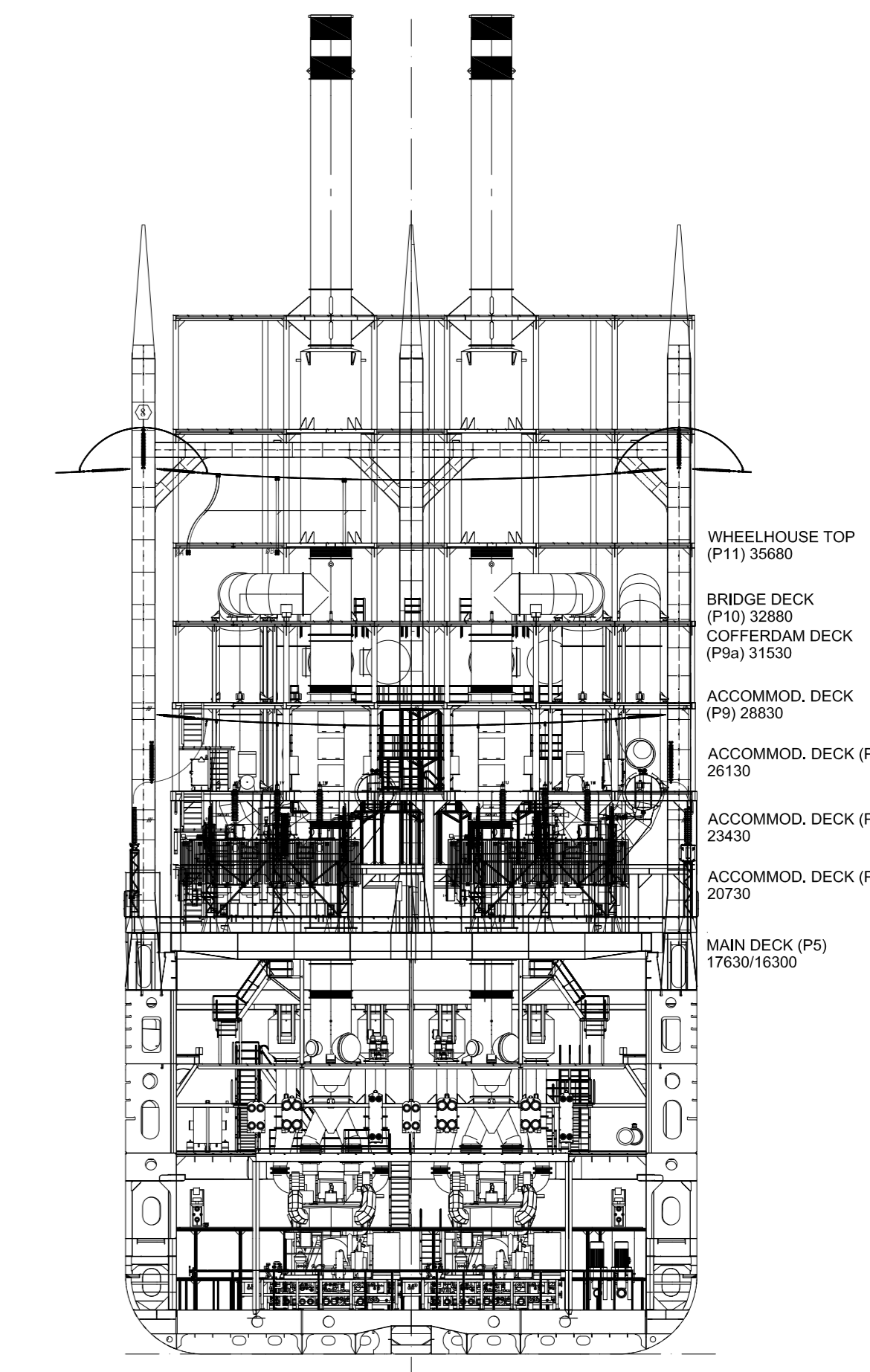
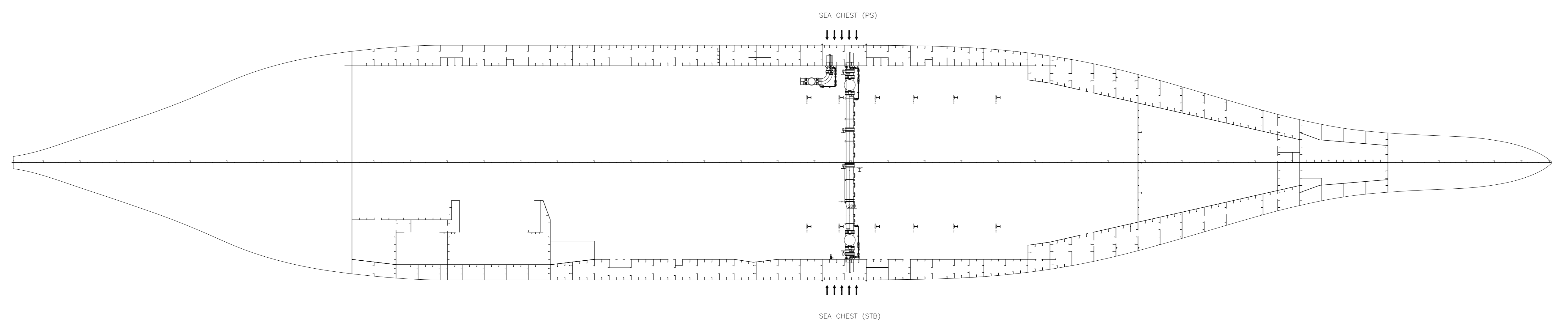
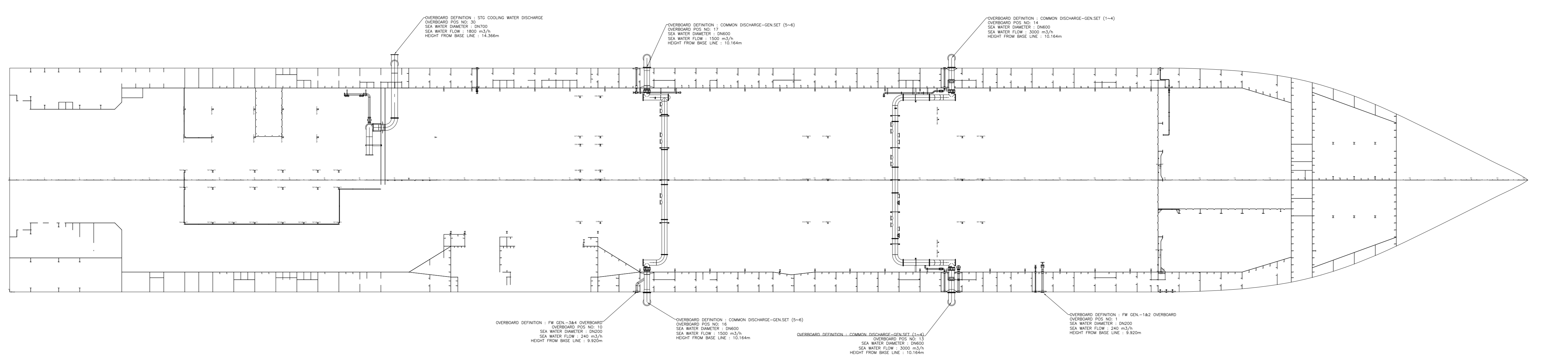
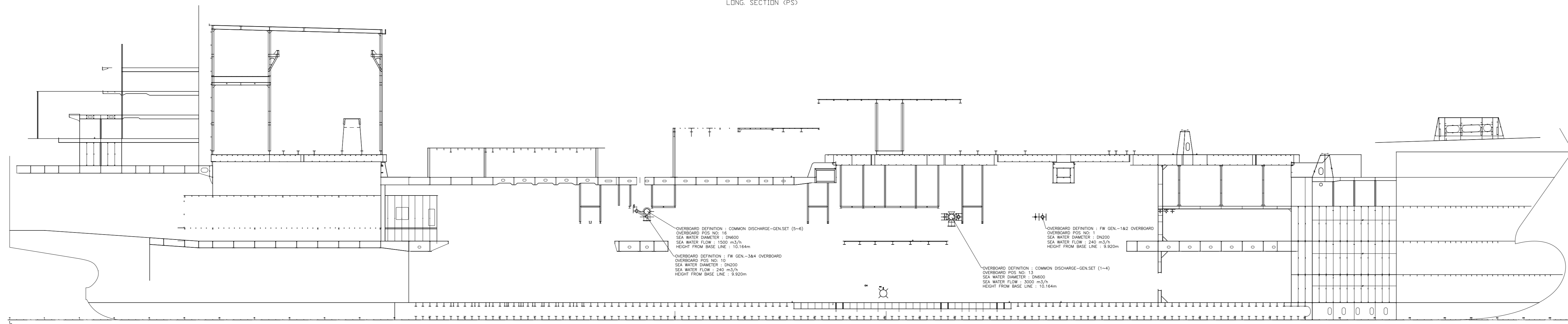
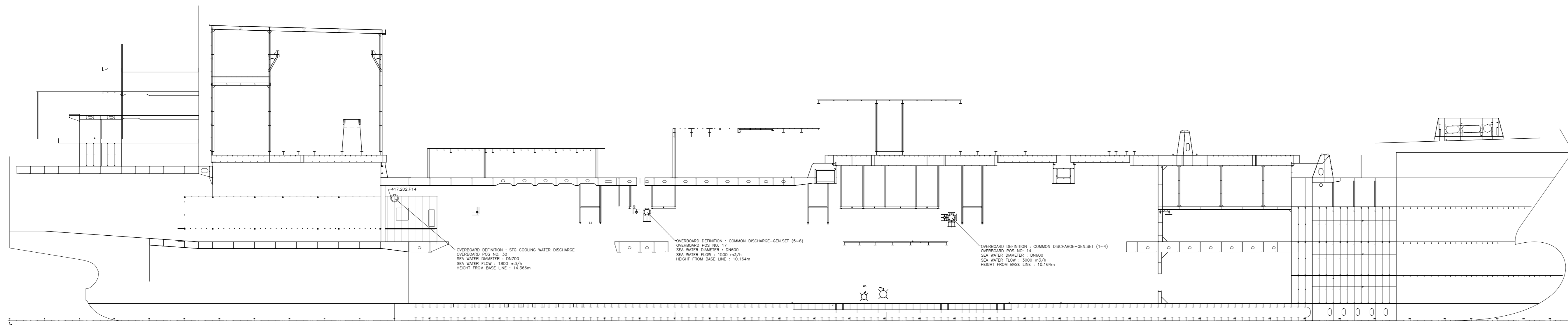



## **APPENDIX 2: FACILITY ILLUSTRATION**

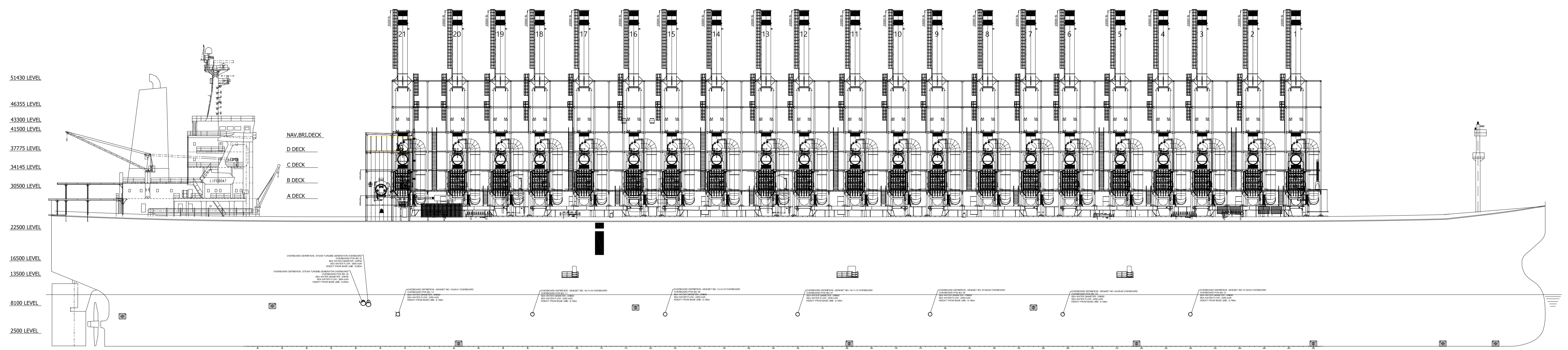
## **APPENDIX 2.1: SHARK CLASS ILLUSTRATIONS**



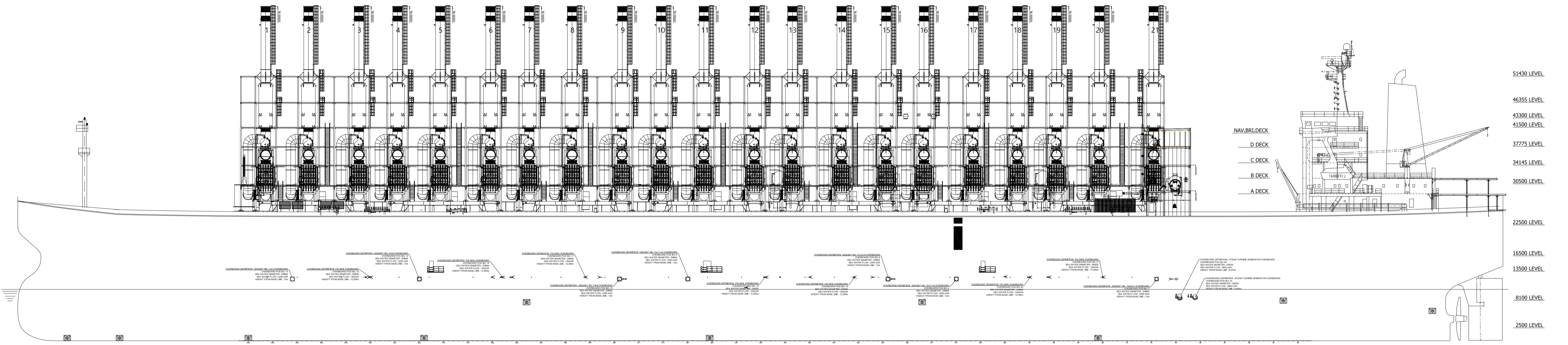
0	FIRST ISSUE	A.ŞERBETCI	23.09.2020	
NO.	REVISION NOTE	REVISED BY	REV. DATE	
 <b>KARADENİZ HOLDİNG</b>		<b>PROJECT NAME</b> KARADENİZ POWERSHIP SHARK CLASS		
		<b>DRAWING NAME</b> OVERBOARD & SEACHEST ARRANGEMENT		
		<b>PRJ. NO / HULL NO</b> KPS--	<b>CLASS / ID NO</b> BV / --	
		<b>SHIPYARD</b> KARADENİZ	<b>DRAWN BY</b> A.ŞERBETCI	<b>DATE</b> 23.09.2020
<b>CHECKED BY</b> C.KURAK	<b>DWG NO</b> 406.001	<b>SCALE</b> 1:250		

## **APPENDIX 2.2: KHAN CLASS ILLUSTRATIONS**

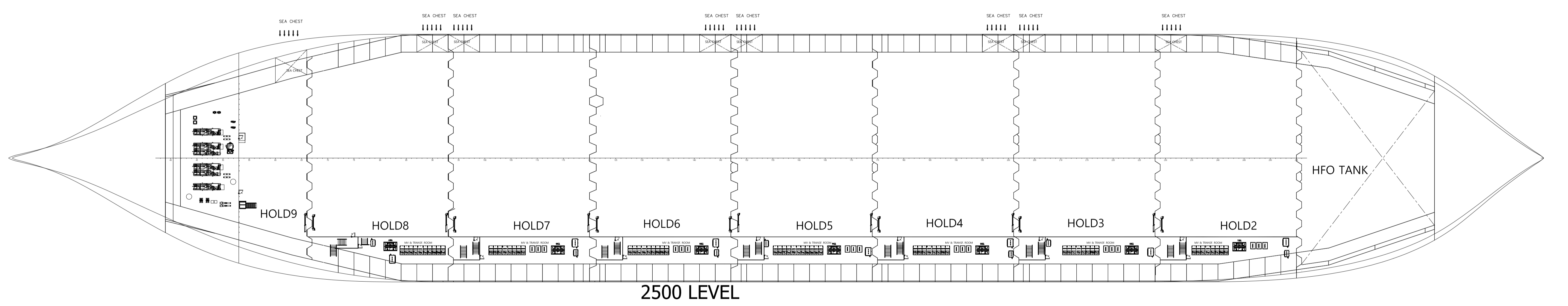
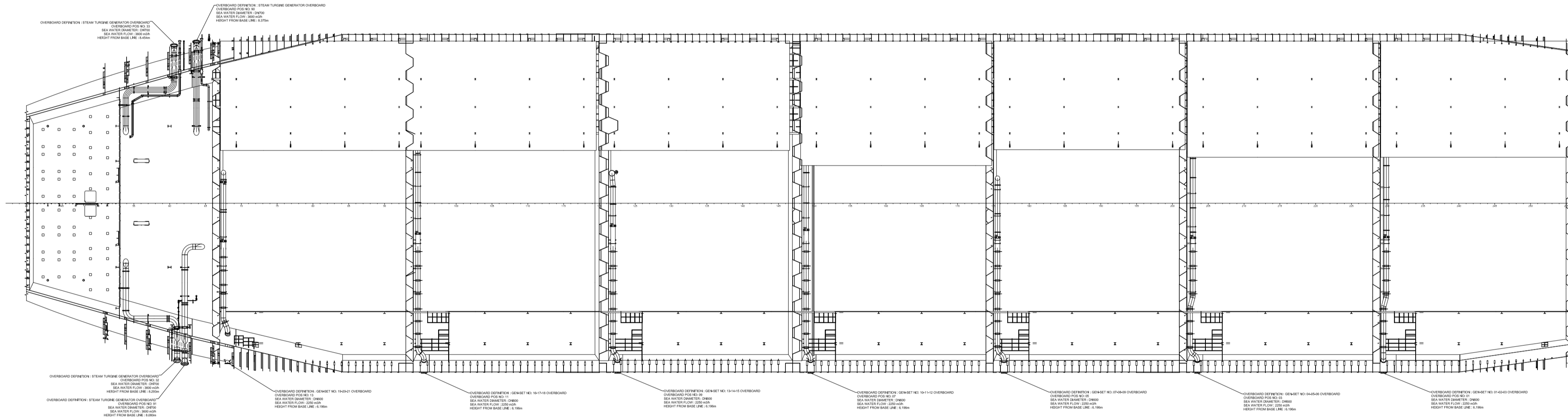
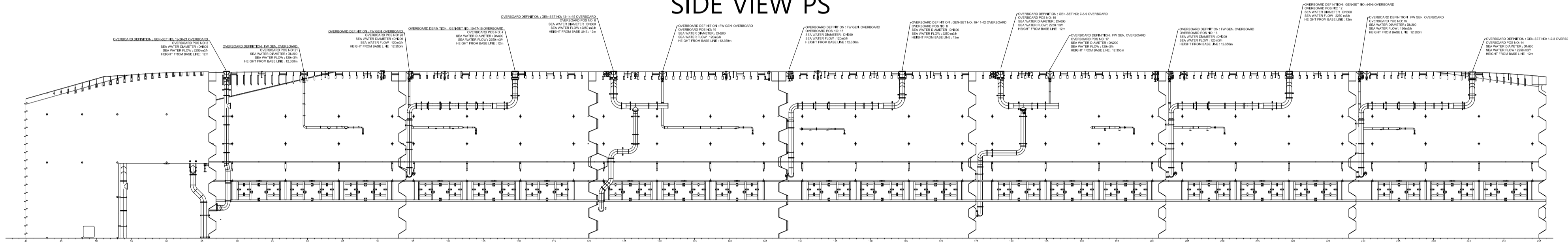




SIDE VIEW STB

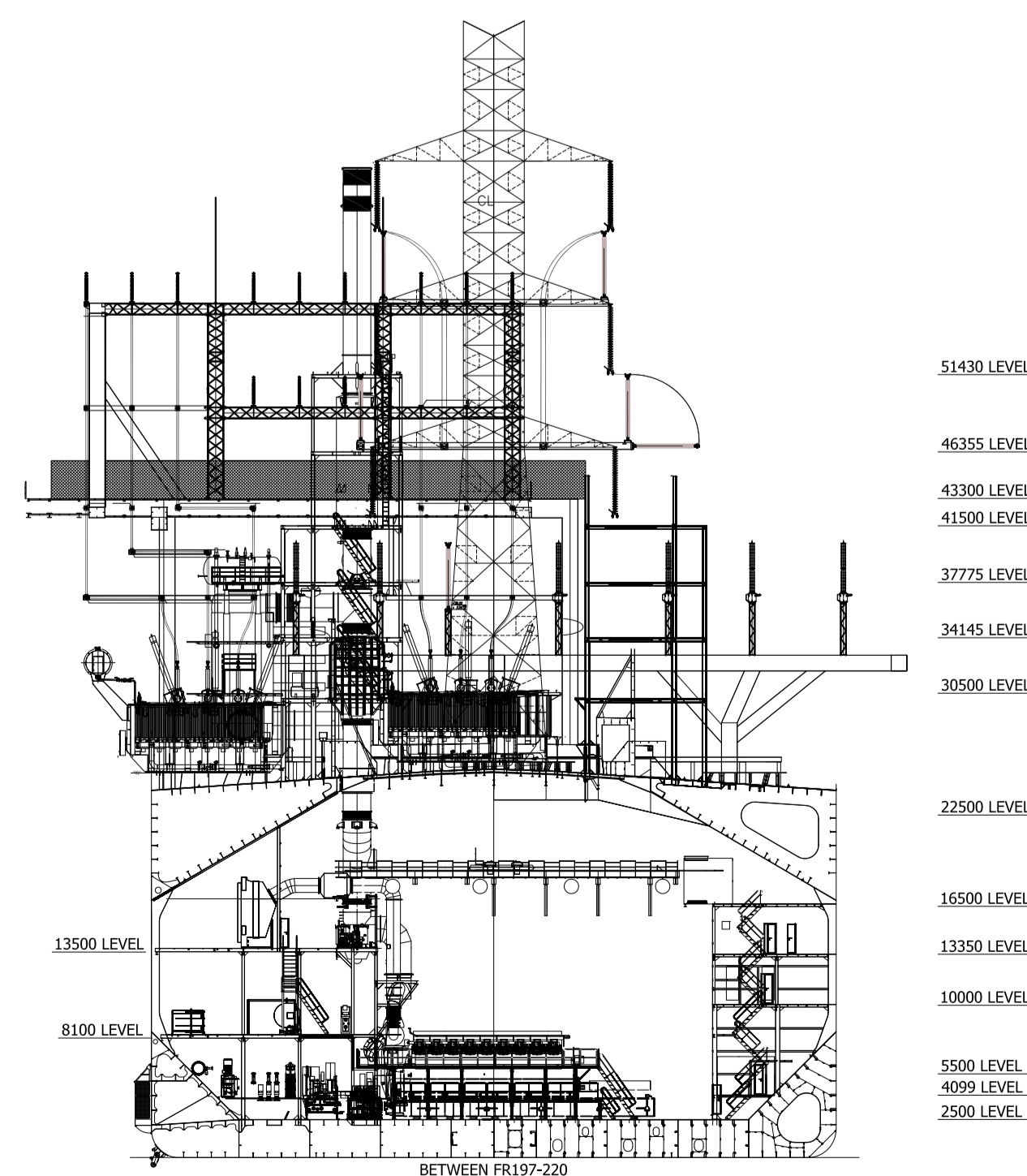


SIDE VIEW PS



2500 LEVEL

DRAUGHT : 5.419m

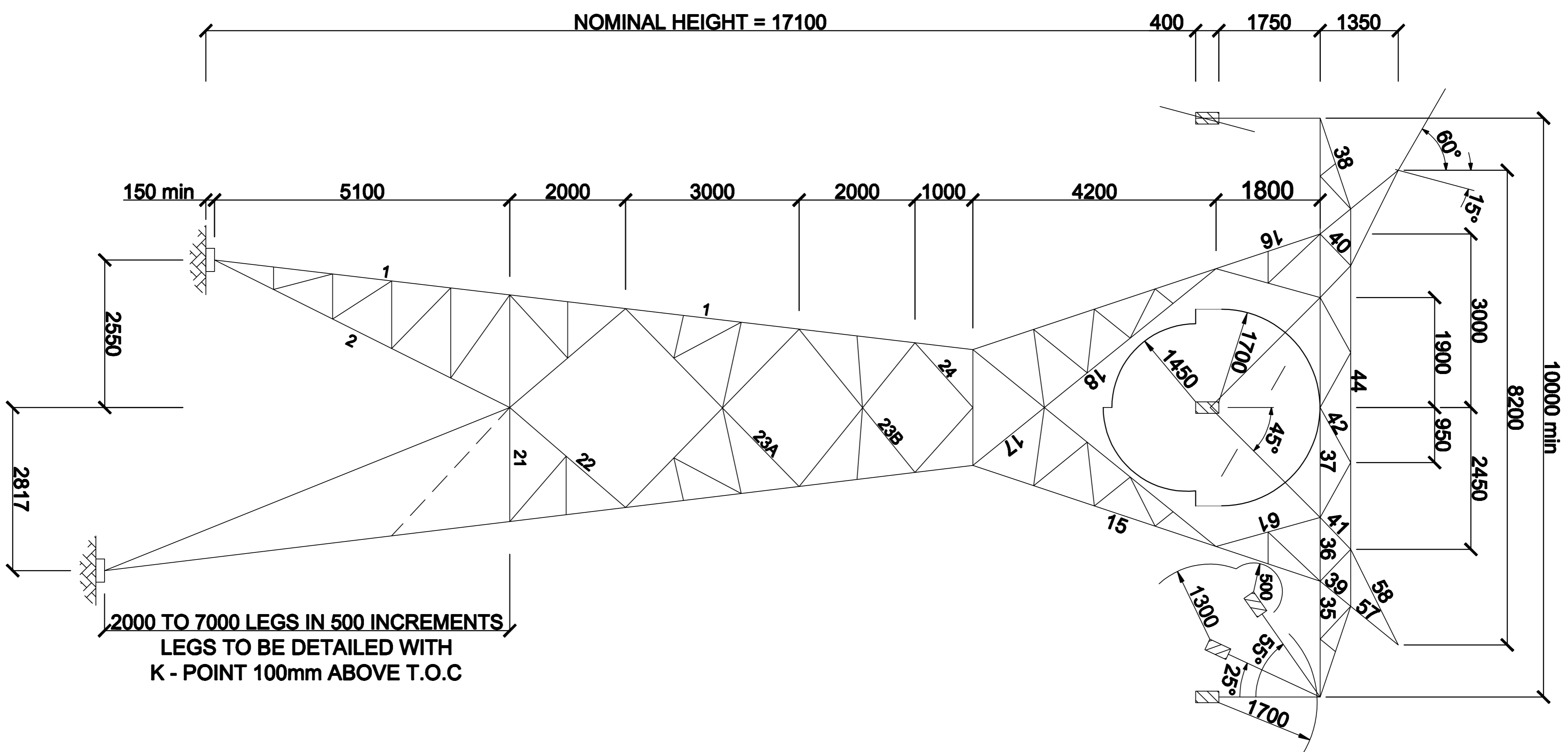


0	FIRST ISSUE	A.ŞERBETCI	23.09.2020
NO:	REVISION NOTE	REVISED BY	REV. DATE
		<b>KARADENİZ HOLDİNG</b>	
		<b>KARADENİZ POWERSHIP KHAN CLASS</b>	
<b>Karadeniz Holding A.Ş.</b> Merkez Marmaris Deniz Çukuluğu No:16 - 34600 Kuşçesu / Marmaris - 0880071 Tel: +90 212 295 47 37 Faks: +90 212 295 42 45 Mersis No: 08090028800019 VV / M. Kuşçesu / 000004343 <a href="http://www.karadenizholding.com">www.karadenizholding.com</a>	PRJ. NO / HULL NO KPS-- CLASS / ID NO BV / -- SHIPYARD SHIPYARD	PROJECT NAME <b>OVERBOARD &amp; SEACHEST ARRANGEMENT</b>	
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# **APPENDIX 2.3: 132 KV TWIN CONDUCTOR TOWER ILLUSTRATIONS**

# LEGEND



## APPROVAL

No	Department	Name	Date	Signature
1	Manager Design			
2	Manager Development			
3	Manager Medium Voltage			
4	Manager Network Optimization			
5	General Manager Design and Development			
6	General Manager Utilization			
7	General Manager Customer Service			
8	Energy and Trading Manager			
9	Executive Manager Engineering			

**Customer:**  
**Karpowerstrip**  
 164 Totius Street  
 Groenkloof  
 Pretoria

**Site:**  
**POWERSHIP 132KV  
 POWER EVACUATION**

**Drawing Title:**  
**132KV TWIN CONDUCTOR  
 TOWER STRUCTURE**

**Site:** Engineering (Pty) Ltd  
 Bassonville Office Park  
 Cussonville Drive  
 Bassonville  
 Tel: (011) 882 1971  
 Fax: (011) 432 8115



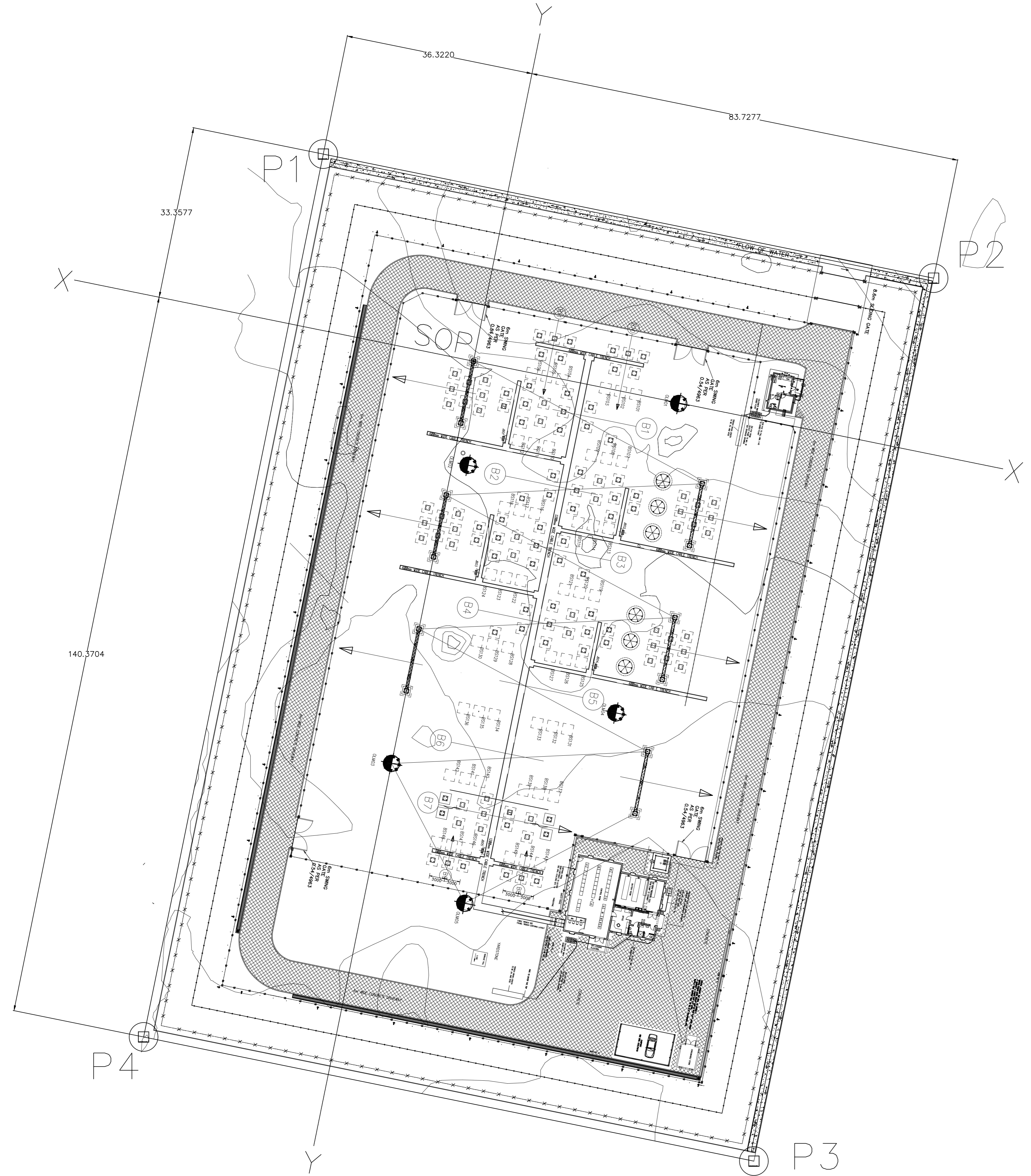
**Drawn By:** P Lekgani  
**Checked By:** S Pritthraj  
**Approved By:** K Pflamher  
**Scale:** 1:50

**Date:** 11/06/2020  
**Size:** A1

**Drawing No:** SE-PWS-STR-TCTS-0001-00  
**Revison:** 00

## **APPENDIX 2.4: 132 KV SWITCHING STATION**





SITE AND CONTOUR PLAN



LOCALITY PLAN 1:50 000

**Geo positioned: WGS 84 LO31**

Points	X Coordinate	Y Coordinate	Coordinate System
P1	98741,5600	-3185232,3200	32° 0' 40.32" E ; 28° 46' 45.63" S
P2	98859,4170	-3185256,3042	32° 0' 44.67" E ; 28° 46' 46.37" S
P3	98824,7087	-3185426,8590	32° 0' 43.45" E ; 28° 46' 51.92" S
P4	98706,8517	-3185402,8749	32° 0' 39.10" E ; 28° 46' 51.18" S
SOP	98770,5542	-3185272,3250	32° 0' 41.40" E ; 28° 46' 46.92" S

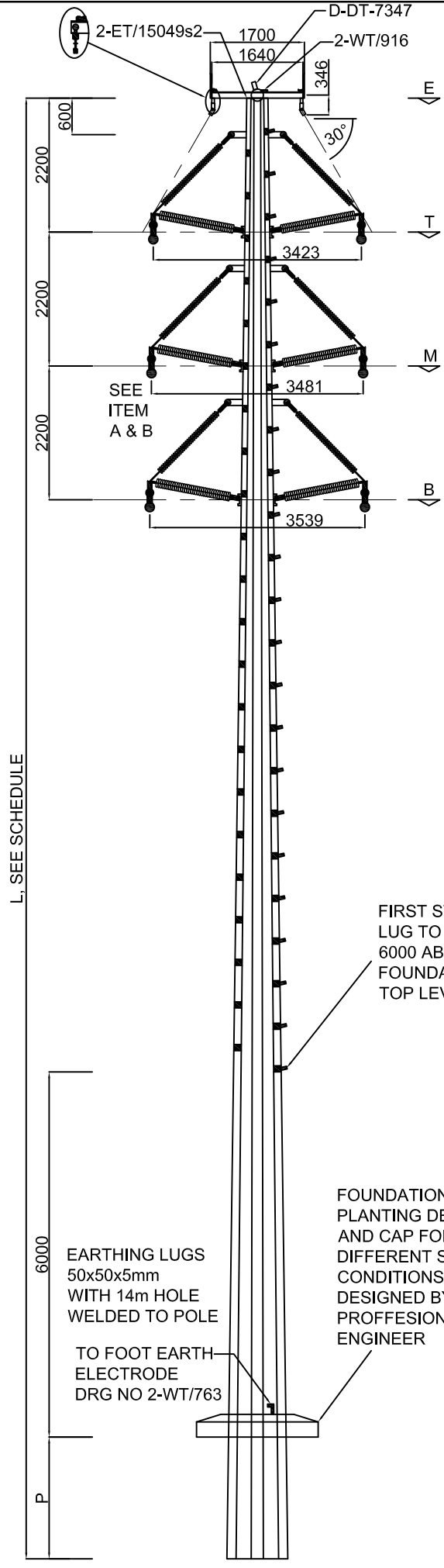
D6	STATION ELECTRIC DIAGRAM
D7	KEY PLAN
D8	FOUNDATION & TRENCH LAYOUT
D10	EARTHMAT LAYOUT
D11	OVERHEAD EARTHWARE LAYOUT
D12	TUBULAR BUSBAR LAYOUT
D13	STEELWORK MARKING PLAN
D14	SAFETY AND SECURITY FENCE
D15	OPERATING DIAGRAM
D16	BAY LAYOUT DRAWINGS 1 TO 19
D38	BUILDING GENERAL ARRANGEMENT
D39	SITE AND CONTOUR PLAN
D40	GEOMETRIC DESIGN
D41	TERRACE LAYOUT
D42	ACCESS ROAD LAYOUT
D43	DRAINAGE LAYOUT
D46-1	SECURITY FENCE LIGHTING LAYOUT
D46-2	SECURITY FENCE LIGHTING SCHEMATIC
D47	OPERATIONAL FLOODLIGHT SH1-3
D48	FOUNDATION LEVEL SCHEDULE
D49	FIRE PROTECTION
050a	ACCESS CONTROL BUILDING
050b	CONSUMABLE STORE
050c	WATER TANK
050c	CONTROL BUILDING
0500	BUILDING DETAILS SH1-18
051A SH1	C/BUILD ELECTRICAL RETICULATION
051A SH2	CONTROL BUILDING SCHEMATIC
051B SH1	CONTROL BUILDING VENTILATION
051B SH2	BOOSTER PUMP
051C	ACCESS CONTROL BUILDING ELECT

**DETAIL DESIGN  
NOT FOR CONSTRUCTION**  
ORIGINAL DWG #: NOT APPLICABLE  
CONCEPT DWG #: NOT APPLICABLE

0	09/09/2022	FIRST ISSUE.																	
REV	DATE	REVISION	REV BY	CHKD BY	APP BY	ACPT BY	DRG NO.	REFERENCE DRAWINGS											
ACCEPTED FOR ESKOM BY:																			
APPROVED BY: R G NORTON																			
09/09/2022 R G NORTON																			
CHECKED BY: D TULSEE																			
09/09/2022 D TULSEE																			
CREATED BY: P LEKGARI									CONTRACTOR DRAWING NO <b>INGW21P01-SE-D39</b> SHT 0 REV 0										
09/09/2022 P LEKGARI																			
SCALE 1:250																			



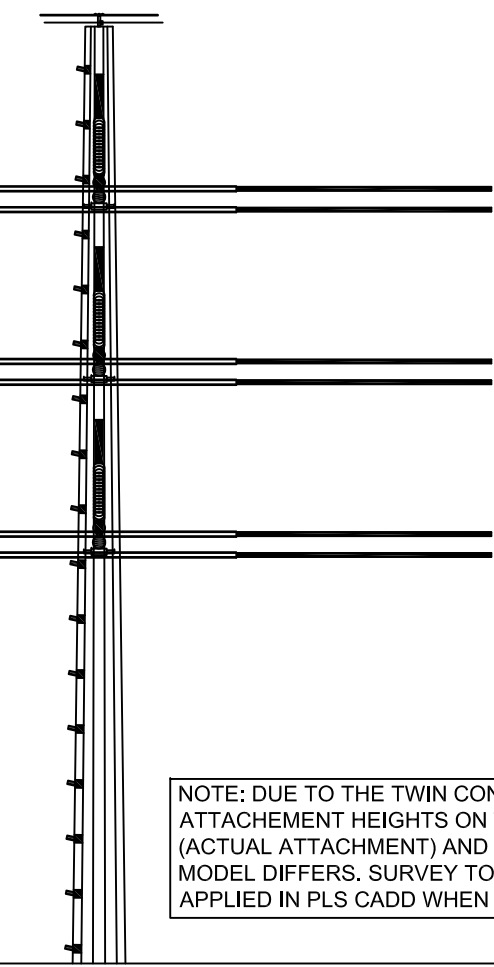
**APPENDIX 2.5: 132 KV STEEL POLE  
INTERMEDIATE DOUBLE CIRCUIT  
STRUCTURE FOR TWIN TERN  
CONDUCTOR**



BRACED POST INSULATOR ASSEMBLY 2-ET/15049s2



PERCHING BRACKET



NOTE: DUE TO THE TWIN CONFIGURATION. THE ATTACHEMENT HEIGHTS ON THIS DRAWING (ACTUAL ATTACHEMENT) AND THE PLS CAD MODEL DIFFERS. SURVEY TOLERANCE TO BE APPLIED IN PLS CADD WHEN MODELLING.


132 STEELPOLE INTERMEDIATE 132kV DOUBLE TWIN TERN						
ADDITIONAL ITEMS TO BE SUPPLIED BY THE POLE MANUFACTURER						
ITEM	DESCRIPTION				QTY/STRUCTURE	
A	PLATE 6 x 160 x 100 WITH 4 x 18mm HOLES				12	
B	BOLTS AND NUTS HDG TO SABS 763 M16 x 120				24	
C	DOUBLE EARTH WIRE BRACKET 1290mm 80 x 80 x 8				1	
D-DT-7347	BIRD PERCHING BRACKET				1	
CONDUCTOR ATTACHMENT HEIGHT						
P-PLANTING DEPTH (m)	OVERALL POLE LENGTH L(m) STRUCTA	CONDUCTOR ATTACHMENT HEIGHT (m)				
		SHIELD WIRE	TOP PHASE	MIDDLE PHASE	BOTTOM PHASE	
2.8	22	19.0	16.8	14.6	12.4	
3.0	24	20.8	18.6	16.4	14.2	
3.2	26	22.6	20.4	18.2	16.0	
3.4	28	24.4	22.2	20.0	17.8	
3.6	30	26.2	24.0	21.8	19.6	
CONDUCTOR, EARTH WIRE - 1 x WOLF & 16kA OPGW						
		TERRAIN TOPOGRAPHY	DEVIATION ANGLE (deg)	WIND SPAN (m)	WEIGHT SPAN (m)	MAX GEOMETRICK SPAN (m)
Pole lengths:		NORMAL UPWIND SLOPES	0	300	400	324
22m	1		250	400	324	
24m	2		200	400	324	
26m						
28m						
Pole lengths:		NORMAL NO UPWIND SLOPES	0	280	400	324
30m	1		235	400	324	
	2		190	400	324	

Customer:  
POWERSHIP  
164 Totius Street  
Groenkloof  
Pretoria

Site:  
**RICHARDS BAY**

Drawing Title:  
**132kV STEEL POLE INTERMEDIATE DOUBLE CIRCUIT STRUCTURE FOR TWIN TERN CONDUCTOR**

Siris Engineering (Pty) Ltd  
Bassonia Office Park  
Cussonia Drive  
Bassonia  
Tel: (011) 682 1971  
Fax: (011) 432 6115



Drawn By:  
P Lekgari

Checked By:  
V Chinniah

Approved By:  
K Pflamber

Scale:  
N.T.S

Date:  
08/10/2020

Size:  
A3

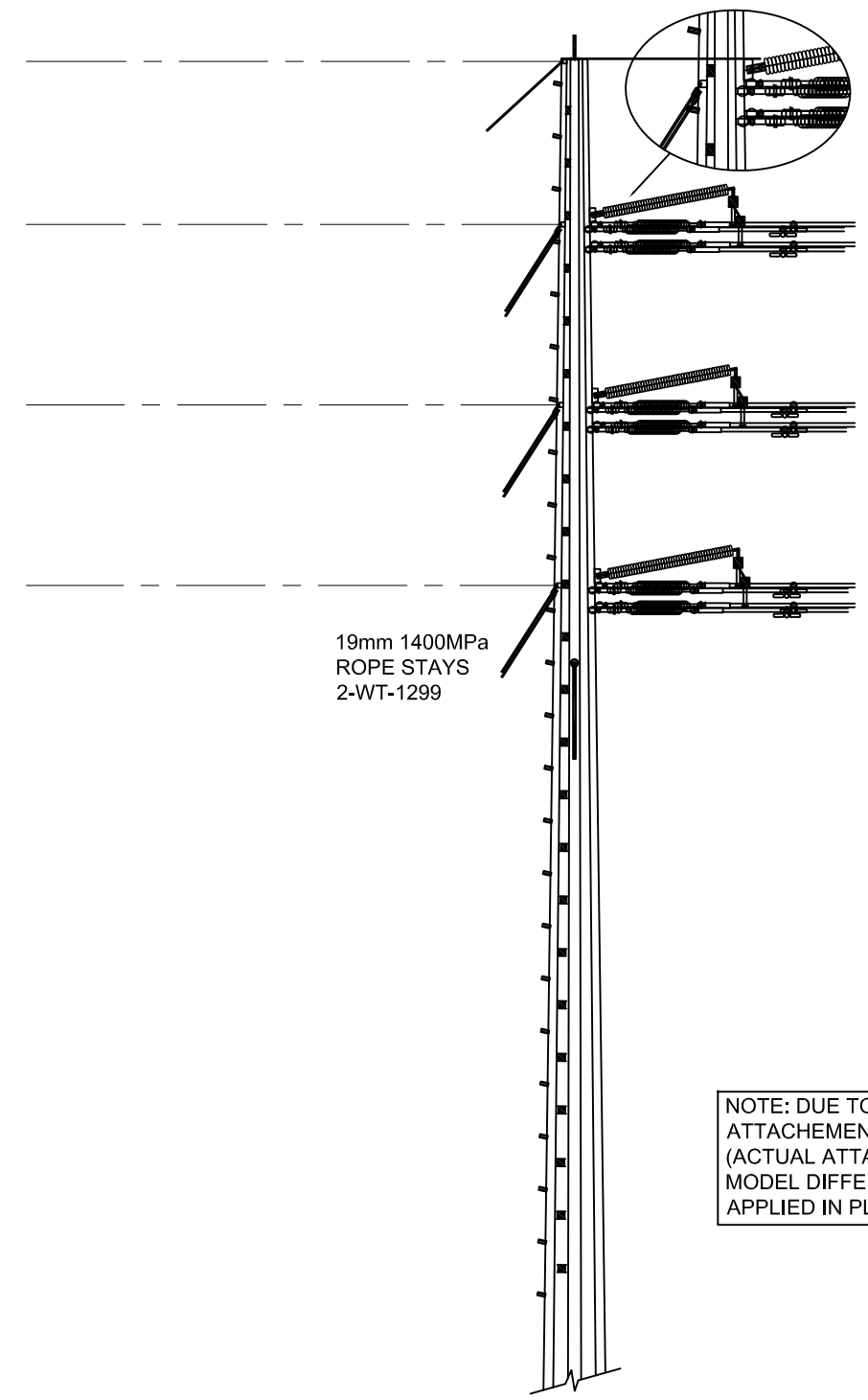
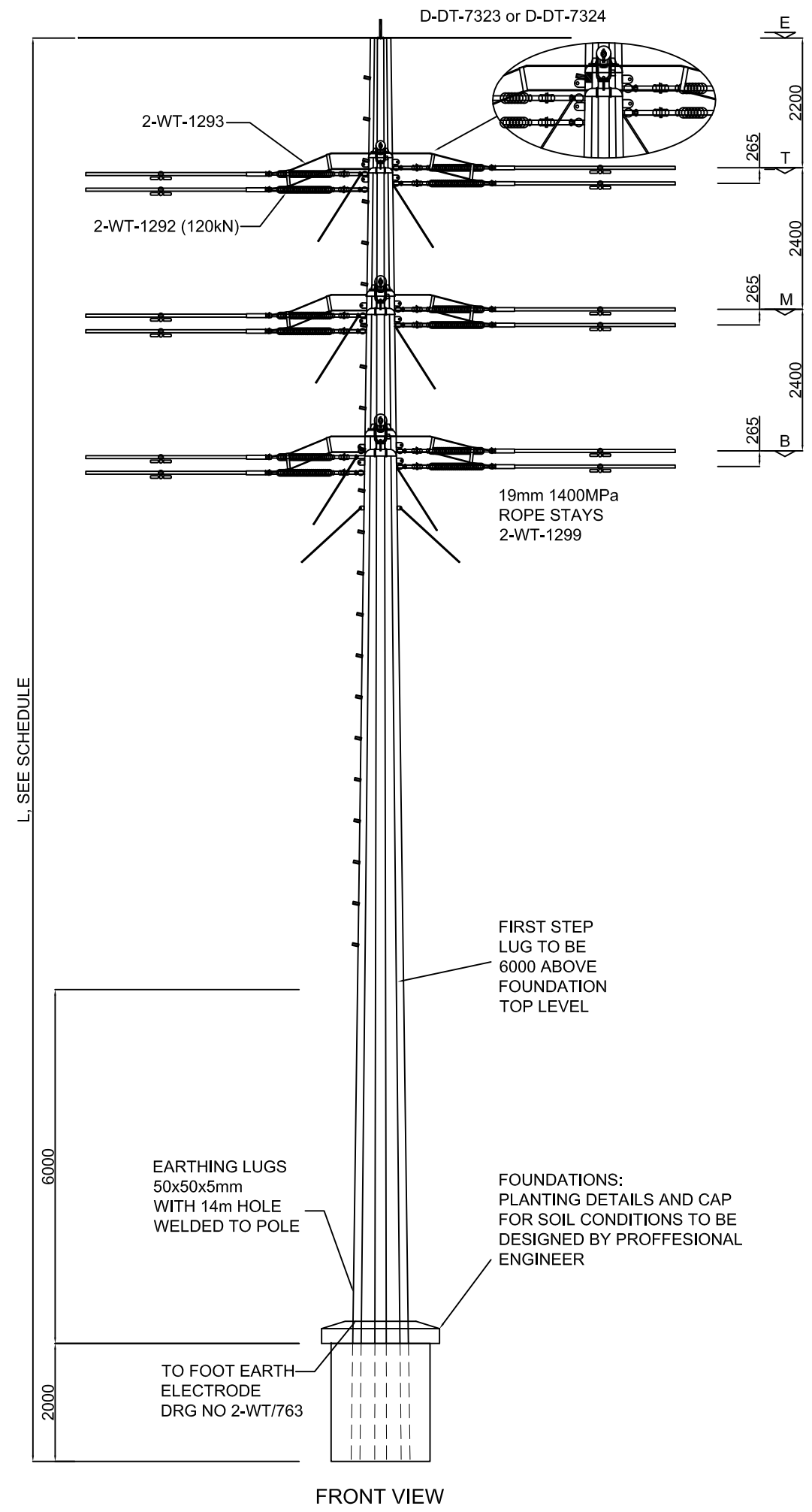
Drawing No:  
SE-PWS-STR-SPDC-0001-00

Revision:  
00

Rev	Date	Drawn	Revision Details	Rev	Date	Drawn	Revision Details
00	08/10/20	PL	Initial Design				

## **APPENDIX 2.6: 132 KV STEEL POLE ANGLE STRAIN STRUCTURE**





NOTE: DUE TO THE TWIN CONFIGURATION, THE ATTACHEMENT HEIGHTS ON THIS DRAWING (ACTUAL ATTACHEMENT) AND THE PLS CAD MODEL DIFFERS. SURVEY TOLERANCE TO BE APPLIED IN PLS CADD WHEN MODELLING.

OVERALL POLE LENGTH L (m)	CONDUCTOR ATTACHEMENT HEIGHT (m)			
	SHIELD WIRE	TOP PHASE	MIDDLE PHASE	BOTTOM PHASE
20	18	15.8	13.4	11.0
21	19	16.8	14.4	12.0
22	20	17.8	15.4	13.0
23	21	18.8	16.4	14.0
24	22	19.8	17.4	15.0
25	23	20.8	18.4	16.0
27	25	22.8	20.4	18.0
28	26	23.8	21.4	19.0
30	28	25.8	23.4	21.0

DESIGN SPANS-TWIN BERFORD CONDUCTOR: 2 x 19/2.65 STEEL EARTH WIRES


TERRAIN TOPOGRAPHY	DEVIATION ANGLE (deg)	WIND SPAN (m)	WEIGHT SPAN (m)	MAX GEOMETRIC SPAN (m)
NORMAL NO UPWIND SLOPES	0-2	284	370	450

Customer:  
POWERSHIP  
164 Tolius Street  
Groenkloof  
Pretoria

Site:  
**RICHARDS BAY**

Drawing Title:  
132kV STEEL POLE ANGLE STRAIN  
STRUCTURE (2-90) TWIN  
BERSFORD/KINGBIRD CONDUCTOR  
GENERAL ARRANGEMENT

Siris Engineering (Pty) Ltd  
Bassonia Office Park  
Cussonia Drive  
Bassonia  
Tel: (011) 682 1971  
Fax: (011) 432 6115



Drawn By:  
P Lekgari

Checked By:  
V Chinniah

Approved By:  
K Pflamber

Scale:  
N.T.S

Date:  
08/10/2020

Size:  
A3

Drawing No:  
SE-PWS-STR-SPAS-0001-00

Revision:  
00

Rev	Date	Drawn	Revision Details	Rev	Date	Drawn	Revision Details
00	08/10/20	PL	Initial Design				