.0000	0.0000
	C310	-201.3826	0.0000	0.0000	0.0000	0.0000	0.0000
	C311	-89.2044	0.0000	0.0000	0.0000	0.0000	0.0000
	C312	-81.8685	0.0000	0.0000	0.0000	0.0000	0.0000
	C313	-362.2490	0.0000	0.0000	0.0000	0.0000	0.0000
	C314	-354.9131	0.0000	0.0000	0.0000	0.0000	0.0000
	C315	-248.0787	0.0000	0.0000	0.0000	0.0000	0.0000
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	UN05	-471.8865	0.0000	0.0000	0.0000	0.0000	0.0000
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	UN14	-352.5953	0.0000	0.0000	0.0000	0.0000	0.0000
	UN15	-273.4587	0.0000	0.0000	0.0000	0.0000	0.0000
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F208	C101	-195.0204	0.0000	0.0000	0.0000	0.0000	0.0000
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	C103	-131.6735	0.0000	0.0000	0.0000	0.0000	0.0000
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	C105	-552.6136	0.0000	0.0000	0.0000	0.0000	0.0000
	C106	-583.6694	0.0000	0.0000	0.0000	0.0000	0.0000
	C107	-436.0214	0.0000	0.0000	0.0000	0.0000	0.0000
	C108	-467.0772	0.0000	0.0000	0.0000	0.0000	0.0000
	C109	-325.0301	0.0000	0.0000	0.0000	0.0000	0.0000
	C110	-319.5961	0.0000	0.0000	0.0000	0.0000	0.0000
	C111	-236.5012	0.0000	0.0000	0.0000	0.0000	0.0000
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	C201	-87.0234	0.0000	0.0000	0.0000	0.0000	0.0000
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	C215	-301.8967	0.0000	0.0000	0.0000	0.0000	0.0000
	C216	-294.5609	0.0000	0.0000	0.0000	0.0000	0.0000
	C301	-33.2054	0.0000	0.0000	0.0000	0.0000	0.0000
	C302	-75.1308	0.0000	0.0000	0.0000	0.0000	0.0000
	C303	52.3129	0.0000	0.0000	0.0000	0.0000	0.0000
	C304	10.3875	0.0000	0.0000	0.0000	0.0000	0.0000
	C305	-515.9562	0.0000	0.0000	0.0000	0.0000	0.0000
	C306	-557.8816	0.0000	0.0000	0.0000	0.0000	0.0000
	C307	-358.5567	0.0000	0.0000	0.0000	0.0000	0.0000
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	C309	-208.7185	0.0000	0.0000	0.0000	0.0000	0.0000

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			C310	-201.3826	0.0000	0.0000	0.0000	0.0000	0.0000
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			C313	-362.2490	0.0000	0.0000	0.0000	0.0000	0.0000
			C314	-354.9131	0.0000	0.0000	0.0000	0.0000	0.0000
			C315	-248.0787	0.0000	0.0000	0.0000	0.0000	0.0000
			C316	-240.7428	0.0000	0.0000	0.0000	0.0000	0.0000
			UN01	-114.2933	0.0000	0.0000	0.0000	0.0000	0.0000
			UN02	-145.3492	0.0000	0.0000	0.0000	0.0000	0.0000
			UN03	-50.9464	0.0000	0.0000	0.0000	0.0000	0.0000
			UN04	-82.0023	0.0000	0.0000	0.0000	0.0000	0.0000
			UN05	-471.8865	0.0000	0.0000	0.0000	0.0000	0.0000
			UN06	-502.9424	0.0000	0.0000	0.0000	0.0000	0.0000
			UN07	-355.2943	0.0000	0.0000	0.0000	0.0000	0.0000
			UN08	-386.3502	0.0000	0.0000	0.0000	0.0000	0.0000
			UN09	-244.3031	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN11	-155.7741	0.0000	0.0000	0.0000	0.0000	0.0000
			UN12	-150.3401	0.0000	0.0000	0.0000	0.0000	0.0000
			UN13	-358.0293	0.0000	0.0000	0.0000	0.0000	0.0000
			UN14	-352.5953	0.0000	0.0000	0.0000	0.0000	0.0000
			UN15	-273.4587	0.0000	0.0000	0.0000	0.0000	0.0000
			UN16	-268.0247	0.0000	0.0000	0.0000	0.0000	0.0000
R307-F307	R307	SD1	C101	-666.1576	0.0000	0.0000	0.0000	0.0000	0.0000
			C102	-621.5663	0.0000	0.0000	0.0000	0.0000	0.0000
			C103	-496.3412	0.0000	0.0000	0.0000	0.0000	0.0000
			C104	-451.7499	0.0000	0.0000	0.0000	0.0000	0.0000
			C105	-539.1021	0.0000	0.0000	0.0000	0.0000	0.0000
			C106	-494.5108	0.0000	0.0000	0.0000	0.0000	0.0000
			C107	-432.4852	0.0000	0.0000	0.0000	0.0000	0.0000
			C108	-387.8939	0.0000	0.0000	0.0000	0.0000	0.0000
			C109	-603.5236	0.0000	0.0000	0.0000	0.0000	0.0000
			C110	-618.5533	0.0000	0.0000	0.0000	0.0000	0.0000
			C111	-468.3874	0.0000	0.0000	0.0000	0.0000	0.0000
			C112	-483.4172	0.0000	0.0000	0.0000	0.0000	0.0000
			C113	-511.1205	0.0000	0.0000	0.0000	0.0000	0.0000
			C114	-526.1503	0.0000	0.0000	0.0000	0.0000	0.0000
			C115	-380.0949	0.0000	0.0000	0.0000	0.0000	0.0000
			C116	-395.1248	0.0000	0.0000	0.0000	0.0000	0.0000
			C201	-637.5046	0.0000	0.0000	0.0000	0.0000	0.0000
			C202	-577.3062	0.0000	0.0000	0.0000	0.0000	0.0000
			C203	-408.2525	0.0000	0.0000	0.0000	0.0000	0.0000
			C204	-348.0542	0.0000	0.0000	0.0000	0.0000	0.0000
			C205	-465.9797	0.0000	0.0000	0.0000	0.0000	0.0000
			C206	-405.7813	0.0000	0.0000	0.0000	0.0000	0.0000
			C207	-322.0468	0.0000	0.0000	0.0000	0.0000	0.0000
			C208	-261.8485	0.0000	0.0000	0.0000	0.0000	0.0000
			C209	-552.9485	0.0000	0.0000	0.0000	0.0000	0.0000
			C210	-573.2388	0.0000	0.0000	0.0000	0.0000	0.0000
			C211	-370.5148	0.0000	0.0000	0.0000	0.0000	0.0000
			C212	-390.8051	0.0000	0.0000	0.0000	0.0000	0.0000
			C213	-428.2045	0.0000	0.0000	0.0000	0.0000	0.0000
			C214	-448.4947	0.0000	0.0000	0.0000	0.0000	0.0000
			C215	-251.3200	0.0000	0.0000	0.0000	0.0000	0.0000
			C216	-271.6102	0.0000	0.0000	0.0000	0.0000	0.0000
			C301	-557.5631	0.0000	0.0000	0.0000	0.0000	0.0000
			C302	-497.3648	0.0000	0.0000	0.0000	0.0000	0.0000
			C303	-328.3111	0.0000	0.0000	0.0000	0.0000	0.0000
			C304	-268.1127	0.0000	0.0000	0.0000	0.0000	0.0000
			C305	-386.0382	0.0000	0.0000	0.0000	0.0000	0.0000
			C306	-325.8399	0.0000	0.0000	0.0000	0.0000	0.0000
			C307	-242.1054	0.0000	0.0000	0.0000	0.0000	0.0000
			C308	-181.9071	0.0000	0.0000	0.0000	0.0000	0.0000
			C309	-473.0071	0.0000	0.0000	0.0000	0.0000	0.0000
			C310	-493.2974	0.0000	0.0000	0.0000	0.0000	0.0000
			C311	-290.5734	0.0000	0.0000	0.0000	0.0000	0.0000
			C312	-310.8636	0.0000	0.0000	0.0000	0.0000	0.0000
			C313	-348.2631	0.0000	0.0000	0.0000	0.0000	0.0000
			C314	-368.5533	0.0000	0.0000	0.0000	0.0000	0.0000
			C315	-171.3785	0.0000	0.0000	0.0000	0.0000	0.0000
			C316	-191.6688	0.0000	0.0000	0.0000	0.0000	0.0000
			UN01	-546.2454	0.0000	0.0000	0.0000	0.0000	0.0000
			UN02	-501.6541	0.0000	0.0000	0.0000	0.0000	0.0000
			UN03	-376.4291	0.0000	0.0000	0.0000	0.0000	0.0000
			UN04	-331.8377	0.0000	0.0000	0.0000	0.0000	0.0000
			UN05	-419.1900	0.0000	0.0000	0.0000	0.0000	0.0000
			UN06	-374.5986	0.0000	0.0000	0.0000	0.0000	0.0000
			UN07	-312.5731	0.0000	0.0000	0.0000	0.0000	0.0000
			UN08	-267.9817	0.0000	0.0000	0.0000	0.0000	0.0000

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			UN09	-483.6114	0.0000	0.0000	0.0000	0.0000	0.0000
			UN10	-498.6412	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN12	-363.5051	0.0000	0.0000	0.0000	0.0000	0.0000
			UN13	-391.2084	0.0000	0.0000	0.0000	0.0000	0.0000
			UN14	-406.2382	0.0000	0.0000	0.0000	0.0000	0.0000
			UN15	-260.1828	0.0000	0.0000	0.0000	0.0000	0.0000
			UN16	-275.2126	0.0000	0.0000	0.0000	0.0000	0.0000
	F307		C101	-666.1576	0.0000	0.0000	0.0000	0.0000	0.0000
			C102	-621.5663	0.0000	0.0000	0.0000	0.0000	0.0000
			C103	-496.3412	0.0000	0.0000	0.0000	0.0000	0.0000
			C104	-451.7499	0.0000	0.0000	0.0000	0.0000	0.0000
			C105	-539.1021	0.0000	0.0000	0.0000	0.0000	0.0000
			C106	-494.5108	0.0000	0.0000	0.0000	0.0000	0.0000
			C107	-432.4852	0.0000	0.0000	0.0000	0.0000	0.0000
			C108	-387.8939	0.0000	0.0000	0.0000	0.0000	0.0000
			C109	-603.5236	0.0000	0.0000	0.0000	0.0000	0.0000
			C110	-618.5533	0.0000	0.0000	0.0000	0.0000	0.0000
			C111	-468.3874	0.0000	0.0000	0.0000	0.0000	0.0000
			C112	-483.4172	0.0000	0.0000	0.0000	0.0000	0.0000
			C113	-511.1205	0.0000	0.0000	0.0000	0.0000	0.0000
			C114	-526.1503	0.0000	0.0000	0.0000	0.0000	0.0000
			C115	-380.0949	0.0000	0.0000	0.0000	0.0000	0.0000
			C116	-395.1248	0.0000	0.0000	0.0000	0.0000	0.0000
			C201	-637.5046	0.0000	0.0000	0.0000	0.0000	0.0000
			C202	-577.3062	0.0000	0.0000	0.0000	0.0000	0.0000
			C203	-408.2525	0.0000	0.0000	0.0000	0.0000	0.0000
			C204	-348.0542	0.0000	0.0000	0.0000	0.0000	0.0000
			C205	-465.9797	0.0000	0.0000	0.0000	0.0000	0.0000
			C206	-405.7813	0.0000	0.0000	0.0000	0.0000	0.0000
			C207	-322.0468	0.0000	0.0000	0.0000	0.0000	0.0000
			C208	-261.8485	0.0000	0.0000	0.0000	0.0000	0.0000
			C209	-552.9485	0.0000	0.0000	0.0000	0.0000	0.0000
			C210	-573.2388	0.0000	0.0000	0.0000	0.0000	0.0000
			C211	-370.5148	0.0000	0.0000	0.0000	0.0000	0.0000
			C212	-390.8051	0.0000	0.0000	0.0000	0.0000	0.0000
			C213	-428.2045	0.0000	0.0000	0.0000	0.0000	0.0000
			C214	-448.4947	0.0000	0.0000	0.0000	0.0000	0.0000
			C215	-251.3200	0.0000	0.0000	0.0000	0.0000	0.0000
			C216	-271.6102	0.0000	0.0000	0.0000	0.0000	0.0000
			C301	-557.5631	0.0000	0.0000	0.0000	0.0000	0.0000
			C302	-497.3648	0.0000	0.0000	0.0000	0.0000	0.0000
			C303	-328.3111	0.0000	0.0000	0.0000	0.0000	0.0000
			C304	-268.1127	0.0000	0.0000	0.0000	0.0000	0.0000
			C305	-386.0382	0.0000	0.0000	0.0000	0.0000	0.0000
			C306	-325.8399	0.0000	0.0000	0.0000	0.0000	0.0000
			C307	-242.1054	0.0000	0.0000	0.0000	0.0000	0.0000
			C308	-181.9071	0.0000	0.0000	0.0000	0.0000	0.0000
			C309	-473.0071	0.0000	0.0000	0.0000	0.0000	0.0000
			C310	-493.2974	0.0000	0.0000	0.0000	0.0000	0.0000
			C311	-290.5734	0.0000	0.0000	0.0000	0.0000	0.0000
			C312	-310.8636	0.0000	0.0000	0.0000	0.0000	0.0000
			C313	-348.2631	0.0000	0.0000	0.0000	0.0000	0.0000
			C314	-368.5533	0.0000	0.0000	0.0000	0.0000	0.0000
			C315	-171.3785	0.0000	0.0000	0.0000	0.0000	0.0000
			C316	-191.6688	0.0000	0.0000	0.0000	0.0000	0.0000
			UN01	-546.2454	0.0000	0.0000	0.0000	0.0000	0.0000
			UN02	-501.6541	0.0000	0.0000	0.0000	0.0000	0.0000
			UN03	-376.4291	0.0000	0.0000	0.0000	0.0000	0.0000
			UN04	-331.8377	0.0000	0.0000	0.0000	0.0000	0.0000
			UN05	-419.1900	0.0000	0.0000	0.0000	0.0000	0.0000
			UN06	-374.5986	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN09	-483.6114	0.0000	0.0000	0.0000	0.0000	0.0000
			UN10	-498.6412	0.0000	0.0000	0.0000	0.0000	0.0000
			UN11	-348.4753	0.0000	0.0000	0.0000	0.0000	0.0000
			UN12	-363.5051	0.0000	0.0000	0.0000	0.0000	0.0000
			UN13	-391.2084	0.0000	0.0000	0.0000	0.0000	0.0000
			UN14	-406.2382	0.0000	0.0000	0.0000	0.0000	0.0000
			UN15	-260.1828	0.0000	0.0000	0.0000	0.0000	0.0000
			UN16	-275.2126	0.0000	0.0000	0.0000	0.0000	0.0000
R308-F308	R308	SD1	C101	-385.7519	0.0000	0.0000	0.0000	0.0000	0.0000
			C102	-354.6953	0.0000	0.0000	0.0000	0.0000	0.0000
			C103	-300.9103	0.0000	0.0000	0.0000	0.0000	0.0000
			C104	-269.8536	0.0000	0.0000	0.0000	0.0000	0.0000
			C105	-187.8533	0.0000	0.0000	0.0000	0.0000	0.0000
			C106	-156.7967	0.0000	0.0000	0.0000	0.0000	0.0000
			C107	-156.2592	0.0000	0.0000	0.0000	0.0000	0.0000

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	C108	-125.2025	0.0000	0.0000	0.0000	0.0000	0.0000
	C109	-194.1099	0.0000	0.0000	0.0000	0.0000	0.0000
	C110	-179.0800	0.0000	0.0000	0.0000	0.0000	0.0000
	C111	-140.1673	0.0000	0.0000	0.0000	0.0000	0.0000
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	C113	-350.2975	0.0000	0.0000	0.0000	0.0000	0.0000
	C114	-335.2677	0.0000	0.0000	0.0000	0.0000	0.0000
	C115	-292.2438	0.0000	0.0000	0.0000	0.0000	0.0000
	C116	-277.2140	0.0000	0.0000	0.0000	0.0000	0.0000
	C201	-396.9687	0.0000	0.0000	0.0000	0.0000	0.0000
	C202	-355.0422	0.0000	0.0000	0.0000	0.0000	0.0000
	C203	-282.4325	0.0000	0.0000	0.0000	0.0000	0.0000
	C204	-240.5060	0.0000	0.0000	0.0000	0.0000	0.0000
	C205	-129.8056	0.0000	0.0000	0.0000	0.0000	0.0000
	C206	-87.8791	0.0000	0.0000	0.0000	0.0000	0.0000
	C207	-87.1535	0.0000	0.0000	0.0000	0.0000	0.0000
	C208	-45.2270	0.0000	0.0000	0.0000	0.0000	0.0000
	C209	-138.2519	0.0000	0.0000	0.0000	0.0000	0.0000
	C210	-117.9617	0.0000	0.0000	0.0000	0.0000	0.0000
	C211	-65.4294	0.0000	0.0000	0.0000	0.0000	0.0000
	C212	-45.1392	0.0000	0.0000	0.0000	0.0000	0.0000
	C213	-349.1052	0.0000	0.0000	0.0000	0.0000	0.0000
	C214	-328.8150	0.0000	0.0000	0.0000	0.0000	0.0000
	C215	-270.7328	0.0000	0.0000	0.0000	0.0000	0.0000
	C216	-250.4425	0.0000	0.0000	0.0000	0.0000	0.0000
	C301	-359.1682	0.0000	0.0000	0.0000	0.0000	0.0000
	C302	-317.2418	0.0000	0.0000	0.0000	0.0000	0.0000
	C303	-244.6320	0.0000	0.0000	0.0000	0.0000	0.0000
	C304	-202.7056	0.0000	0.0000	0.0000	0.0000	0.0000
	C305	-92.0052	0.0000	0.0000	0.0000	0.0000	0.0000
	C306	-50.0787	0.0000	0.0000	0.0000	0.0000	0.0000
	C307	-49.3531	0.0000	0.0000	0.0000	0.0000	0.0000
	C308	-7.4266	0.0000	0.0000	0.0000	0.0000	0.0000
	C309	-100.4515	0.0000	0.0000	0.0000	0.0000	0.0000
	C310	-80.1613	0.0000	0.0000	0.0000	0.0000	0.0000
	C311	-27.6290	0.0000	0.0000	0.0000	0.0000	0.0000
	C312	-7.3387	0.0000	0.0000	0.0000	0.0000	0.0000
	C313	-311.3048	0.0000	0.0000	0.0000	0.0000	0.0000
	C314	-291.0145	0.0000	0.0000	0.0000	0.0000	0.0000
	C315	-232.9323	0.0000	0.0000	0.0000	0.0000	0.0000
	C316	-212.6421	0.0000	0.0000	0.0000	0.0000	0.0000
	UN01	-329.0512	0.0000	0.0000	0.0000	0.0000	0.0000
	UN02	-297.9946	0.0000	0.0000	0.0000	0.0000	0.0000
	UN03	-244.2096	0.0000	0.0000	0.0000	0.0000	0.0000
	UN04	-213.1530	0.0000	0.0000	0.0000	0.0000	0.0000
	UN05	-131.1527	0.0000	0.0000	0.0000	0.0000	0.0000
	UN06	-100.0960	0.0000	0.0000	0.0000	0.0000	0.0000
	UN07	-99.5585	0.0000	0.0000	0.0000	0.0000	0.0000
	UN08	-68.5019	0.0000	0.0000	0.0000	0.0000	0.0000
	UN09	-137.4092	0.0000	0.0000	0.0000	0.0000	0.0000
	UN10	-122.3794	0.0000	0.0000	0.0000	0.0000	0.0000
	UN11	-83.4666	0.0000	0.0000	0.0000	0.0000	0.0000
	UN12	-68.4368	0.0000	0.0000	0.0000	0.0000	0.0000
	UN13	-293.5969	0.0000	0.0000	0.0000	0.0000	0.0000
	UN14	-278.5670	0.0000	0.0000	0.0000	0.0000	0.0000
	UN15	-235.5432	0.0000	0.0000	0.0000	0.0000	0.0000
	UN16	-220.5133	0.0000	0.0000	0.0000	0.0000	0.0000
F308	C101	-385.7519	0.0000	0.0000	0.0000	0.0000	0.0000
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	C103	-300.9103	0.0000	0.0000	0.0000	0.0000	0.0000
	C104	-269.8536	0.0000	0.0000	0.0000	0.0000	0.0000
	C105	-187.8533	0.0000	0.0000	0.0000	0.0000	0.0000
	C106	-156.7967	0.0000	0.0000	0.0000	0.0000	0.0000
	C107	-156.2592	0.0000	0.0000	0.0000	0.0000	0.0000
	C108	-125.2025	0.0000	0.0000	0.0000	0.0000	0.0000
	C109	-194.1099	0.0000	0.0000	0.0000	0.0000	0.0000
	C110	-179.0800	0.0000	0.0000	0.0000	0.0000	0.0000
	C111	-140.1673	0.0000	0.0000	0.0000	0.0000	0.0000
	C112	-125.1374	0.0000	0.0000	0.0000	0.0000	0.0000
	C113	-350.2975	0.0000	0.0000	0.0000	0.0000	0.0000
	C114	-335.2677	0.0000	0.0000	0.0000	0.0000	0.0000
	C115	-292.2438	0.0000	0.0000	0.0000	0.0000	0.0000
	C116	-277.2140	0.0000	0.0000	0.0000	0.0000	0.0000
	C201	-396.9687	0.0000	0.0000	0.0000	0.0000	0.0000
	C202	-355.0422	0.0000	0.0000	0.0000	0.0000	0.0000
	C203	-282.4325	0.0000	0.0000	0.0000	0.0000	0.0000
	C204	-240.5060	0.0000	0.0000	0.0000	0.0000	0.0000
	C205	-129.8056	0.0000	0.0000	0.0000	0.0000	0.0000
	C206	-87.8791	0.0000	0.0000	0.0000	0.0000	0.0000
	C207	-87.1535	0.0000	0.0000	0.0000	0.0000	0.0000

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			C208	-45.2270	0.0000	0.0000	0.0000	0.0000	0.0000
			C209	-138.2519	0.0000	0.0000	0.0000	0.0000	0.0000
			C210	-117.9617	0.0000	0.0000	0.0000	0.0000	0.0000
			C211	-65.4294	0.0000	0.0000	0.0000	0.0000	0.0000
			C212	-45.1392	0.0000	0.0000	0.0000	0.0000	0.0000
			C213	-349.1052	0.0000	0.0000	0.0000	0.0000	0.0000
			C214	-328.8150	0.0000	0.0000	0.0000	0.0000	0.0000
			C215	-270.7328	0.0000	0.0000	0.0000	0.0000	0.0000
			C216	-250.4425	0.0000	0.0000	0.0000	0.0000	0.0000
			C301	-359.1682	0.0000	0.0000	0.0000	0.0000	0.0000
			C302	-317.2418	0.0000	0.0000	0.0000	0.0000	0.0000
			C303	-244.6320	0.0000	0.0000	0.0000	0.0000	0.0000
			C304	-202.7056	0.0000	0.0000	0.0000	0.0000	0.0000
			C305	-92.0052	0.0000	0.0000	0.0000	0.0000	0.0000
			C306	-50.0787	0.0000	0.0000	0.0000	0.0000	0.0000
			C307	-49.3531	0.0000	0.0000	0.0000	0.0000	0.0000
			C308	-7.4266	0.0000	0.0000	0.0000	0.0000	0.0000
			C309	-100.4515	0.0000	0.0000	0.0000	0.0000	0.0000
			C310	-80.1613	0.0000	0.0000	0.0000	0.0000	0.0000
			C311	-27.6290	0.0000	0.0000	0.0000	0.0000	0.0000
			C312	-7.3387	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN02	-297.9946	0.0000	0.0000	0.0000	0.0000	0.0000
			UN03	-244.2096	0.0000	0.0000	0.0000	0.0000	0.0000
			UN04	-213.1530	0.0000	0.0000	0.0000	0.0000	0.0000
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			UN06	-100.0960	0.0000	0.0000	0.0000	0.0000	0.0000
			UN07	-99.5585	0.0000	0.0000	0.0000	0.0000	0.0000
			UN08	-68.5019	0.0000	0.0000	0.0000	0.0000	0.0000
			UN09	-137.4092	0.0000	0.0000	0.0000	0.0000	0.0000
			UN10	-122.3794	0.0000	0.0000	0.0000	0.0000	0.0000
			UN11	-83.4666	0.0000	0.0000	0.0000	0.0000	0.0000
			UN12	-68.4368	0.0000	0.0000	0.0000	0.0000	0.0000
			UN13	-293.5969	0.0000	0.0000	0.0000	0.0000	0.0000
			UN14	-278.5670	0.0000	0.0000	0.0000	0.0000	0.0000
			UN15	-235.5432	0.0000	0.0000	0.0000	0.0000	0.0000
			UN16	-220.5133	0.0000	0.0000	0.0000	0.0000	0.0000
R4L5-F4L5	R4L5	SD1	C101	-638.8981	-78.9604	231.0293	0.0000	-115.5144	39.4801
			C102	-531.7149	-47.1866	175.7162	0.0000	-87.8579	23.5932
			C103	-470.9200	-60.0136	172.2321	0.0000	-86.1159	30.0067
			C104	-363.7368	-28.2398	116.9190	0.0000	-58.4594	14.1199
			C105	-96.3463	55.6183	-273.1705	0.0000	136.5850	-27.8091
			C106	10.8369	87.3921	-328.4836	0.0000	164.2415	-43.6960
			C107	-70.8901	39.9863	-203.9702	0.0000	101.9849	-19.9931
			C108	36.2932	71.7601	-259.2833	0.0000	129.6414	-35.8800
			C109	180.4763	81.4513	300.1921	0.0000	-150.0958	-40.7255
			C110	259.4816	86.1956	357.5405	0.0000	-178.7699	-43.0977
			C111	155.5377	63.4625	208.7448	0.0000	-104.3722	-31.7312
			C112	234.5429	68.2069	266.0932	0.0000	-133.0463	-34.1034
			C113	-865.7419	-77.3868	-453.8249	0.0000	226.9119	38.6933
			C114	-786.7366	-72.6425	-396.4765	0.0000	198.2378	36.3212
			C115	-654.6652	-56.2113	-352.3620	0.0000	176.1806	28.1056
			C116	-575.6599	-51.4669	-295.0137	0.0000	147.5065	25.7334
			C201	-725.6932	-109.0875	335.2892	0.0000	-167.6443	54.5436
			C202	-580.9958	-66.1928	260.6165	0.0000	-130.3080	33.0963
			C203	-498.9226	-83.5092	255.9130	0.0000	-127.9562	41.7545
			C204	-354.2252	-40.6146	181.2403	0.0000	-90.6200	20.3073
			C205	6.7519	72.5938	-345.3805	0.0000	172.6899	-36.2968
			C206	151.4492	115.4884	-420.0533	0.0000	210.0262	-57.7441
			C207	41.1178	51.4906	-251.9601	0.0000	125.9798	-25.7452
			C208	185.8151	94.3852	-326.6328	0.0000	163.3160	-47.1925
			C209	380.4624	107.4683	428.6591	0.0000	-214.3291	-53.7340
			C210	487.1195	113.8732	506.0794	0.0000	-253.0392	-56.9365
			C211	346.7952	83.1834	305.2052	0.0000	-152.6022	-41.5916
			C212	453.4523	89.5883	382.6255	0.0000	-191.3123	-44.7941
			C213	-1031.9321	-106.9632	-589.2639	0.0000	294.6313	53.4815
			C214	-925.2751	-100.5583	-511.8436	0.0000	255.9212	50.2790
			C215	-746.9786	-78.3762	-452.2890	0.0000	226.1440	39.1880
			C216	-640.3215	-71.9713	-374.8687	0.0000	187.4340	35.9856
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			C302	-539.2189	-66.9534	267.7615	0.0000	-133.8805	33.4766
			C303	-457.1458	-84.2698	263.0580	0.0000	-131.5287	42.1348
			C304	-312.4484	-41.3752	188.3853	0.0000	-94.1924	20.6876
			C305	48.5288	71.8332	-338.2356	0.0000	169.1174	-35.9165
			C306	193.2261	114.7278	-412.9083	0.0000	206.4537	-57.3638

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	C307	82.8947	50.7300	-244.8151	0.0000	122.4073	-25.3649
	C308	227.5920	93.6246	-319.4878	0.0000	159.7436	-46.8122
	C309	422.2393	106.7077	435.8040	0.0000	-217.9016	-53.3537
	C310	528.8964	113.1126	513.2244	0.0000	-256.6116	-56.5562
	C311	388.5721	82.4228	312.3501	0.0000	-156.1747	-41.2113
	C312	495.2292	88.8277	389.7704	0.0000	-194.8848	-44.4138
	C313	-990.1552	-107.7237	-582.1190	0.0000	291.0588	53.8618
	C314	-883.4982	-101.3188	-504.6986	0.0000	252.3488	50.6593
	C315	-705.2017	-79.1368	-445.1441	0.0000	222.5716	39.5683
	C316	-598.5446	-72.7319	-367.7238	0.0000	183.8615	36.3659
	UN01	-576.2328	-80.1013	241.7467	0.0000	-120.8731	40.0506
	UN02	-469.0496	-48.3275	186.4336	0.0000	-93.2166	24.1637
	UN03	-408.2546	-61.1544	182.9495	0.0000	-91.4746	30.5772
	UN04	-301.0714	-29.3806	127.6364	0.0000	-63.8181	14.6903
	UN05	-33.6809	54.4774	-262.4531	0.0000	131.2263	-27.2386
	UN06	73.5023	86.2512	-317.7662	0.0000	158.8828	-43.1255
	UN07	-8.2247	38.8454	-193.2528	0.0000	96.6262	-19.4227
	UN08	98.9585	70.6192	-248.5659	0.0000	124.2827	-35.3095
	UN09	243.1417	80.3104	310.9096	0.0000	-155.4545	-40.1551
	UN10	322.1469	85.0547	368.2579	0.0000	-184.1286	-42.5273
	UN11	218.2030	62.3216	219.4622	0.0000	-109.7309	-31.1607
	UN12	297.2083	67.0660	276.8106	0.0000	-138.4050	-33.5329
	UN13	-803.0765	-78.5277	-443.1075	0.0000	221.5532	39.2638
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			UN11	218.2030	62.3216	219.4622	0.0000	0.0000	0.0000
			UN12	297.2083	67.0660	276.8106	0.0000	0.0000	0.0000
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			UN14	-724.0712	-73.7833	-385.7591	0.0000	0.0000	0.0000
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			C102	-642.8506	-17.8536	-247.8758	0.0000	123.9376	8.9268
			C103	-484.4464	-1.4942	-284.2697	0.0000	142.1345	0.7471
			C104	-439.6391	-10.9988	-161.2117	0.0000	80.6057	5.4994
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			C107	-297.2578	6.1976	232.4276	0.0000	-116.2135	-3.0988
			C108	-252.4505	-3.3070	355.4856	0.0000	-177.7424	1.6535
			C109	-942.6774	-82.6206	384.7957	0.0000	-192.3974	41.3102
			C110	-1021.6827	-87.3649	442.1440	0.0000	-221.0715	43.6824
			C111	-675.5535	-58.4724	286.1833	0.0000	-143.0913	29.2361
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			C115	40.8808	59.1259	-272.6508	0.0000	136.3251	-29.5629
			C116	-38.1245	54.3815	-215.3024	0.0000	107.6510	-27.1907
			C201	-698.9377	-8.7220	-519.3348	0.0000	259.6669	4.3610
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			C203	-424.6021	0.5320	-402.3382	0.0000	201.1687	-0.2660
			C204	-364.1122	-12.2992	-236.2100	0.0000	118.1047	6.1496
			C205	-315.7475	7.3674	418.2516	0.0000	-209.1253	-3.6837
			C206	-255.2576	-5.4639	584.3799	0.0000	-292.1893	2.7319
			C207	-171.8975	10.9159	295.2031	0.0000	-147.6012	-5.4579
			C208	-111.4076	-1.9153	461.3313	0.0000	-230.6652	0.9577
			C209	-1043.2141	-108.9886	500.9000	0.0000	-250.4494	54.4942
			C210	-1149.8712	-115.3935	578.3203	0.0000	-289.1595	57.6966
			C211	-682.5966	-76.3885	367.7732	0.0000	-183.8862	38.1942
			C212	-789.2537	-82.7935	445.1935	0.0000	-222.5963	41.3966
			C213	242.5919	102.6408	-513.9547	0.0000	256.9768	-51.3203
			C214	135.9348	96.2359	-436.5344	0.0000	218.2667	-48.1178
			C215	284.5897	82.3691	-386.6527	0.0000	193.3259	-41.1845
			C216	177.9326	75.9642	-309.2325	0.0000	154.6159	-37.9820
			C301	-628.8917	-7.9436	-525.0063	0.0000	262.5026	3.9718
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			C303	-354.5561	1.3104	-408.0097	0.0000	204.0044	-0.6552
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			C306	-185.2116	-4.6855	578.7083	0.0000	-289.3535	2.3427
			C307	-101.8515	11.6943	289.5316	0.0000	-144.7655	-5.8471
			C308	-41.3616	-1.1370	455.6598	0.0000	-227.8294	0.5685
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			C311	-612.5506	-75.6102	362.1017	0.0000	-181.0505	37.8050
			C312	-719.2077	-82.0151	439.5220	0.0000	-219.7605	41.0075
			C313	312.6378	103.4192	-519.6262	0.0000	259.8125	-51.7095
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			C315	354.6357	83.1475	-392.3242	0.0000	196.1617	-41.5736
			C316	247.9786	76.7425	-314.9040	0.0000	157.4516	-38.3712
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			UN09	-837.6085	-81.4530	376.2885	0.0000	-188.1438	40.7264
			UN10	-916.6138	-86.1974	433.6368	0.0000	-216.8179	43.0986
			UN11	-570.4846	-57.3048	277.6760	0.0000	-138.8377	28.6524
			UN12	-649.4898	-62.0492	335.0244	0.0000	-167.5118	31.0245
			UN13	114.8403	75.3095	-375.4557	0.0000	187.7275	-37.6547
			UN14	35.8350	70.5651	-318.1074	0.0000	159.0533	-35.2825
			UN15	145.9498	60.2934	-281.1580	0.0000	140.5787	-30.1466
			UN16	66.9445	55.5490	-223.8097	0.0000	111.9046	-27.7745
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C106	-359.0061	-5.9356	446.6326	0.0000	0.0000	0.0000
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C110	-1021.6827	-87.3649	442.1440	0.0000	0.0000	0.0000
C111	-675.5535	-58.4724	286.1833	0.0000	0.0000	0.0000
C112	-754.5588	-63.2168	343.5316	0.0000	0.0000	0.0000
C113	9.7713	74.1420	-366.9485	0.0000	0.0000	0.0000
C114	-69.2340	69.3976	-309.6001	0.0000	0.0000	0.0000
C115	40.8808	59.1259	-272.6508	0.0000	0.0000	0.0000
C116	-38.1245	54.3815	-215.3024	0.0000	0.0000	0.0000
C201	-698.9377	-8.7220	-519.3348	0.0000	0.0000	0.0000
C202	-638.4478	-21.5532	-353.2066	0.0000	0.0000	0.0000
C203	-424.6021	0.5320	-402.3382	0.0000	0.0000	0.0000
C204	-364.1122	-12.2992	-236.2100	0.0000	0.0000	0.0000
C205	-315.7475	7.3674	418.2516	0.0000	0.0000	0.0000
C206	-255.2576	-5.4639	584.3799	0.0000	0.0000	0.0000
C207	-171.8975	10.9159	295.2031	0.0000	0.0000	0.0000
C208	-111.4076	-1.9153	461.3313	0.0000	0.0000	0.0000
C209	-1043.2141	-108.9886	500.9000	0.0000	0.0000	0.0000
C210	-1149.8712	-115.3935	578.3203	0.0000	0.0000	0.0000
C211	-682.5966	-76.3885	367.7732	0.0000	0.0000	0.0000
C212	-789.2537	-82.7935	445.1935	0.0000	0.0000	0.0000
C213	242.5919	102.6408	-513.9547	0.0000	0.0000	0.0000
C214	135.9348	96.2359	-436.5344	0.0000	0.0000	0.0000
C215	284.5897	82.3691	-386.6527	0.0000	0.0000	0.0000
C216	177.9326	75.9642	-309.2325	0.0000	0.0000	0.0000
C301	-628.8917	-7.9436	-525.0063	0.0000	0.0000	0.0000
C302	-568.4018	-20.7749	-358.8781	0.0000	0.0000	0.0000
C303	-354.5561	1.3104	-408.0097	0.0000	0.0000	0.0000
C304	-294.0662	-11.5209	-241.8815	0.0000	0.0000	0.0000
C305	-245.7015	8.1457	412.5801	0.0000	0.0000	0.0000
C306	-185.2116	-4.6855	578.7083	0.0000	0.0000	0.0000
C307	-101.8515	11.6943	289.5316	0.0000	0.0000	0.0000
C308	-41.3616	-1.1370	455.6598	0.0000	0.0000	0.0000
C309	-973.1680	-108.2102	495.2285	0.0000	0.0000	0.0000
C310	-1079.8252	-114.6151	572.6488	0.0000	0.0000	0.0000
C311	-612.5506	-75.6102	362.1017	0.0000	0.0000	0.0000
C312	-719.2077	-82.0151	439.5220	0.0000	0.0000	0.0000
C313	312.6378	103.4192	-519.6262	0.0000	0.0000	0.0000
C314	205.9808	97.0143	-442.2059	0.0000	0.0000	0.0000
C315	354.6357	83.1475	-392.3242	0.0000	0.0000	0.0000
C316	247.9786	76.7425	-314.9040	0.0000	0.0000	0.0000
UN01	-582.5890	-7.1815	-379.4410	0.0000	0.0000	0.0000
UN02	-537.7816	-16.6861	-256.3831	0.0000	0.0000	0.0000
UN03	-379.3774	-0.3266	-292.7769	0.0000	0.0000	0.0000
UN04	-334.5701	-9.8313	-169.7189	0.0000	0.0000	0.0000
UN05	-298.7444	4.7366	315.0674	0.0000	0.0000	0.0000
UN06	-253.9371	-4.7680	438.1254	0.0000	0.0000	0.0000
UN07	-192.1889	7.3651	223.9204	0.0000	0.0000	0.0000
UN08	-147.3815	-2.1395	346.9783	0.0000	0.0000	0.0000
UN09	-837.6085	-81.4530	376.2885	0.0000	0.0000	0.0000
UN10	-916.6138	-86.1974	433.6368	0.0000	0.0000	0.0000
UN11	-570.4846	-57.3048	277.6760	0.0000	0.0000	0.0000
UN12	-649.4898	-62.0492	335.0244	0.0000	0.0000	0.0000
UN13	114.8403	75.3095	-375.4557	0.0000	0.0000	0.0000
UN14	35.8350	70.5651	-318.1074	0.0000	0.0000	0.0000
UN15	145.9498	60.2934	-281.1580	0.0000	0.0000	0.0000
UN16	66.9445	55.5490	-223.8097	0.0000	0.0000	0.0000

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13.2 STRUCTURAL CHECKS

The results of the performed analysis in terms of structural elements' Unity Check (UC) and Joints' Punching Shear Unity Checks are detailed in the following. Structural checks of sea-fastening and grillage structural elements are not covered by present document and detailed in a separate dedicated report, ref./27/.

13.2.1 Member checks

All members were checked according to ISO 19902 and Eurocode 3, Ref./6/and /8/, respectively for tubular and non-tubular elements. Members' code checks are reported in the following and show that the structure can withstand Transportation load combinations, with utilization factors below 1.0.

The maximum UC value is equal to 0.358 on member SS03-SM12 for load combination C201. Maximum member UC are reported in following SACS excerpt and figures.

GROUP I - UNITY CHECKS GREATER THAN 0.20 AND LESS THAN 0.40

MEMBER	GROUP ID	MAXIMUM COMBINED UNITY CK	LOAD COND NO.	DIST FROM END	AXIAL STRESS N/MM2	BENDING STRESS Y N/MM2	BENDING STRESS Z N/MM2	SHEAR FORCE FY KN	SHEAR FORCE FZ KN	KLY/RY	KLZ/RZ	SECOND-HIGHEST UNITY CHECK	SECOND-HIGHEST LOAD COND	THIRD-HIGHEST UNITY CHECK	THIRD-HIGHEST LOAD COND
SC09-SM35	HA3	0.278	C201	0.0	4.96	-20.60	97.93	-30.14	22.06	11.5	51.5	0.259	C301	0.252	C101
SM10-SM09	IP3	0.215	C213	1.2	-1.00	2.05	-65.16	-8.59	2.10	26.3	149.4	0.213	C313	0.182	C215
SU01-SU03	IP3	0.229	C210	0.0	-1.50	-10.04	-87.90	6.89	8.60	56.2	21.1	0.223	C310	0.195	C312
SU04-SU02	IP3	0.308	C213	0.7	-2.63	-10.53	-82.23	-7.42	-7.65	56.2	21.1	0.305	C313	0.249	C215
SU08-SU06	IP3	0.202	C213	0.0	-2.63	6.64	48.59	-3.90	-3.00	56.2	21.1	0.197	C313	0.163	C113
SU10-SU08	IP3	0.217	C213	4.4	-2.43	6.55	48.59	0.54	-0.10	56.2	124.0	0.212	C313	0.176	C215
SU12-SU10	IP3	0.212	C213	0.0	-2.43	-8.53	-57.61	3.32	4.34	56.2	28.2	0.206	C313	0.172	C113
SM15-SM14	L15	0.255	C210	0.0	-0.25	4.17	-118.13	-4.41	-0.91	23.1	54.8	0.254	C310	0.253	C213
SM14-SS07	UN2	0.258	C205	2.3	0.36	-26.53	2.43	0.12	-0.21	60.5	87.1	0.256	C206	0.253	C105
SM15-SS08	UN2	0.276	C206	2.3	-1.60	25.80	-5.07	-0.12	-0.23	60.5	87.1	0.271	C205	0.270	C209
SS03-SM12	UN2	0.352	C201	0.0	-9.84	25.78	0.00	-0.00	0.16	58.4	87.1	0.348	C301	0.331	C210
SS04-SM13	UN2	0.332	C210	4.4	-0.96	-0.55	12.98	1.87	3.27	58.4	87.1	0.332	C209	0.330	C310
SS07-SS05	UN2	0.241	C214	0.3	0.66	0.01	-25.71	2.11	5.48	60.5	12.3	0.238	C314	0.219	C209
SS08-SS06	UN2	0.259	C209	0.3	-0.86	-0.01	-27.30	2.13	-2.09	60.5	12.3	0.256	C309	0.222	C314

GROUP II - UNITY CHECKS GREATER THAN 0.40 AND LESS THAN 0.90

** NO UNITY CHECKS IN THIS GROUP **

GROUP III - UNITY CHECKS GREATER THAN 0.90 AND LESS THAN 999.00

** NO UNITY CHECKS IN THIS GROUP **

Maximum UCs per member's group are reported in following SACS excerpt.

* * * M E M B E R G R O U P S U M M A R Y * * *
ISO 19902:2020 / EC3:1992

GRUP ID	CRITICAL MEMBER	LOAD COND	MAX. UNITY CHECK	DIST FROM END M	* APPLIED STRESSES * AXIAL N/MM2	BEND-Y N/MM2	BEND-Z N/MM2	*** ALLOWABLE STRESSES *** AXIAL N/MM2	EULER N/MM2	BEND-Y N/MM2	BEND-Z N/MM2	CRIT COND	EFFECTIVE LENGTHS KLY M	KLZ M	CM * VALUES * Y	Z
HA3	SC09-SM35	C201	0.28	0.0	5.0	-20.6	97.9	322.7	764.3	338.6	487.7	BN+AX	1.65	3.84	0.00	0.00
IP2	SM22-SM23	C213	0.10	0.5	-0.2	3.4	-43.1	322.7	1365.1	344.3	496.2	BN+AX	3.84	0.50	0.62	0.60
IP3	SU04-SU02	C213	0.31	0.7	-2.6	-10.5	-82.2	322.7	641.5	322.7	322.7	BN+AX	7.70	0.75	0.70	0.74
L15	SM15-SM14	C210	0.25	0.0	-0.2	4.2	-118.1	190.5	673.5	430.5	512.6	BN+COM	1.20	1.20	0.00	0.00
M01	TMJ1-T000	C206	0.02	0.0	-2.9	-2.4	1.4	301.4	4865.8	366.6	366.6	ACBI	50.00	50.00	0.85	0.85
ST3	SL06-SM04	C206	0.11	0.0	-13.1	-5.5	-28.8	265.3	836.1	448.9	448.9	ACBI	2.81	2.81	0.85	0.85
ST4	SM31-SM32	C110	0.04	0.0	0.6	12.4	-10.0	338.1	8770.5	450.8	450.8	TN+BN	1.40	1.40	0.85	0.85
ST5	SC09-SM27	C206	0.17	0.4	16.9	54.1	-54.6	.3E+03	.2E+05	.5E+03	.5E+03	TN+BN	0.80	0.40	0.85	0.85
T00	T000-TA21	C206	0.06	0.4	0.4	-15.1	-4.4	345.5	9524.8	345.5	345.5	BN+AX	16.00	8.00	0.00	0.00
T01	SC05-SC09	C306	0.06	5.3	1.2	16.0	-4.6	363.6	296.2	363.6	363.6	BN+AX	16.00	16.00	0.00	0.00
T02	TA41-TA42	C206	0.04	1.6	-1.6	-8.4	-3.1	345.5	6244.3	345.5	345.5	BN+AX	16.00	8.00	0.86	0.82
T03	TA42-TA43	C206	0.04	0.0	-1.6	-8.4	-3.1	345.5	3809.8	345.5	345.5	BN+AX	16.00	8.00	0.45	0.40
T04	TA23-TA24	C105	0.04	0.0	-0.4	1.6	0.7	345.5	2716.3	388.8	523.2	SHEAR	16.00	8.00	0.69	0.86
T05	T023-T021	C206	0.06	1.0	2.6	-12.1	-6.3	363.6	276.4	363.6	363.6	BN+AX	16.00	16.00	0.00	0.00
T06	T021-TA44	C206	0.05	0.7	1.9	-7.6	-6.8	345.5	260.3	345.5	345.5	BN+AX	16.00	16.00	0.00	0.00
T07	T028-T029	C105	0.05	0.0	0.6	-16.4	2.7	363.6	276.4	363.6	363.6	BN+AX	16.00	16.00	0.00	0.00
T2A	TA21-TA2A	C206	0.06	0.5	0.2	-15.4	-4.0	345.5	6811.6	345.5	345.5	BN+AX	16.00	8.00	0.00	0.00
T2B	TA2A-TA22	C206	0.06	1.1	-0.0	-16.5	-3.5	345.5	5604.3	345.5	345.5	BN+AX	16.00	8.00	0.91	0.88
T3A	TA22-TA2B	C206	0.06	0.0	-0.0	-16.5	-3.5	345.5	4031.1	345.5	345.5	BN+AX	16.00	8.00	0.76	0.68
T3B	TA2B-TA23	C106	0.04	0.0	-0.4	-9.3	-0.9	345.5	3320.6	391.5	524.1	WSHBUC	16.00	8.00	0.53	0.40
TPS	TL02-TA24	C210	0.01	1.4	1.2	-1.1	7.1	.4E+03	.7E+05	.5E+03	.5E+03	TN+BN	1.40	1.40	0.85	0.85
UG3	R205-R305	C213	0.19	1.5	-54.3	1.6	-0.8	291.9	3308.7	446.0	446.0	ACBI	3.00	3.00	0.85	0.85
UN2	SS03-SM12	C201	0.35	0.0	-9.8	25.8	0.0	132.7	266.4	92.8	504.6	LATBUC	4.95	2.00	0.66	1.00

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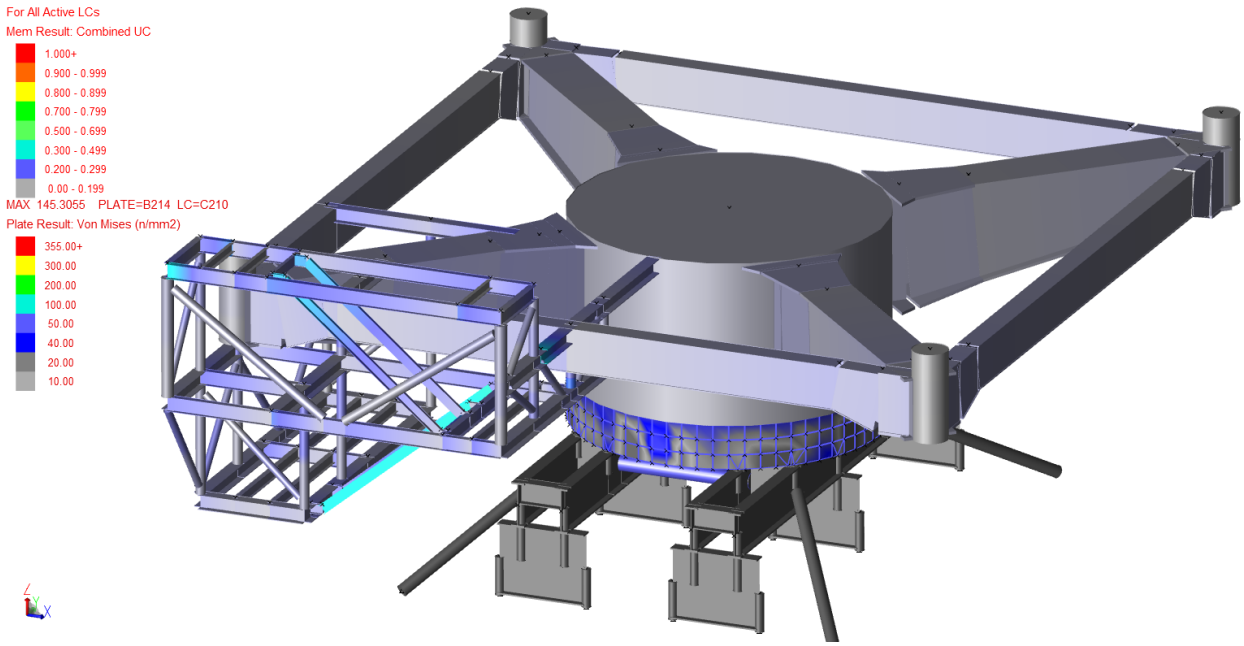


Figure 13-1 -TP – Member UC

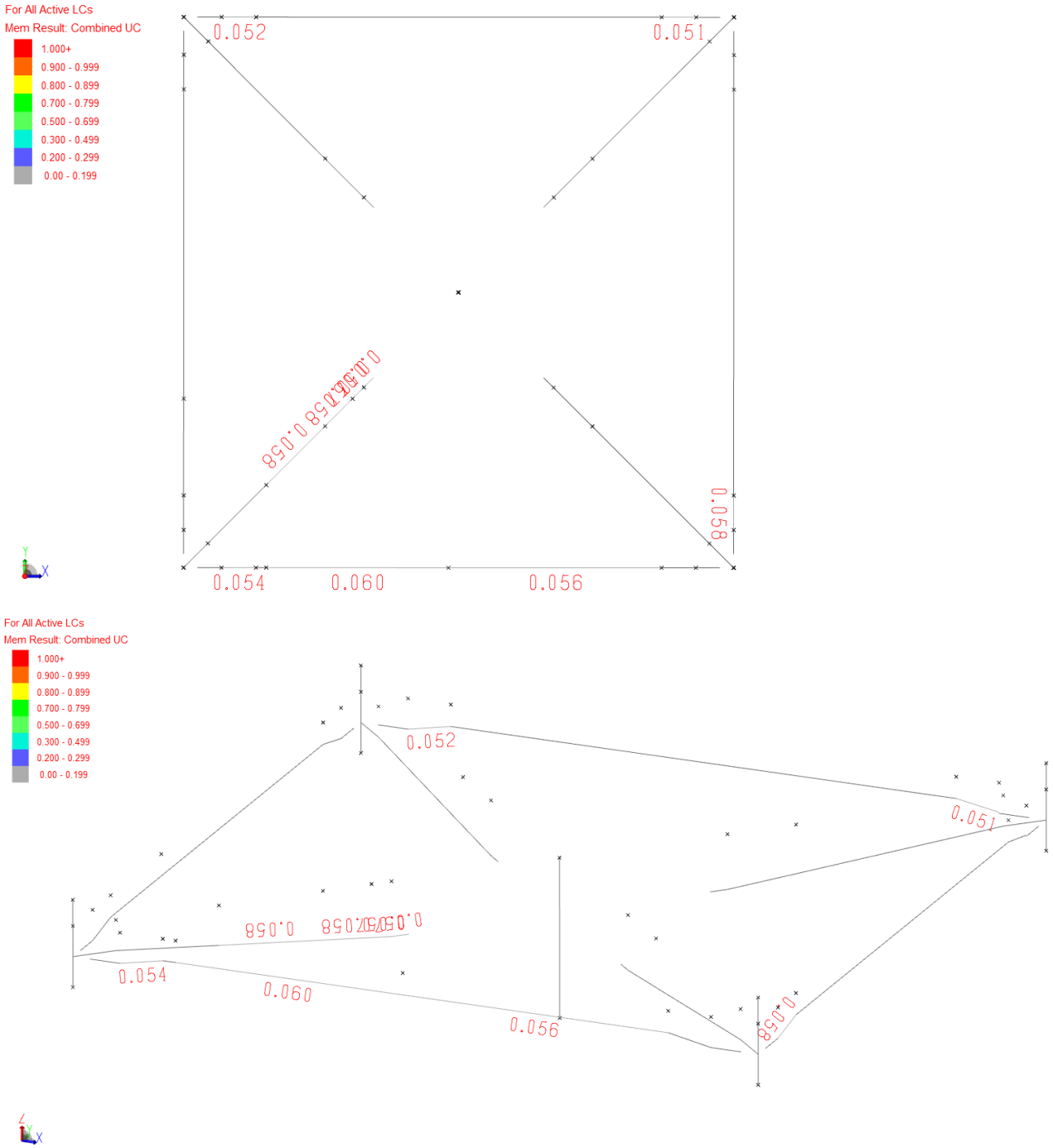


Figure 13-2 - TP primary structures - Max UC=0.06

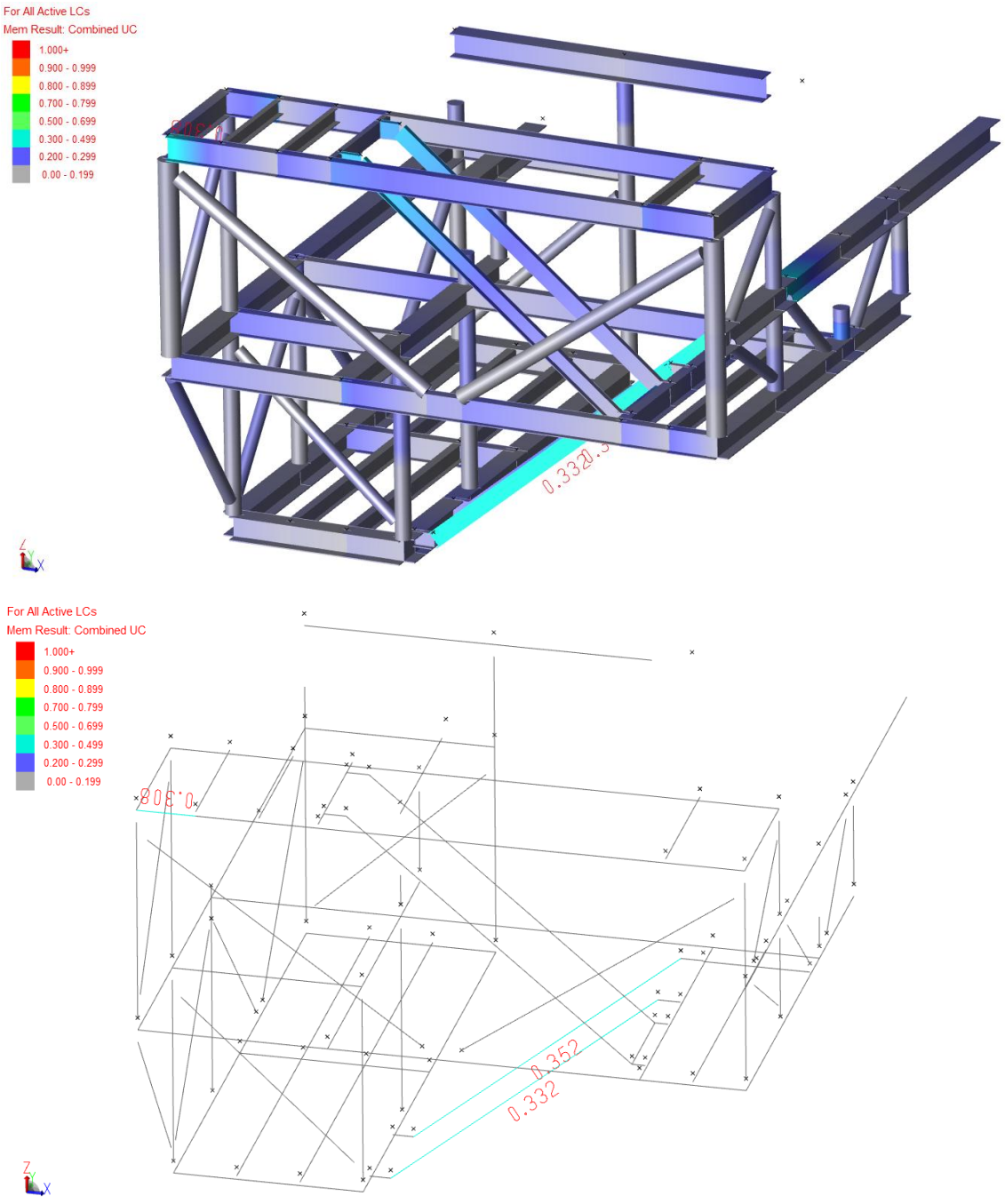


Figure 13-3 - TP stairs - Max UC=0.352

13.2.2 Plate checks

The TP main column with 7m diameter has been modelled with isotropic shell elements between el.+17.05 and +18.05m. This choice allows to better evaluate reaction forces at TP contacts with the upper grillage in transportation conditions. Maximum Von Mises stress of shell elements are reported in following figure. Maximum Von Mises stress is 145 MPa and results below the design yield stress of 380 MPa (UC= 145 / (380/1.1) = 0.42).

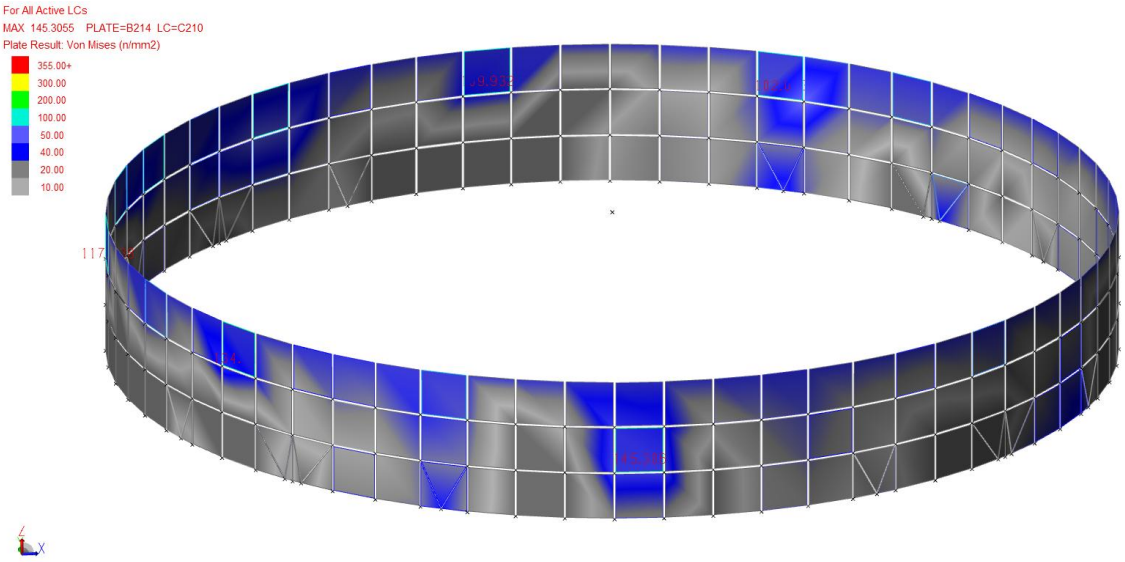


Figure 13-4 - TP main column plates - Max VM = 145 MPa

13.2.3 Tubular Joint checks

All tubular joints punching shear checks and strength checks are detailed in following SACS excerpt and provide utilization factors lower than 1.0, according to ISO19902, ref./6/.

* * J O I N T C A N S U M M A R Y * *
(UNITY CHECK ORDER)

	ORIGINAL					LOAD DESIGN					STRENGTH ANALYSIS		
JOINT	DIAMETER (CM)	THICKNESS (CM)	YLD STRS (N/MM2)	LOAD UC	STRN UC	DIAMETER (CM)	THICKNESS (CM)	YLD STRS (N/MM2)	LOAD UC	STRN UC	BRACE JOINT	LOAD CASE
SL06	21.910	1.031	355.000	0.116	0.136	21.910	1.031	355.000	0.116	0.136	SM02	C206
SM02	21.910	1.031	355.000	0.098	0.115	21.910	1.031	355.000	0.098	0.115	SL03	C206
SM30	21.910	1.031	355.000	0.094	0.111	21.910	1.031	355.000	0.094	0.111	SM33	C101
SM03	21.910	1.031	355.000	0.092	0.108	21.910	1.031	355.000	0.092	0.108	SL18	C201
SU01	21.910	1.031	355.000	0.078	0.091	21.910	1.031	355.000	0.078	0.091	SM04	C210
SL18	21.910	1.031	355.000	0.071	0.083	21.910	1.031	355.000	0.071	0.083	SM03	C201
SM01	21.910	1.031	355.000	0.067	0.078	21.910	1.031	355.000	0.067	0.078	SL02	C206
SU12	27.310	1.270	355.000	0.067	0.078	27.310	1.270	355.000	0.067	0.078	SM11	C201
SU11	21.910	1.031	355.000	0.066	0.077	21.910	1.031	355.000	0.066	0.077	SM33	C210
SM05	21.910	1.031	355.000	0.047	0.055	21.910	1.031	355.000	0.047	0.055	SL01	C213
SU02	27.310	1.270	355.000	0.047	0.054	27.310	1.270	355.000	0.047	0.054	SM10	C206
SL01	21.910	1.031	355.000	0.027	0.032	21.910	1.031	355.000	0.027	0.032	SM05	C310

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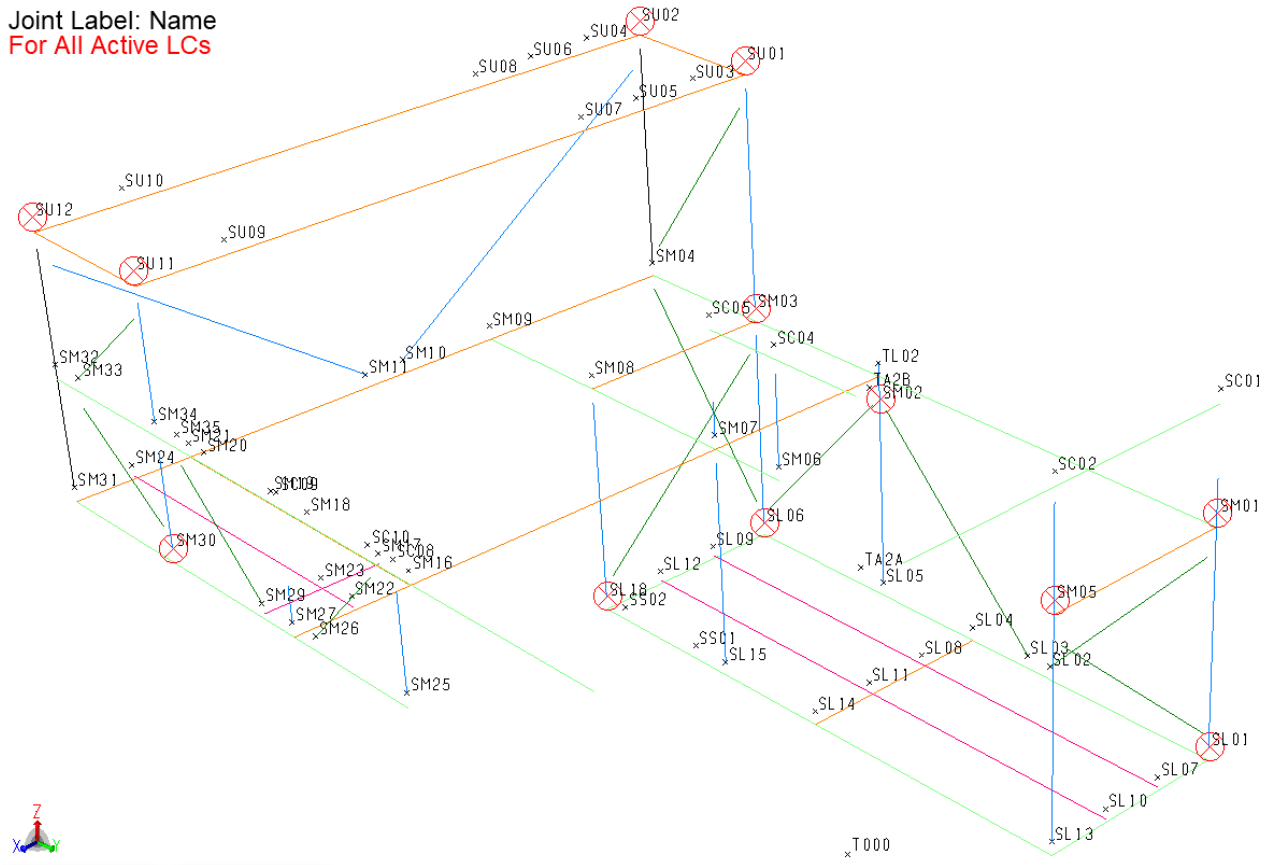


Figure 13-5 - Tubular joints

APPENDIX A – MEMBER GROUPS AND SECTION PROPERTIES

Member Group Report

Name	Section	OD (cm)	WT (cm)	E (kN/cm2)	G (kN/cm2)	Fy (kN/cm2)	Ky	Kz	SPC	SAM	F	Density (tonne/m3)	Length (m)	Section
HA3	HEA340			20500.000	7722.000	35.500	1.00	1.00				7.849		
IP2	IPE240			20500.000	7722.000	35.500	1.00	1.00				7.849		
IP3	IPE330			20500.000	7722.000	35.500	1.00	1.00				7.849		
L15	L15			20500.000	7722.000	27.500	1.00	1.00				7.849		
LD1		20.000	1.500	21000000.0	7900000.00	33.500	1.00	1.00		0.50		10.0000029-5		
LG1	LG1			20500.000	7885.000	34.500	1.00	1.00				7.850		
M01		700.000	6.500	20500.000	7885.000	38.000	1.00	1.00		0.50		7.850		
SD1		20.000	1.500	21000000.0	7900000.00	33.500	1.00	1.00		0.50		10.0000029-5		
SF1		27.310	1.270	20500.000	7885.000	35.500	1.00	1.00		0.50		7.849		
ST3		16.830	0.711	20500.000	7722.000	35.500	1.00	1.00		0.50		7.849		
ST4		27.310	1.270	20500.000	7722.000	35.500	1.00	1.00		0.50		7.849		
ST5		21.910	1.031	20500.000	7722.000	35.500	1.00	1.00		0.50		7.849		
T00	TPBG02A			20500.000	7885.000	38.000	1.00	1.00				7.850		TPBG02B
T01	TPBG01			20500.000	7885.000	40.000	1.00	1.00				7.850		
T02	TPBG02B			20500.000	7885.000	38.000	1.00	1.00				7.850		TPBG03A
T03	TPBG03A			20500.000	7885.000	38.000	1.00	1.00				7.850		TPBG03B
T04	TPBG03B			20500.000	7885.000	38.000	1.00	1.00				7.850		
T05	TPBG01A			20500.000	7885.000	40.000	1.00	1.00				7.850		TPBG01B
T06	TPBG01C			20500.000	7885.000	38.000	1.00	1.00				7.850		
T07	TPBG01B			20500.000	7885.000	40.000	1.00	1.00				7.850		TPBG01A
T2A	TPBG02B			20500.000	7885.000	38.000	1.00	1.00				7.850		TPBG02C
T2B	TPBG02C			20500.000	7885.000	38.000	1.00	1.00				7.850		TPBG03A
T3A	TPBG03A			20500.000	7885.000	38.000	1.00	1.00				7.850		TPBG03C
T3B	TPBG03C			20500.000	7885.000	38.000	1.00	1.00				7.850		TPBG03B
TPS		80.000	4.000	20500.000	7885.000	40.000	1.00	1.00		0.50		7.850		
UD1		20.000	1.500	21000000.0	7900000.00	33.500	1.00	1.00		0.50		10.0000029-5		
UG1	UG1000			20500.000	7885.000	34.500	1.00	1.00				7.850		
UG2	HE500A			20500.000	7885.000	34.500	1.00	1.00				7.850		
UG3		35.560	1.270	20500.000	7885.000	35.500	1.00	1.00		0.50		7.849		
UN2	UPN220			20500.000	7722.000	27.500	1.00	1.00				7.849		

Member Section Report

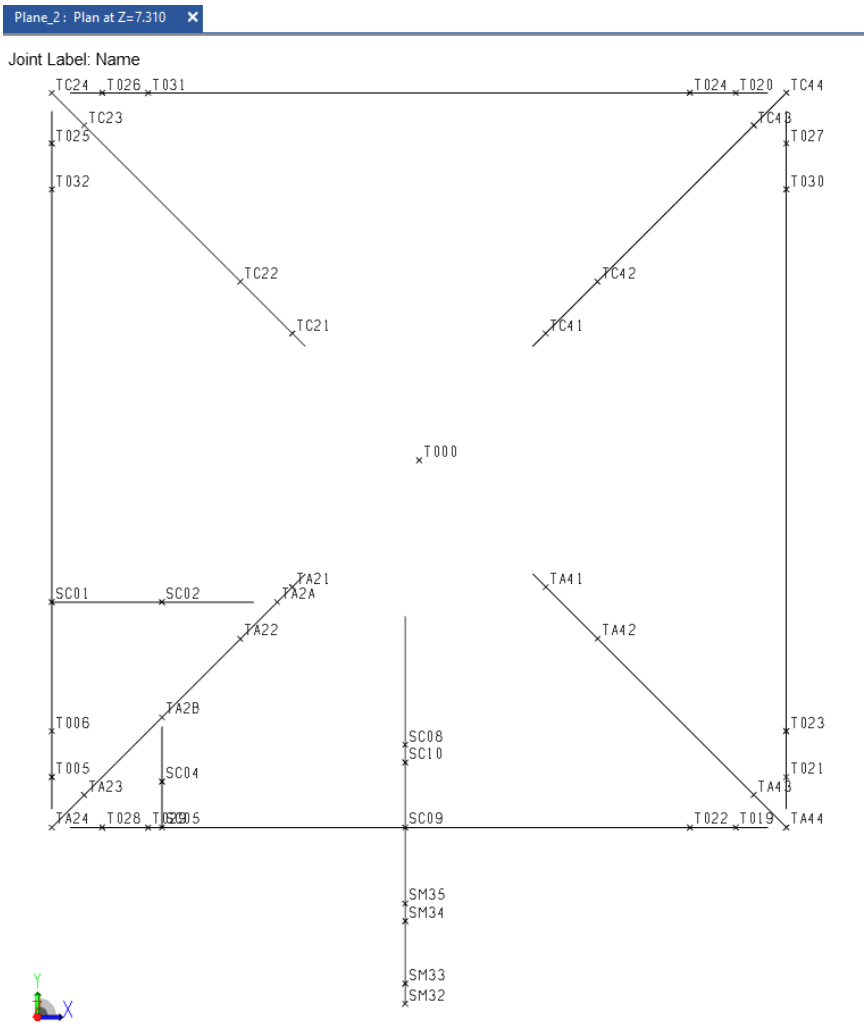
Section	Type	AX(cm2)	J(cm4)	IY(cm4)	IZ(cm4)	A(cm)	B(cm)	C(cm)	D(cm)	E(cm)	F(cm)
HE500A	WF	197.500	309.300	86970.000	10370.000	30.000	2.300	49.000	1.200	2.700	
L15	ANG *	24.000	8.453	645.202	115.048	15.000	10.000	1.000			
LG1	PLG *	466.450	1013.600	1742067.3	14918.510	30.000	3.300	160.000	1.750		
TPBG01	PGD *	630.000	512780.25	880062.50	236129.95	50.000	2.500	100.000	2.000		44.000
TPBG01A	PGD *	630.000	512780.25	880062.50	236129.95	50.000	2.500	100.000	2.000		44.000
TPBG01B	PGD *	770.000	747123.18	1829729.0	303936.62	50.000	2.500	135.000	2.000		44.000
TPBG01C	PGD *	1158.000	868535.00	3581198.2	381457.96	50.000	6.500	140.000	2.000		44.000
TPBG02A	PGD *	4427.000	7325551.0	52115124.	15367670.	230.000	6.500	252.500	3.000		78.000
TPBG02B	PGD *	3769.200	7316286.5	42160956.	8441785.0	179.400	6.500	252.500	3.000		78.000
TPBG02C	PGD *	3495.750	44875.500	27176.000	6726574.5	162.090	6.500	244.430	3.000		78.000
TPBG03A	PGD *	2830.800	6385822.0	23341494.	3805840.0	120.000	6.500	224.800	3.000		78.000
TPBG03B	PGD *	2322.000	3602949.0	7980361.0	31573.500	120.000	6.500	140.000	3.000		78.000
TPBG03C	PGD *	2575.080	4979034.5	14463364.	3416698.0	120.000	6.500	182.180	3.000		78.000
UG1000	PLG *	424.000	1550.547	683061.37	18061.332	30.000	4.000	100.000	2.000		

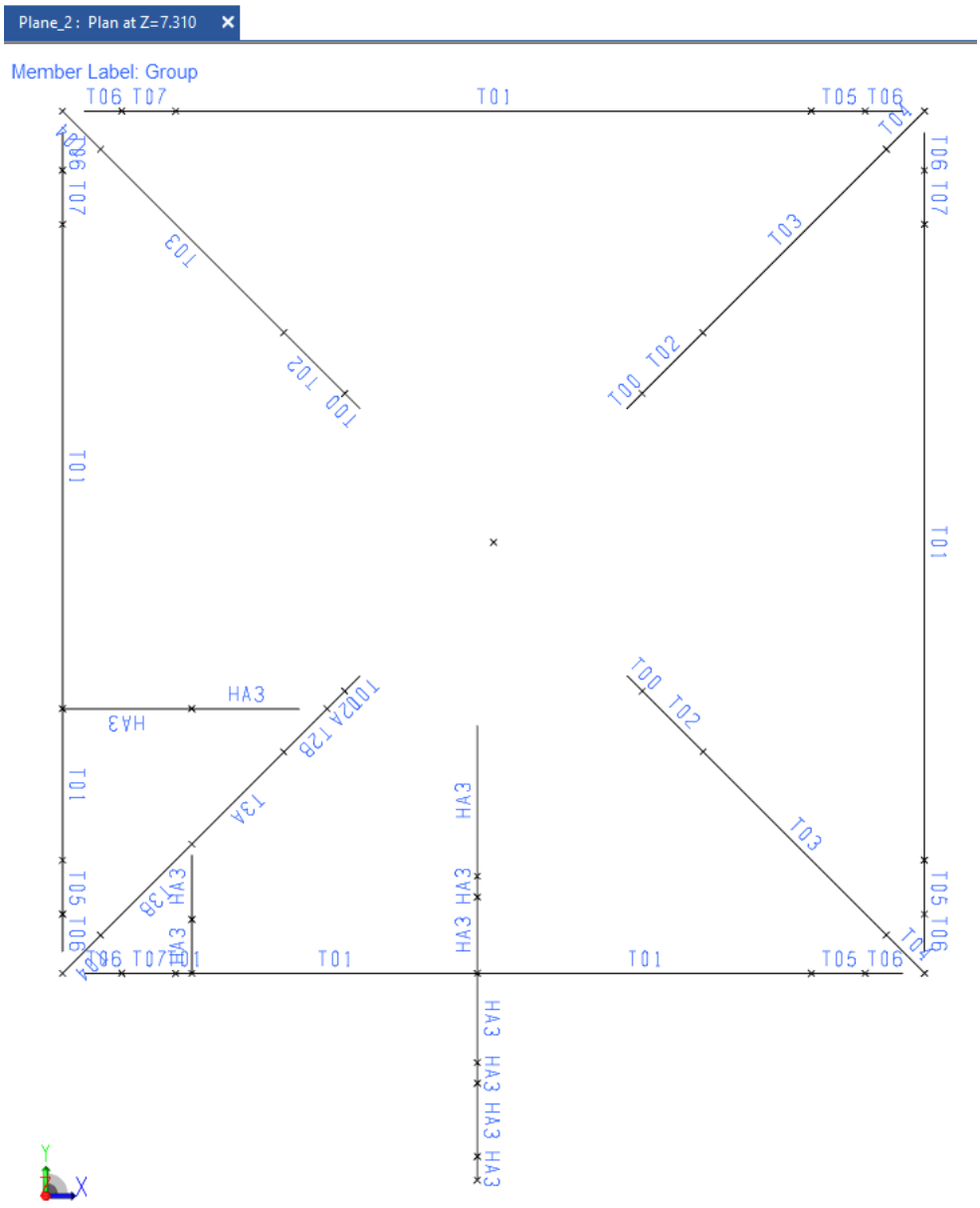
An * indicates that AX, J, IY and IZ are computed values, not user defined.

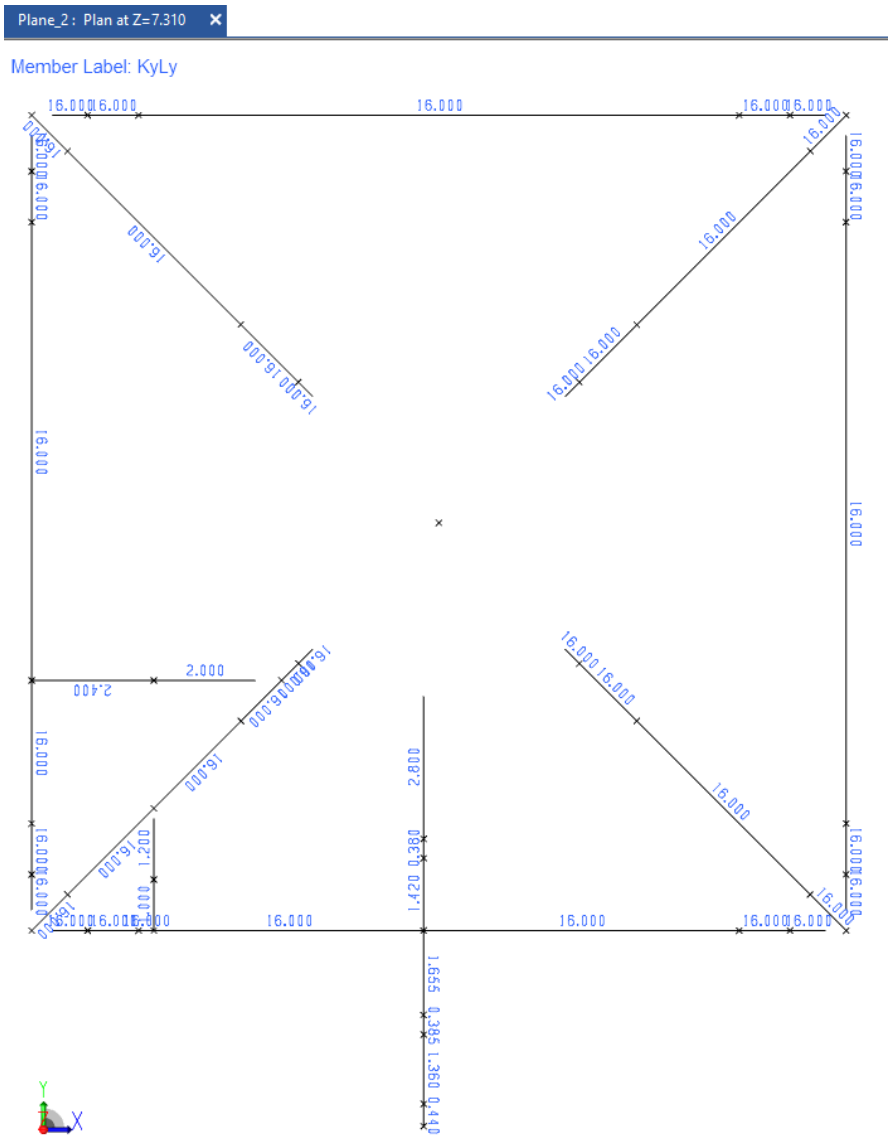
Plate Group Report

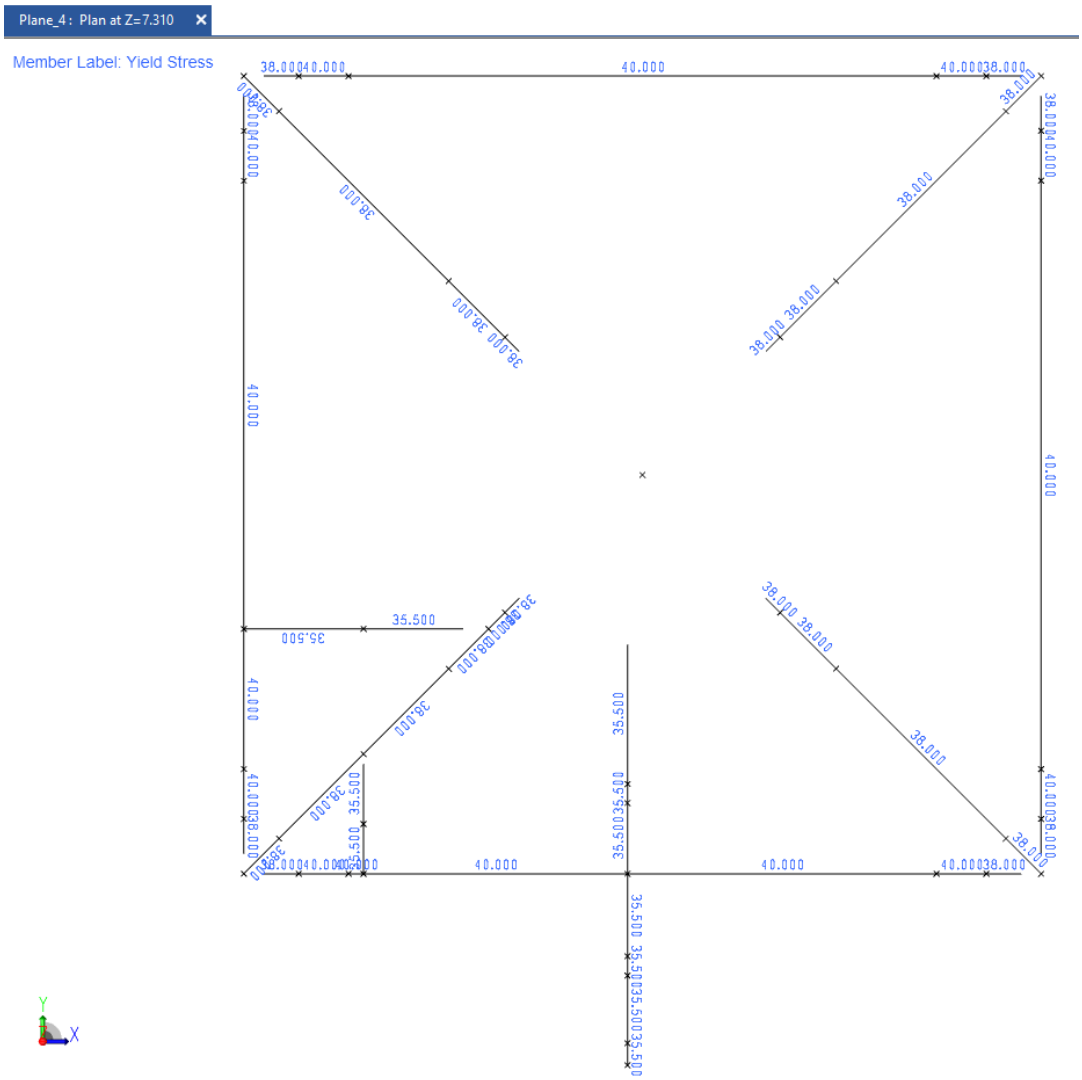
Name	Z Thickness (cm)	M	E (kN/cm2)	U	Fy (kN/cm2)	Z Offset (cm)	Section	Spacing (cm)	L	T	Density (tonne/m3)
M65	6.500	I	20500.000	0.300	38.000						7.850

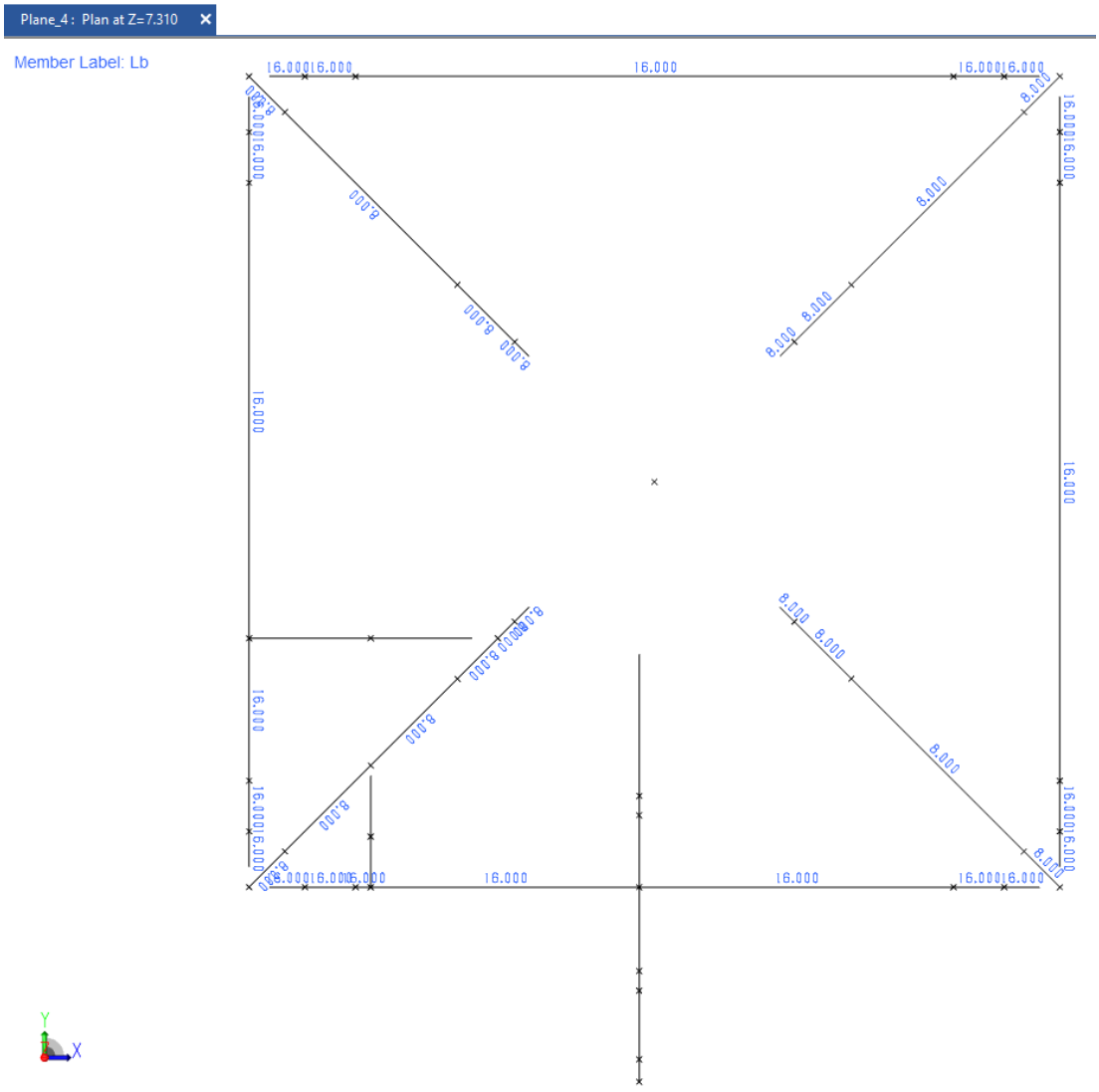
APPENDIX B - WIREFRAME SCHEMES

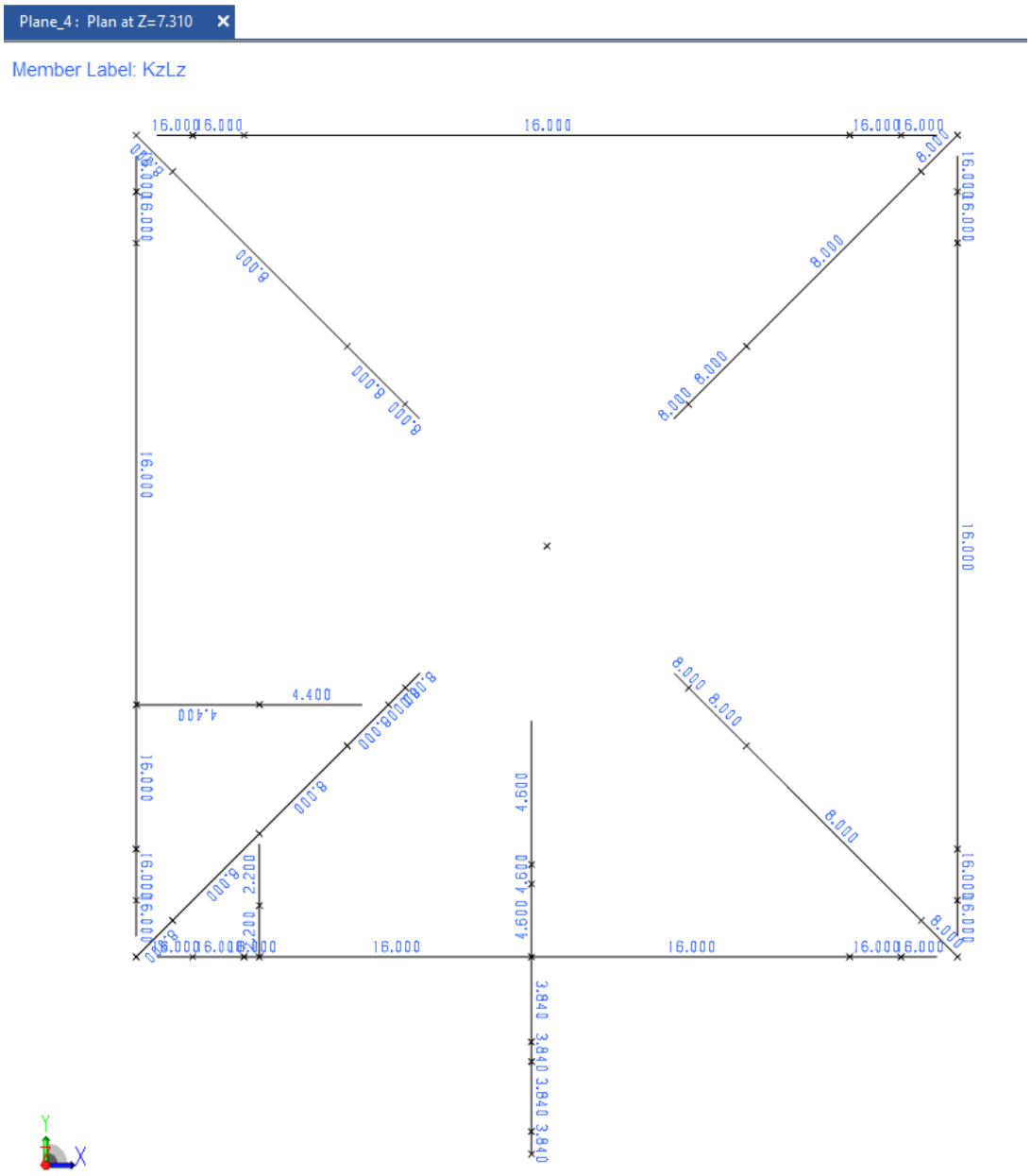


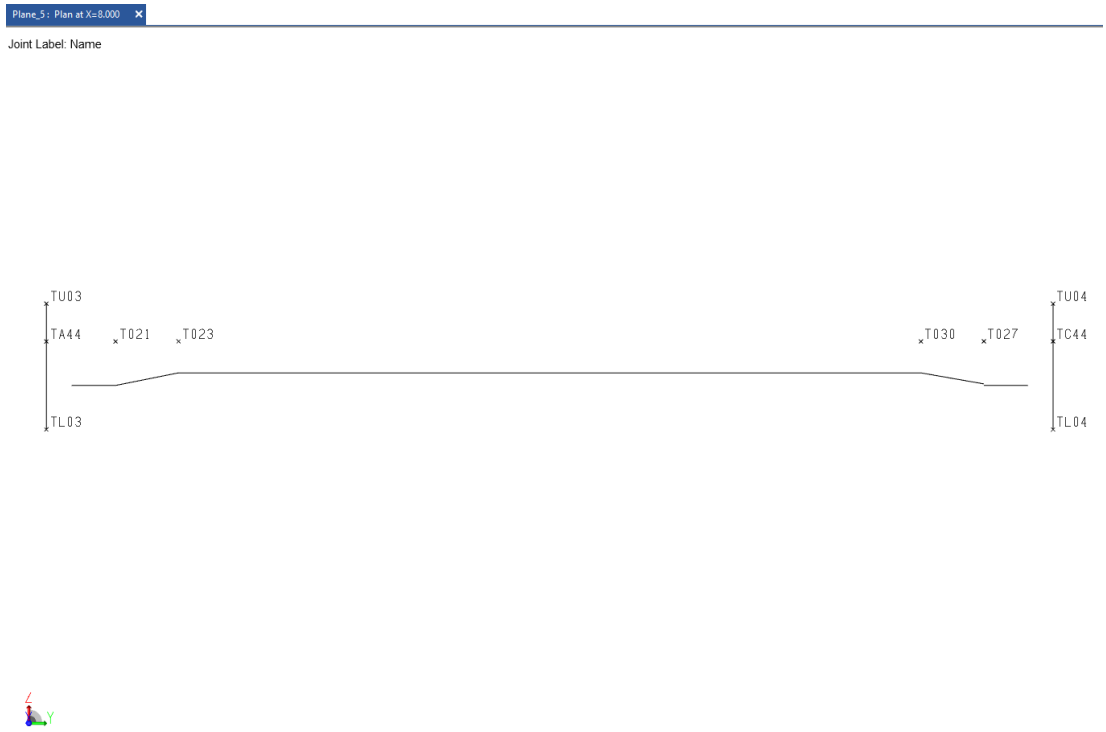

Plane_2 : Plan at Z=7.310
Member Label: Group
T06 T07
T01
T05 T06
T03
T00 T02
HA3
T01
T05 T06
T01
HA3 HA3
T01
T05 T06
HA3 HA3 HA3 HA3
Y
X

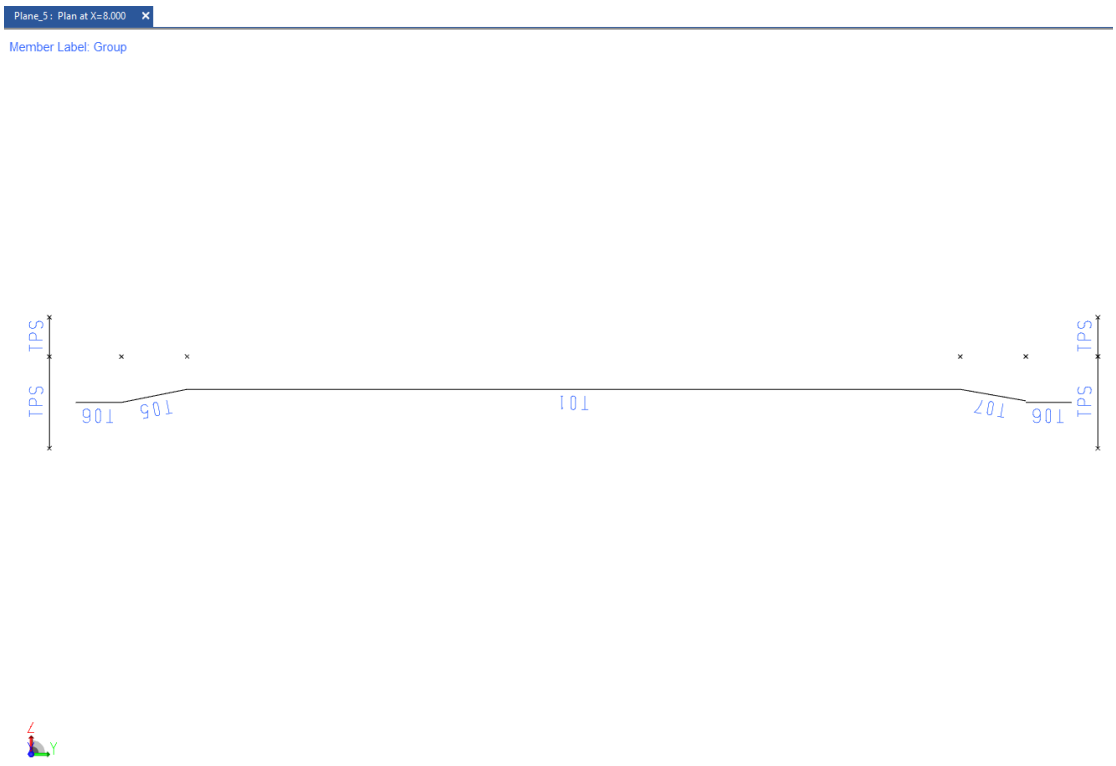

Plane_2 : Plan at Z=7.310
Member Label: KyLy


Plane_4 : Plan at Z=7.310
Member Label: Yield Stress
38.000
40.000
35.500
Y
X

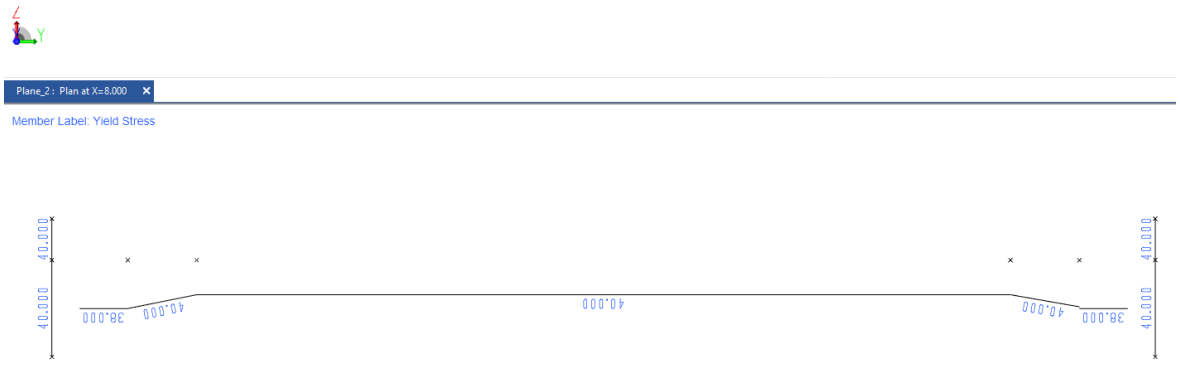

Plane_4 : Plan at Z=7.310
Member Label: Lb
16.000
8.000
Y
X

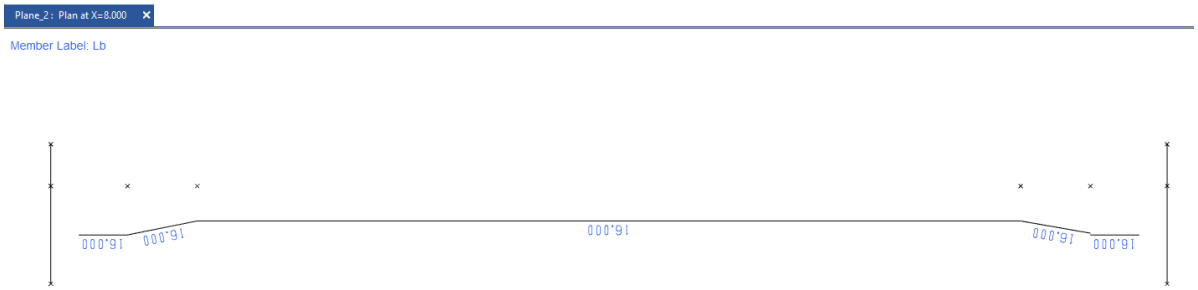

Plane_4 : Plan at Z=7.310
Member Label: KzLz

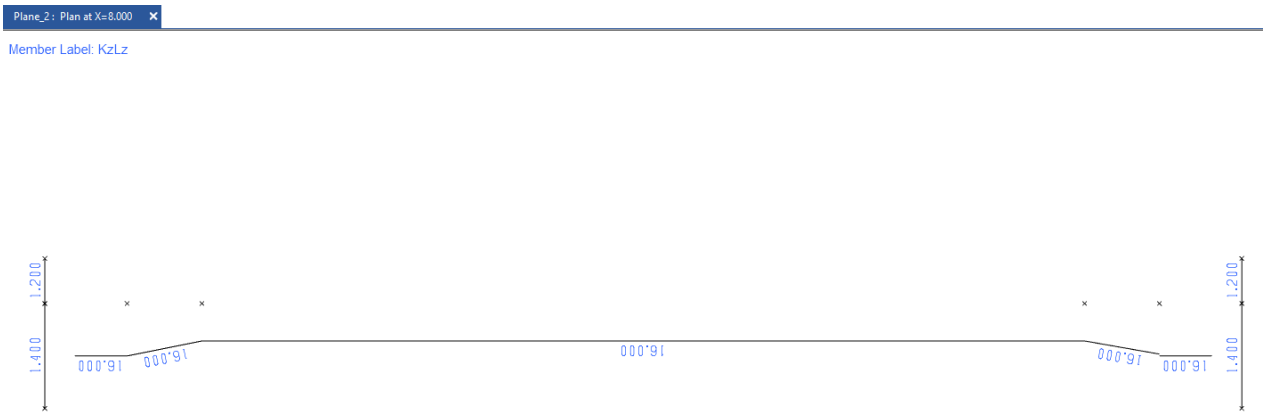

Plane_5 : Plan at X=8.000
Joint Label: Name
TU03
TA44
T021
T023
T030
T027
TU04
TC44
TL03
TL04
Z
Y

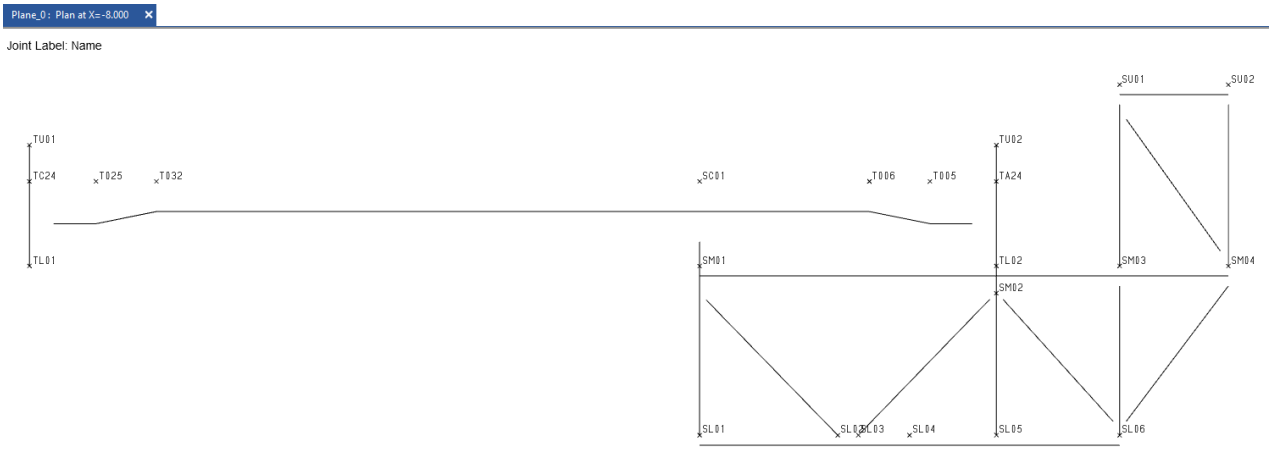

Plane_5 : Plan at X=8.000
Member Label: Group
TPS
TPS
106
105
101
107
106
TPS
TPS
Z
Y

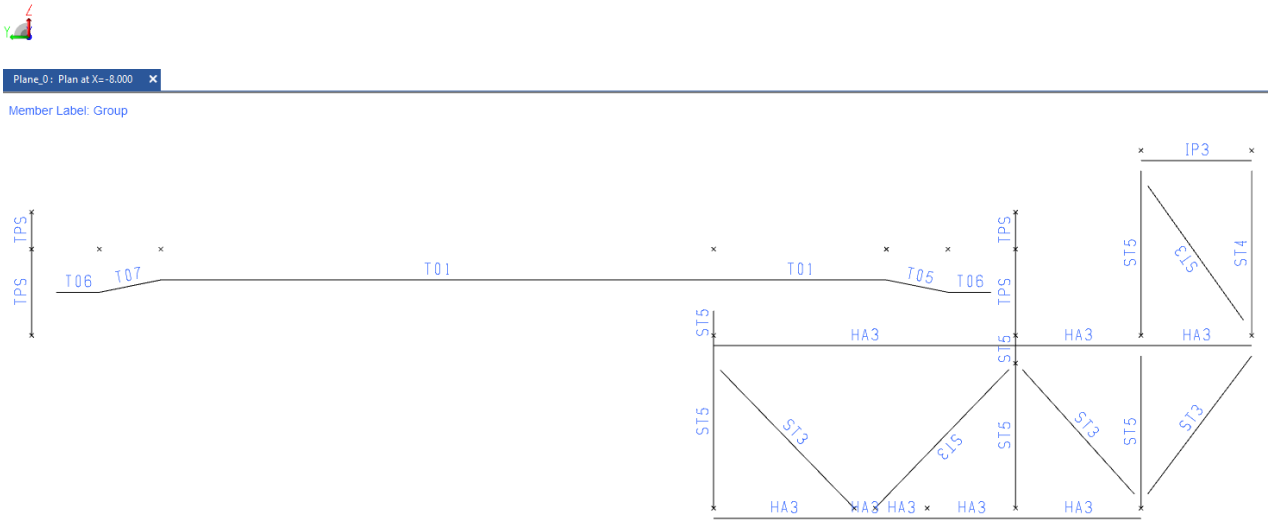

Plane_5 : Plan at X=8.000
Member Label: KyLy
1.400
1.200
16.000
16.000
16.000
16.000
1.400
1.200

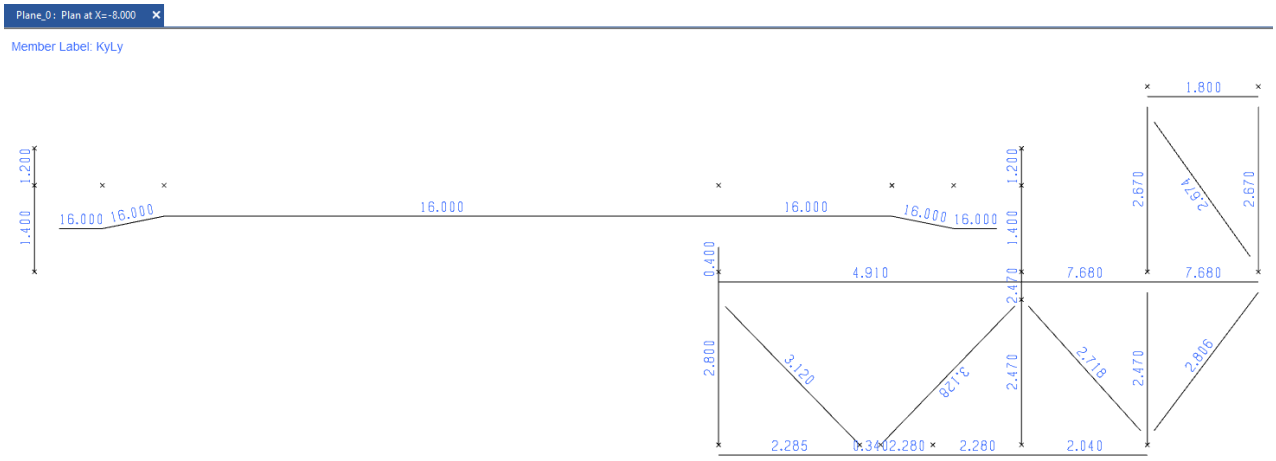

Plane_2 : Plan at X=8.000
Member Label: Yield Stress
40.000
40.000
38.000
40.000
40.000
40.000
38.000
40.000
40.000

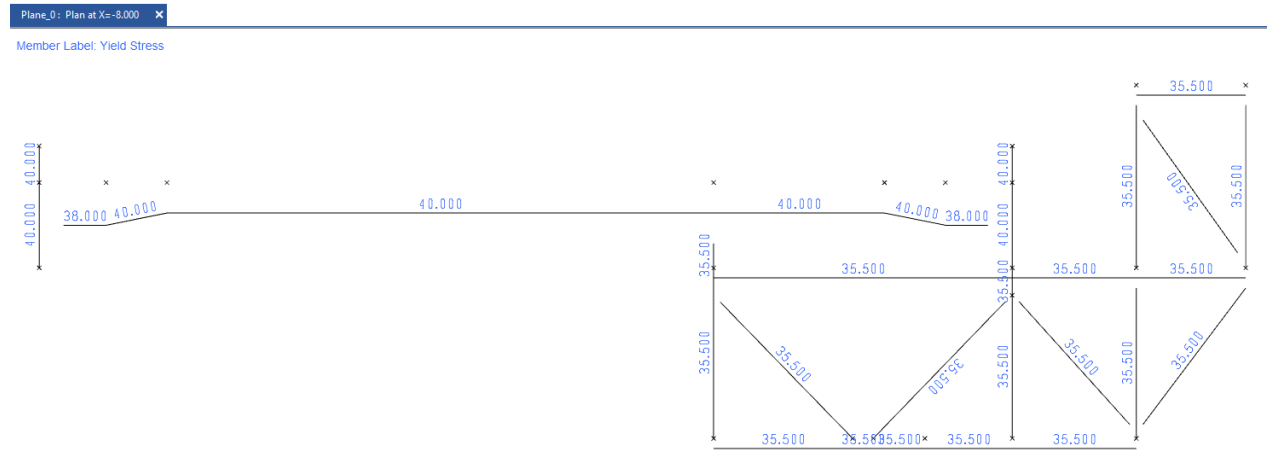

Plane_2 : Plan at X=8.000
Member Label: Lb
16.000
16.000
16.000
16.000
16.000

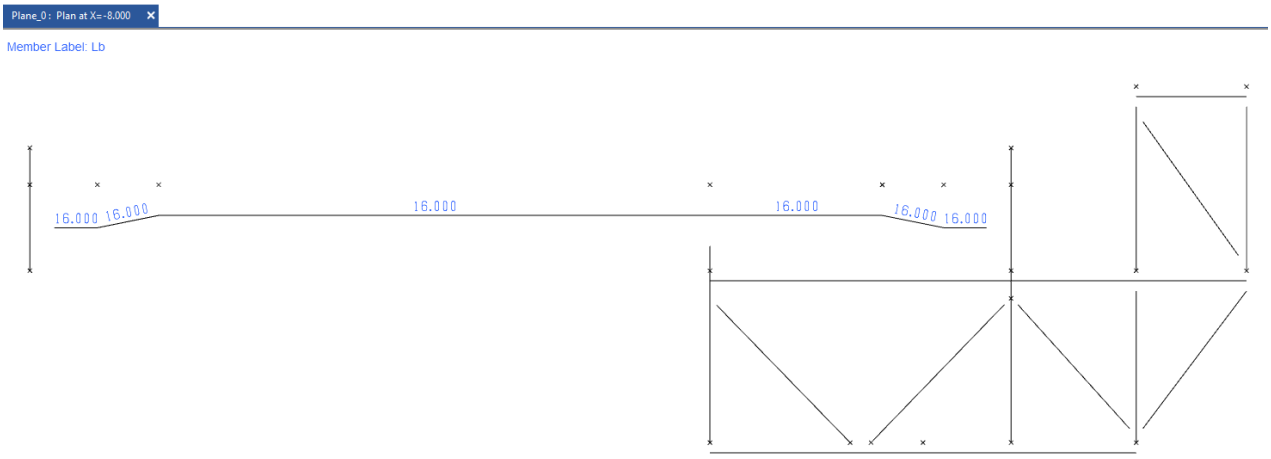

Plane_2 : Plan at X=8.000
Member Label: KzLz
1.200
1.400
16.000
16.000
16.000
16.000
16.000
1.200
1.400

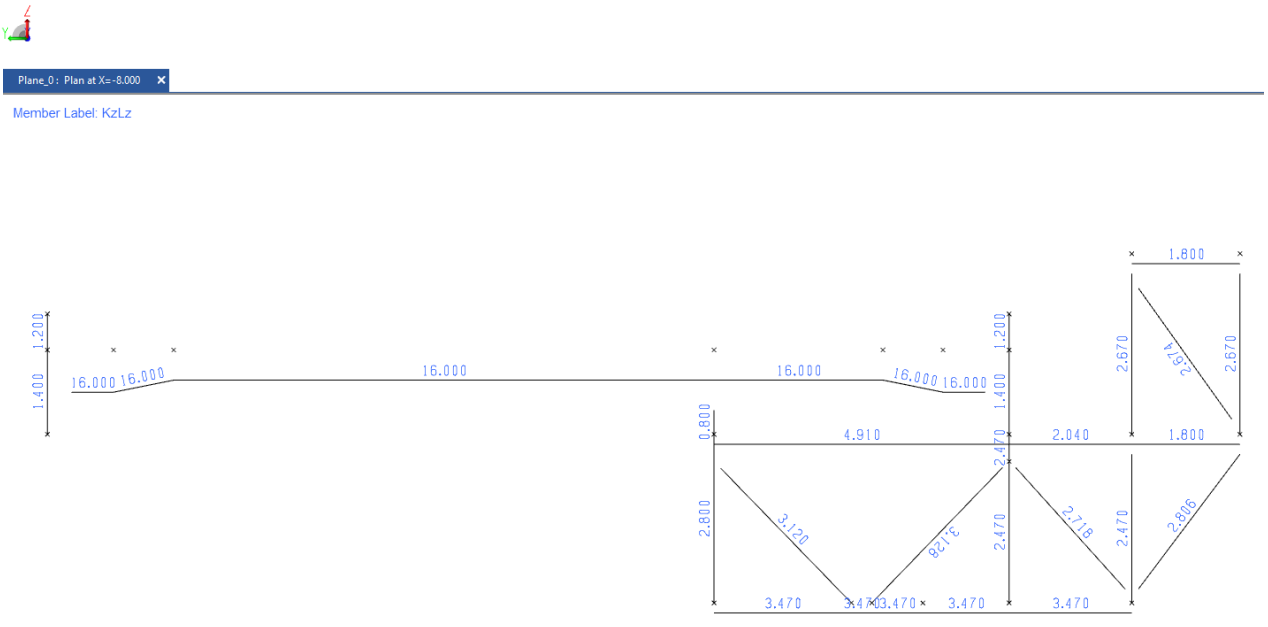

Plane_0 : Plan at X=-8.000
Joint Label: Name
TU01
TC24
T025
T032
SC01
T006
T005
TU02
TA24
SU01
SU02
TL01
SM01
TL02
SM03
SM04
SM02
SL01
SL02
SL03
SL04
SL05
SL06

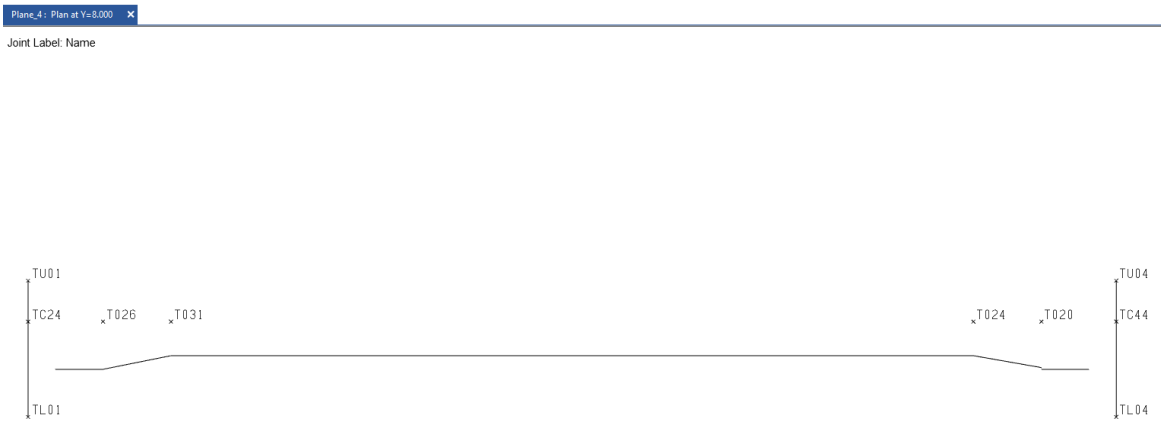

Plane_0 : Plan at X=-8.000
Member Label: Group
TPS
T06
T07
T01
T01
T05
T06
TPS
IP3
ST5
ST3
ST4
HA3
ST5
ST3
HA3

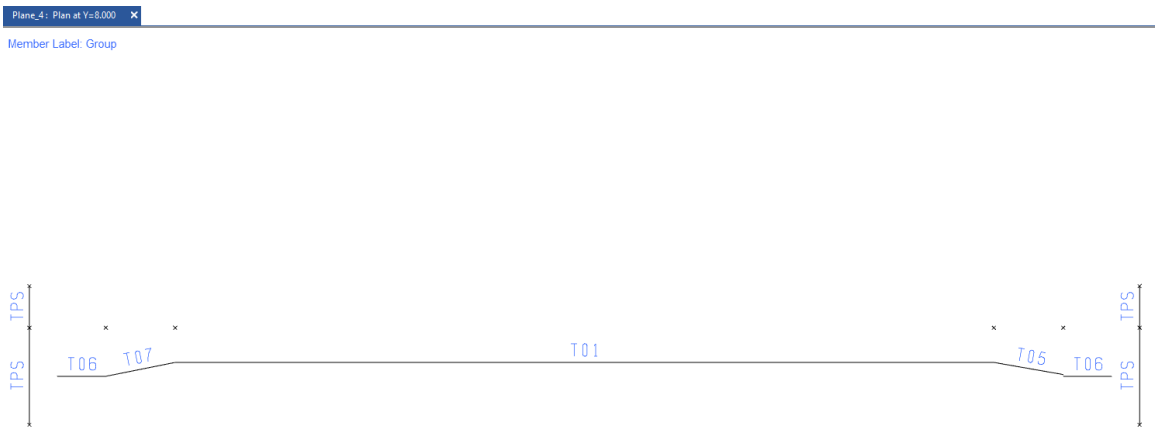

Plane_0 : Plan at X=-8.000
Member Label: KyLy
1.200
1.400
16.000
16.000
16.000
16.000
16.000
16.000
1.800
2.670
2.670
2.670
0.400
4.910
7.680
7.680
2.800
3.120
3.128
2.470
2.718
2.470
2.806
2.285
2.280
2.280
2.040

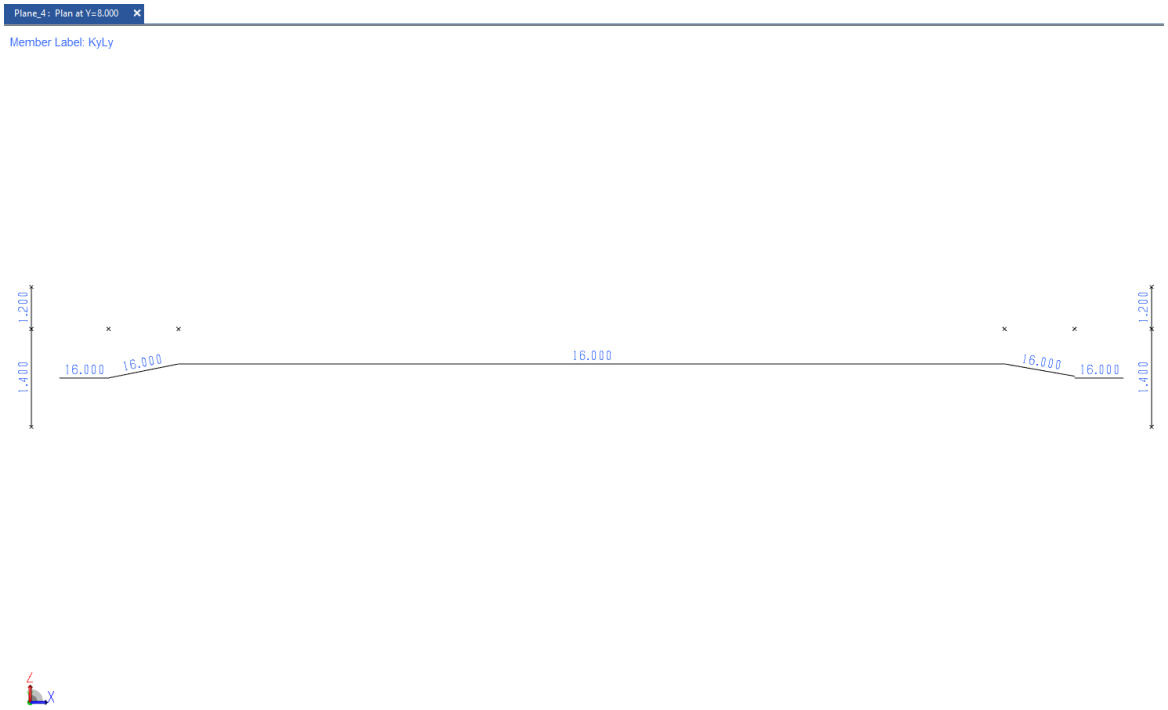

Plane_0 : Plan at X=-8.000
Member Label: Yield Stress
40.000
40.000
38.000
40.000
40.000
40.000
40.000
38.000
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500

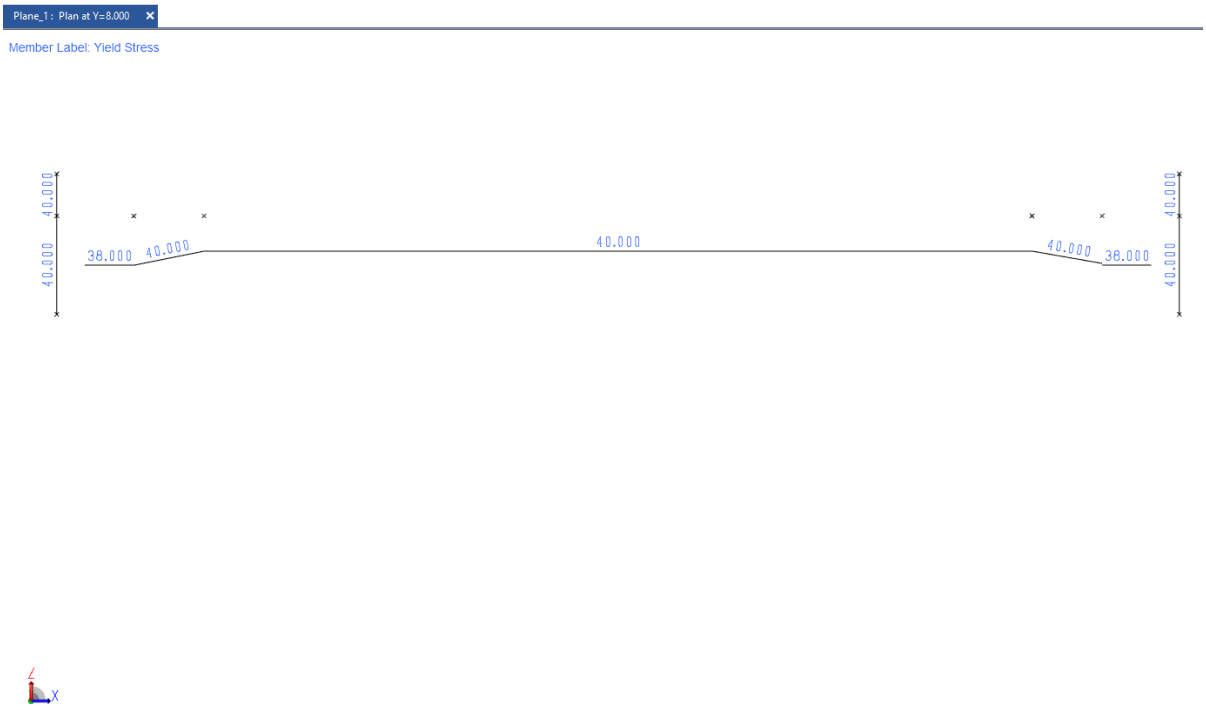

Plane_0 : Plan at X=-8.000
Member Label: Lb
16.000
16.000
16.000
16.000
16.000
16.000
16.000

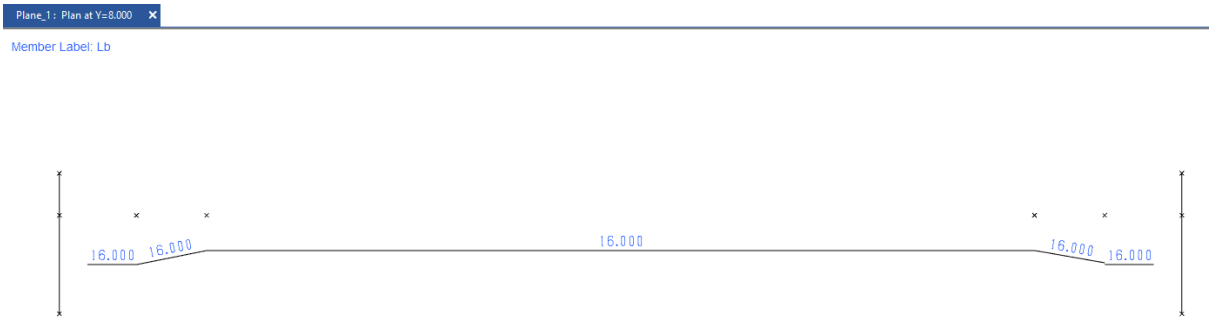

Plane_0 : Plan at X=-8.000
Member Label: KzLz
1.200
1.400
16.000
16.000
16.000
16.000
16.000
16.000
1.800
2.670
2.670
0.800
4.910
2.040
1.800
2.800
3.120
3.128
2.718
2.806
3.470
3.470
3.470
3.470
3.470

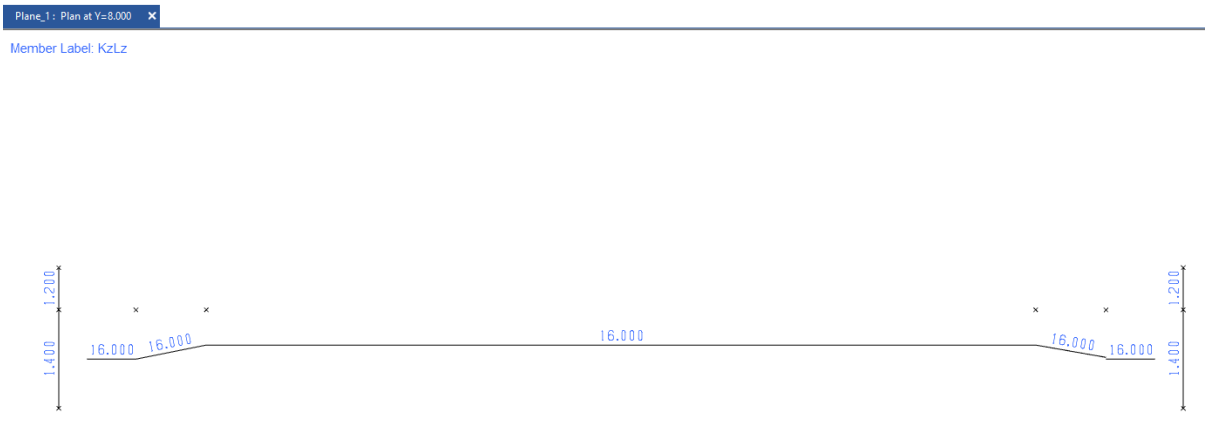

Plane_4 : Plan at Y=8.000
Joint Label: Name
TU01
TC24
T026
T031
T024
T020
TU04
TC44
TL01
TL04

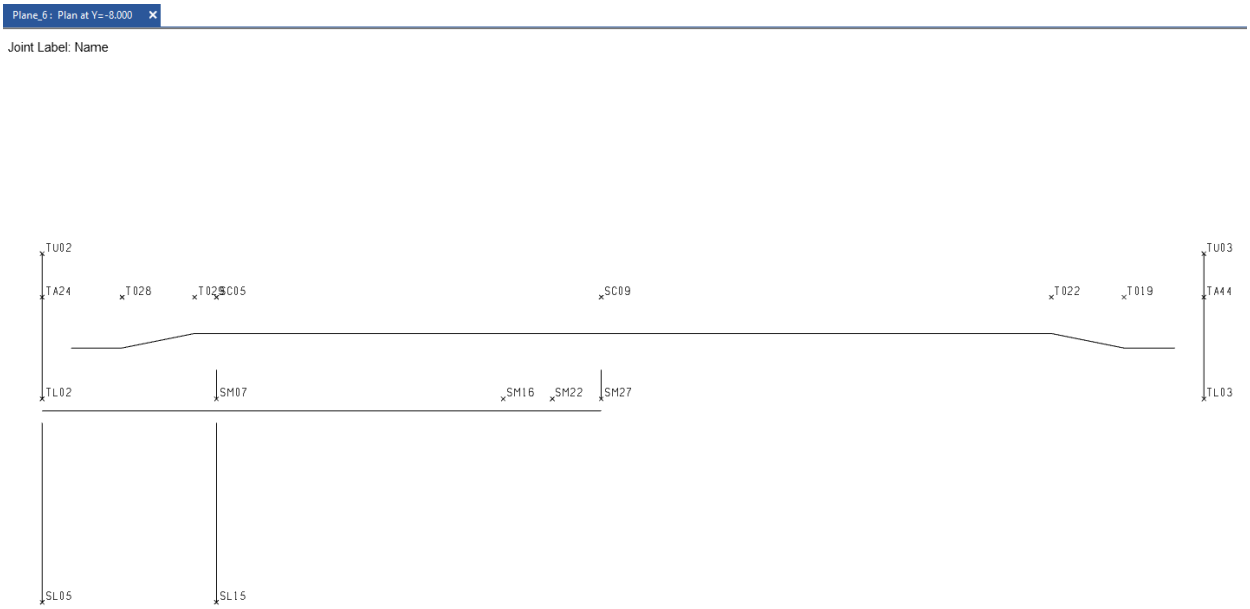

Plane_4 : Plan at Y=8.000
Member Label: Group
TPS
TPS
T06
T07
T01
T05
T06
TPS
TPS

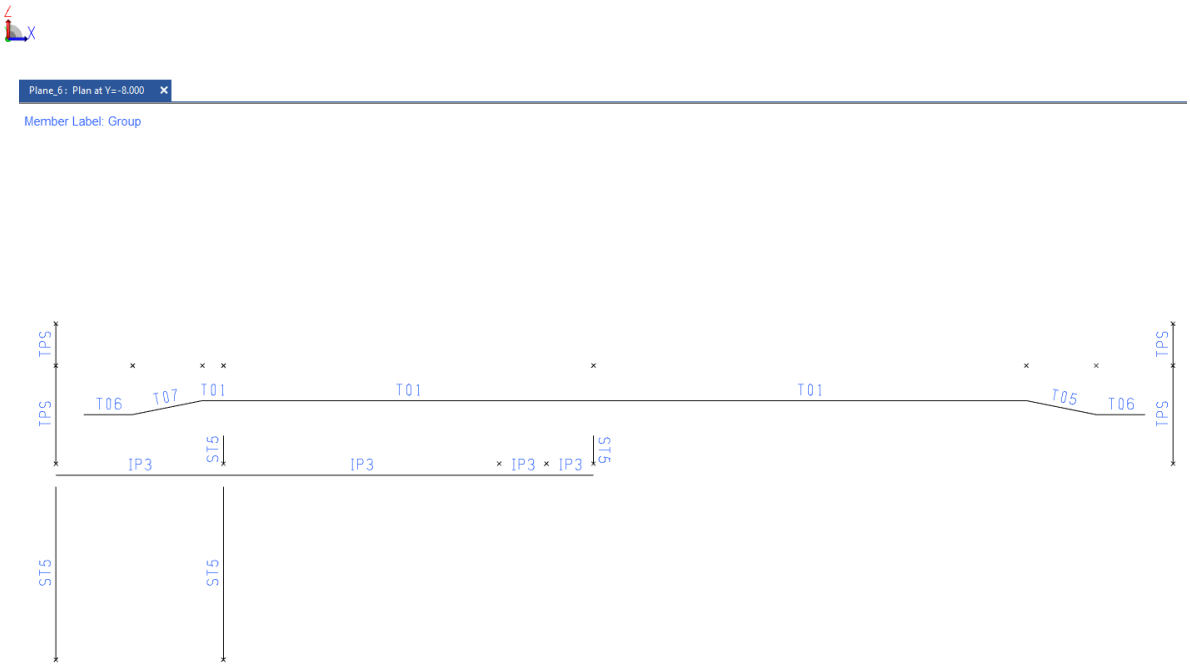

Plane_4 : Plan at Y=8.000
Member Label: KyLy
1.200
1.400
16.000
16.000
16.000
16.000
16.000
1.200
1.400
Z
X

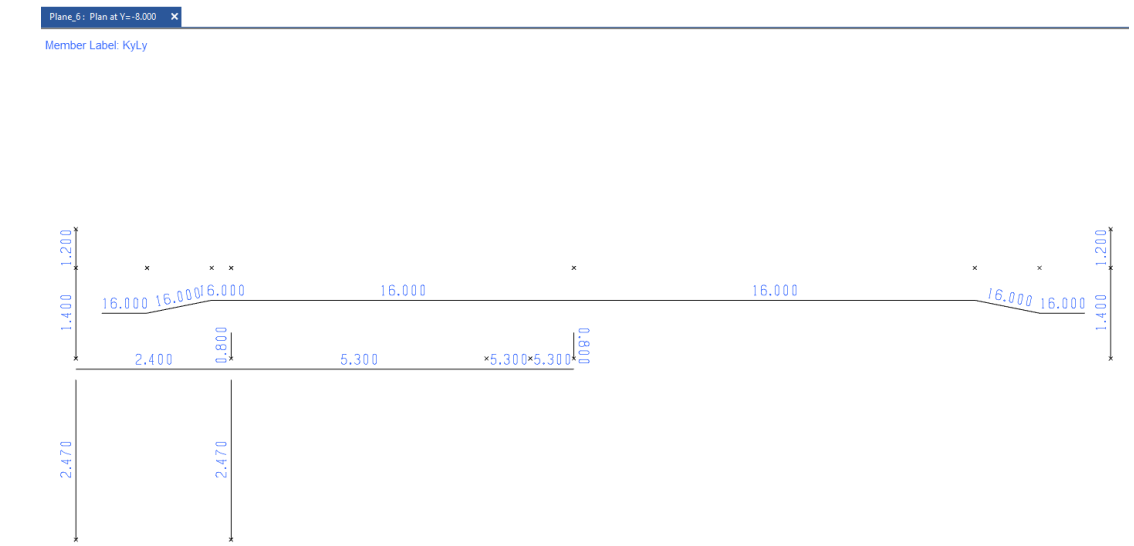

Plane_1 : Plan at Y=8.000
Member Label: Yield Stress
40.000
40.000
38.000
40.000
40.000
40.000
40.000
38.000
40.000
40.000
Z
X

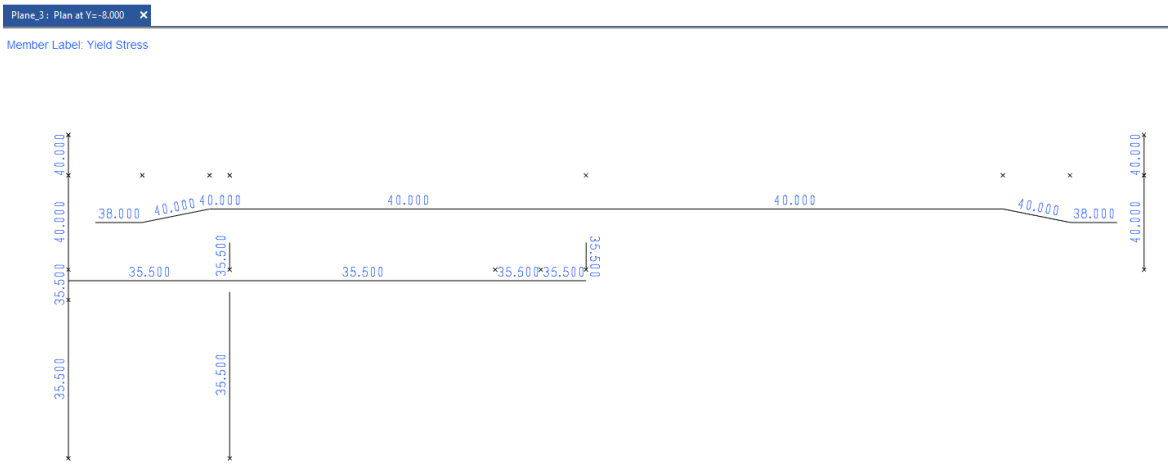

Plane_1 : Plan at Y=8.000
Member Label: Lb
16.000
16.000
16.000
16.000
16.000

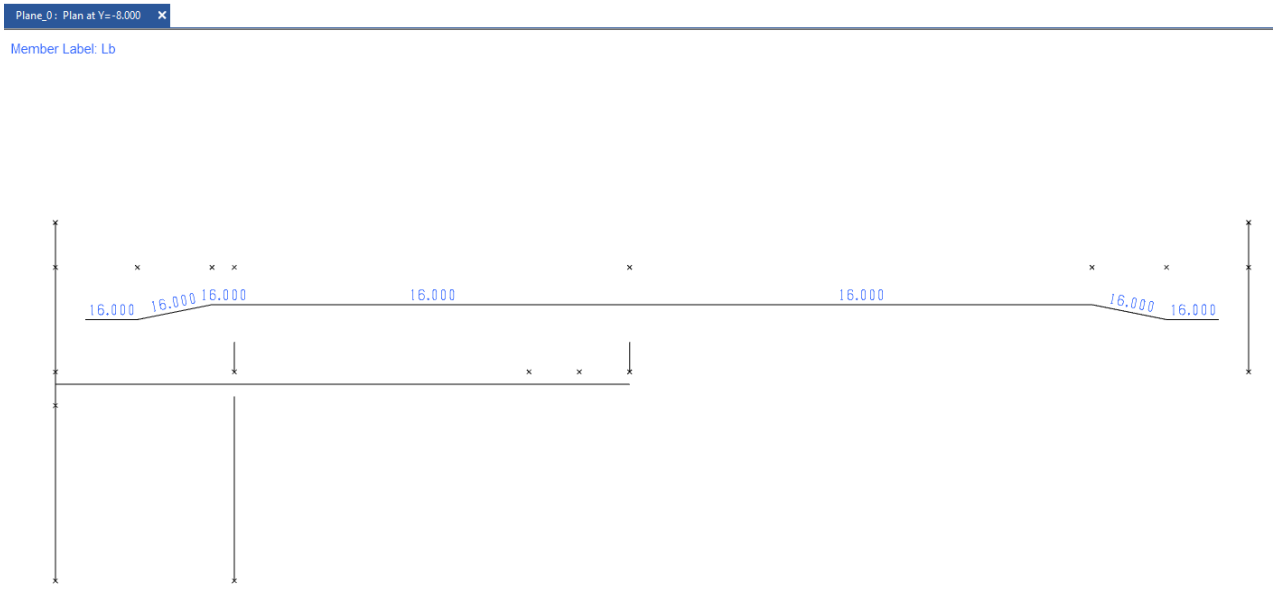

Plane_1 : Plan at Y=8.000
Member Label: KzLz
1.200
1.400
16.000
16.000
16.000
16.000
16.000
1.200
1.400

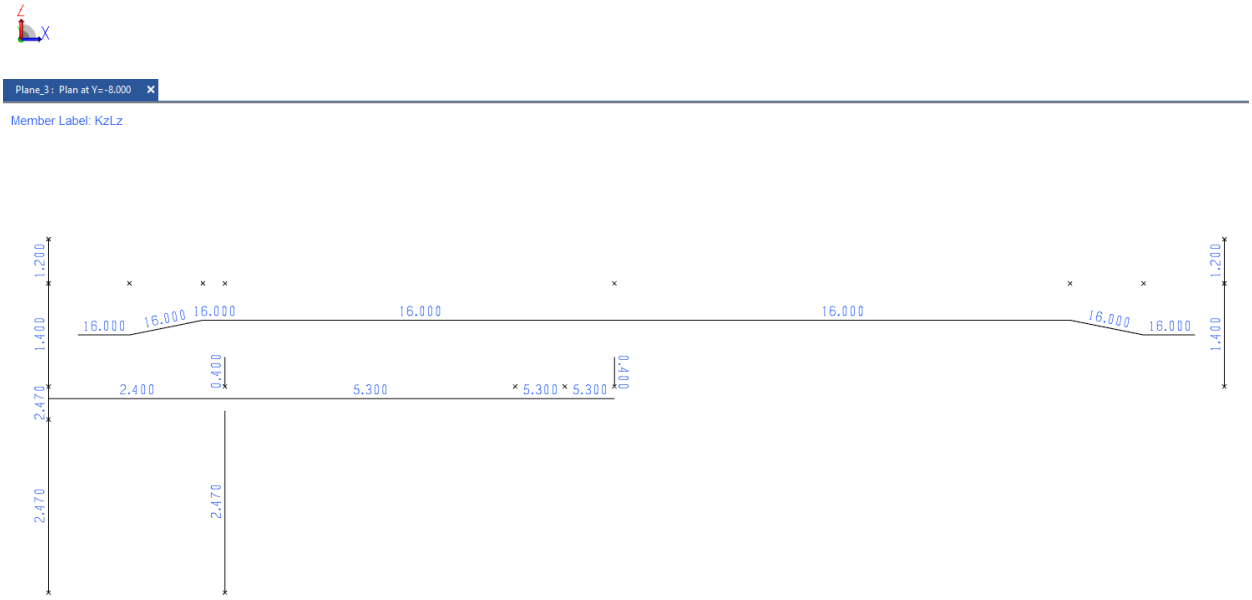

Plane_6 : Plan at Y=-8.000
Joint Label: Name
TU02
TA24
T028
T025
SC05
SC09
T022
T019
TU03
TA44
TL02
SM07
SM16
SM22
SM27
TL03
SL05
SL15

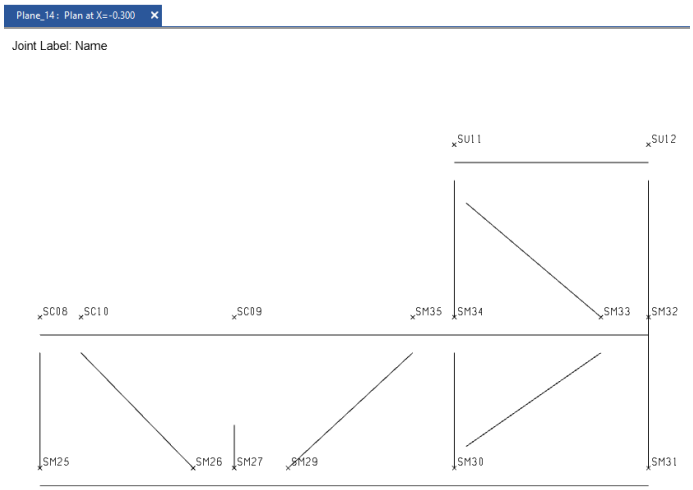

Plane_6 : Plan at Y=-8.000
Member Label: Group
TPS
TPS
T06
T07
T01
T01
T01
T05
T06
TPS
TPS
ST5
IP3
IP3
IP3
IP3
ST5
ST5
ST5

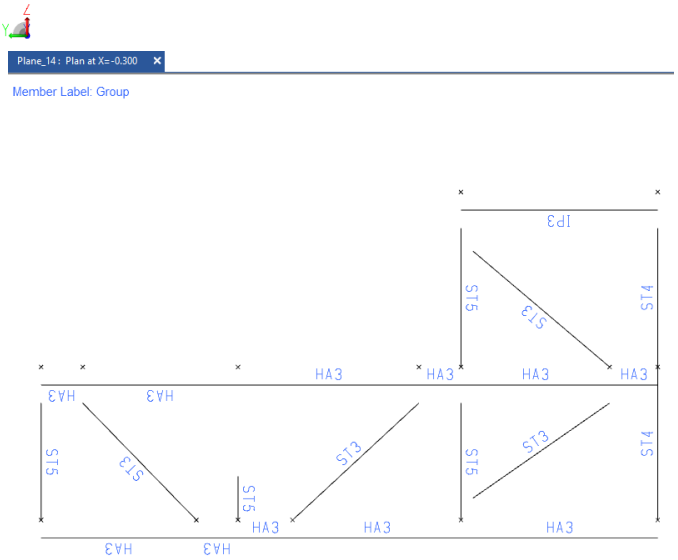

Plane_6 : Plan at Y=-8.000
Member Label: KyLy
1.200
1.400
16.000
16.000
16.000
16.000
16.000
16.000
16.000
1.200
1.400
0.800
2.400
5.300
5.300
5.300
0.800
2.470
2.470

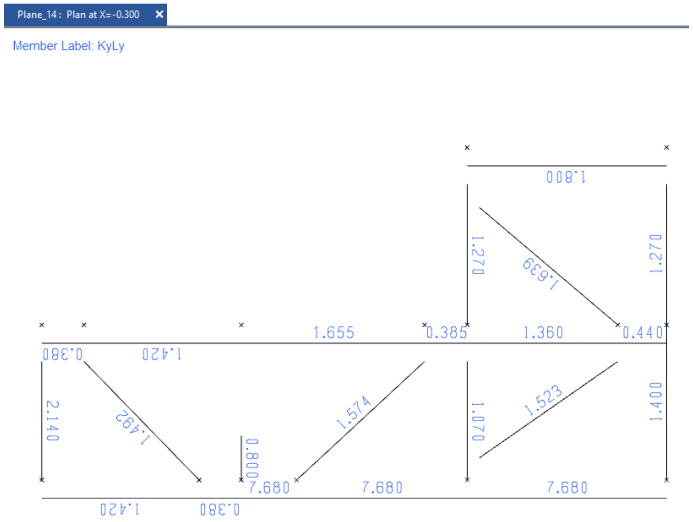

Plane_3 : Plan at Y=-8.000
Member Label: Yield Stress
40.000
40.000
38.000
40.000
40.000
40.000
40.000
38.000
40.000
40.000
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500

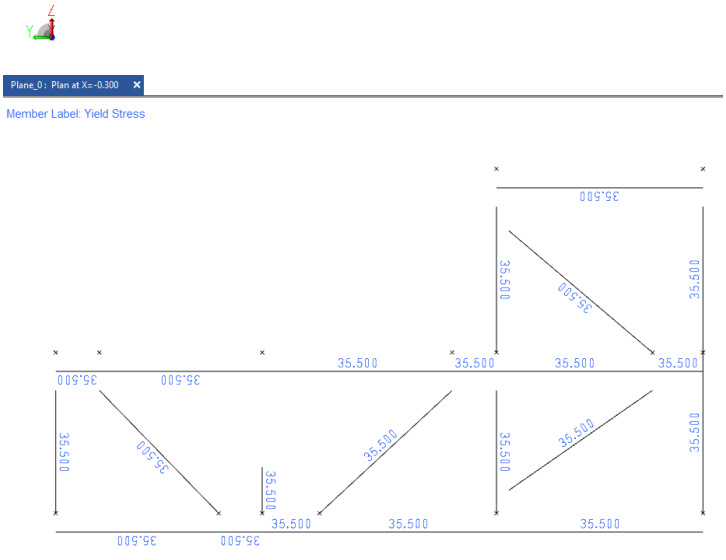

Plane_0 : Plan at Y=-8.000
Member Label: Lb
16.000
16.000
16.000
16.000
16.000
16.000
16.000

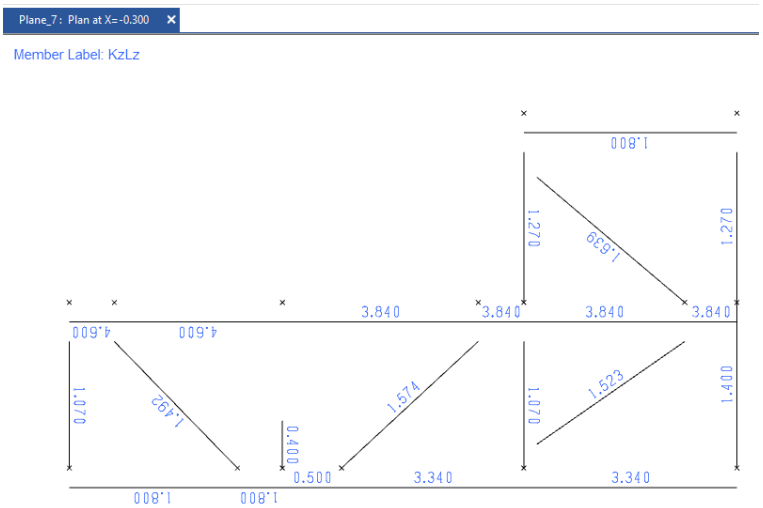

Plane_3 : Plan at Y=-8.000
Member Label: KzLz
1.200
1.400
2.470
2.470
16.000
16.000
16.000
16.000
16.000
16.000
16.000
1.200
1.400
2.400
0.400
5.300
5.300
5.300
0.400
2.470


Plane_14 : Plan at X=-0.300
Joint Label: Name
SU11
SU12
SC08
SC10
SC09
SM35
SM34
SM33
SM32
SM25
SM26
SM27
SM29
SM30
SM31

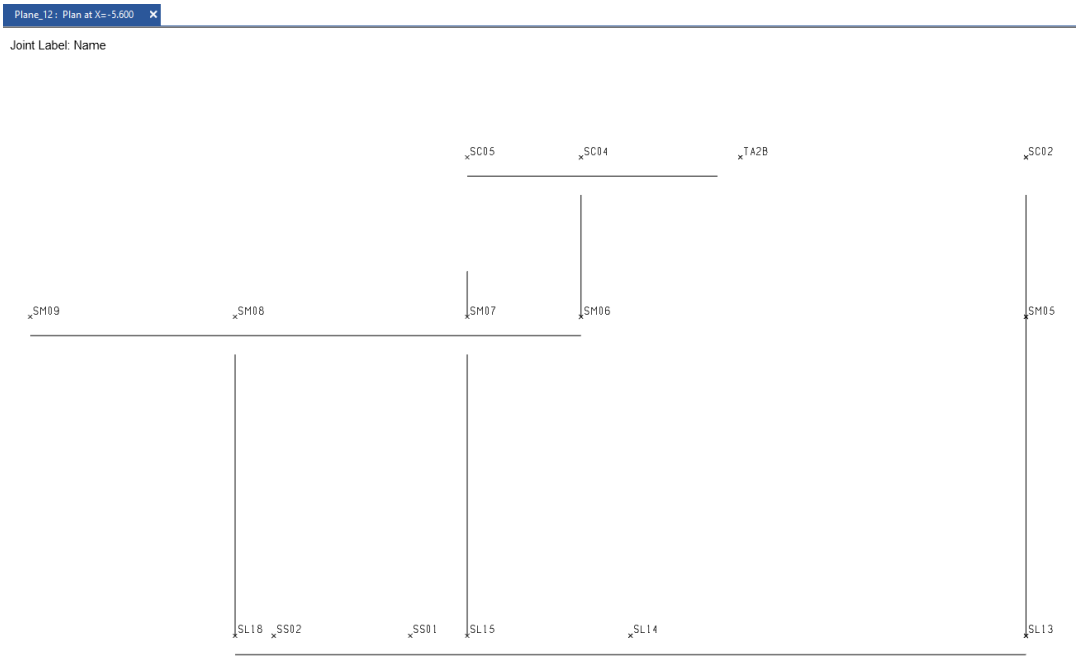

Plane_14 : Plan at X=-0.300
Member Label: Group
HA3
ST5
ST2
ST4
ST3

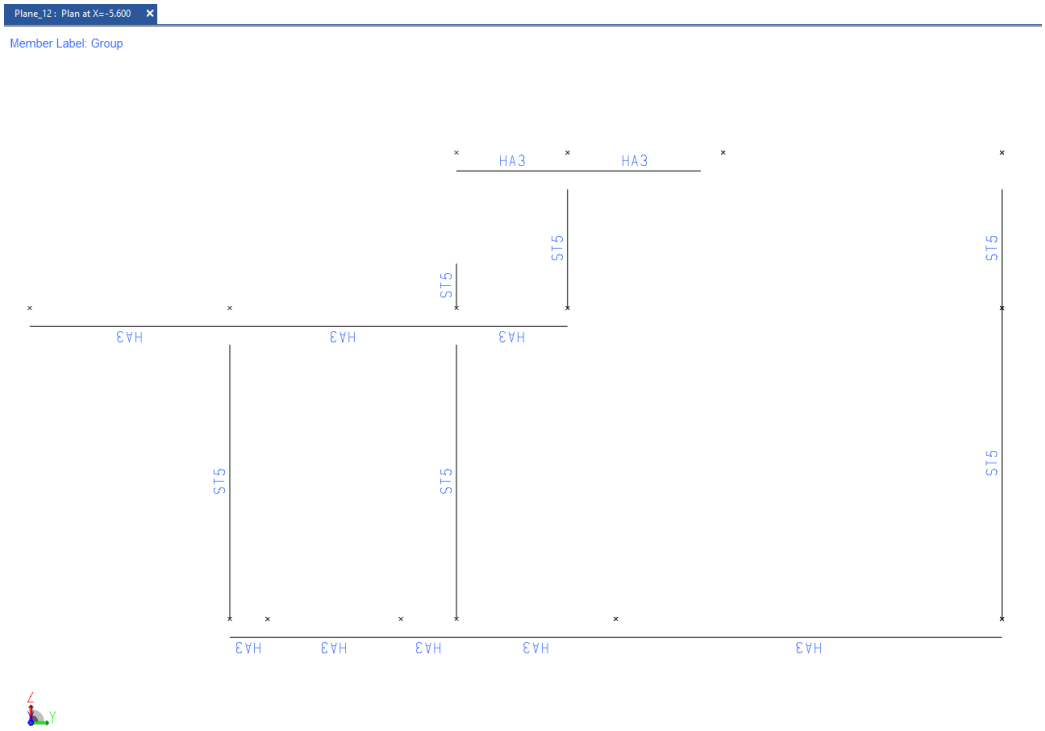

Plane_14 : Plan at X=-0.300
Member Label: KyLy
1.800
1.270
1.639
1.270
1.655
0.385
1.360
0.440
0.380
1.420
2.140
1.492
0.800
1.574
1.070
1.523
1.400
7.680
7.680
7.680

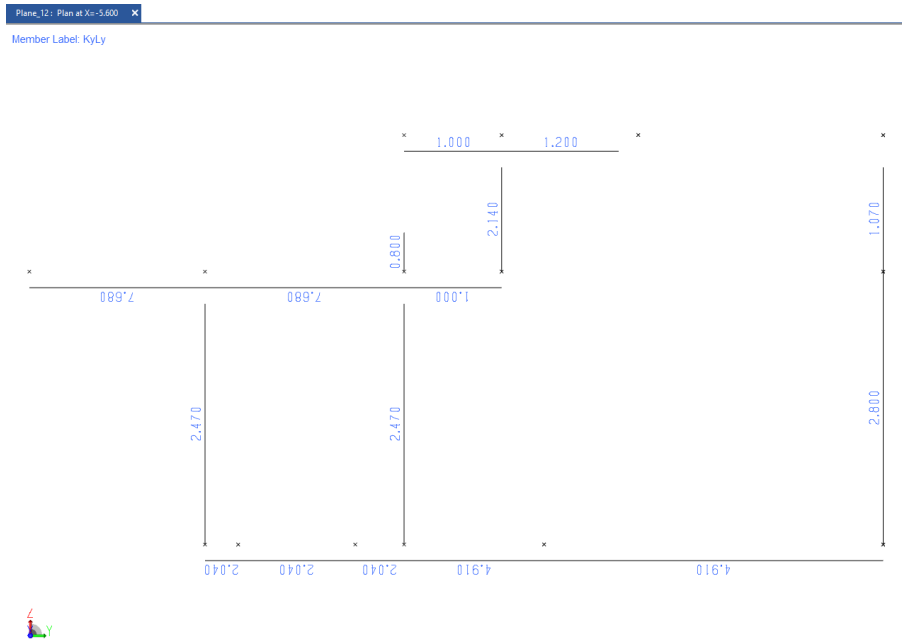

Plane_0 : Plan at X=-0.300
Member Label: Yield Stress
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
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35.500
35.500
35.500
35.500

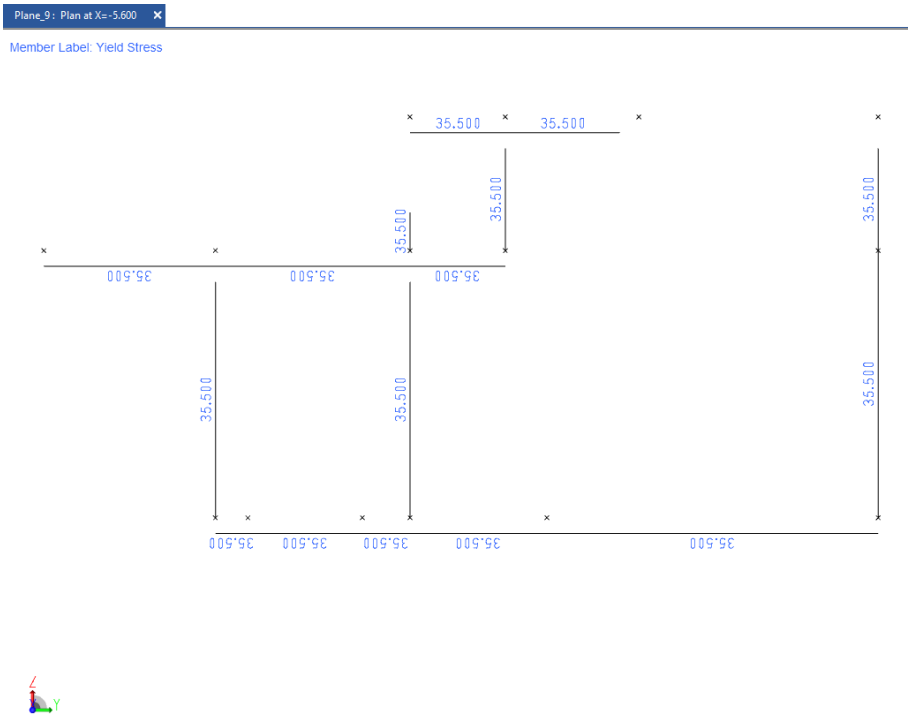

Plane_7 : Plan at X=-0.300
Member Label: KzLz
1.800
1.270
1.639
1.270
3.840
3.840
3.840
3.840
4.600
4.600
1.070
1.492
0.400
1.574
1.070
1.523
1.400
0.500
3.340
3.340
1.800
1.800

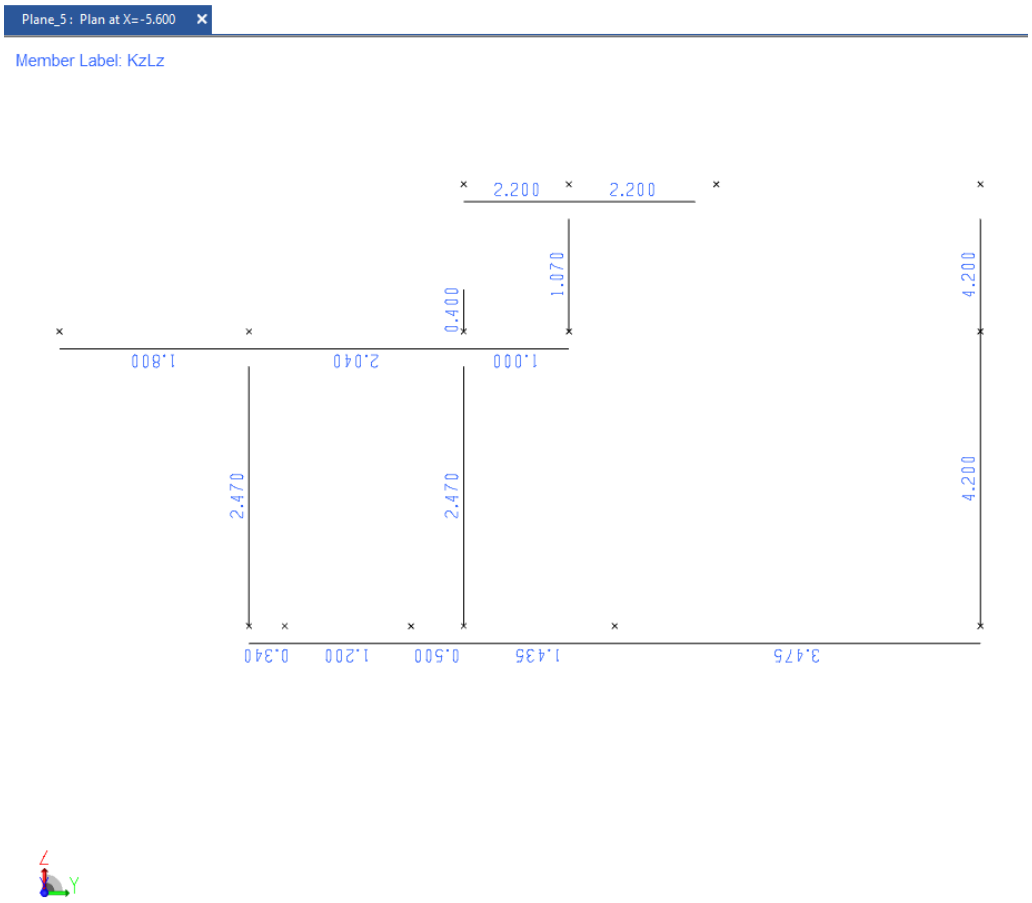


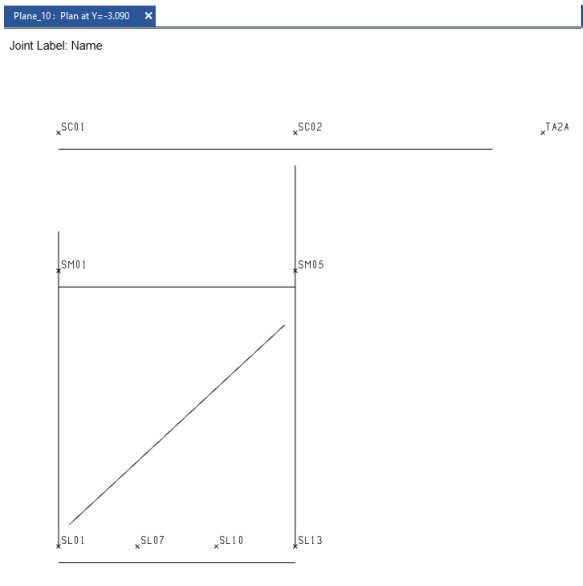

Plane_12 : Plan at X=-5.600
Joint Label: Name
SC05
SC04
TA2B
SC02
SM09
SM08
SM07
SM06
SM05
SL18
SS02
SS01
SL15
SL14
SL13
Y

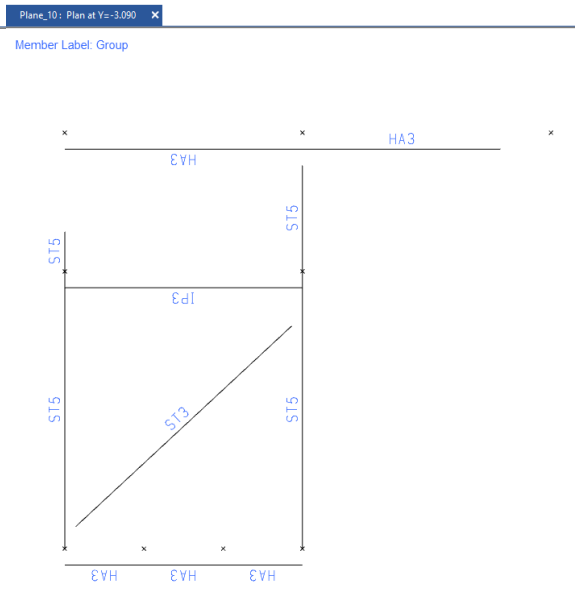

Plane_12 : Plan at X=-5.600
Member Label: Group
HA3
HA3
ST5
ST5
ST5
ST5
ST5
HA3
HA3
HA3
HA3
HA3
HA3
HA3
Y

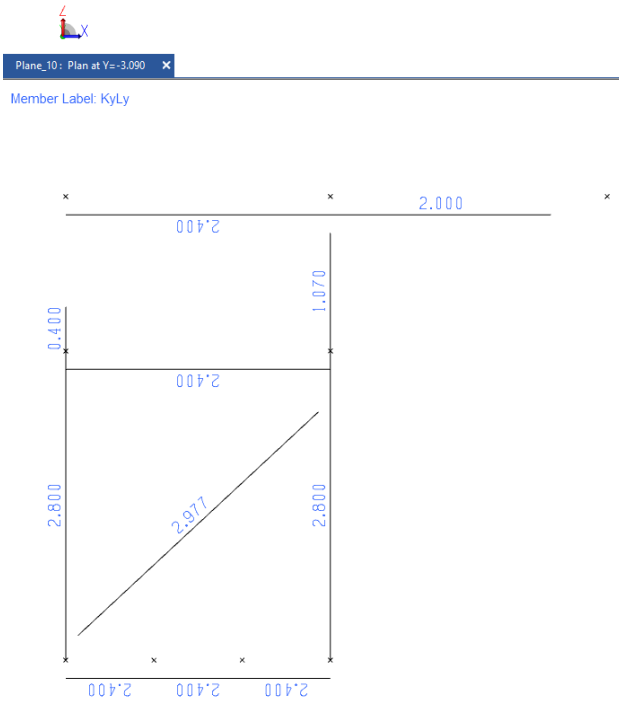

Plane_12 : Plan at X=-5.600
Member Label: KyLy
1.000
1.200
2.140
0.800
1.070
7.680
7.680
1.000
2.470
2.470
2.800
2.040
2.040
2.040
4.910
4.910

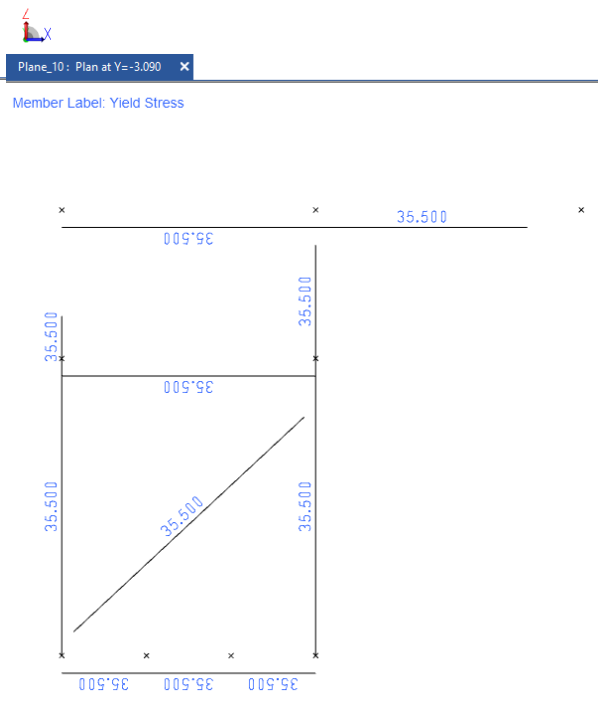

Plane_9 : Plan at X=-5.600
Member Label: Yield Stress
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500

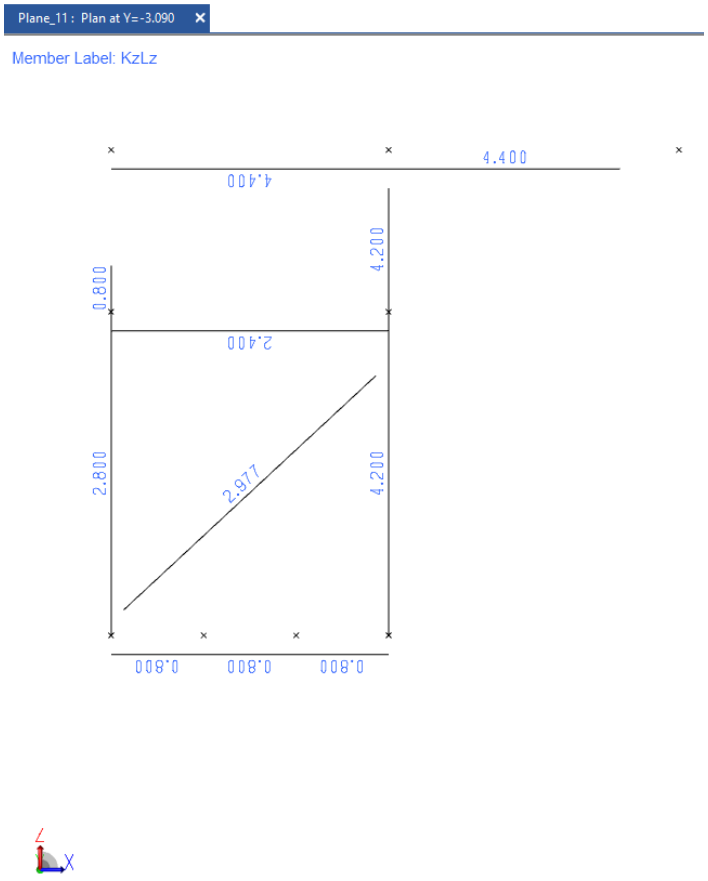

Plane_5 : Plan at X=-5.600
Member Label: KzLz
2.200
2.200
1.070
0.400
4.200
1.800
2.040
1.000
2.470
2.470
4.200
0.340
1.200
0.500
1.435
3.475
Z
Y

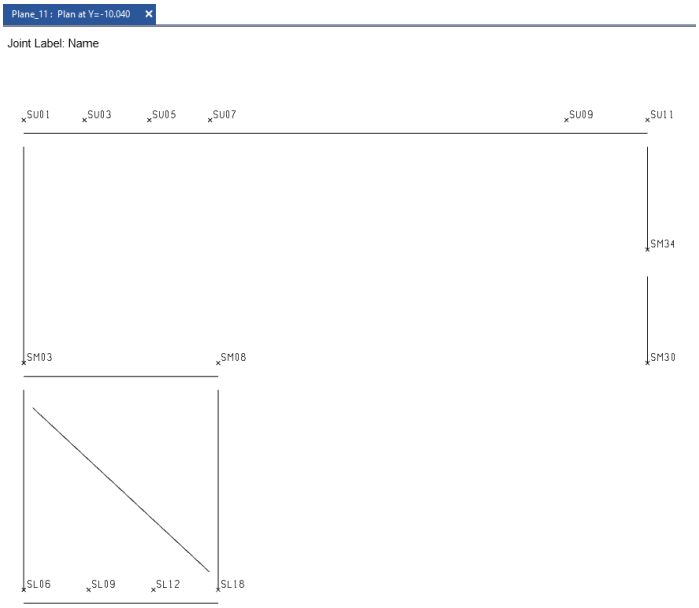

Plane_10 : Plan at Y=-3.090
Joint Label: Name
SC01
SC02
TA2A
SM01
SM05
SL01
SL07
SL10
SL13

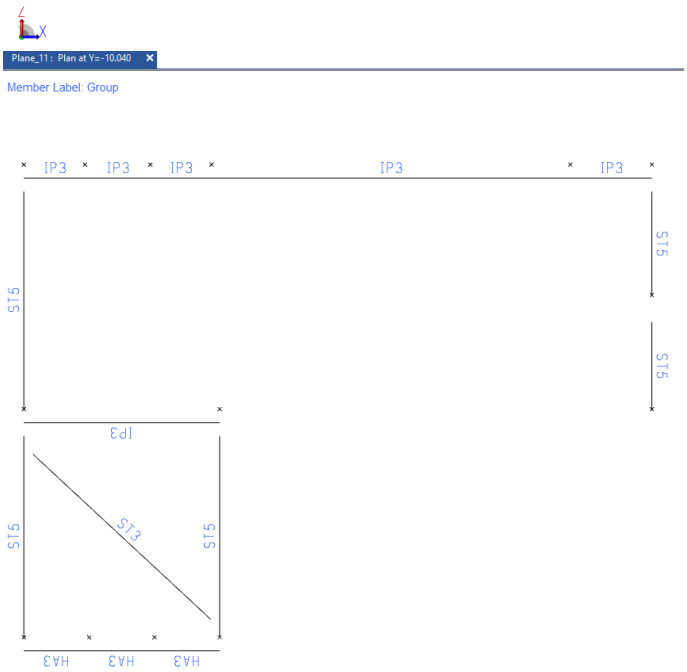

Plane_10 : Plan at Y=-3.090
Member Label: Group
HA3
ST5
JP3
ST3

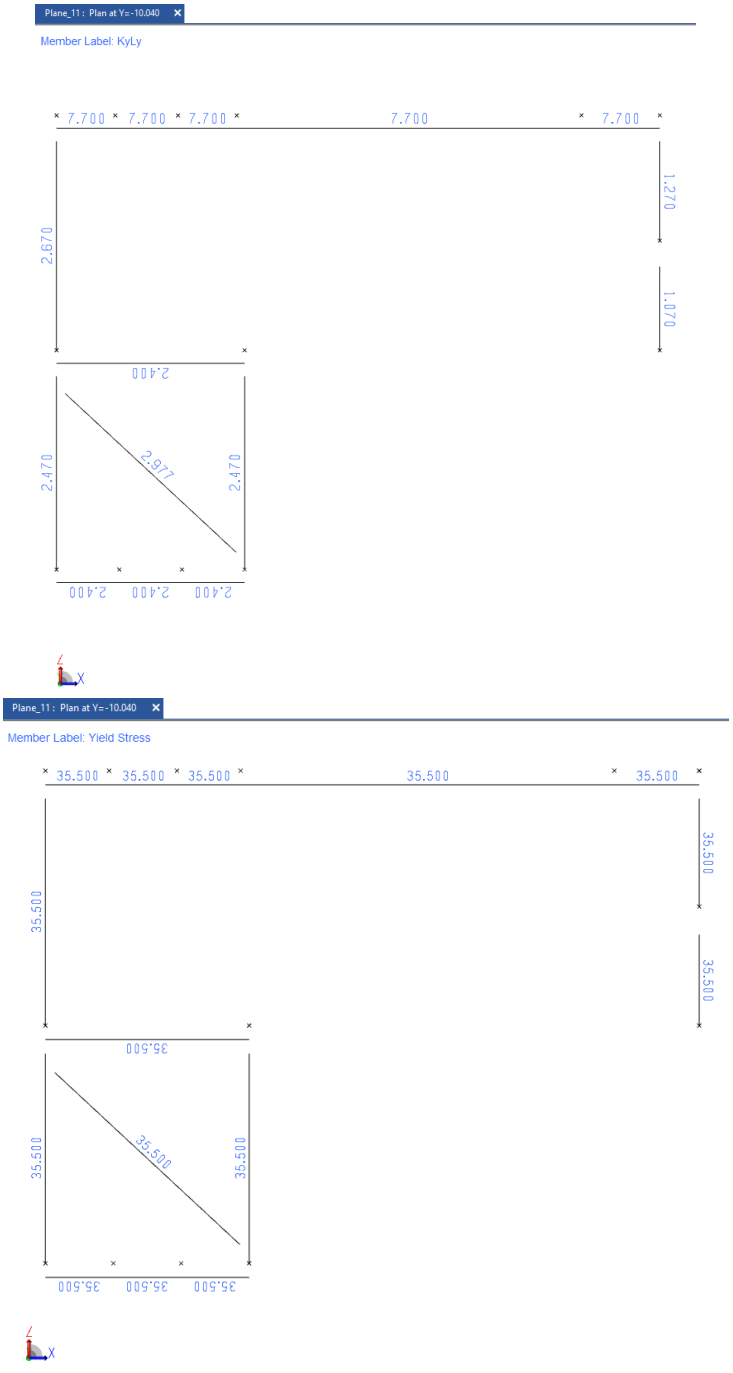

Plane_10 : Plan at Y=-3.090
Member Label: KyLy
2.000
2.400
1.070
0.400
2.800
2.977

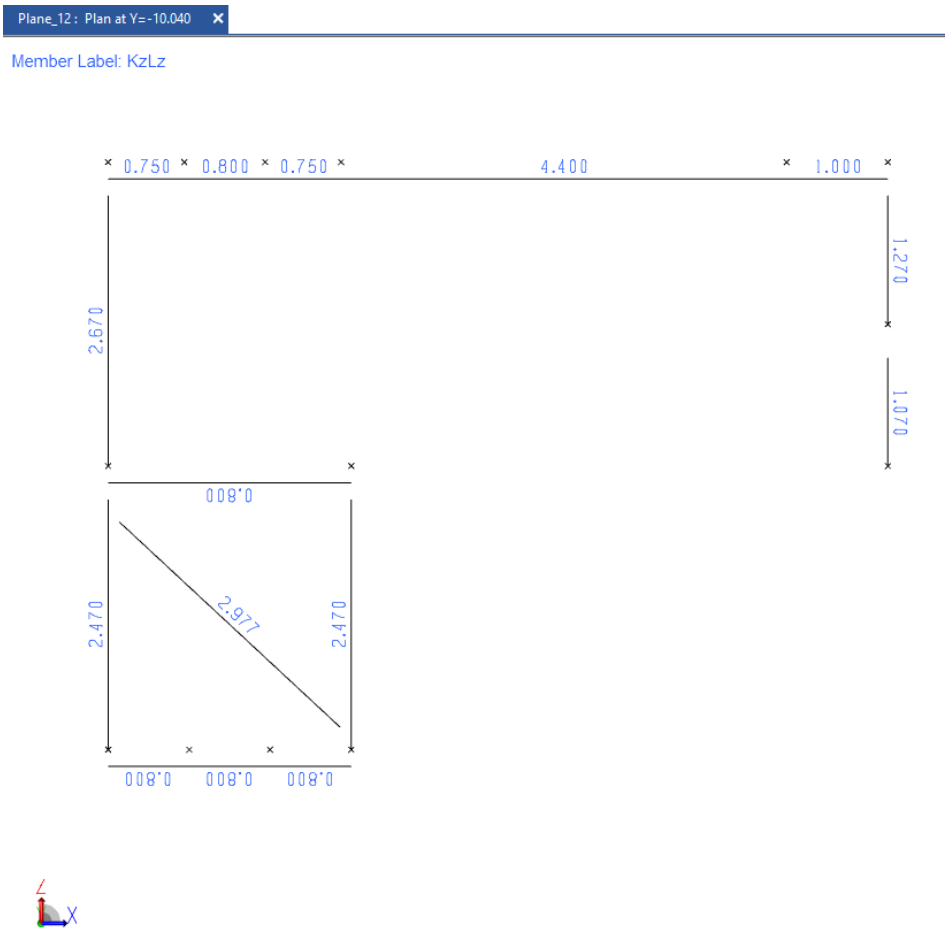

Plane_10 : Plan at Y=-3.090
Member Label: Yield Stress
35.500

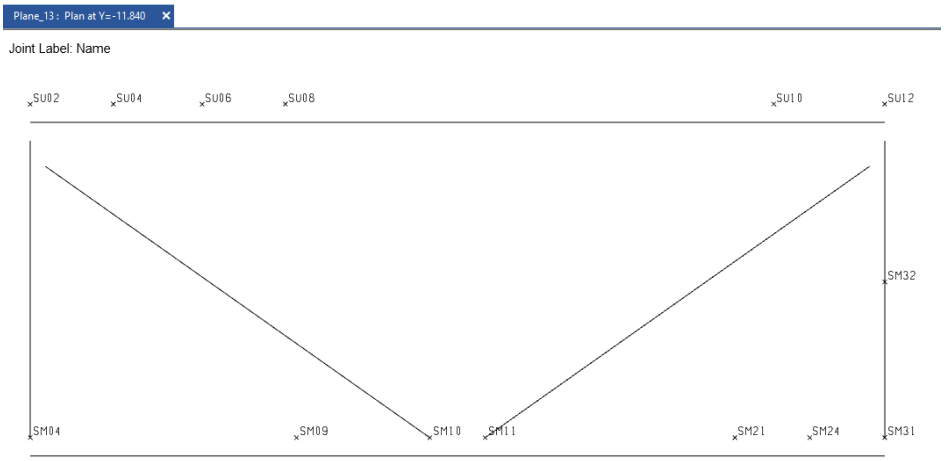

Plane_11 : Plan at Y=-3.090
Member Label: KzLz
4.400
4.400
4.200
0.800
2.400
2.800
2.977
4.200
0.800
0.800
0.800
Z
X

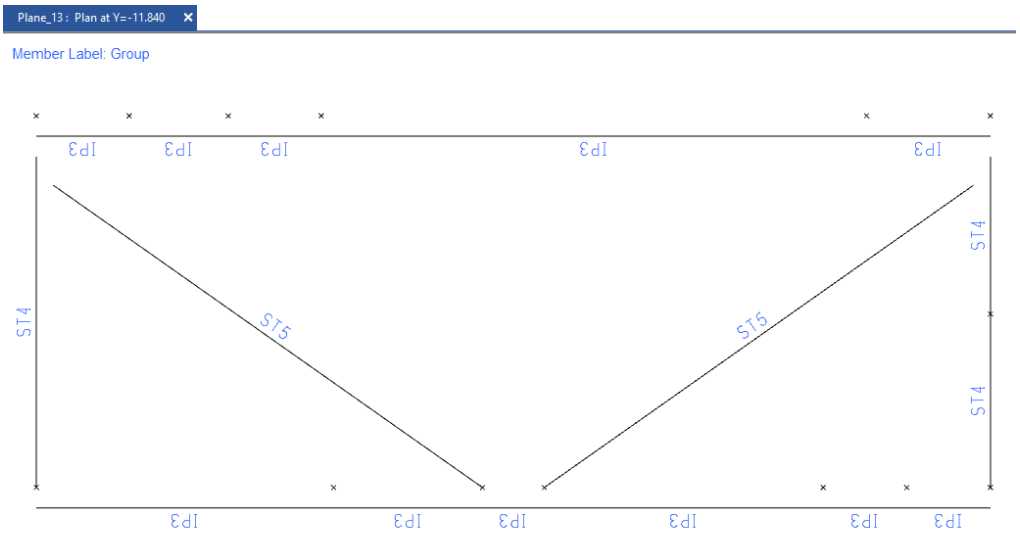

Plane_11 : Plan at Y=-10.040
Joint Label: Name
SU01
SU03
SU05
SU07
SU09
SU11
SM34
SM03
SM08
SM30
SL06
SL09
SL12
SL18

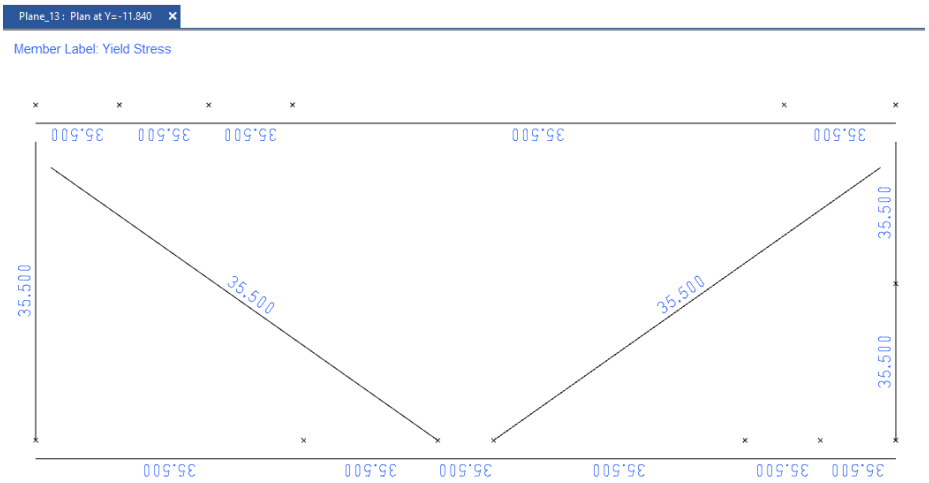

Plane_11 : Plan at Y=-10.040
Member Label: Group
IP3
IP3
IP3
IP3
IP3
ST5
ST5
ST5
ST5
HA3
HA3
HA3

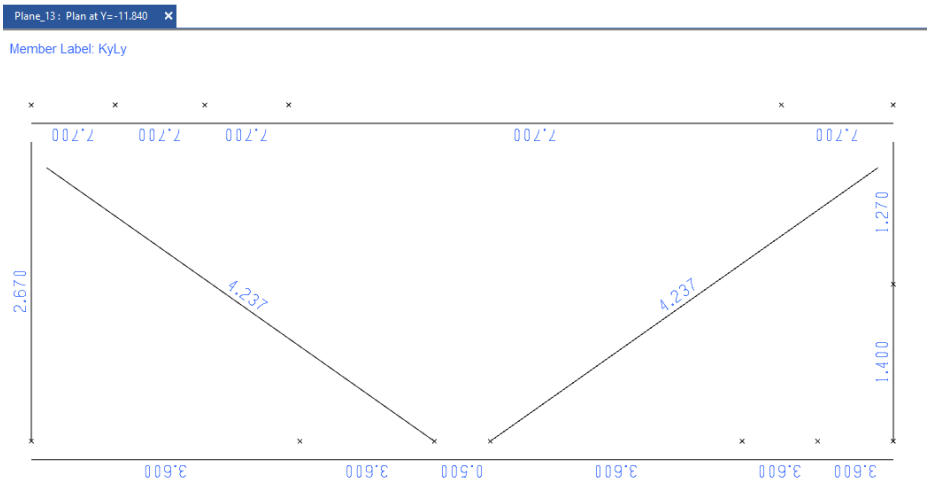

Plane_11 : Plan at Y=-10.040
Member Label: KyLy
7.700
7.700
7.700
7.700
7.700
2.670
1.270
1.070
2.400
2.470
2.977
2.470
2.400
2.400
2.400
Plane_11 : Plan at Y=-10.040
Member Label: Yield Stress
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500

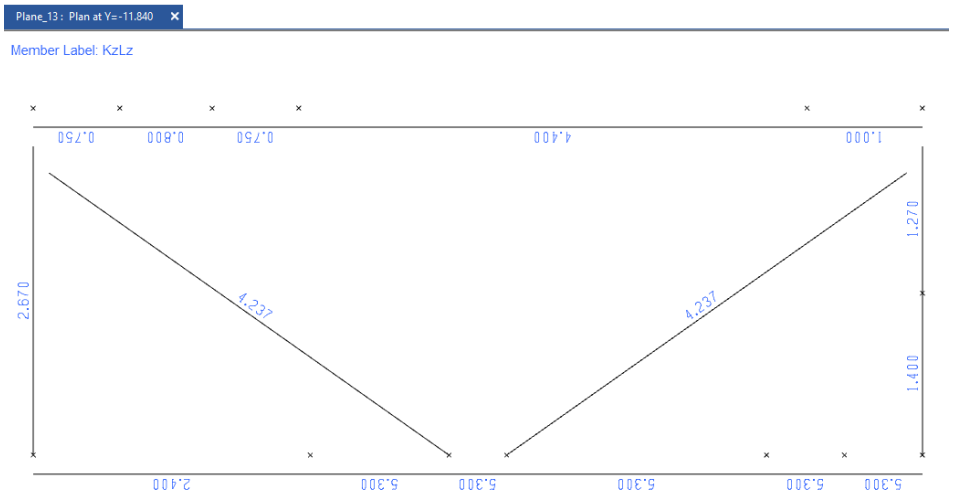

Plane_12 : Plan at Y=-10.040
Member Label: KzLz
0.750
0.800
0.750
4.400
1.000
2.670
1.270
1.070
0.800
2.470
2.977
2.470
0.800
0.800
0.800
Z
X


Plane_13 : Plan at Y=-11.840
Joint Label: Name
SU02
SU04
SU06
SU08
SU10
SU12
SM32
SM04
SM09
SM10
SM11
SM21
SM24
SM31

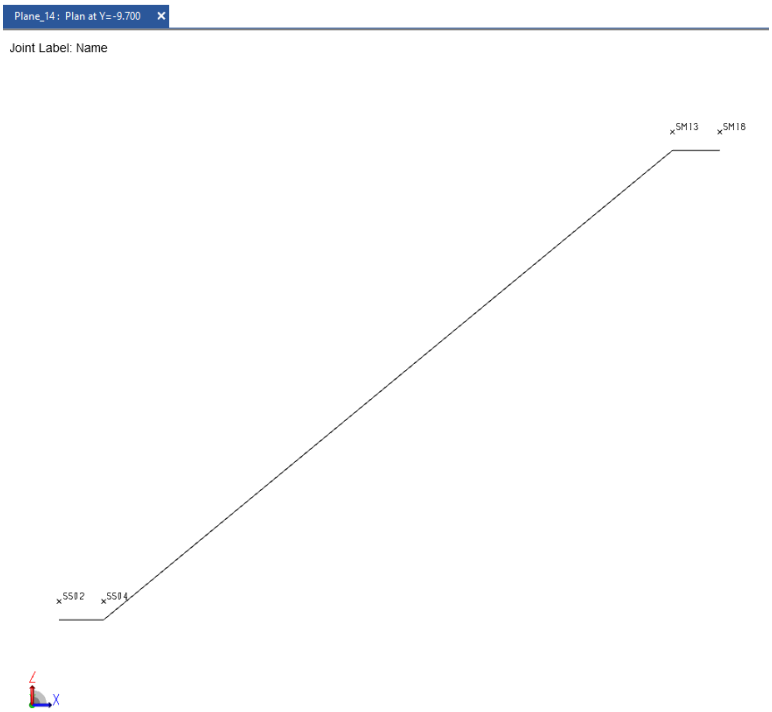

Plane_13 : Plan at Y=-11.840
Member Label: Group
EdI
IP3
ST4
ST5

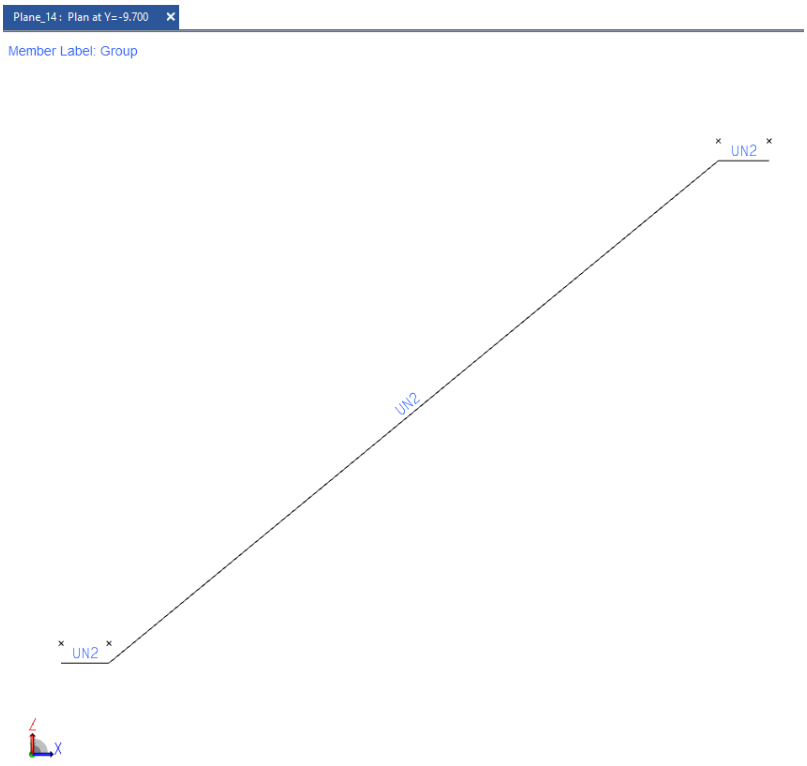

Plane_13 : Plan at Y=-11.840
Member Label: Yield Stress
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
35.500
Z
X

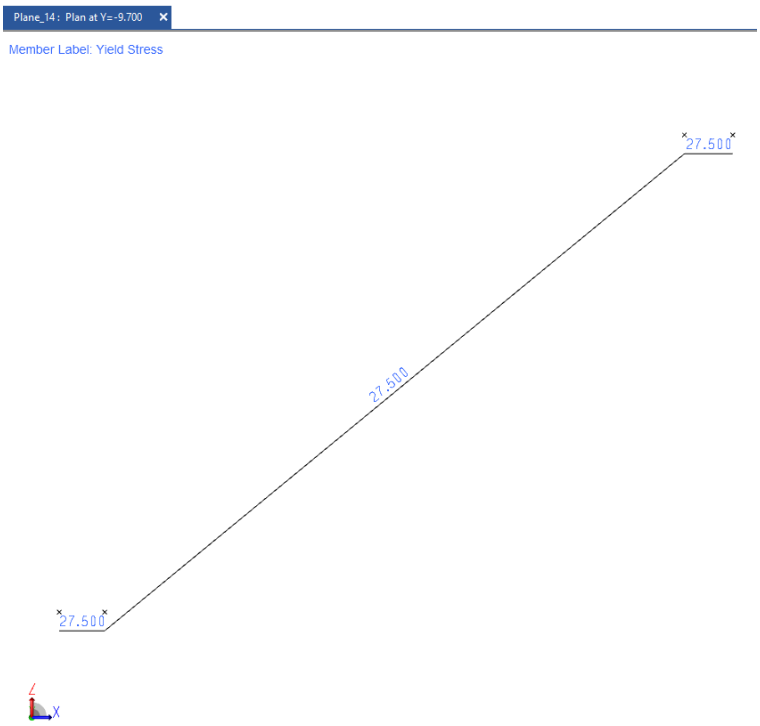

Plane_13 : Plan at Y=-11.840
Member Label: KyLy
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
7.700
Z
X

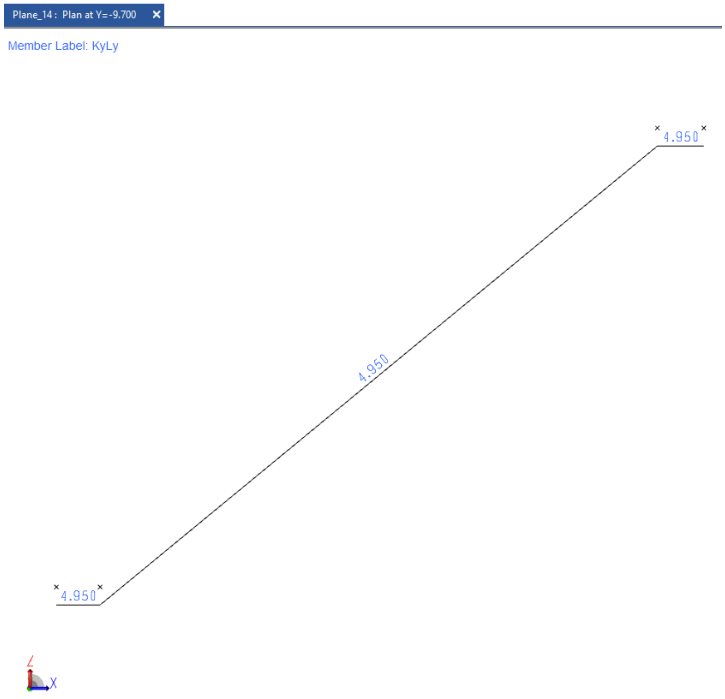

Plane_13 : Plan at Y=-11.840
Member Label: KzLz
0.750
0.800
0.750
4.400
1.000
2.670
4.237
4.237
1.270
1.400
2.400
5.300
5.300
5.300
5.300
5.300

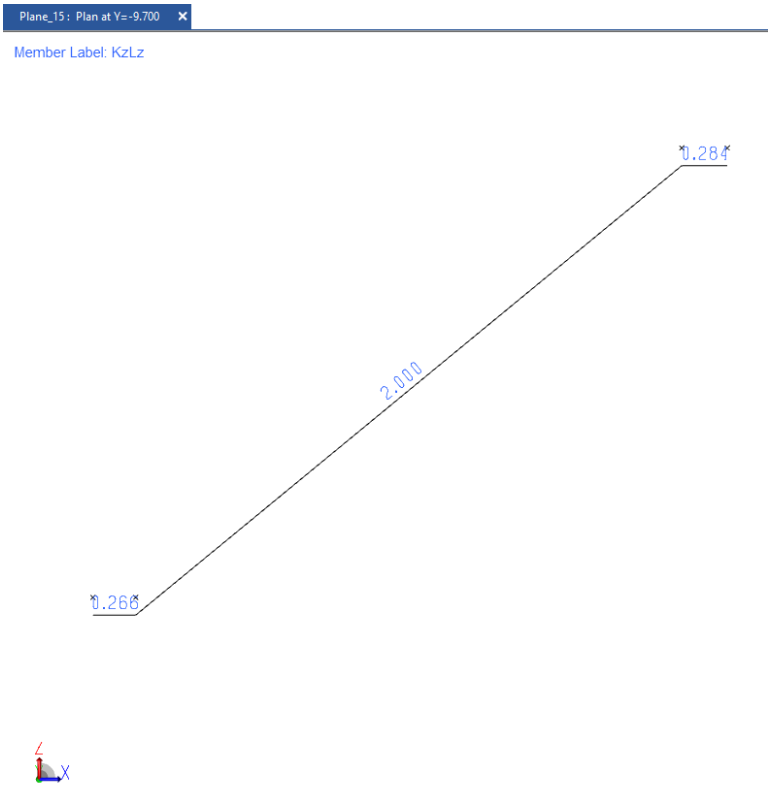

Z
X

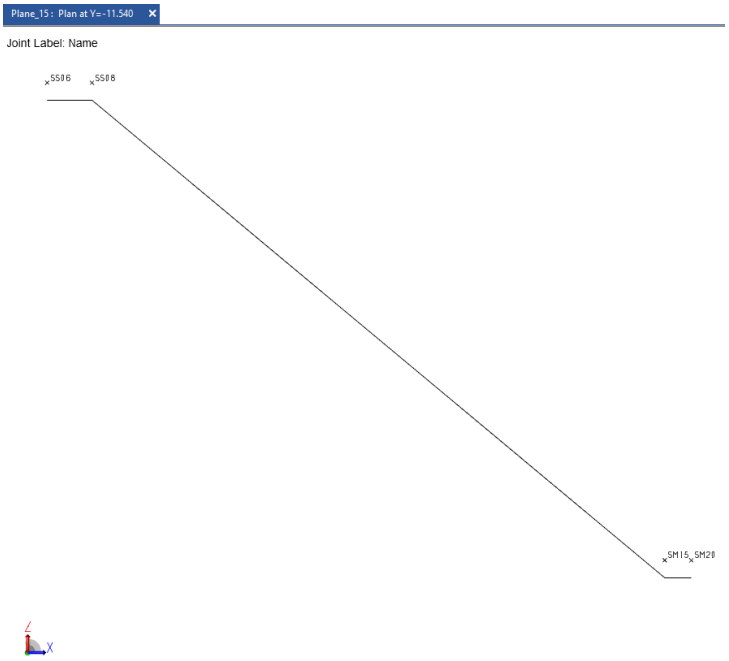

Plane_14 : Plan at Y=-9.700
Joint Label: Name
SM13
SM18
SS02
SS04
Z
X

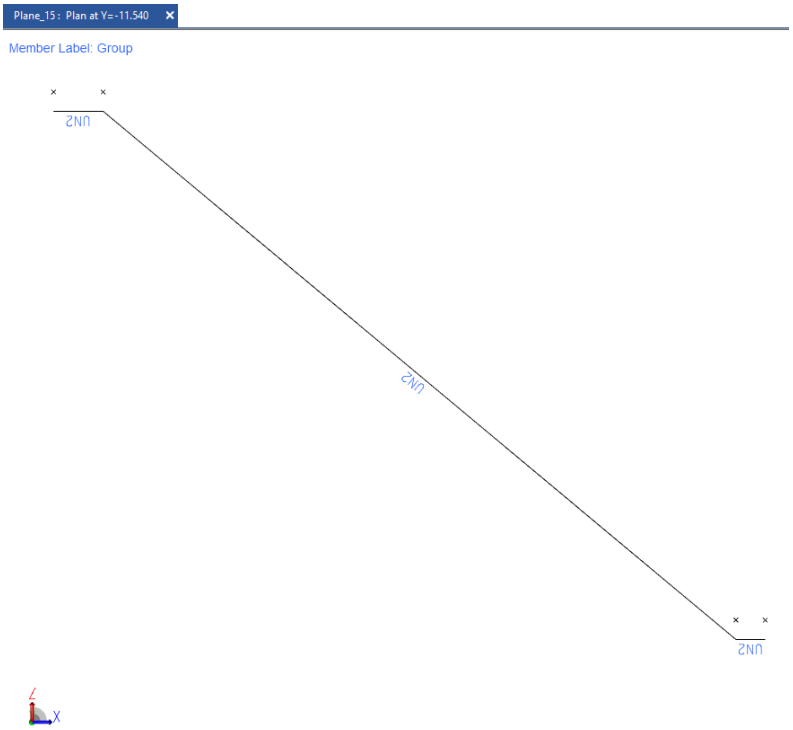

Plane_14 : Plan at Y=-9.700
Member Label: Group
UN2
UN2
UN2
Z
X

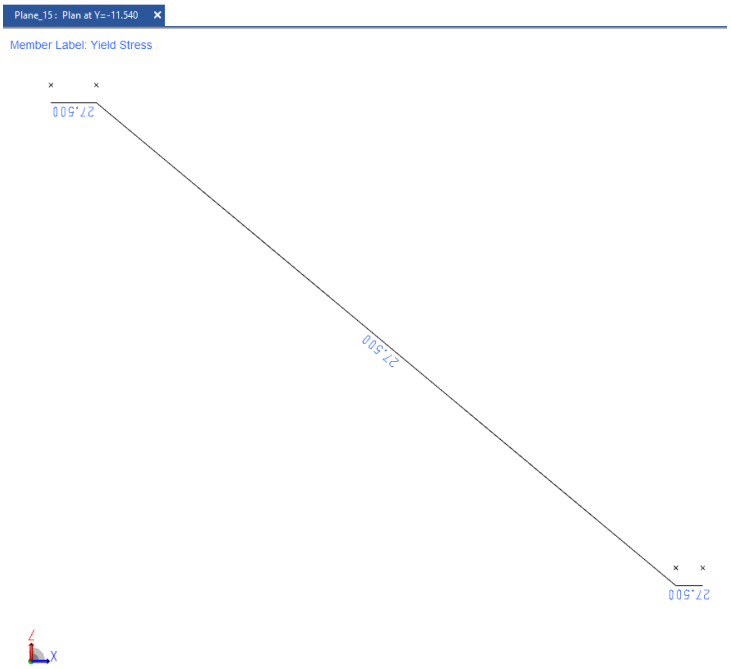

Plane_14 : Plan at Y=-9.700
Member Label: Yield Stress
27.500
27.500
27.500

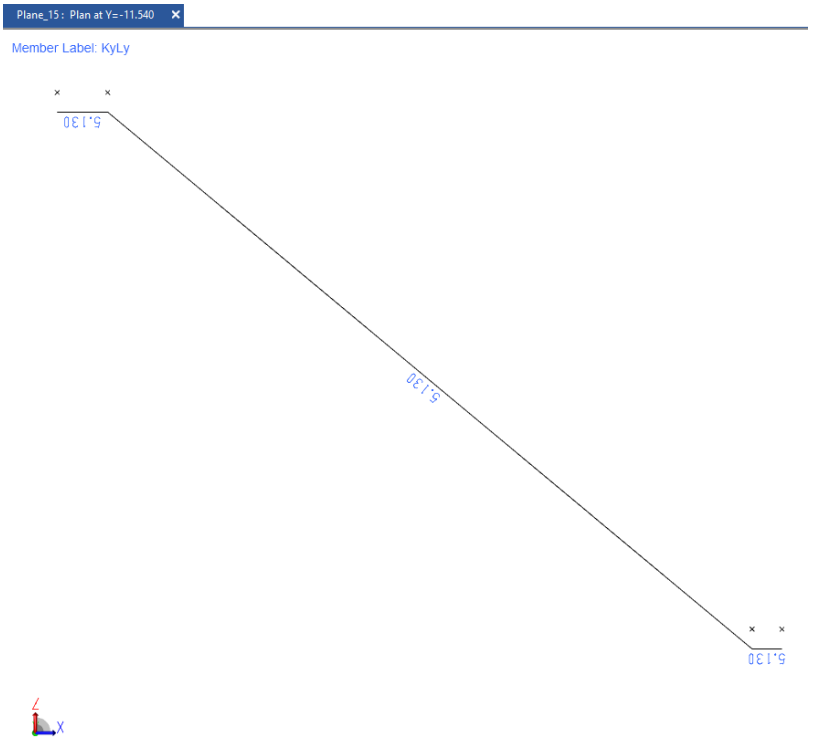

Plane_14 : Plan at Y=-9.700
Member Label: KyLy
4.950
4.950
4.950

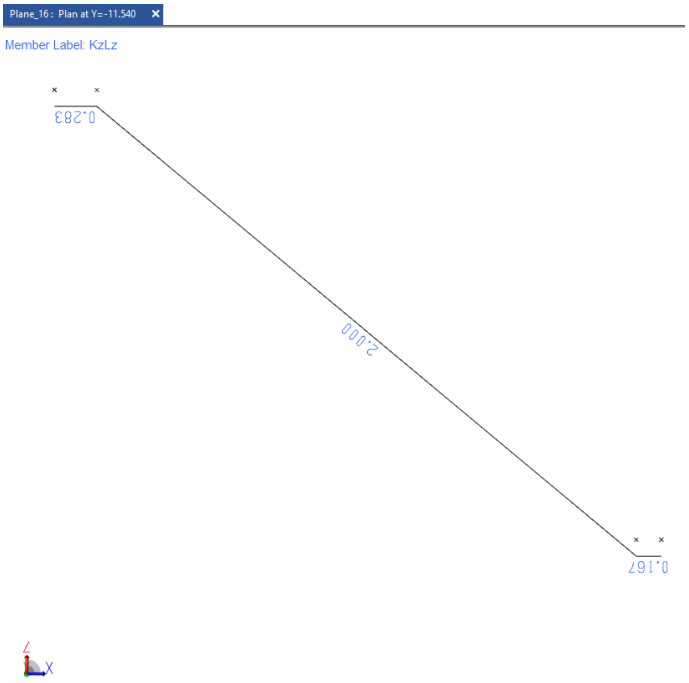

Plane_15 : Plan at Y=-9.700
Member Label: KzLz
0.284
2.000
0.266
Z
X

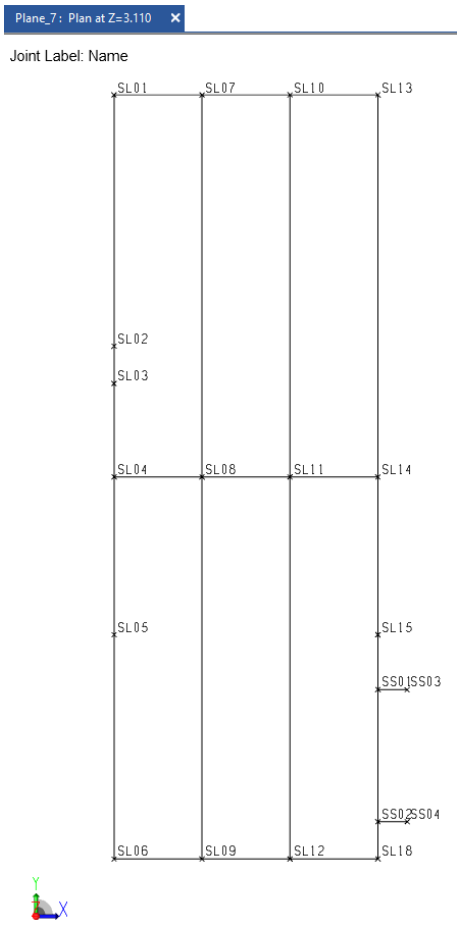

Plane_15 : Plan at Y=-11.540
Joint Label: Name
SS06
SS08
SM15
SM28
Z
X

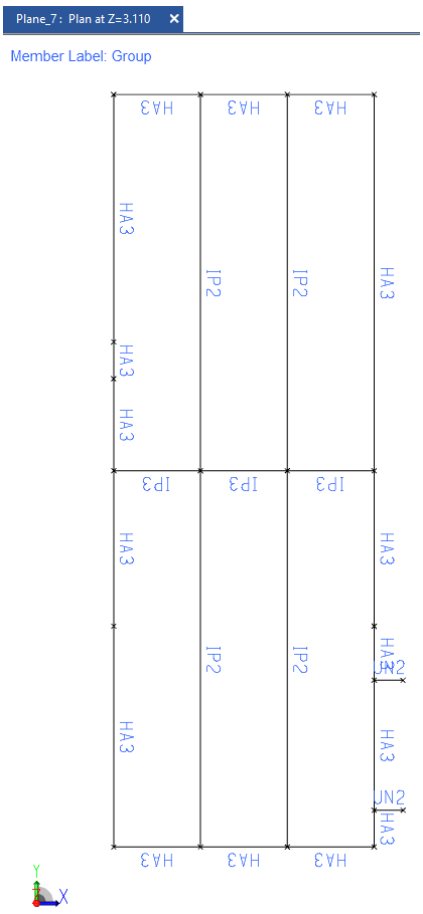

Plane_15 : Plan at Y=-11.540
Member Label: Group
UNS
UNS
UNS
Z
X

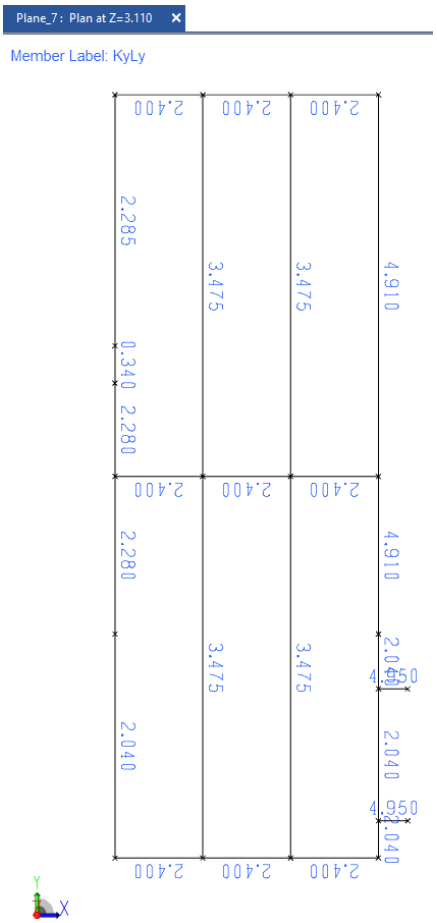

Plane_15 : Plan at Y=-11.540
Member Label: Yield Stress
27.500
27.500
27.500
Z
X

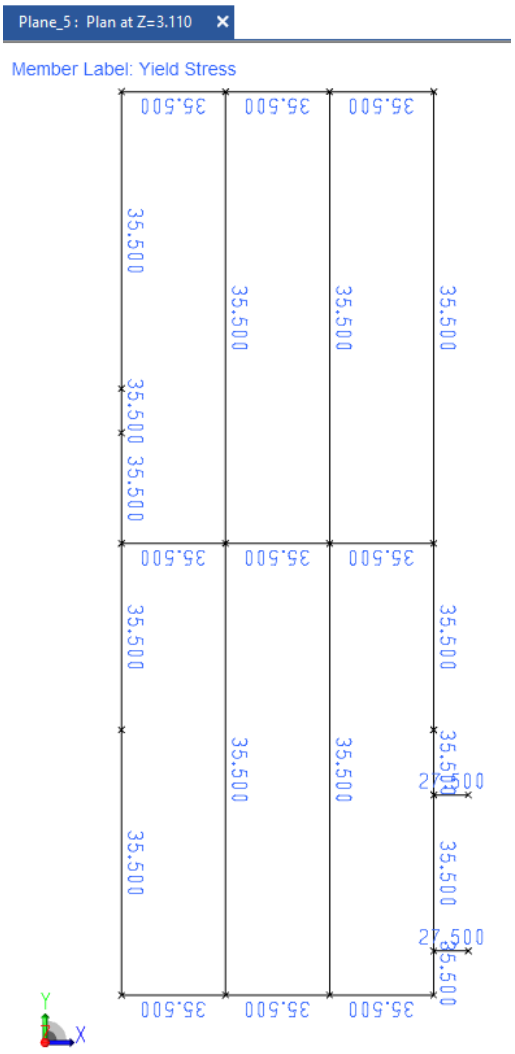

Plane_15 : Plan at Y=-11.540
Member Label: KyLy
5.130
5.130
5.130
Z
X

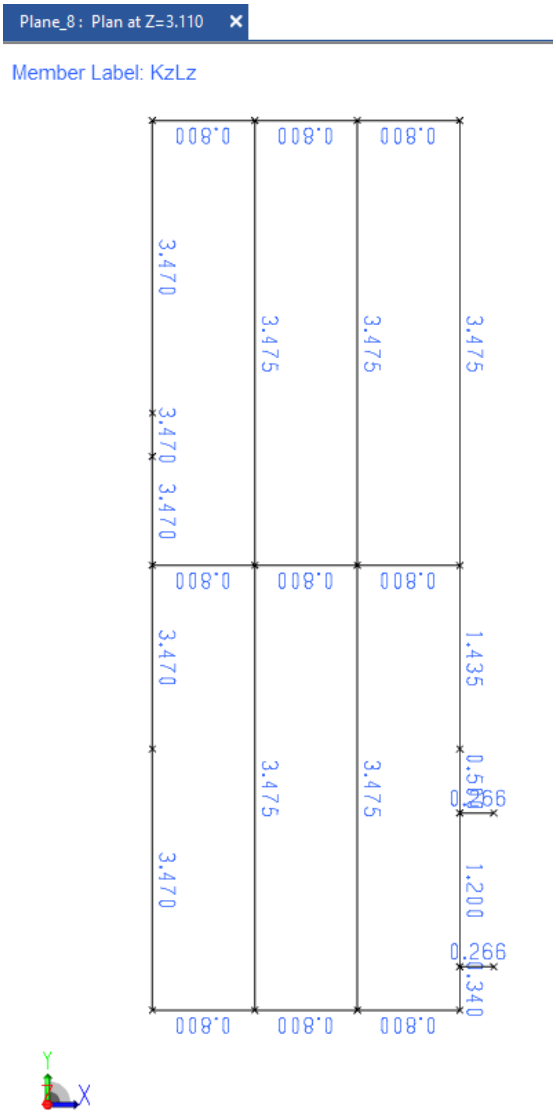

Plane_16 : Plan at Y=-11.540
Member Label: KzLz
0.283
2.000
0.167
Z
X

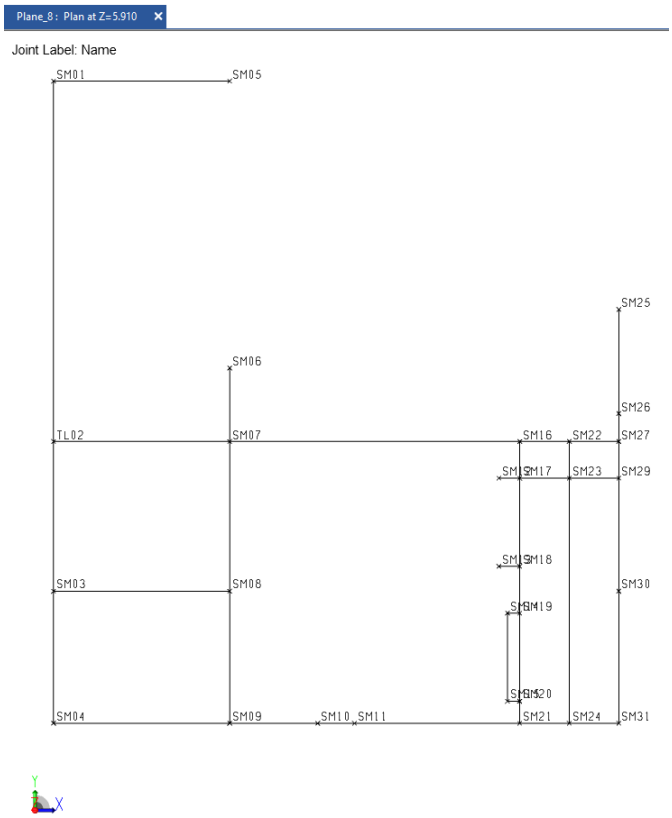

Plane_7 : Plan at Z=3.110
Joint Label: Name
SL01
SL07
SL10
SL13
SL02
SL03
SL04
SL08
SL11
SL14
SL05
SL15
SS01
SS03
SS02
SS04
SL06
SL09
SL12
SL18
Y
X

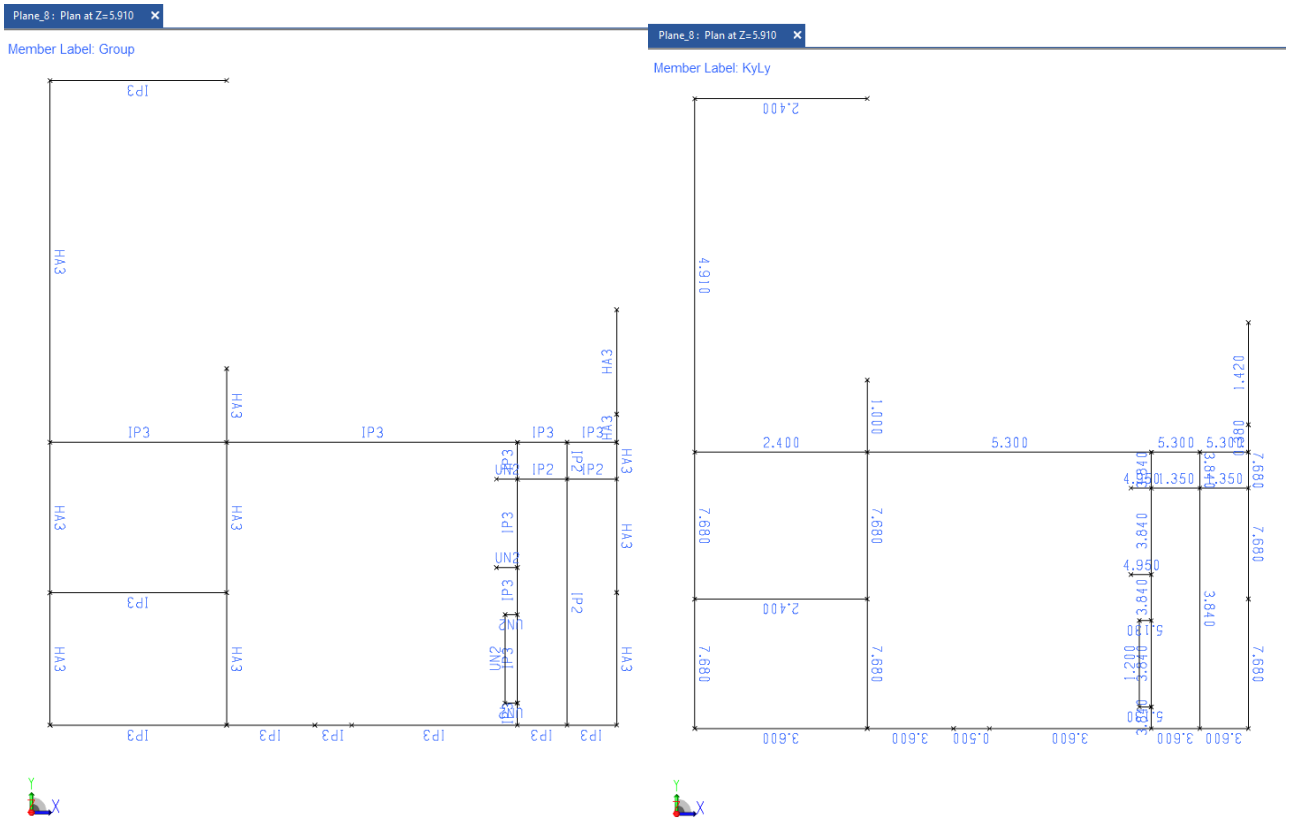

Plane_7 : Plan at Z=3.110
Member Label: Group
HA3
IP2
IP3
UN2
Y
X

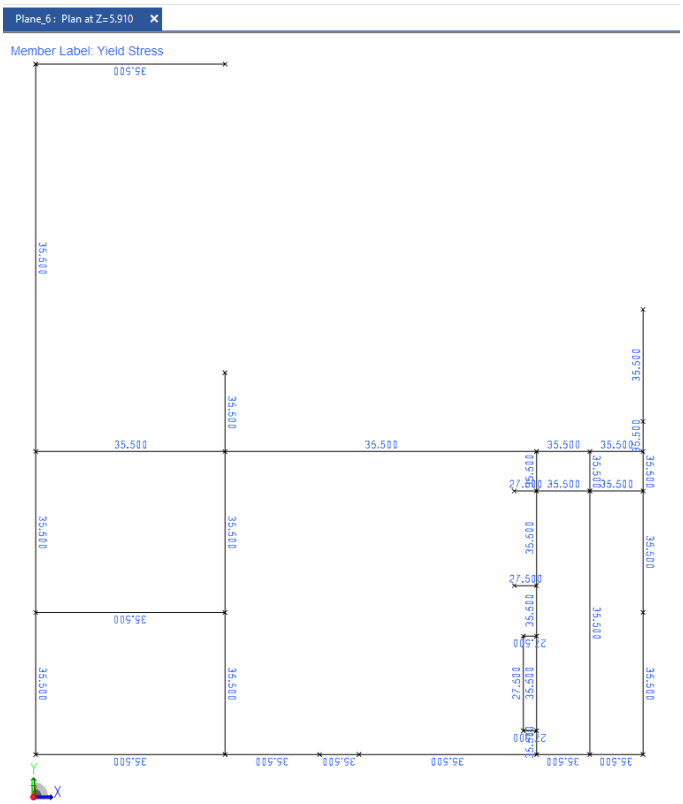

Plane_7 : Plan at Z=3.110
Member Label: KyLy
2.400
2.400
2.400
2.285
3.475
3.475
4.910
0.340
2.280
2.400
2.400
2.400
2.280
4.910
3.475
3.475
2.040
2.040
2.040
Y
X

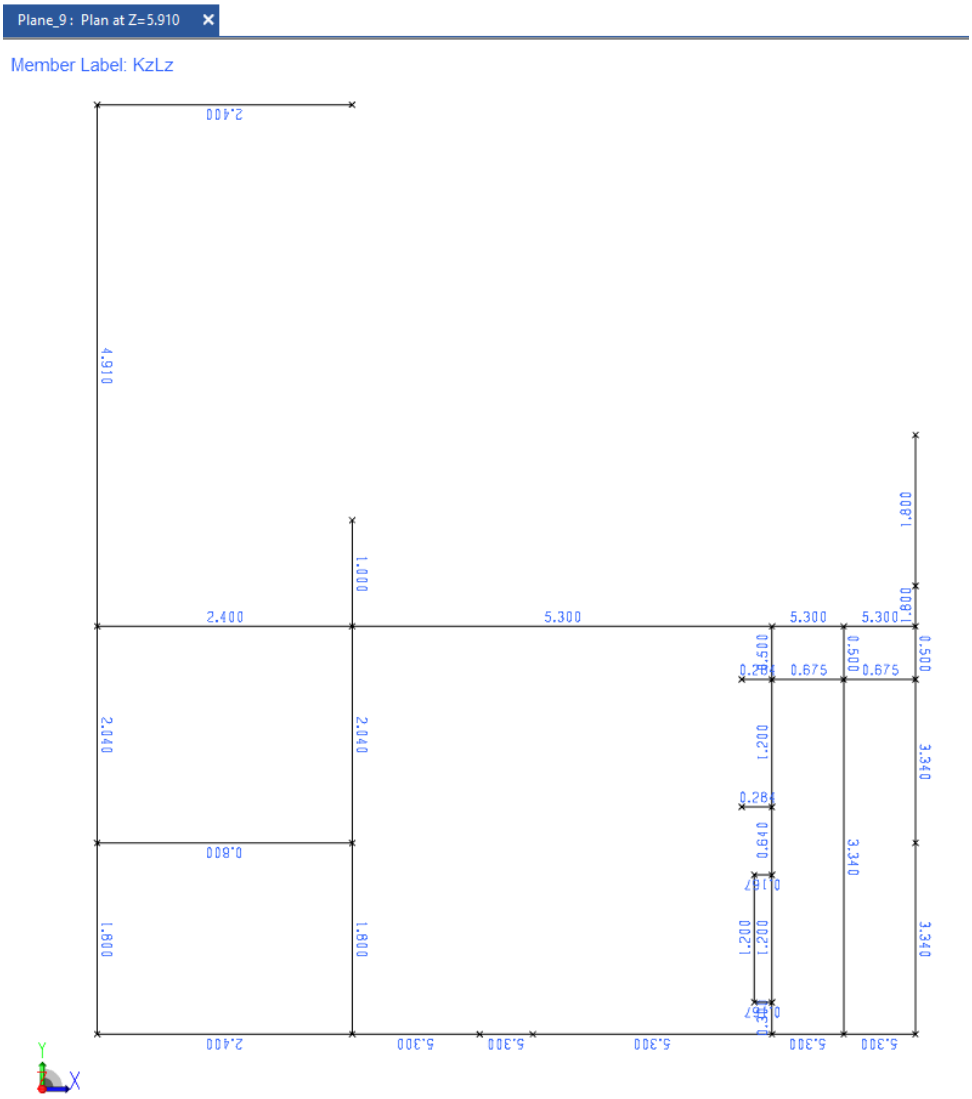

Plane_5 : Plan at Z=3.110
Member Label: Yield Stress
35.500
27.500

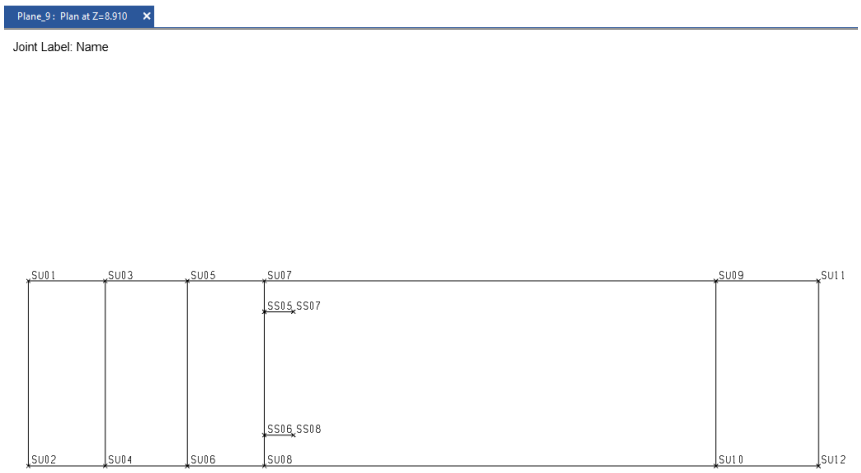

Plane_8 : Plan at Z=3.110
Member Label: KzLz
0.800
3.470
3.475
1.435
0.566
1.200
0.266
1.340

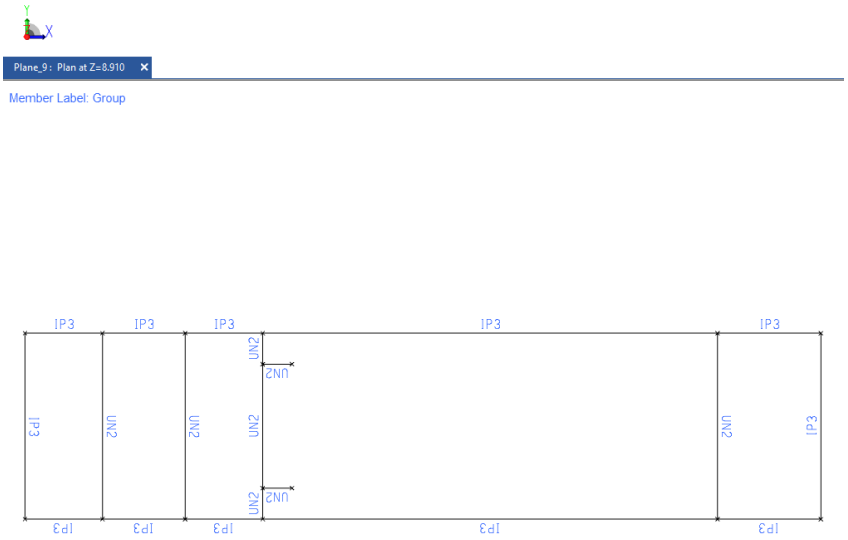

Plane_8 : Plan at Z=5.910
Joint Label: Name
SM01
SM05
SM25
SM06
SM26
TL02
SM07
SM16
SM22
SM27
SM17
SM23
SM29
SM18
SM03
SM08
SM30
SM19
SM20
SM04
SM09
SM10
SM11
SM21
SM24
SM31
Y
X

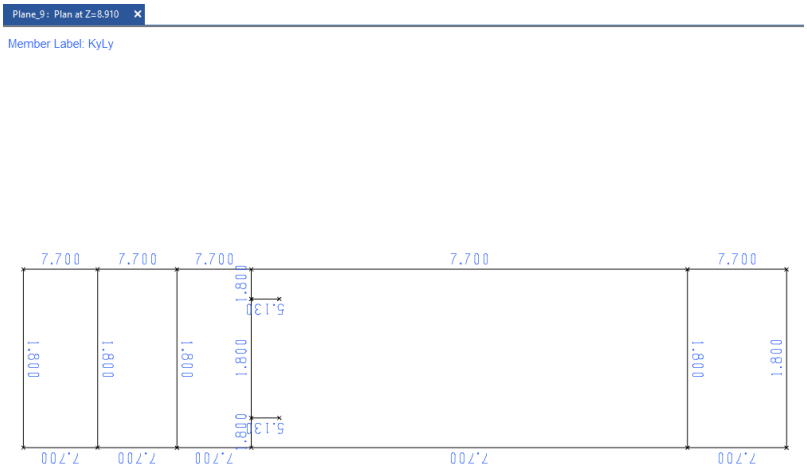

Plane_8 : Plan at Z=5.910
Member Label: Group
Plane_8 : Plan at Z=5.910
Member Label: KyLy

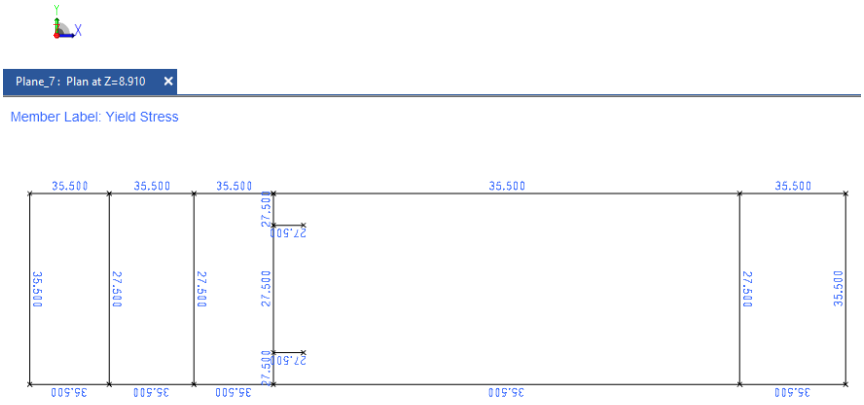

Plane_6 : Plan at Z=5.910
Member Label: Yield Stress
35.500
27.500
Y
X

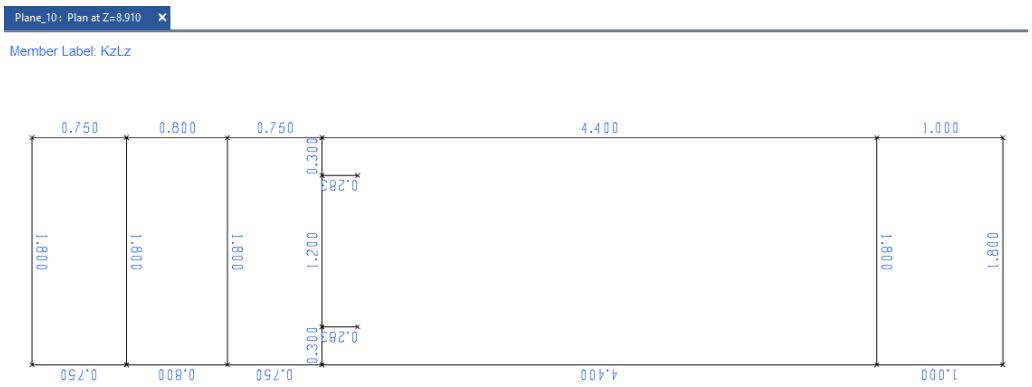

Plane_9 : Plan at Z=5.910
Member Label: KzLz
2.400
4.910
1.000
1.800
2.400
5.300
5.300
5.300
0.500
0.675
0.675
2.040
2.040
1.200
3.340
0.284
0.640
0.600
3.340
1.800
1.800
1.200
1.200
3.340
2.400
5.300
5.300
5.300
5.300
5.300
Y
X

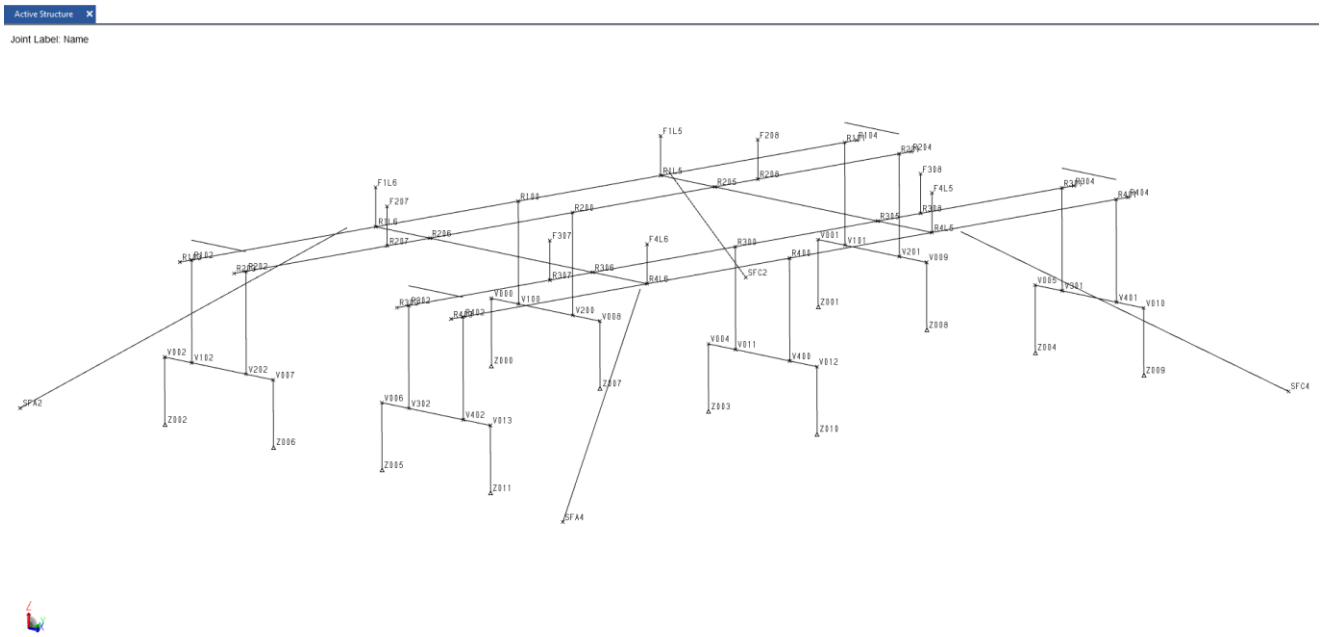

Plane_9 : Plan at Z=8.910
Joint Label: Name
SU01
SU03
SU05
SU07
SU09
SU11
SS05 SS07
SS06 SS08
SU02
SU04
SU06
SU08
SU10
SU12

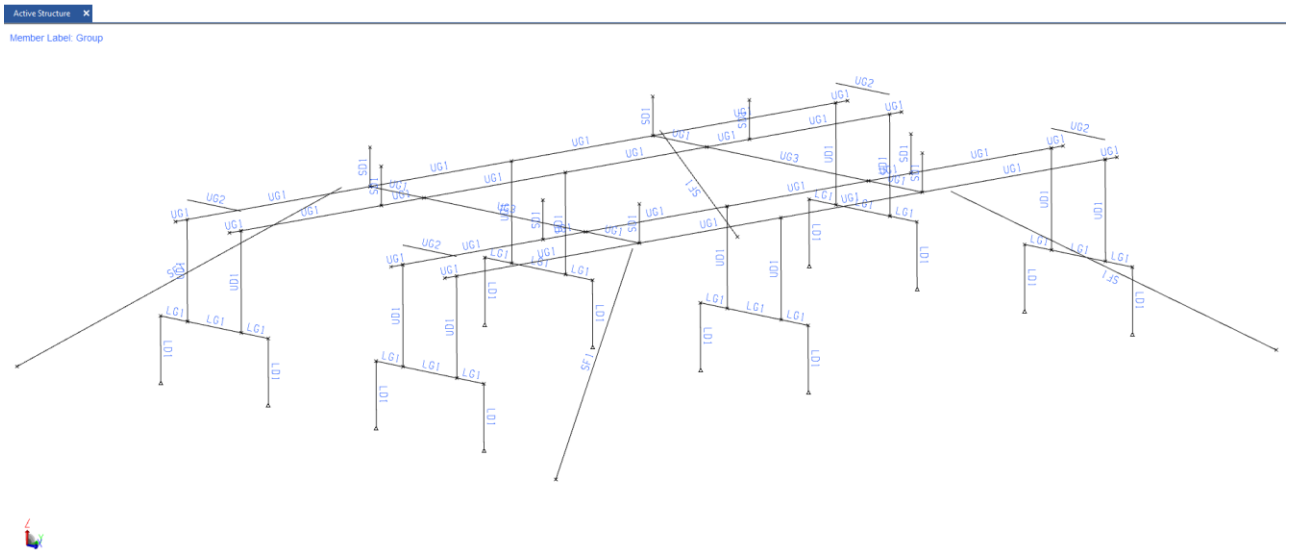

Plane_9 : Plan at Z=8.910
Member Label: Group
IP3
UN2

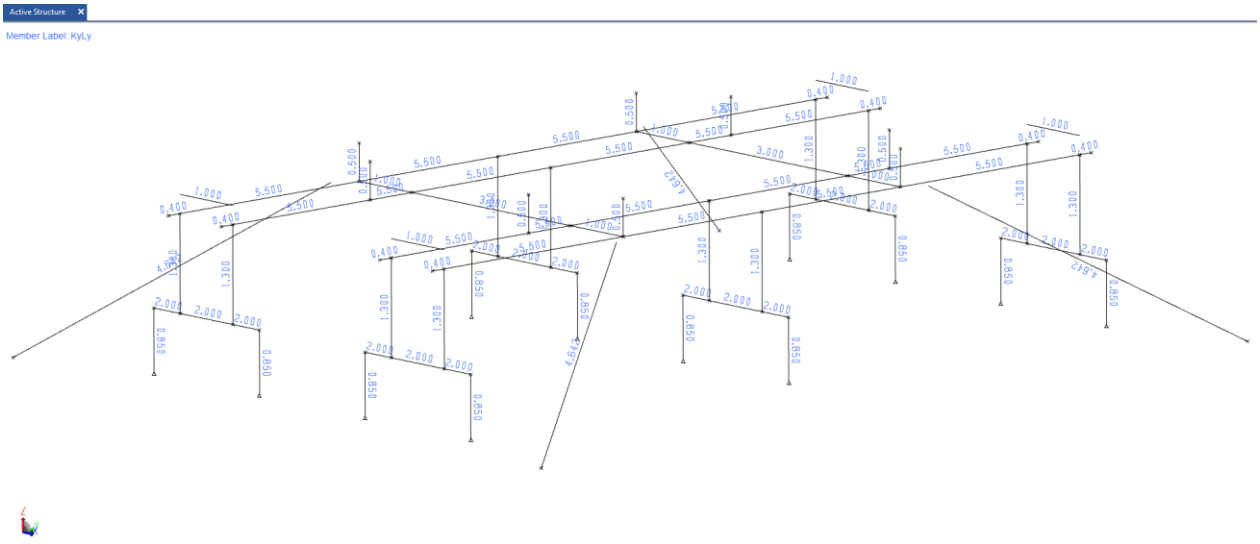

Plane_9 : Plan at Z=8.910
Member Label: KyLy
7.700
7.700
7.700
7.700
7.700
1.800
5.133

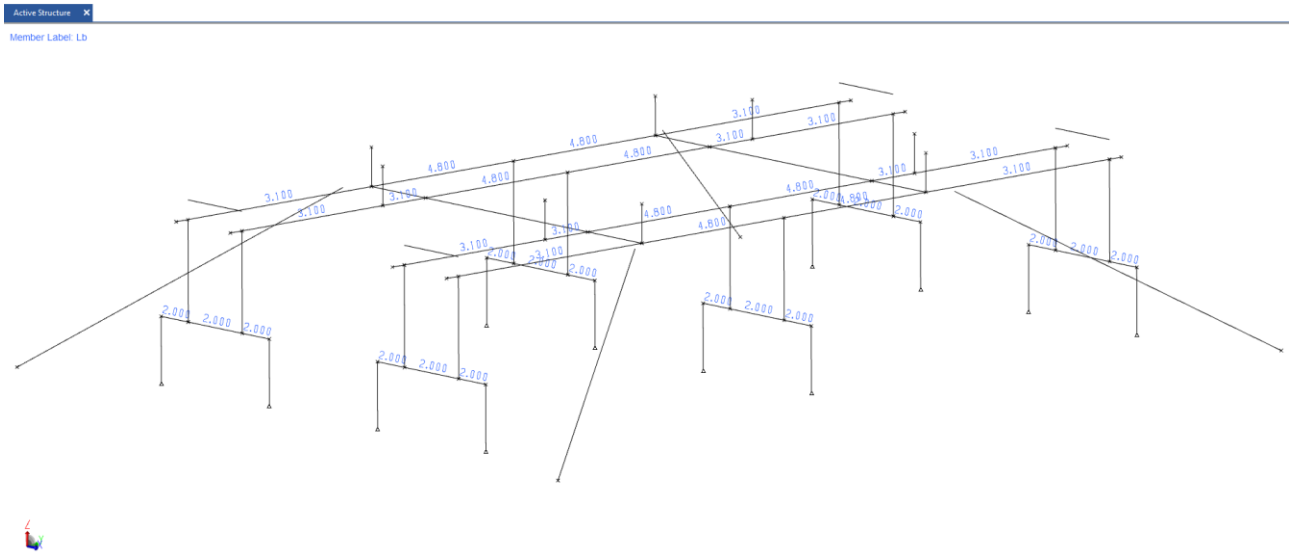

Plane_7 : Plan at Z=8.910
Member Label: Yield Stress
35.500
35.500
35.500
35.500
35.500
27.500
27.500

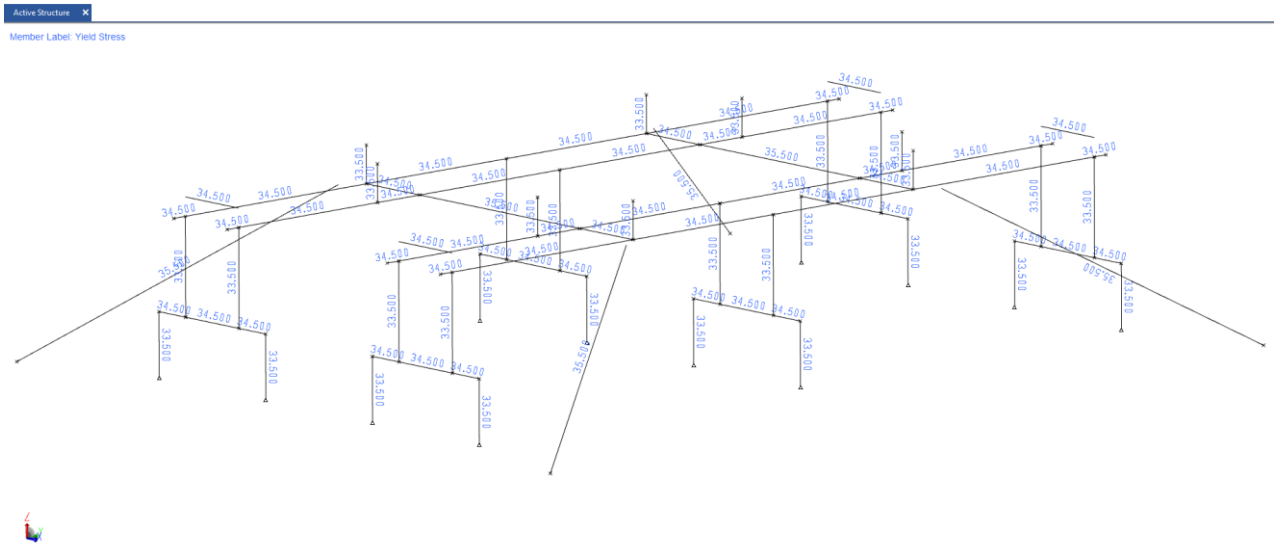

Plane_10 : Plan at Z=8.910
Member Label: KzLz
0.750
0.800
0.750
4.400
1.000
0.300
0.283
1.800
1.200
0.283
0.300

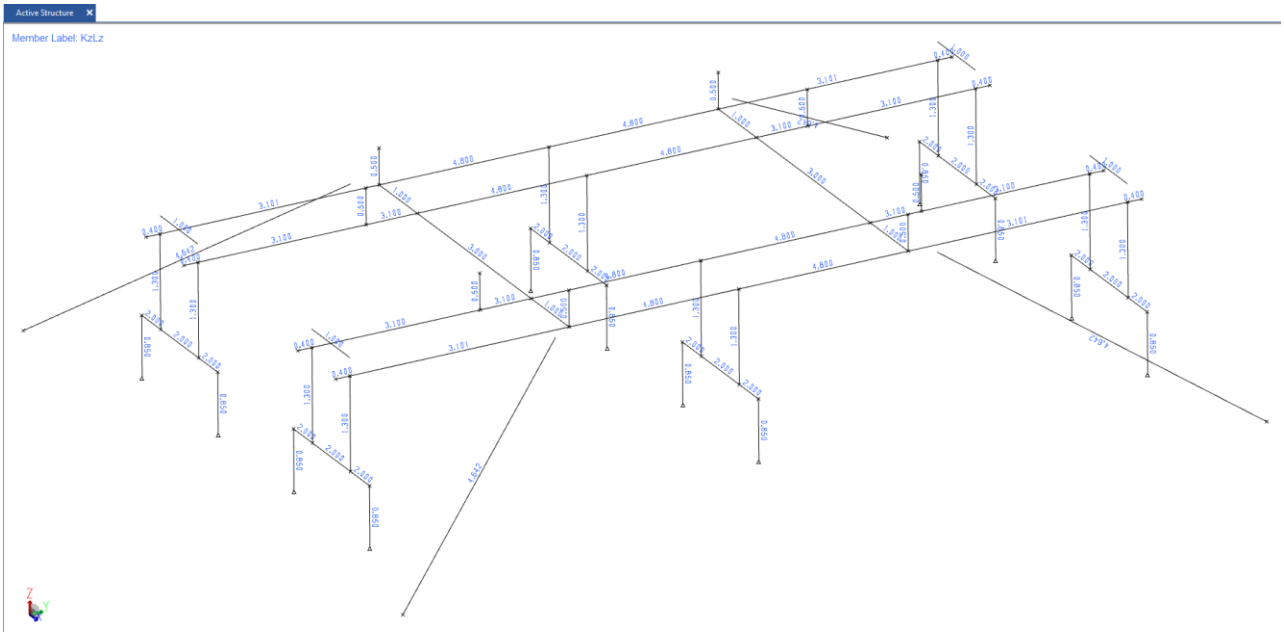

Active Structure
Joint Label: Name

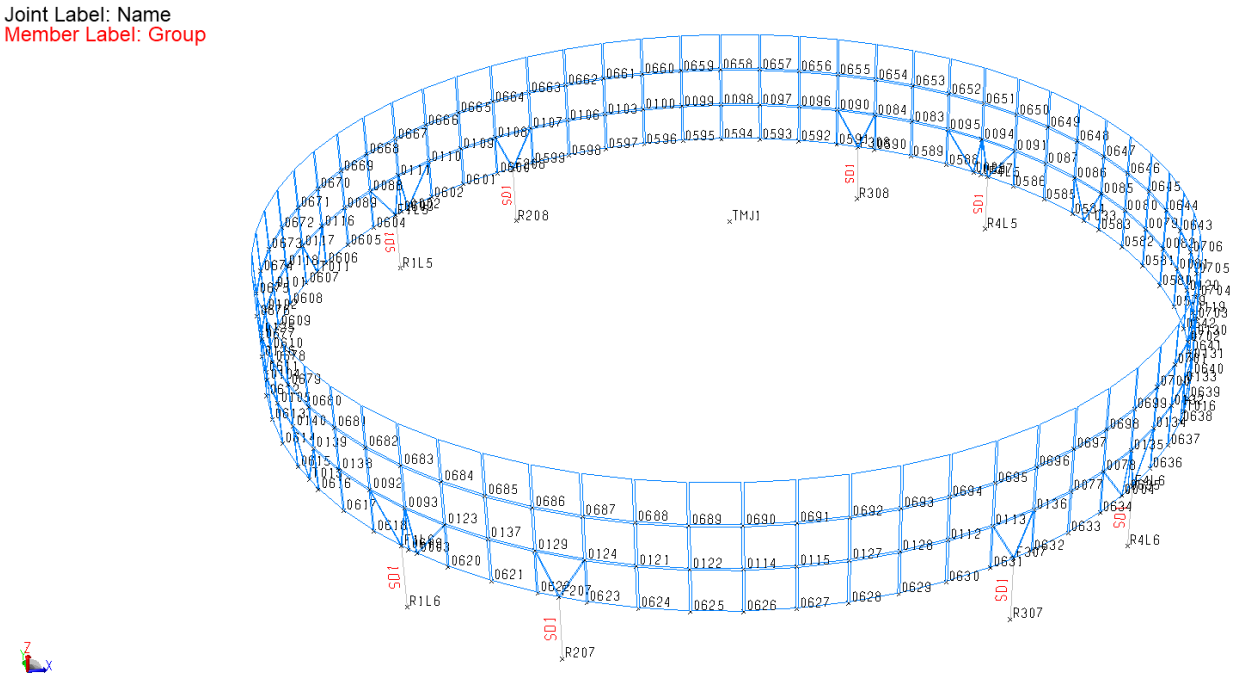

Active Structure
Member Label: Group

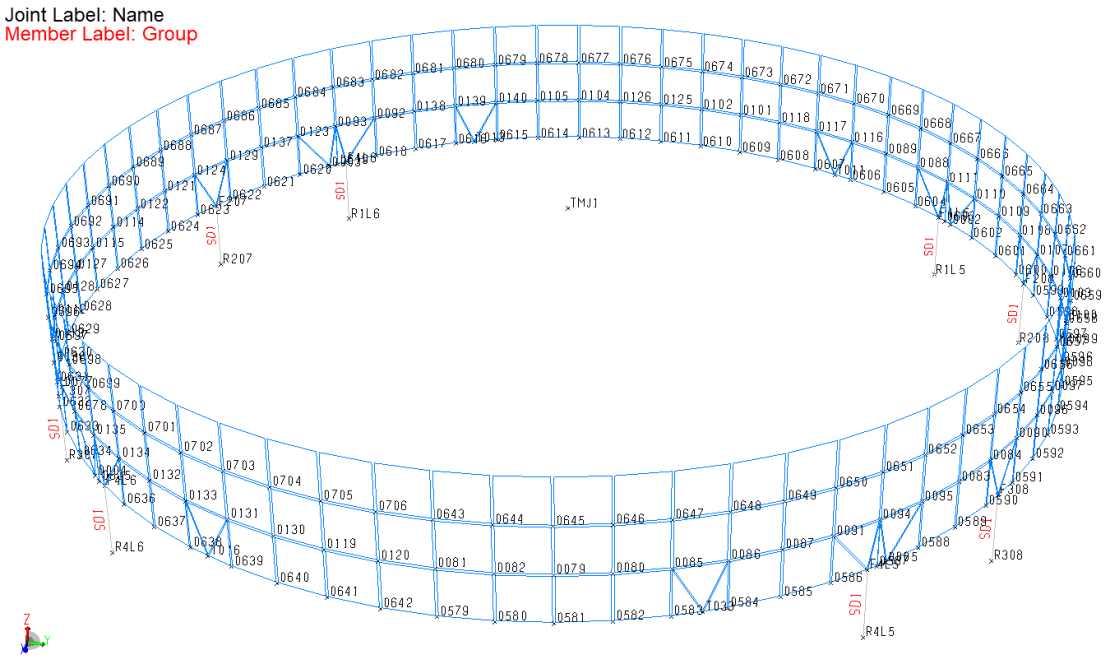

Active Structure
Member Label: KyLy


Active Structure
Member Label: Lb


Active Structure
Member Label: Yield Stress


Active Structure
Member Label: KzLz





All Plates / shells are Group M65