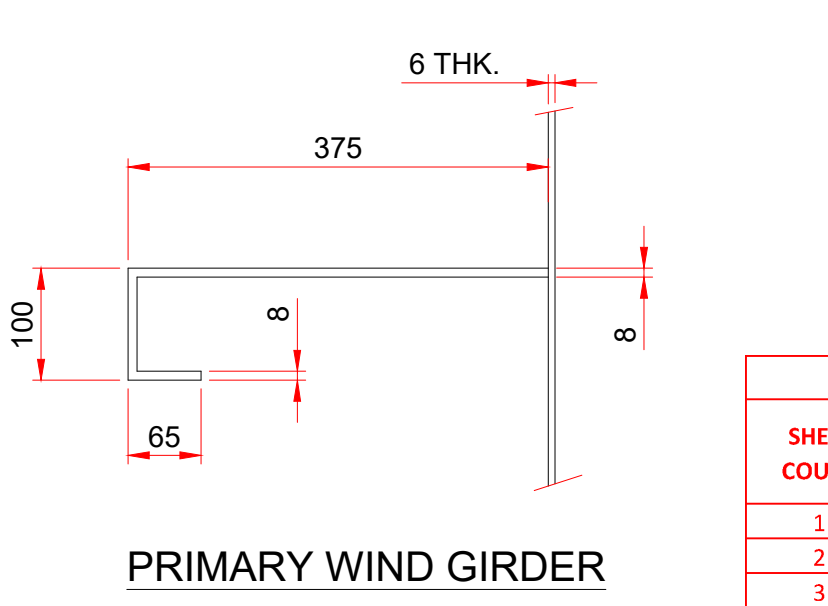
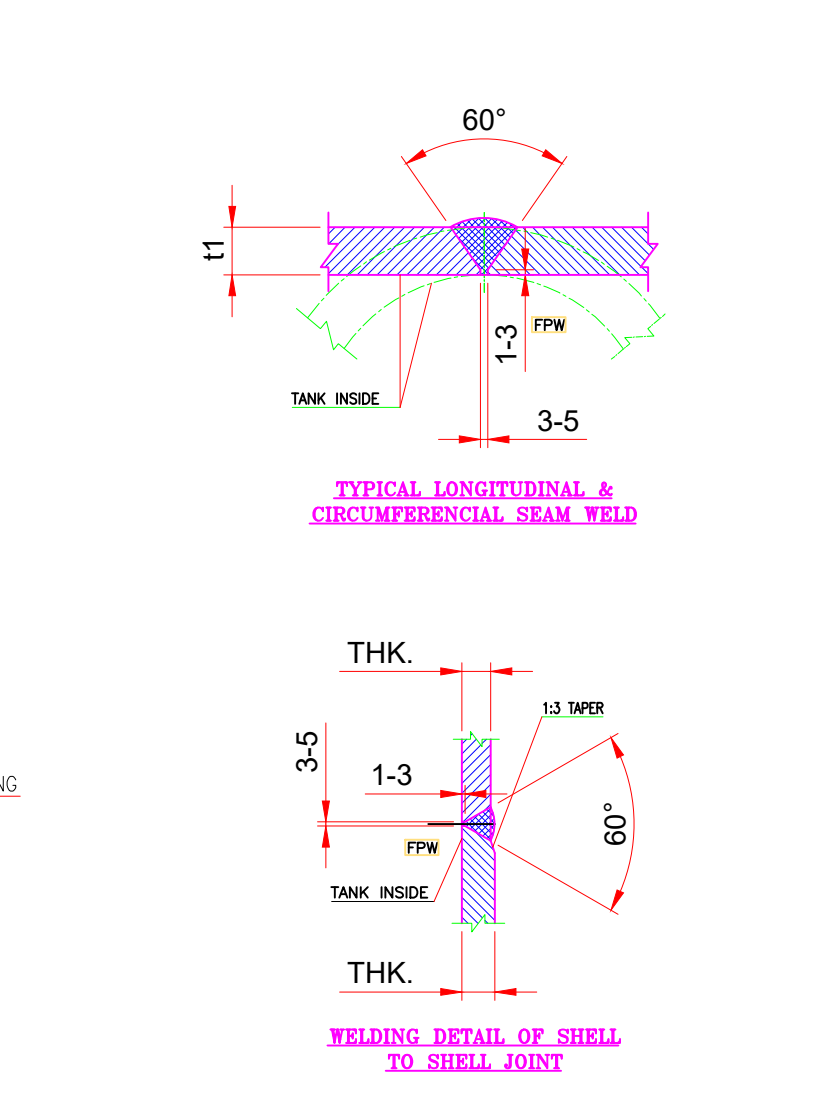
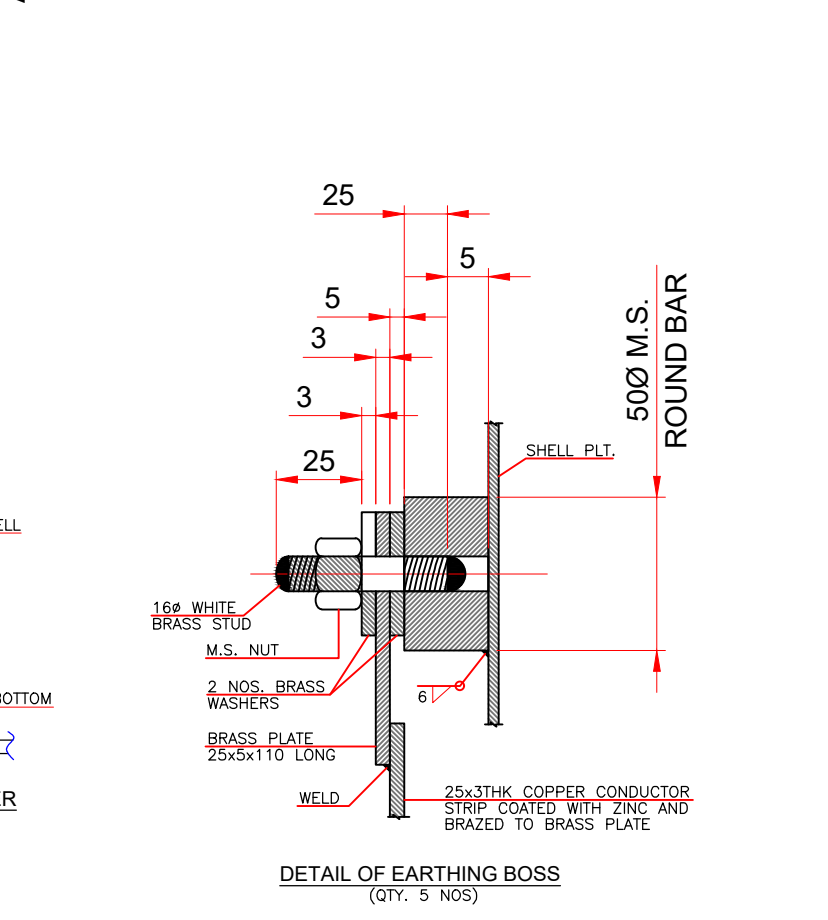
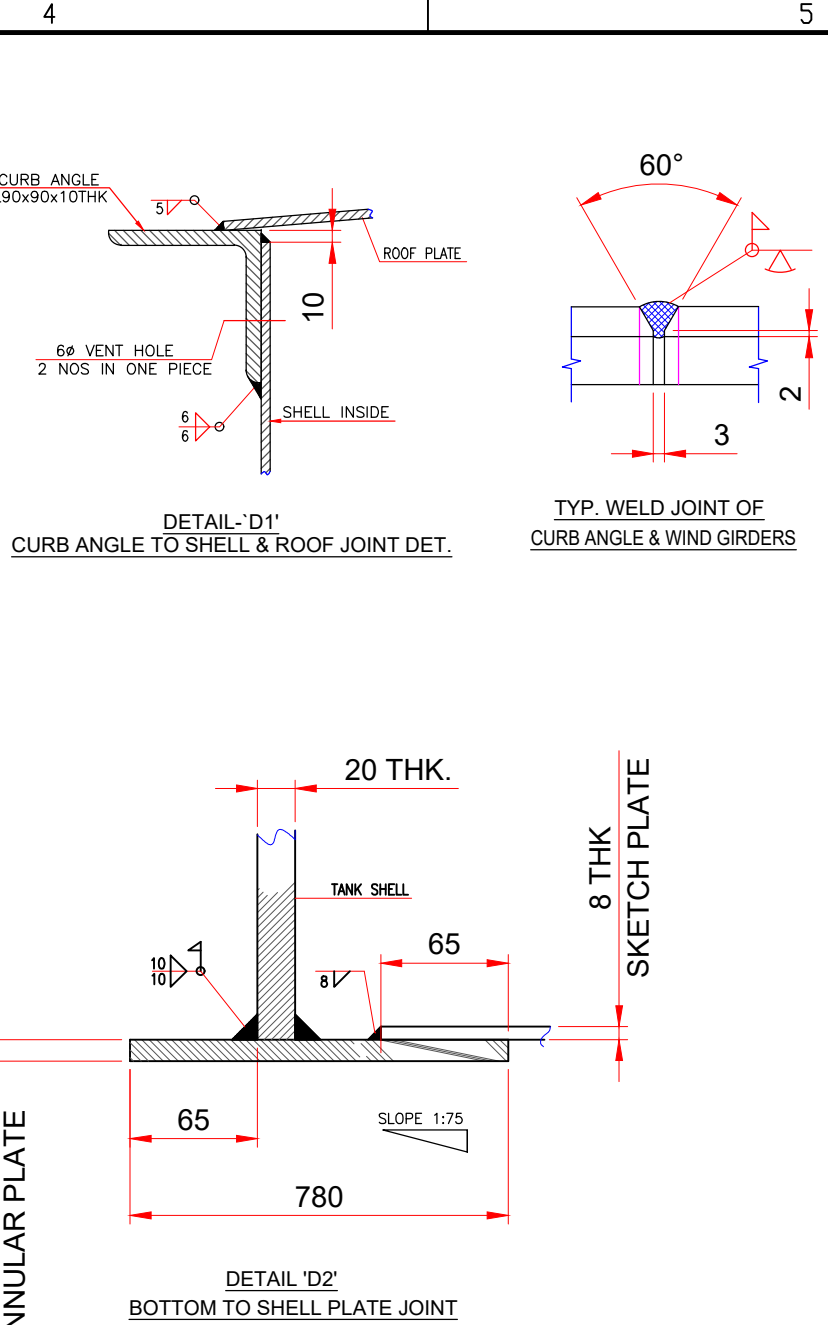
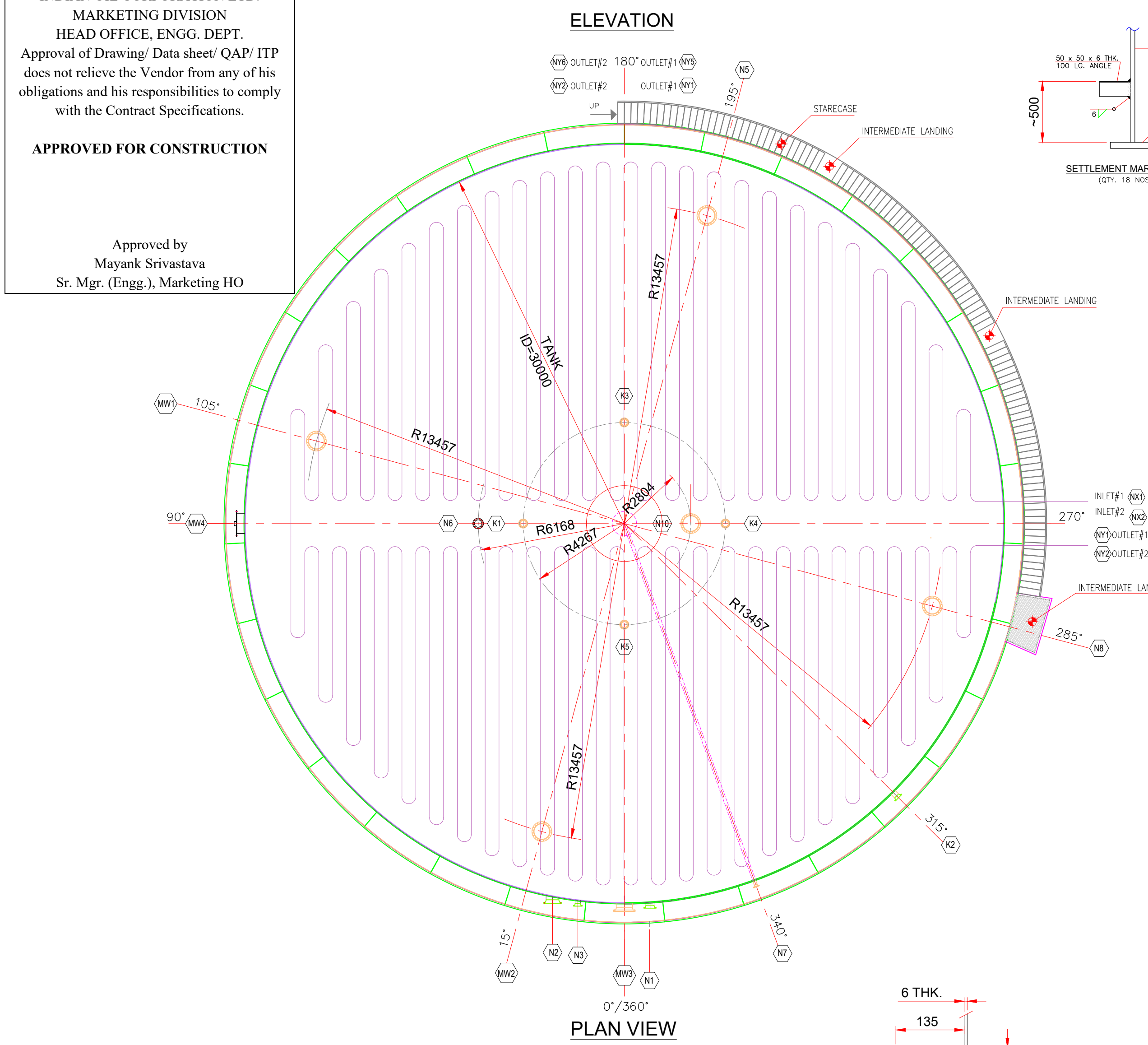


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MARKETING DIVISION
HEAD OFFICE, ENGG. DEPT.
Approval of Drawing/ Data sheet/ QAP/ ITP
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APPROVED FOR CONSTRUCTION

Approved by
Mayank Srivastava
Sr. Mgr. (Engg.), Marketing HO



ERECTION WEIGHT (MT)	351
OPERATING WEIGHT (MT)	14506
HYDROTESTING WEIGHT (MT)	12147

DESIGN DATA	
DESIGN CODE	API-650,ED 2013
STORED PRODUCT	BITUMEN (VG 40/VG30)A
SIZE OF TANK	INSIDE DIAMETER-30 M & HEIGHT-18.5 M
CAPACITY (NOMINAL)	M ³ 12160 (17.2 M HEIGHT)
NOS OF TANK	2
TYPE OF ROOF	CONE ROOF
CORROSION ALLOWANCE	SHELL-1.5MM,BOTTOM-1.5MM,ROOF-1.0MM
FLUID DENSITY	KG/M ³ 1200 MAX.
MAX. DESIGN LIQUID LEVEL	M 17.5 (SAFE FILL LIQUID LEVEL)
DESIGN (POSITIVE) PRESSURE	MM WC ATMOSPHERIC + FULL OF LIQUID
OPERATING PRESSURE	MM WC ATMOSPHERIC
DESIGN TEMPERATURE	°C 200
OPERATING TEMPERATURE	°C 170
TEST PRESSURE	KG/CM ² g FULL OF WATER
JOINT EFFICIENCY	85%
MAWP	KPa 1.4824 (151.1786 mmh2o)
MAVV	KPa 0.5208 (-53.1155 mmh2o)
RADIOGRAPHY	SPOT 10% RT
FLASH POINT	°C 220°
BASIC WIND SPEED	M/S 47
WIND PRESSURE	AS PER IS 875
SEISMIC / ZONE	AS PER IS:1893- 2016 ED./ ZONE-III
PAINTING	AS PER SPECIFICATION
INSULATION / THK MINERAL WOOL AS PER	YES/50 MM MINERAL WOOL (144 Kg/m3)
ASTM C612 TYPE III	
BITUMEN FLOW RATE (IN/OUT)	(52800 kg/hr)
INSPECTION	CLIENT / TPIA
GROUND SNOW LOAD	KPa 0.0
ROOF LIVE LOAD	KPa 1.23
ADDITIONAL ROOF DEAD LOAD	KPa 0.5
STEAM FLOW RATE	kg/hr 1299
HEATING COIL	NPS 40NB" PIPE SCH.80
STEAM PRESSURE	10 bar(g) SATURATED
COIL LENGTH	M 2184 (2 STAGE)

MATERIAL SPECIFICATION	
DESCRIPTION	TECHNICAL PARTICULARS
SHELL / BOTTOM / ROOF / ANNULAR PLATE	IS 2062 Gr B
CURB ANGLE	IS 2062 Gr B
REINFORCEMENT PAD	IS 2062 Gr B
MANWAY NECKS / FLANGES / COVER PLATE	IS 2062 Gr. B / SA 105
PIPE FITTINGS	SA 234 Gr. WPB
NOZZLE NECKS UP TO 250 NB	AS PER ASTM A106 GR B(SEAMLESS)
NOZZLE NECKS ABOVE 250 NB	AS PER ASTM A106 GR B(SEAMLESS)
	ASTM A 105 #150 AND DIMENTION AS PER ANSI B 16.5 AND RISER FACE TO AARH 125
NOZZLE FLANGES	
NAMEPLATE	SS 304
GASKETS	METALLIC SPIRAL WINDING GASKET - SS316 WITH GRAPHITE FILLED -ASME B 16.20
BOLTING FOR STRUCTURE	IS: 1363 CS
BOLTING FOR NOZZLES	IS: 1367 CL. 4.6/4.0 FOR ROOF CS MANHOLES, SA 193 GR. B7/SA 194 GR. 2 H FOR ALL OTHER NOZZLES
INTERNAL BOLTS	SS 304
EXTERNAL GUSSETS	IS 2062 Gr. B
STRUCTURAL	IS 2062 Gr. A / SA 283 Gr. C
INTERNAL	IS 2062 Gr. B / SA 106 Gr. B
HANDRAILS	IS 1239 CS
ROOF EYE BOLT	IS 2062 Gr. B
PAINTER'S HOOK	IS 2062 Gr. B
WIND GIRDERS	IS 2062 Gr. B
STEAM COILS	SA106 Gr.B (SEAMLESS)

ACCESSORIES	
DESCRIPTION	SUPPLIED BY
EARTHING CONNECTION	FABRICATOR
SPIRAL STAIRWAY WITH HANDRAIL	FABRICATOR
PERIPHERIES HANDRAIL ON ROOF	FABRICATOR
SETTLEMENT LEVEL MARKER	FABRICATOR
GAUGE HATCH WITH COVER	FABRICATOR
STILL WELL / INTERNALS	FABRICATOR
LEVEL TRANSMITTER	By IOCL
TEMPERATURE ELEMENT	By IOCL
PRESSURE TRANSMITTER	By IOCL
WATER DRAW OFF SUMP	FABRICATOR
VENT WITH SS BIRD SCREEN	FABRICATOR
NAMEPLATE	FABRICATOR
STEAM COIL	FABRICATOR

FOUNDATION LOADING DATA		
SHEAR FORCE (Kg)	WIND 63588	SEISMIC 1536205
MOMENT (Kg-M)	1589111	18644920

SHELL WEIGHTS								
SHELL ID (MM)	SHELL COUSE HEIGHT (MM)	THICKNESS (MM)	MEAN ID (MM)	CIR.LENGTH (MM)	MATERIAL	UNIT WEIGHT (Kg/m)	WEIGHT (Kg)	
30000	2000	24	30024	94361	IS2062 Gr.B	188.4	35555	
30000		22	30022	94355	IS2062 Gr.B	172.7	24443	
30000	1500	20	30020	94349	IS2062 Gr.B	157	22219	
30000	1500	18	30018	94342	IS2062 Gr.B	141.3	19996	
30000	1500	16	30016	94336	IS2062 Gr.B	125.6	17773	
30000	1500	14	30014	94330	IS2062 Gr.B	109.9	15550	
30000	1500	12	30012	94323	IS2062 Gr.B	94.2	13328	
30000	1500	10	30010	94317	IS2062 Gr.B	78.5	11106	
30000	1500	8	30008	94311	IS2062 Gr.B	62.8	8884	
30000	1500	6	30006	94305	IS2062 Gr.B	47.1	6663	
30000	1500	6	30006	94305	IS2062 Gr.B	47.1	6663	
30000	1500	6	30006	94305	IS2062 Gr.B	47.1	6663	
	18500						188842	

- GENERAL NOTES :-**
- ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED.
 - ALL BUTT WELD SEAMS WITHOUT BACKING STRIP SHALL BE CHIPPED BACK TO SOUND METAL & REWELD.
 - MANHOLE MAY BE FABRICATED FROM PLATE AND SHALL BE 100% RADIOGRAPHED.
 - ALL NOZZLE 50NB AND BELOW SHALL BE STIFFENED BY 2 NOS, 50x6THK FLAT 90° APART.
 - ALL NOZZLE AND MANHOLE BOLTS SHALL STRADDLE THE NEUTRAL AXIS OF EQUIPMENT.
 - THE NOZZLE ABOVE 50NB SHALL BE PROVIDED WITH REINFORCEMENT PAD AS PER CODE.
 - DELETED.
 - ALL COMPENSATION RINGS AND PADS FOR NOZZLES SHALL BE PNEUMATICALLY AT 100 KPa(G) BY APPLYING SOAP SOLUTION ON OUTSIDE WELD. ALL REINFORCEMENT TESTED WITH AIR PADS SHOULD HAVE 6ø TELL-TALE ON HORIZONTAL CENTERLINE.
 - PROJECTION OF SHELL NOZZLE ARE MENTIONED FROM OUTSIDE DIAMETER OF TANK /OUTER SURFACE OF ROOF OF TANK TO NOZZLE FLANGE FACE(i.e. GASKET SEATING FACE)
 - DIMENSIONAL TOLERANCES SHALL BE IN ACCORDANCE WITH CLAUSE 7.5 OF API 650.
 - VERTICAL JOINTS IN ADJACENT SHELL COURSES SHALL NOT BE IN ALIGNMENT BUT SHALL BE OFFSET FROM EACH OTHER BY 1/3RD OF THE PLATE LENGTH BUT IN NO CASE LESS THAN A DISTANCE OF 300 mm.
 - GAUGE HATCH, TEMPERATURE ELEMENT & LEVEL TRANSMITTER SHOULD BE LOCATED AWAY FROM THE INLET AND OUTLET NOZZLE.
 - ELECTRODES:- E-6013 : PLATES UP TO 12 THK.
E-7018 : PLATES 12.5 THK AND ABOVE AND SHELL TO ANNULAR JOINT.
 - THE TANKS SHALL BE MANUFACTURED, INSPECTED / TESTED, ERECTED & PAINTED AS PER LISTED SPECIFICATION
 - EARTHING BOSS SHALL BE PROVIDED AS PER STD - BR/CR/236 & OISD 244.
 - FABRICATOR HAS TO DESIGN, FABRICATE, SUPPLY, INSTALL ERECT AND COMMISSION
 - FREE VENT TO BE DESIGN FOR FLOW RATE, IN-2500 KL/hr, OUT-2000 KL/hr
 - FABRICATION DETAILS PROVIDED ARE INDICATIVE FOR REFERENCE.
 - PROVISION OF OPERATING/MAINTENANCE PLATFORM WITH SUITABLE GUARDS/CAGE SYSTEM TO BE CONSIDERED FOR ALL THE NOZZLES ABOVE 2.0 METER.
 - SHELL NOZZLES SHALL BE SEAMLESS PIPE BOTH END FLANGED IF ANY.

- NOTE ON WELDING SEQUENCE FOR TANK ROOF PLATES**
- FOR REVERSE SHINGLING OF ROOF PLATES(I.E FROM CENTER TO SHELL) START LAYING COURSE AT THE CENTER OF THE TANK, COMPLETE EACH COURSER WORKING FROM THE COURSE OUT TO & INCLUDING THE SKETCHES AT BOTH ENDS BEFORE PROCEEDING COURSE WITH RESPECT TO CENTER LINE OF THE TANK.
 - OVER LAP EACH PLATE OVER THE LAST ONE LAID,CHECK THE DISTANCE FROM CENTER LINE TO THE EDGE OF EACH COURSE
 - TACK WELD PLATES LIGHTLY THIS WILL MAKE ADJUSTMENT IF NECESSARY, EASIER.
 - THE NUMBERS IN FIGURE INDICATE THE FITTING & WELDING SEQUENCE @ ARROWS SHOW THE DIRECTION OF WELDING WHERE CRITICAL.
 - WELD SKETCHES TO CURB ANGLE BEFORE WELDING ANY SKETCHES TO EACH OTHERS
 - WELDING OF RECTANGULAR SEAMS NUMBER 1&2 AS SHOWS IN FIGURE PROCEED WITHOUT REGARDS TO THE WELDING OF SKETCHES TO CURB ANGLE OR EACH OTHER.
 - COMPLETE WELDING OF ALL SEAMS NUMBER 1&2 BEFORE WELDING SEAM 3.
 - WELD HEAVY LINES LAST.

NOZZLE SCHEDULE									
MARK	NOZZLE		QTY.	FLANGE			PROJ.	SERVICE	
	SIZE(NPS)	SCH		RTG.	TYPE	FACE			
MW3& MW4	30"	11 THK.	02	AS PER SPECIFICATION			300	SHELL W/H WITH COVER & DAVIT ARM	
N1	12"	12.7 THK.	01	300#	WN	RF	225	INLET	
N2	20"	12.7 THK.	01	300#	WN	RF	275	OUTLET	
N3	8"	12.7 THK.	01	300#	WN	RF	225	RECIRCULATION	
N7	6"	SCH80	01	300#	WN	RF	200	DRAIN	
NX1/NX2	1.5"	SCH80	02	300#	WN	RF	150	STEAM INLET	
NY1/NY2	1.5"	SCH80	02	300#	WN	RF	150	STEAM OUTLET	
K2	4"	SCH80	01	150#	WN	RF	175	PRESSURE TRANSMITTER	
N5	10"	SCH40	01	150#	SO	RF		GOOSE NECK ROOF VENT	
N6	10"	SCH40	01	150#	SO	RF		GOOSE NECK ROOF VENT	
N10	10"	SCH40	01	150#	SO	RF		GOOSE NECK ROOF VENT	
K3	6"	SCH40	01	150#	WN	RF		LEVEL TRANSMITTER W/STILLING WELL	
K5	6"	SCH40	01	150#	WN	RF		LEVEL TRANSMITTER W/STILLING WELL	
N8	4"	SCH40	01	150#	SO	RF		GAUGE HATCH WITH COVER	
K1	3"	SCH40	01	150#	WN	RF		LEVEL SWITCH	
K4	3"	SCH40	01	150#	WN	RF		TEMPERATURE TRANSMITTER	
MW1& MW2	24"	8 THK.	02	150#	SO	RF		ROOF M/H WITH COVER	

NOTE - ALL NOZZLES SHALL BE DOUBLE FLANGED LONG HEIGHT TYPE AS PER API 650.

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03	27.06.2023	ISSUED FOR COMMENTS	RJK	RND	NH	KNS
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01	29.04.2023	ISSUED FOR COMMENTS	RJK	RND	NH	KNS
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Rev.	D M Y	Modifications	Drawn	Checked	Validated	Approved

LOA NO. HCC/ 246/ ENGG- 07/ PT-21/ 2022- 23/ LOA Dated 21. 10. 2022

SAP PO number: XXXXXXXX

OWNER / CLIENT

INDIAN OIL CORPORATION LIMITED
Indian Oil Bhawan, G-9, Ali Yavar Jung Marg, Bandra East, Mumbai- 400051

PROJECT

EPCM FOR BITUMEN HANDLING FACILITY

SUBJECT

GENERAL ARRANGEMENT DRAWING FOR BITUMEN TANK
30 MTR DIA. x 18.5 MTR HT. LOCATION:- MATHURA

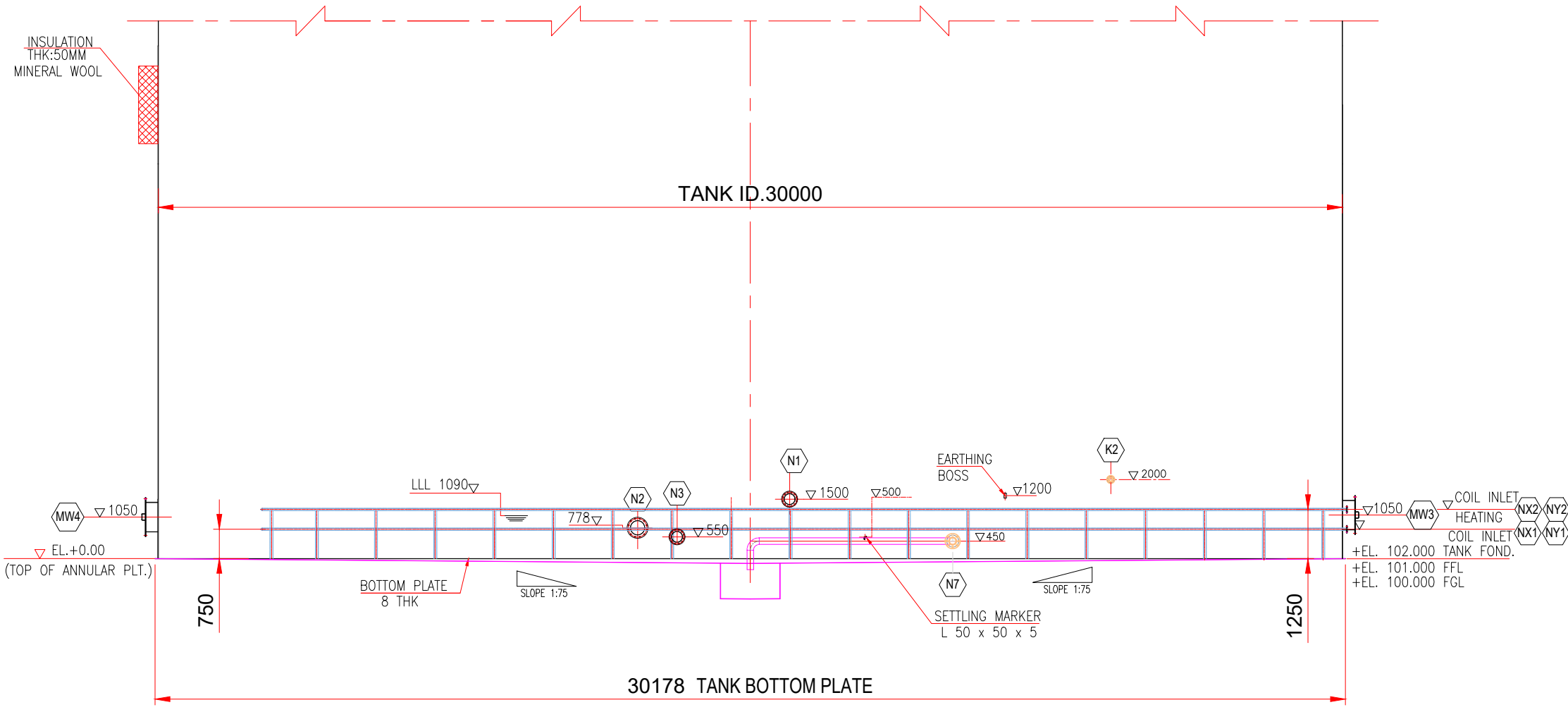
TRACTEBEL
TRACTEBEL Engineering pvt. ltd.

Size Scale Sheet

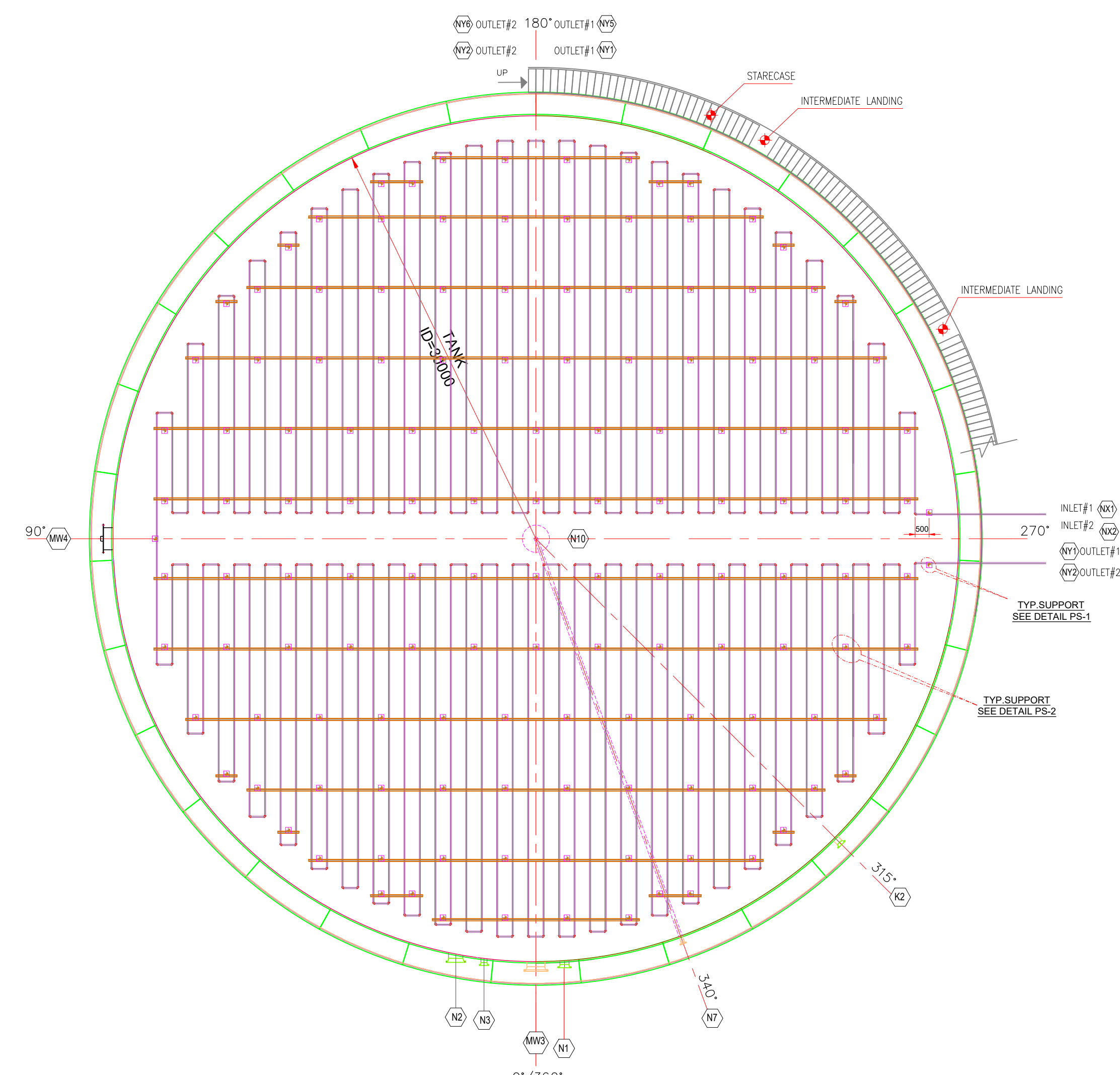
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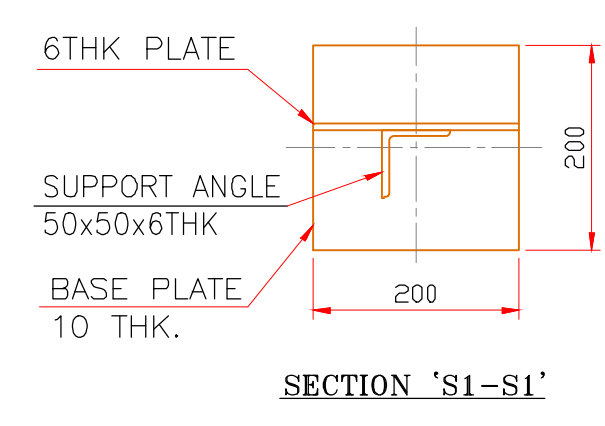
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ELEVATION



PLAN VIEW

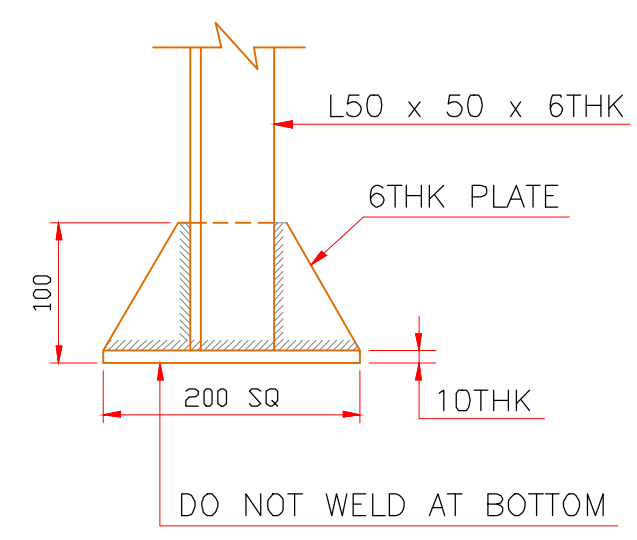


SECTION 'S1-S1'

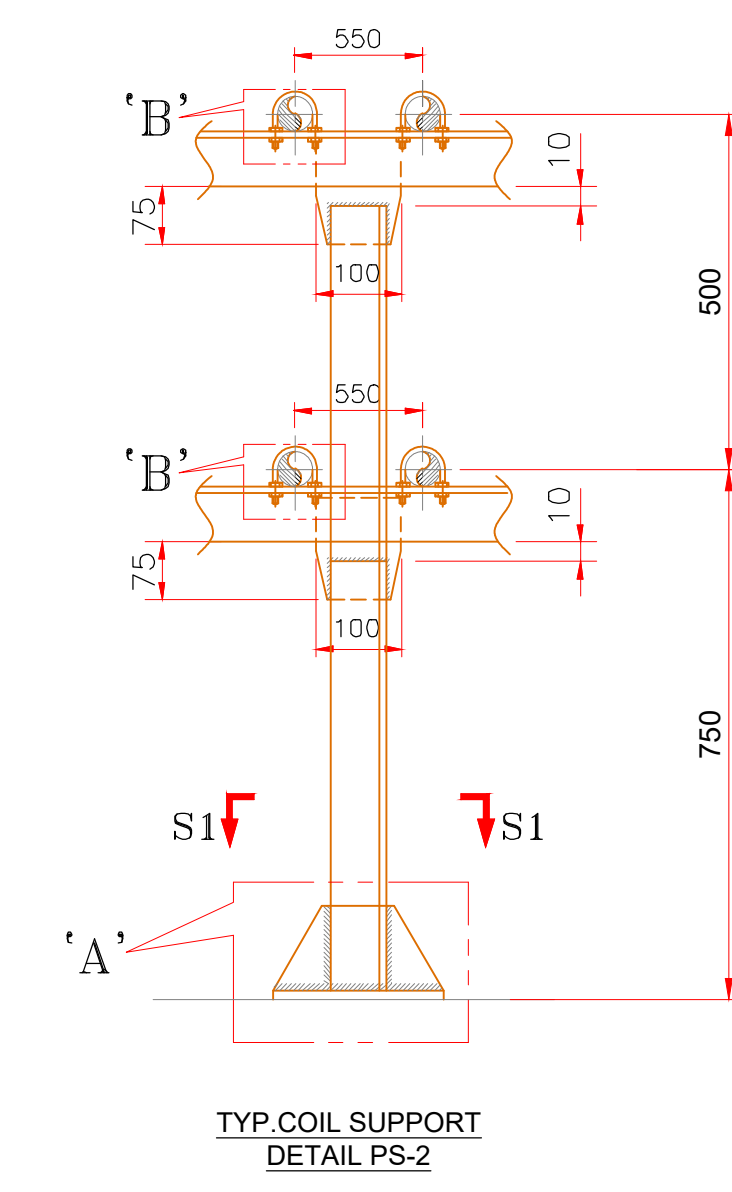
TABLE-01 - U-BOLT						
PIPE SIZE	MATERIAL	U-BOLT SIZE				QTY
		A	B	C	L	
40	HOT DIP GALVANIZED	62	60	M10	50	1

U BOLT WITH 2 FULL NUTS & 2 LOCK NUTS

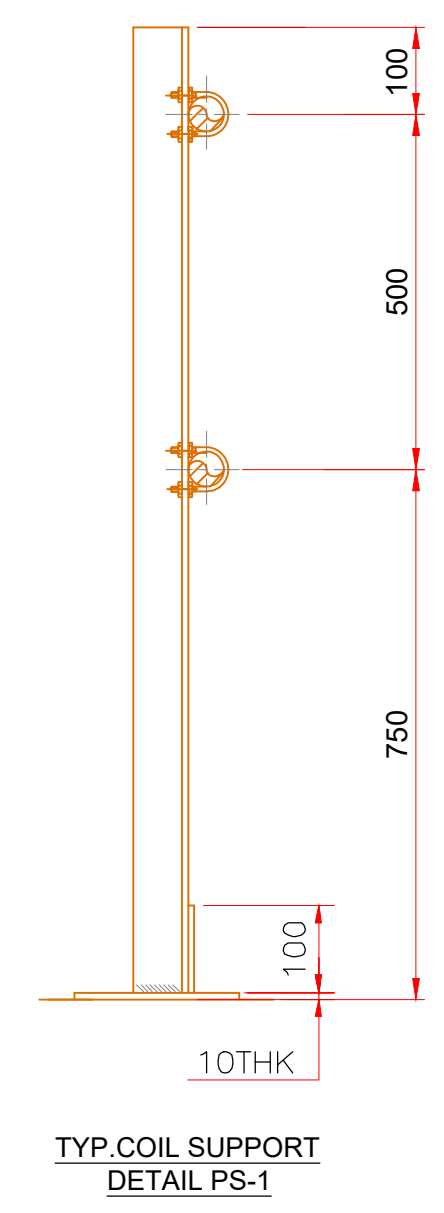
U-BOLT DETAIL-B



DETAIL AT 'A'



TYP.COIL SUPPORT
DETAIL PS-2



TYP.COIL SUPPORT
DETAIL PS-1

PIPE LENGTH

SIZE	ELEVATION	LENGTH(M)
40NB	(+).0.750	1092
40NB	(+).1.250	1092

- NOTES:
- 1) ALL DIMENSIONS ARE IN m.m. UNLESS OTHERWISE SPECIFIED.
 - 2) PIPE MAY BE BEND TO A MINIMUM RADIUS EQUAL TO THREE TIMES THE DIAMETER.
 - 3) ALL FILLET WELDS SHALL BE 6 mm. UNLESS OTHERWISE SPECIFIED.
 - 4) HEATING COIL SHALL HAVE SLOPE TOWARDS OUTLET NOZZLE FOR SELF DRAINAGE.
 - 5) ALL THE BEND CORNERS, JOINTS MAY BE FABRICATED BY BENDING THE PIPE.
 - 6) AFTER HYDROTEST OF THE TANK THE HEIGHT OF ALL SUPPORTS SHALL BE READJUSTED TO TAKE CARE OF UNEVEN SETTLEMENT OF TANK BOTTOM BY USING PACKING PLATE WELDED TO SUPPORT BASE PLATE OR BY RE-ADJUSTING THE SUPPORT HEIGHT.
 - 7) BEND SHALL BE FREE FROM CRACKS & BUCKLES, FLATTERING OF BEND, AS MEASURED BY DIFFERENCE BETWEEN THE MAXIMUM AND MINIMUM DIAMETER AT ANY CROSS-SECTION SHALL NOT EXCEED 8% OF NOMINAL OUTSIDE DIAMETER.
 - 8) NO. OF JOINTS TO BE RADIOGRAPHED SHALL BE 25% AND INTERPRETATION OF RADIOGRAPHY SHALL BE AS PER ANSI B 31.3

DESIGN DATA FOR HEATING COIL

FLUID CIRCULATED	= MP STEAM
DESIGN PRESSURE	= 18 KG/CM ² (g)
DESIGN TEMPERATURE	= 300° C
TEST PRESSURE	= 27 KG/CM ² (g)
RADIOGRAPHY	= AS PER SPEC.
COIL LENGTH	= 1092M x 2 = 2084M
COIL AREA	= 330 M ²
COIL PIPE SIZE	= 40NB SCH.80
M.O.C.	= SA 106 GR.B

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TRACTEBEL

TRACTEBEL Engineering pvt. ltd.

Size Scale Sheet Rev.

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