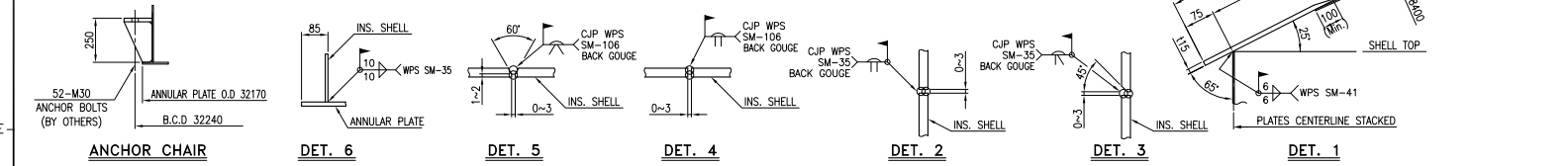


SCHEMATIC ELEVATION



- 17) WELDING:
 - a) ALL WELDING SHALL BE IN ACCORDANCE WITH CLIENT SPECIFICATION 100-YER-PE-YSS-0254 AND SHALL BE PER APPROVED PRE QUALIFIED PROCEDURES AS SPECIFIED ON THE DRAWING.
 - b) ALL SHELL OPENING CONNECTIONS WHICH REQUIRE REINFORCING, SUCH AS NOZZLES, MANHOLES ETC SHALL BE ATTACHED BY WELDS FULLY PENETRATING THE SHELL UNLESS NOTED OTHERWISE.
 - c) UNLESS OTHERWISE NOTED, ALL DOUBLE SIDE WELDING SHALL BE GROUNDED OR GOUNDED TO SOUND METAL AND INSPECTED BY DYE PENETRANT OR MAGNETIC PARTICLE IN ACCORDANCE WITH YSC PROCEDURE PT-1 OR WMT-1 RESPECTIVELY BEFORE WELDING THE SECOND SIDE.
 - d) FOR NOZZLES AND INTERNAL PIPE, WHERE BACK GOUGING IS NOT POSSIBLE, THE ROOF PASS SHALL BE DONE WITH GT (GAS TUNGSTEN) WELDING.
- e) BOTTOM PLATE FILLET WELDS AND BOTTOM-TO-SHELL CORNER WELDS SHALL REQUIRE A MINIMUM OF TWO PASSES.
- f) WELDS SHALL BE CONTINUOUS WITH NO POROSITY, HOLES, HIGH SPOTS OR UNDERCUTTING. WELD SPATTER SHALL BE REMOVED. WELDS SHALL BE FINISHED BY GRINDER. ALL EDGES AND CORNERS SHALL BE GROUNDED TO 3 MM MINIMUM RADIUS. ATTACHMENTS ON THE INSIDE OF THE EQUIPMENT SHALL BE FITTED FLUSH AGAINST THE ADJACENT SURFACE AND SHALL BE CONTINUOUSLY WELDED ON ALL SIDES TO FACILITATE RUBBER LINING.
- g) MISALIGNMENT OF PLATES AT INTERNAL SURFACES SHALL MEET ALL REQUIREMENTS OF API 650 SECTION 7.2.3.1 AND 7.2.3.2
- 18) WELD INSPECTION
 - a) ALL WELDS ATTACHING SHELL NOZZLES, MANHOLES, PERMANENT ATTACHMENT WELDS AND AREAS WHERE TEMPORARY ATTACHMENTS ARE REMOVED SHALL BE 100% EXAMINED FOR CRACKS IN ACCORDANCE WITH YSC PROCEDURE WMT-1 BEFORE AND AFTER PAINT IF APPLICABLE.
 - b) SHELL PLATE TO SHELL PLATE WELD SHALL BE INSPECTED BY THE RADIOGRAPHIC METHOD AS SPECIFIED IN SECTION 8.1 OF API 650 AND YSC PROC. RT-1 (CP-189) & SAUDI ARAMCO SPECS. 32-SAMSS-005.
 - c) ALL WELDS SHALL BE INSPECTED BY VISUAL EXAMINATION IN ACCORDANCE WITH YSC PROC.(VI-1) (CP-189).
 - d) ALL WELDS ATTACHING SHELL NOZZLES & MANHOLES, SHALL BE EXAMINED IN ACCORDANCE WITH YSC PROC. WMT-1 (CP-189) OR PT-1 (CP-189).
 - e) THE TANK SHELL TO BOTTOM FIRST WELD PASS SHALL BE EXAMINED WITH PENETRATING OIL SUCH AS LIGHT DIESEL OIL FOR A MINIMUM (4) HOURS (PREFERABLY OVERNIGHT) BEFORE THE OTHER SIDE WELD IS STARTED. IN ADDITION THE INSIDE FILLET WELD AT TANK SHELL TO BOTTOM JOINT SHALL BE EXAMINED IN ACCORDANCE WITH YSC PROCEDURE WMT-1 (CP-189) OR PT-1 (CP-189) BEFORE AND AFTER HYDROTEST.
 - f) ALL WELDS SHALL BE INSPECTED BY VISUAL EXAMINATION IN ACCORDANCE WITH YSC PROCEDURE VI-1.
 - g) SHELL TO SHELL PLATE WELD INCLUDING INSERT PLATES WELDING SHALL BE INSPECTED BY THE RADIOGRAPHIC METHOD SPECIFIED IN THE SECTION 8.1 OF API-650 AND YSC PROCEDURE RT-1.
- 19) TESTING:
 - a) THE TANK ROOF, BOTTOM WELD JOINTS AND SUMP WELDS SHALL BE EXAMINED BY VACUUM BOX METHOD IN ACCORDANCE WITH YSC PROCEDURE VB-1
 - b) REINFORCING PLATES SHALL BE TESTED IN ACCORDANCE WITH YSC PROCEDURE PLT-1. PRIOR TO THE HYDROTEST, IT SHALL APPLY 103 KPA AIR PRESSURE USING THE TELL TALE HOLE. WHILE UNDER PRESSURE, A SOAP SLUSH SOLUTION SHALL BE APPLIED TO ALL ATTACHMENT WELDS FOR DETECTION OF LEAKS.
 - c) THE TANK SHELL SHALL BE HYDROSTATICALLY TESTED PER API 650 AND YSC PROCEDURE HT-3.
 - d) ALL ITEMS FALLING WITHIN 0.6M OF THE SHELL HEIGHT INCLUDING SUPPORT LEGS (IF ANY) AND DRAW-OFF PIPES SHALL BE PAINTED (INTERNAL AND EXTERNAL SURFACES) PLUS ALL NOZZLES INCLUDING ROOF DRAIN INTERSECTING AT 0.6M OF SHELL HEIGHT SHALL BE PAINTED FULLY. ALL SURFACES (INTERNAL & EXTERNAL) OF DRAIN PIPE ASSY. SHALL BE PAINTED.
 - e) PRIOR TO FINAL INSPECTION AND PRESSURE TESTING, THE INSIDE AND OUTSIDE SURFACE OF THE TANK SHALL BE THOROUGHLY CLEANED OF ALL SLAG, SCALE, DIRT, GRIT, WELD SPATTER, PAINT, OIL ETC.

REFERENCE DRAWINGS	
DRAWING NO.	TITLE
160-SP4-PU-G9D-0006	GENERAL ARRANGEMENT & DESIGN DATA
160-SP4-PU-G9D-0007	NOZZLE ORIENTATION
160-SP4-PU-G9D-0008	SHELL PLATE DETAIL
160-SP4-PU-G9D-0009	1ST COURSE SHELL PLATE DETAIL
160-SP4-PU-G9D-0010	ROOF PLATE ARRANGEMENT
160-SP4-PU-G9D-0011	ROOF PLATE DETAIL
160-SP4-PU-G9D-0012	ROOF STRUCTURE DETAIL
160-SP4-PU-G9D-0013	ROOF STRUCTURE DETAIL
160-SP4-PU-G9D-0014	BOTTOM PLATE ARRANGEMENT
160-SP4-PU-G9D-0015	BOTTOM PLATE DETAIL
160-SP4-PU-G9D-0016	NOZZLE DETAIL (1/5)
160-SP4-PU-G9D-0017	NOZZLE DETAIL (2/5)
160-SP4-PU-G9D-0018	NOZZLE DETAIL (3/5)
160-SP4-PU-G9D-0019	NOZZLE DETAIL (4/5)
-	NOZZLE DETAIL (5/5)
160-SP4-PU-G9D-0020	SPIRAL STAIRWAY DETAIL (1/5)
160-SP4-PU-G9D-0021	SPIRAL STAIRWAY DETAIL (2/5)
160-SP4-PU-G9D-0022	SPIRAL STAIRWAY DETAIL (3/5)
160-SP4-PU-G9D-0023	SPIRAL STAIRWAY DETAIL (4/5)
-	SPIRAL STAIRWAY DETAIL (5/5)
160-SP4-PU-G9D-0024	TOP PLATFORM & HANDRAIL DETAIL
160-SP4-PU-G9D-0025	NAME PLATE DETAIL
160-SP4-PU-G9D-004	ANCHOR BOLT DETAILS & LOADING DATA

- GENERAL NOTES:**
- 1) ALL DIMENSIONS ARE IN MM (U.N.O.)
 - 2) ALL NOZZLE FLANGES SHALL BE IN ACCORDANCE WITH ASME / ANSI B16.5, SURFACE FINISH TO BE 125-250 Ra MICRO INCHES. MANHOLE FLANGES TO API 650.
 - 3) ALL WELDINGS SHALL BE IN ACCORDANCE WITH 100-YER-PE-YSS-0254 AND API 650.
 - 4) FLANGE BOLTING SHALL BE COATED WITH FLUOROPOLYMER/CERAMIC COATING IN ACCORDANCE WITH 100-YER-PE-YSS-0324.
 - 5) THE STORAGE TANK MATERIAL, DESIGN, FABRICATION, TESTING AND INSPECTION SHALL BE IN ACCORDANCE WITH CLIENT'S SPECIFICATION AND API 650 11 TH EDITION + ADDENDUM-2
 - 6) DIMENSIONS & TOLERANCE OF FLANGE & PIPE MATERIAL SHALL BE AS PER ANSI/ASME B16.5 & B36.10 RESPECTIVELY. FLANGES UP TO AND INCLUDING 24" NB SHALL BE AS PER ASME/ANSI B16.5 AND FLANGES ABOVE 24" NB SHALL BE AS PER ASME B16.47, SERIES A. ROOF AND SHELL MANHOLES INCLUDING EMERGENCY VENT FLANGES TO BE AS PER API 650 (SI UNIT).
 - 7) NOZZLE PIPE USED SHALL BE SEAMLESS AND NOZZLE NECK FABRICATED FROM PLATE SHALL BE FULL PENETRATION WELDED AND WMT/PT TESTED
 - 8) FLANGE BOLT HOLES FOR SHELL MANHOLES AND NOZZLES SHALL STRADDLE TANK VERTICAL CENTERLINE.
 - 9) ALL INTERNAL AND EXTERNAL ATTACHMENT WELDS SHALL BE CONTINUOUS SEAL WELDED
 - 10) MILL TEST REPORTS SHALL BE PROVIDED FOR BOTTOM, SHELL, ROOF PLATES AND DIRECT ATTACHMENTS IN ACCORDANCE WITH EN10204 TYPE 3.1 AND TYPE 2.1 FOR INDIRECT ATTACHMENTS.
 - 11) ALL MATERIALS SHALL BE FROM APPROVED MANUFACTURERS PER ARAMCO
 - 12) GASKET MATERIALS SHALL BE NON-ASBESTOS ACCORDING TO 100-YER-PE-YSS-0121.
 - 13) PAINTING SHALL BE IN ACCORDANCE WITH YSC PAINTING INSTRUCTION P-1, OF DATA SHEET 160-SP4-PE-V10-0001 AND CLIENT'S SPECIFICATION 100-YER-PE-YSS-0081, Rev.2
 - 14) ALL STRUCTURAL STEEL TO BE HOT DIP GALVANIZED IN ACCORDANCE WITH CLIENT SPEC 100-YER-YSS-0328.
 15. WIND LOAD: 150 Km/h, ASCE 7-2005, I=1.15 EXP-C.
 16. EARTHQUAKE: IBC-2006 (Sa=20.4kg, Si=5.85kg, PGA=0.8) AND API 650 APP. E

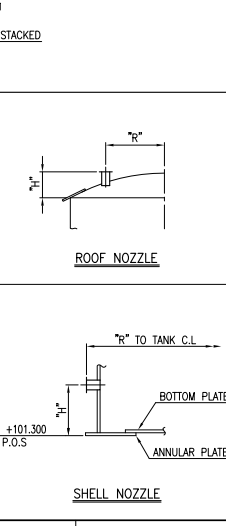
NOZZLE AND CONNECTIONS									
PART	MARK	REQ'D	SIZE	SCH.	RATING	SERVICE	"r"	"h"	REMARKS
SHELL NOZZLES	MH1	1	30"	110	API 650	SHELL MANHOLE	16350	898	W/HINGE COVER
	MH2	1	24"	18	API 650	SHELL MANHOLE	16300	758	W/HINGE COVER
	MH3	1	24"	18	API 650	SHELL MANHOLE	16300	758	W/HINGE COVER
	A	1	12"	60	ASME 150#	INLET	16245	1300	
	B	1	4"	120	ASME 150#	DRAIN	16195	400	W/SUMP
	C	1	30"	30	ASME 150#	OUTLET	16320	1665	W/VORTEX BREAKER
	D	1	12"	60	ASME 150#	OVERFLOW	16235	17550	
	G	1	12"	60	ASME 150#	KICKBACK / SPILL BACK	16245	1300	
	H	1	12"	60	ASME 150#	FIRE WATER TEST LINE	16245	1300	
	I	1	14"	60	ASME 150#	ROOF OVER THE PMP RISE RETURN LINE	16270	1316	
	J1	1	6"	120	ASME 150#	ADDEY PMP REGULATOR RECYLE LINE	16220	1222	
	J2	1	6"	120	ASME 150#	ADDEY PMP REGULATOR RECYLE LINE	16220	1222	
AA	1	2"	160	ASME 300#	PH ANALYZER XMTR	16170	300		
M	1	14"	60	ASME 150#	ROOF OVER THE PMP RISE RETURN LINE	16270	1316		
MH4	1	24"	17.6	API 650	ROOF MANHOLE	14665	1042.4	W/HINGE COVER	
MH5	1	24"	17.6	API 650	ROOF MANHOLE	14665	1042.4	W/HINGE COVER	
MH6	1	24"	17.6	API 650	ROOF MANHOLE	14665	1450.4	W/EMERGENCY VENT	
F	1	8"	80	ASME #150	VENT	CENTER	3792.4	W/BIRD SCREEN	
L	1	8"	80	ASME #150	GAUGE HATCH	14665	1450.4		
AL	1	4"	80	ASME #300	GUIDED WAVE RADAR XMTR	14665	1450.4		
BL	1	4"	80	ASME #300	GUIDED WAVE RADAR XMTR	14665	1450.4		

MATERIAL SPECIFICATION		
SHELL	1st ~ 3rd COURSE	ASTM A573 Gr.70
SHELL	4th ~ 7th COURSE	ASTM A36
ROOF		ASTM A36
BOTTOM	ANNULAR PLATE	ASTM A573 Gr.70
BOTTOM	BOTTOM PLATE	ASTM A36
FORGED NOZZLES, FLANGES AND COVERS		ASTM A105
FITTING		ASTM A234-WPB
NOZZLE NECK PLATE		ASTM A36/A573-70
NOZZLE NECK PIPE		ASTM A106-B
INTERNAL SUPPORTS WELDED TO SHELL		ASTM A36/A573-70
EXTERNAL SUPPORTS WELDED TO SHELL		ASTM A36/A573-70
PLATE FLANGES AND COVERS		ASTM A36/A573-70
INTERNAL PIPE		ASTM A106-B
INTERNAL BOLTS/NUTS		A193-88/A194-8
EXTERNAL BOLTS/NUTS		A193-87/A194-2H
INTERNAL GASKETS		SEE NOTE 12
EXTERNAL GASKETS		SEE NOTE 12
ANCHOR CHAIR		A573-70
FOUNDATION BOLTS/NUTS		BY OTHERS
REIN. PADS		ASTM A573 Gr.70/A36
EARTH LUG		S.S. 304
INSULATION		-

DESIGN DATA			
CODE	API 650+11 TH ED. ADD. 2	CONTENTS	FIRE WATER
DESIGN PRESSURE	ATM	mbarng	SPECIFIC GRAVITY
DESIGN VACUUM	ATM	mbarng	SHELL
DESIGN TEMPERATURE	65 °C	CORROSION ALLOWANCE	ROOF
OPERATING PRESSURE	ATM	°C	BOTTOM
OPERATING TEMP. (MIN./MAX.)	27 / 55 °C	STRUCTURE	1.6 (TOTAL) mm
HYDRO. TEST PRESSURE	17400 mm	POST WELD HEAT TREATMENT	API 650 PARA. 5.7.4
PNEUM. TEST PRESSURE	-	RADIOGRAPHIC EXAMINATION	API 650 PARA. 8.1
WIND VELOCITY	SEE NOTE 15	M.D.M.T	12 °C
EARTHQUAKE FACTOR	SEE NOTE 16	FLOW RATE	INT. 520 m ³ /h
TYPE OF ROOF	SELF SUPPORTED CONE ROOF	OUT.	3405 m ³ /h
INSULATION (BY OTHERS)	NONE		

WEIGHT AND CAPACITY (ESTIMATED)

NOMINAL CAPACITY	14389.9 m ³	EMPTY WEIGHT	311960 kg
WORKING CAPACITY	12425 m ³	OPERATING WEIGHT	14066260 kg
WEIGHT OF LIQUID	13734550 kg	TEST WEIGHT	14708000 kg



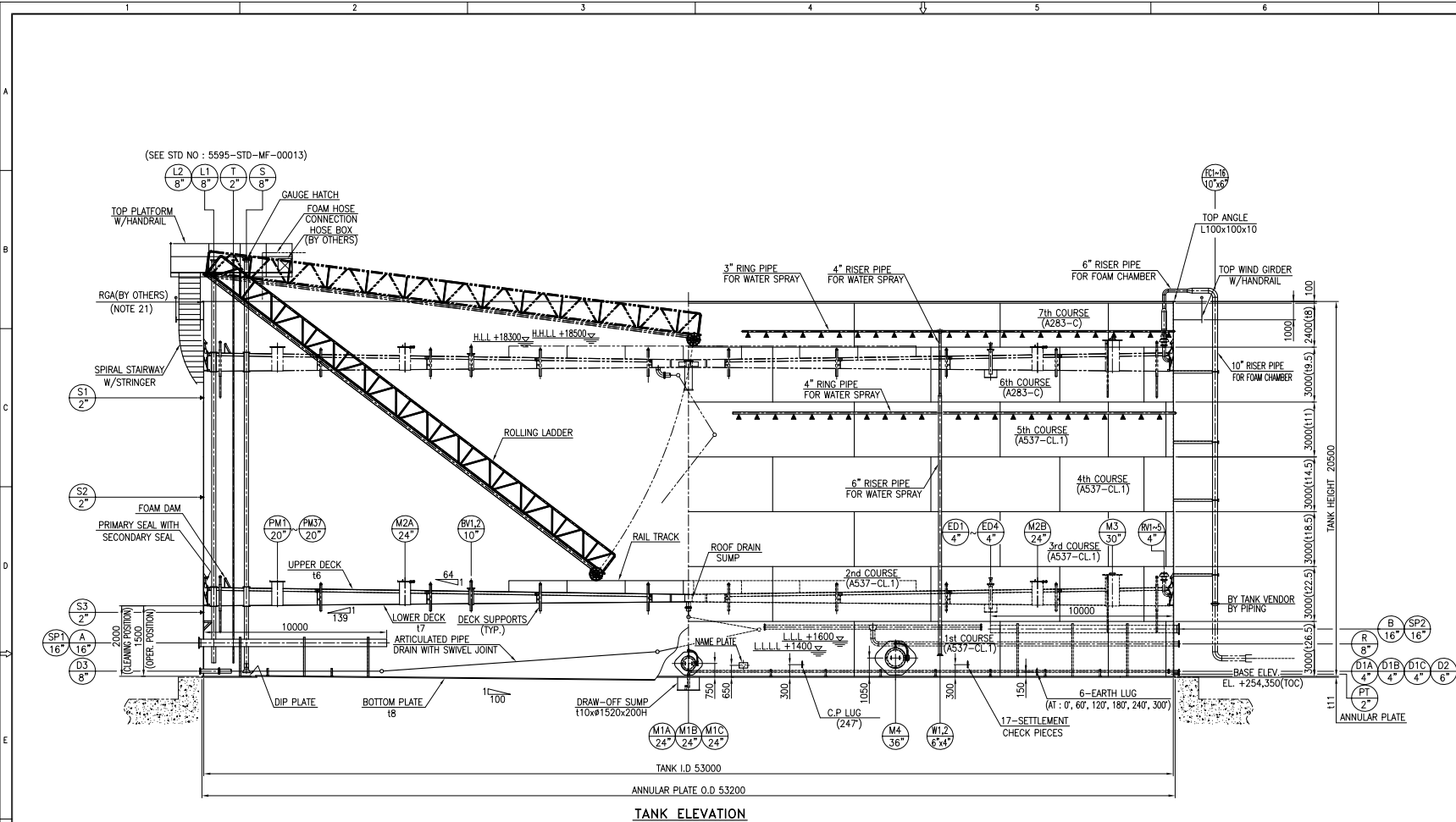
ARC LENGTHS ARE MEASURED ON OUTSIDE SURFACE OF SHELL RING. NO. 1 WITH RADIUS = 16015.4

11'	3074.7
23'	6429.0
35'	9783.3
85'	23759.3
90'	25156.9
125'	34940.2
135'	37735.4
151'	42207.7
157'	43884.9
160'	44723.4
170'	47518.6
175'	48916.3
180'	50313.9
185'	51711.5
187.5'	52410.3
192.5'	53807.9
200.5'	56044.1
211'	58979.0
215'	60097.1
225'	62892.3
230'	64289.3
232'	64849.0
270'	75470.8
305'	85254.0
315'	88049.3
359'	100348.2

DEGREE ARC LENGTH

ARC DIMENSIONS

ISS	REV	REV DESCRIP	DATE	ENG	DISC	PROJ	APP	APP	APP	APP



TANK ELEVATION

GENERAL NOTES

- ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.
- BOLT HOLES OF FLANGES SHALL STRADDLE THE VERTICAL CENTER LINES OF THE NOZZLE.
- NOZZLE NECK THICKNESS AND REINFORCEMENT SHALL BE AS PER CODE.
- NOZZLE NECK 12"NB & ABOVE IF FABRICATED FROM PLATE SHALL BE 100% RADIOGRAPHED.
- NOZZLE 2"NB SHALL BE ADEQUATELY STIFFENED BY 2 Nos. STIFFENERS AT 90° APART.
- TANK BOTTOM (SOIL SIDE) SHALL BE CATHODICALLY PROTECTED.
- FLANGE DIMENSIONS SHALL BE AS PER ASME B16.5, UNLESS OTHERWISE STATED.
- VENT SIZING SHALL BE BASED ON MAXIMUM FILLING AND DRAW-OFF RATE OF 800m³/hr. (BASED ON USE OF SPARE NOZZLES IN FUTURE.)
- TANK SHALL HAVE PRIMARY AS WELL AS SECONDARY SEAL, ALL SEALS SHALL BE COMPATIBLE WITH LIQUID STORED AND ITS VAPOUR. PRODUCT CONTAINS 10% MTBE(MAX) AND 10% PPM SULFUR (MAX).
- PAINTING & LINING SCHEDULE
 - PART : SHELL/ROOF

SYSTEM NO.	PROCESS	TYPE OF PAINT MATERIAL	NO. OF COAT	DRY FILM THK (µm)
2	SURFACE PREPARATION	So 2 1/2	-	-
	PRIMER COAT	INORGANIC ZINC PRIMER	1	75
	INTERMEDIATE COAT	POLYAMIDE EPOXY	1	125
	FINISH COAT	POLYURETHANE	1	75
 - PART : BOTTOM UNDERSIDE

SYSTEM NO.	PROCESS	TYPE OF PAINT MATERIAL	NO. OF COAT	DRY FILM THK (µm)
10	SURFACE PREPARATION	So 3	-	-
	PRIMER COAT	GLASS FLAKE EPOXY	1	200
	FINISH COAT	GLASS FLAKE EPOXY	1	200
 - PART : LADDERS, LADDER CAGES, HANDRAILS

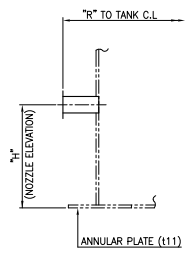
PAINT SYSTEM	APPLICABLE TO SURFACE PREPARATION	SURFACE PREPARATION	PAINT SYSTEM	TOTAL DRY FILM THICKNESS (MICRONS)	MAXIMUM TEMPERATURE (°C)		
13	GALV.	SEE SECTION 13.	PRIMER COAT	INTERNAL COAT	150	93	
			FINISH COAT	FINISH COAT			
			ZINC RICH EPOXY (75µ)				POLYURETHANE (75µ)
- LINING AS PER "5595-E2-AMD-MX-004" & "5595-E2-TEC-MW-001"

PART	SYSTEM NO.	SURFACE PREPARATION	1 ST COAT OF LINING	2 ND COAT OF LINING	DRY FILM THICKNESS
SHELL/ROOF	1	So 3	PHENOLIC EPOXY POLYURETHANE GURD (125-150µ)	PHENOLIC EPOXY POLYURETHANE GURD (125-150µ)	250 ~ 300 µm
			NON-ASBESTOS (75µ)	-	75 µm
- MATERIAL SHALL CONFORM TO THE REQUIREMENTS FURNISHED IN 5595-E2-AMD-MF-002.
- TANK TO BE PROVIDED WITH JET MIXERS (DISTRIBUTOR) TO HOMOGENISE THE TANK CONTENTS. DESIGN AND NO. OF JET MIXERS TO BE DESIGN BY EPC CONTRACTOR. JET MIXER INTERNALS MATERIAL SHALL BE S.S 316L FOR THE DESIGN OF MIXERS, FLOW AND PRESSURE AT THE INLET OF THE NOZZLE MAY BE CONSIDERED AS 110m³/hr AND 3.5kg/cm² (WHEN THE TANK IS FULL) RESPECTIVELY.
- EXTERNAL FASTENERS (BOLT, STUD AND NUTS ETC.) SHALL BE XYLAM-1014 COATED
- SPECIFICATIONS (DGS) SHALL BE READ IN CONJUNCTION WITH ITS AMENDMENT, IF ANY, FOR THIS PROJECT.
- GASKET MATERIAL FOR ASME STD. FLANGE :
 - SPIRAL WOUND GASKET (4.5t)
 - HOOP : S.S 316L
 - FILLER : GRAPHITE FILLED
 - OUTER RING : C.S
 - INNER RING : S.S 316L
- GASKET MATERIAL FOR MANWAY & NON STD NOZZLE : 3(NON-ASBESTOS) FULL-FAÇE
- WATER SPRAY NOZZLES SHALL BE ARRANGED TO ZIGZAG ABOUT UPPER NOZZLES AND UNDER NOZZLES.
- VENT SIZE IS CALCULATED BASED ON USE OF SPARE NOZZLES IN FUTURE. (MAXIMUM FILLING AND EMPTYING RATE : 800m³/hr)
- ALL OPENING CONNECTIONS REQUIRING REINFORCEMENT IN A NOZZLE "M1A"-"M1C", M4, SP1, SP2, "D1A" ~ "D1C", D2, D3, S3 A, B, R, PT WITH ATTACHED SHELL PLATE SHALL BE THERMALLY STRESS RELIEVED IN THE SHOP AS DESCRIBED IN PARA 5.7.4 OF API STD. 650.
- RETRACTABLE GROUNDING ASSEMBLY SHALL BE INSTALLED AT TOP OF THE SHELL.

PART	MARK	SIZE	SCH.	Q'TY	RATING & FACING	DESCRIPTION	REMARKS	
ROOF NOZZLES	T	2"	160	1	ASME #300 WN. RF	SEE DWG. SEE DWG.	MULTI POINT TEMPERATURE ELEMENT	
	S	8"	60	1	ASME #150 SO. RF	SEE DWG. SEE DWG.	GAUGE /SAMPLE HATCH	
	RV1-5	4"	X-STG	5	ASME #150 WN. RF	SEE DWG. SEE DWG.	W/BREATHER VALVE & FLAME ARRESTOR	
	L2	8"	60	1	ASME #150 WN. RF	SEE DWG. SEE DWG.	RIM VENT	
	L1	8"	60	1	ASME #150 WN. RF	SEE DWG. SEE DWG.	LEVEL TRANSMITTER RADAR TYPE	
	BV1, 2	10"	80	2	API 650	SEE DWG. SEE DWG.	AUTO BLEEDER VENT	
	ED1,2,3,4	4"	X-STG	4	API 650	SEE DWG. SEE DWG.	EMERGENCY DRAIN	
	PM1-37	20"	17	37	API 650	SEE DWG. SEE DWG.	PONTOON MANHOLE	
	M3	30"	17	1	API 650	SEE DWG. SEE DWG.	MANHOLE	
	M2A, B	24"	17	2	API 650	SEE DWG. SEE DWG.	MANHOLE	
SHELL NOZZLES	W1, 2	6"x4"	X-STG	2	ASME #150 WN. RF	SEE DWG. SEE DWG.	WATER SPRAY SYSTEM	
	PT	2"	160	1	ASME #300 WN. RF	210	26680	PRESSURE TRANSMITTER
	R	8"	805	1	ASME #150 WN. RF	560	26730	JET MIXER (HOLD)
	FC1-16	10"x6"	X-STG	16	ASME #150 WN. RF	SEE DWG. SEE DWG.	FOAM CONNECTION	
	SP2	16"	X-STG	1	ASME #150 WN. RF	560	26780	SPARE
	SP1	16"	X-STG	1	ASME #150 WN. RF	560	26780	SPARE
	S3	2"	160	1	ASME #300 WN. RF	560	26680	SAMPLE POINT
	S2	2"	160	1	ASME #300 WN. RF	9950	26680	SAMPLE POINT
	S1	2"	160	1	ASME #300 WN. RF	17300	26680	SAMPLE POINT
	D3	8"	80	1	ASME #150 WN. RF	280	26710	ROOF DRAIN
	D2	6"	X-STG	1	ASME #150 WN. RF	330	26730	SIPHON DRAIN (PRODUCT)
	D1A, B, C	4"	X-STG	3	ASME #150 WN. RF	280	26710	SIPHON DRAIN (WATER DRAW OFF)
	B	16"	X-STG	1	ASME #150 WN. RF	560	26780	OUTLET
	A	16"	X-STG	1	ASME #150 WN. RF	560	26780	INLET
	M4	36"	I24	1	API 650	1050	26690	MANHOLE
	M1A, B, C	24"	I11.7, 3	3	API 650	750	26690	MANHOLE
					"H"			DESCRIPTION
								"R"

NOZZLE SCHEDULE

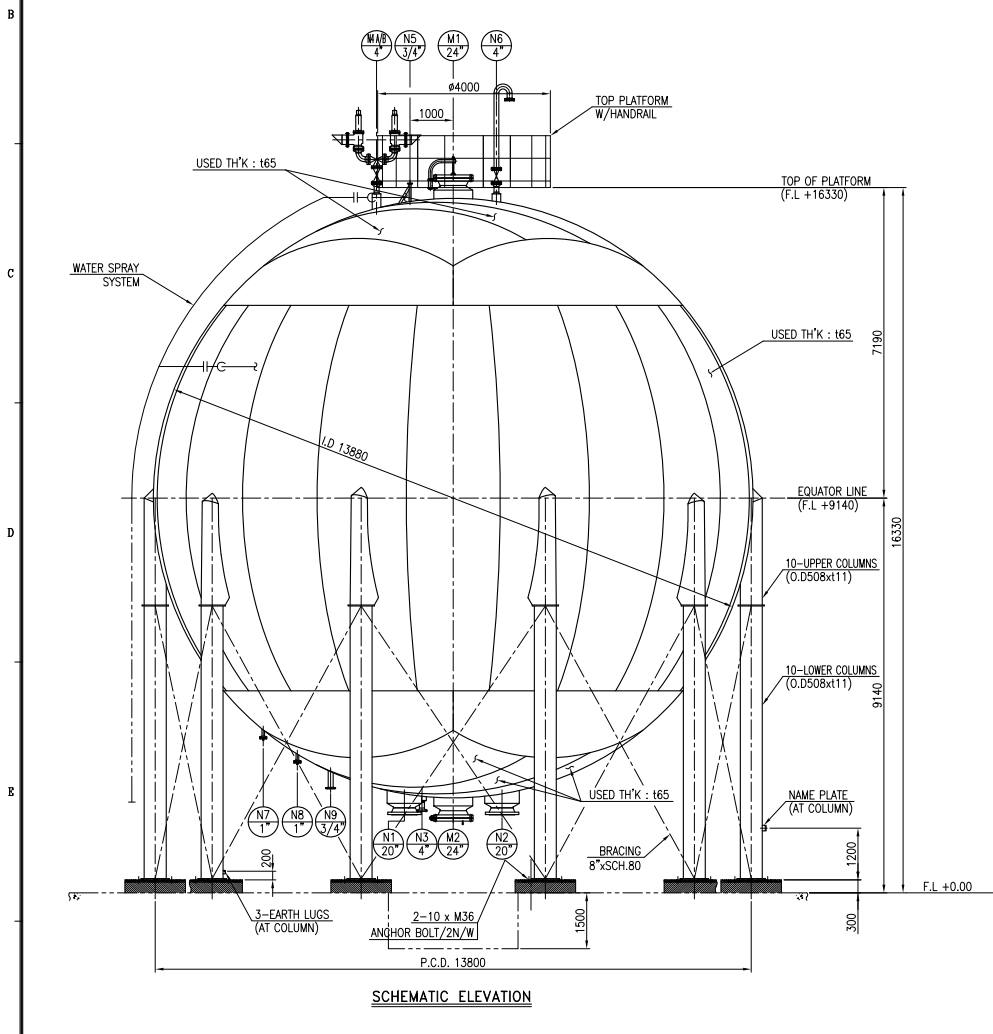
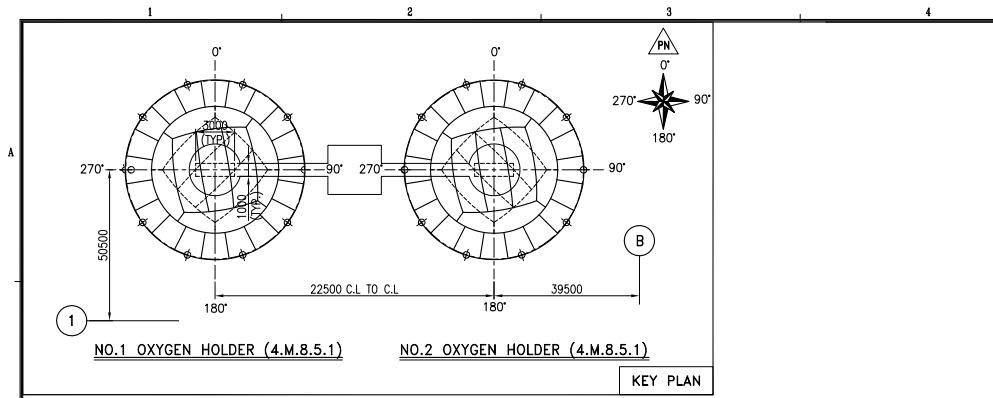
MATERIAL SPECIFICATIONS		DESIGN DATA		CAPACITY & WEIGHT (ESTIMATED)	
SHELL PLATE	A537-CL.1/A283-C	CODE	API 650, 11th ED. ADD.1+ADD.2+APP.C	EMPTY	915 TON.
BOTTOM PLATE	A283-C	STORED PRODUCT	UNLEADED GASOLINE 91	OPERATING	32,600 TON.
BOTTOM ANNULAR PLATE	A537-CL.1	ROOF TYPE	FLOATING ROOF (DOUBLE DECK TYPE)	TEST WEIGHT	46,142 TON.
DECK & PONTOON PLATE	A283-C	DESIGN PRESS. (INT/EXT.)	65/38 (VACUUM) mm w.g	NOMINAL CAPACITY	45,227 m ³
DECK POST & GUIDE	A53-B/A36	OPER. PRESS. (INT/EXT.)	ATM.	WORKING CAPACITY	36,843 m ³
TOP ANGLE	A36	DESIGN TEMP.	87 °C		
WIND GIRDER	-	OPER. TEMP.	13-45 °C		
EXTERNAL GUSSETS	A283-C	HYDRO. TEST PRESS.	FULL OF WATER		
NOZZLE NECK	A106-B/A537-CL.1	RADIOGRA. TEST	API 650 Para 8.1		
(PIPE/PLATE) ROOF	A106-B/A283-C	JOINT EFFICIENCY	1.0		
PIPE FITTING	A234-WPB	FILLING RATE (NORM/MAX)	332.5 (SEE NOTE 19) m ³ /h		
FLANGE	A105	EMPTYING RATE (NORM/MAX)	332.5/750 (SEE NOTE 19) m ³ /h		
REINFORCEMENT PAD	A537-CL.1 /A283-C	P.W.H.T	(SEE NOTE 20.)		
BOLT & NUT (FLANGE)	A193-B7/A194-2H	SPECIFIC GRAVITY (DESIGN / ACTURE)	(1.0 / 0.775) FLOATING ROOF DESIGN=0.7		
STRUCTURE BOLTING	A307-B & A32M/A563M(GALV.)	SHELL	BOTTOM	ROOF	
JET MIXER	S.S 316L	CORR. ALLOWANCE	1.5 mm	2.0 mm	1.5 mm
GASKET	SEE NOTE 17	SEISMIC ZONE	SOIL TYPE "SD", ZONE : 1		
SPIRAL STAIRWAY & HANDRAIL	A36(GALV.)	WIND VELOCITY	160 km/h		
OTHER INTERNAL PIPING	S.S 316L /A106-B	INSULATION	YES (NO) (- MM)		
NAME PLATE/BRAKET	S.S 316L /A36	PAINTING	SEE NOTE 10		
SETTLEMENT CHECK PIECE	S.S 316L	SPIRAL STAIRWAY & HAND RAIL	(YES) , NO		
EARTH LUGS	S.S 316L				
ANCHOR B/N	-				
GRATING	A36(GALV.)				
C.P LUGS	A537-CL.1				



SHELL NOZZLE

REV.	DATE	DESCRIPTION	ISSUED BY	APPROVED BY

DRAWING: _____ CHECKED: _____ SCALE: 1:100



NOZZLE SCHEDULE								DESIGN DATA		
MARK	Q'TY	SIZE	SCH	RATING	TYPE / FACE	DESCRIPTION	PROJECTION	REMARK	DESIGN CODE	H.P.G.C.I. & KS B6733
M1	1	24"	20L	ASME #300	WN.RF.	MANHOLE	7405	W/DAVIT	FLUID NAME	OXYGEN
M2	1	24"	20L	ASME #300	WN.RF.	MANHOLE	7405	W/HINGE	UNIT	sets
N1	1	20"	20L	ASME #300	WN.RF.	GAS INLET	7230		NET CAPACITY	1400 m ³
N2	1	20"	20L	ASME #300	WN.RF.	GAS OUTLET	7230		NOMINAL CAPACITY	1400 m ³
N3	1	4"	80	JIS 30K	WN.RF.	DRAIN	7200		OPERATING PRESSURE	2.432 (25) MPaG(kg/cm ² G)
N4 A/B	2	4"	80	JIS 30K	WN.RF.	SAFETY VALVE CONN.	7300		TEMPERATURE	40 °C
N5	1	3/4"	-	ASME #300	LWN.RF.	PRESSURE GAUGE	7300		DESIGN PRESSURE	2.697 (27.5) MPaG(kg/cm ² G)
N6	1	4"	80	JIS 30K	WN.RF.	VENT	7300		TEMPERATURE MAX.	40 °C
N7	1	1"	-	ASME #300	LWN.RF.	TEMP. TRANS. CONN.	7200		TEMPERATURE MIN.	-10 °C
N8	1	1"	-	ASME #300	LWN.RF.	TEMP. GAUGE	7200		TEST PRESS.	3.506 (35.75) MPaG(kg/cm ² G)
N9	1	3/4"	-	ASME #300	LWN.RF.	PRESS. TRANS. CONN.	7200		PNEUMATIC	N/A MPaG(kg/cm ² G)

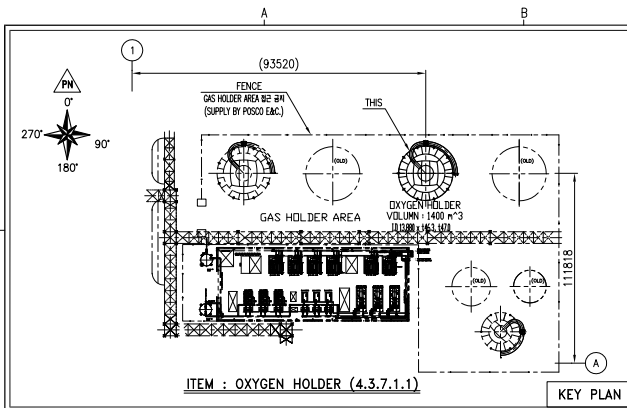
REFERENCE DRAWING LIST			MATERIAL SPECIFICATION		
BB-925-M31-0002	NOZZLE ORIENTATION		SHELL	JIS G3115 SPV 4900	
BB-925-M33-0001	LOADING DATA		UPPER COLUMN	JIS G3115 SPV 4900	
BB-925-M33-0002	SHELL PLATE DETAIL		LOWER COLUMN	SS400	
BB-925-M33-0003	PIPE BRACING DETAIL		BRACING TIE ROD	JIS G3454 STPG370E	
BB-925-M33-0004	UPPER & LOWER COLUMN DETAIL		NOZZLE NECK	JIS G3455 STS410	
BB-925-M33-0005	TOP MANHOLE DETAIL		INTERNAL PIPE/FITTING	JIS G3454 STPG370E	
BB-925-M33-0006	BOTTOM MANHOLE DETAIL		FORGED FLANGES & COVERS	SF 440 OR A105	
BB-925-M33-0007	NOZZLE DETAIL (1/3)		INTERNAL SUPPORT LUGS	JIS G3115 SPV 4900/ SS400	
BB-925-M33-0008	NOZZLE DETAIL (2/3)		EXTERNAL LUGS	JIS G3115 SPV 4900/ SS400	
BB-925-M33-0009	NOZZLE DETAIL (3/3)		PRESS. PART BOLT/NUT	A193 Gr.B7 / A194 Gr.2H, SNB7 / S45C	
BB-925-M33-00010	-DELETE-		GASKET	SEE NOTE 7.	
BB-925-M33-00011	TOP PLATFORM DETAIL (1/2)		PAINTING	AS PER SPEC.	
BB-925-M33-00012	TOP PLATFORM DETAIL (2/2)		NAME PLATE, EARTH LUG	SUS 304 / SS400	
BB-925-M33-00013	-DELETE-		STAIRWAY	SS400	
BB-925-M33-00014	UPPER STAIRWAY DETAIL (1/2)		ANCHOR BOLTS/NUTS	A307-B/ A563-A	
BB-925-M33-00015	UPPER STAIRWAY DETAIL (2/2)		PLATFORM & STEP	GRATING (H.D.GALV.)	
BB-925-M33-00016	MIDDLE PLATFORM DETAIL				
BB-925-M33-00017	LOWER STAIRWAY DETAIL (1/2)				
BB-925-M33-00018	LOWER STAIRWAY DETAIL (2/2)				
BB-925-M33-00019	INTERNAL LADDER DETAIL				
BB-925-M33-00020	-DELETE-				
BB-925-M33-00021	WATER SPRAY SYSTEM ASSEMBLY				
BB-925-M33-00022	WATER SPRAY SYSTEM DETAIL				
BB-925-M33-00023	-DELETE-				
BB-925-M33-00024	-DELETE-				
BB-925-M33-00025	-DELETE-				
BB-925-M33-00026	NAME PLATE DETAIL				

WEIGHT ESTIMATED		
EMPTY WEIGHT	333.89	TON
OPERATING WEIGHT	333.89	TON
FULL WATER WEIGHT	1400	TON
HYDROSTATIC TEST WEIGHT	1734.02	TON

GENERAL NOTES

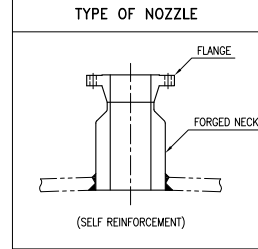
- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED.
(체적이 명시되지 않은 모든 치수는 mm 기준임.)
- INTERNAL WELD SURFACE OF INSTRUMENT NOZZLE TO BE FULLY FLUSHED.
(INSTRUMENT용 노즐의 안쪽 용접은 매끈하게 해야 함.)
- ALL WELDS SHALL BE CONTINUOUS, UNLESS OTHERWISE NOTED.
(체적이 명시되지 않은 모든 용접은 연속적으로 함.)
- FLANGE BOLT HOLE ARE TO STRADDLE THE NORTH/SOUTH AND VERTICAL/HORIZONTAL CENTER LINES.
(노즐 플랜지의 보링은 서로 그림과 같이 N-S 용접면 또는 수직/수평면에서 맞물려야 함.)
- NOZZLE PROJECTIONS ARE FROM TANGENTIAL LINE OR CENTERLINE OF VESSEL TO FLANGE FACE.
(NOZZLE PROJECTION은 TANGENTIAL LINE 또는 VESSEL C.I.에서 FLANGE 면까지 판 거리임.)
- GASKET SEATING SURFACES SHALL HAVE 125 TO 250 AARH.
(가스켓 접촉면은 125-250 AARH #표.)
GASKET MATERIAL : SPIRAL WOUND GASKET (14.5)
- FILLER : GRAPHITE
- HOOP : 304 S.S
- INNER RING : 304 S.S
- OUTER RING : CARBON STEEL

NO.	DATE	REVISIONS & DESCRIPTION	Drawn	Checked	Reviewed/Approved



NOZZLE SCHEDULE									
PART	MARK	Q'TY	SIZE	SCH	RATING	TYPE /FACE	DESCRIPTION	PROJECTION	REMARK
TOP NOZZLE	M1	1	24"	12I	ASME #300	WN.RF.	TOP MANHOLE	7390	W/DAVIT
	N3	1	4"	80	ASME #300	WN.RF.	VENT LINE	7305	
	N4	1	6"	80	ASME #300	WN.RF.	SAFETY V/V CONN.	7305	
BOTTOM NOZZLE	M2	1	24"	12I	ASME #300	WN.RF.	BOTTOM MANHOLE	7390	W/HINGE
	N1	1	16"	80	ASME #300	WN.RF.	GO2 GAS INLET	7305	
	N2	1	18"	80	ASME #300	WN.RF.	GO2 GAS OUTLET	7305	
	N5	1	3/4"	-	ASME #300	LWN.RF.	PRESS. G. CONN.	7150	
	N6	1	2"	160	ASME #300	WN.RF.	DRAIN	7200	W/B.FLANGE
	N7	1	1"	160	ASME #300	WN.RF.	TEMP. G. CONN.	7150	

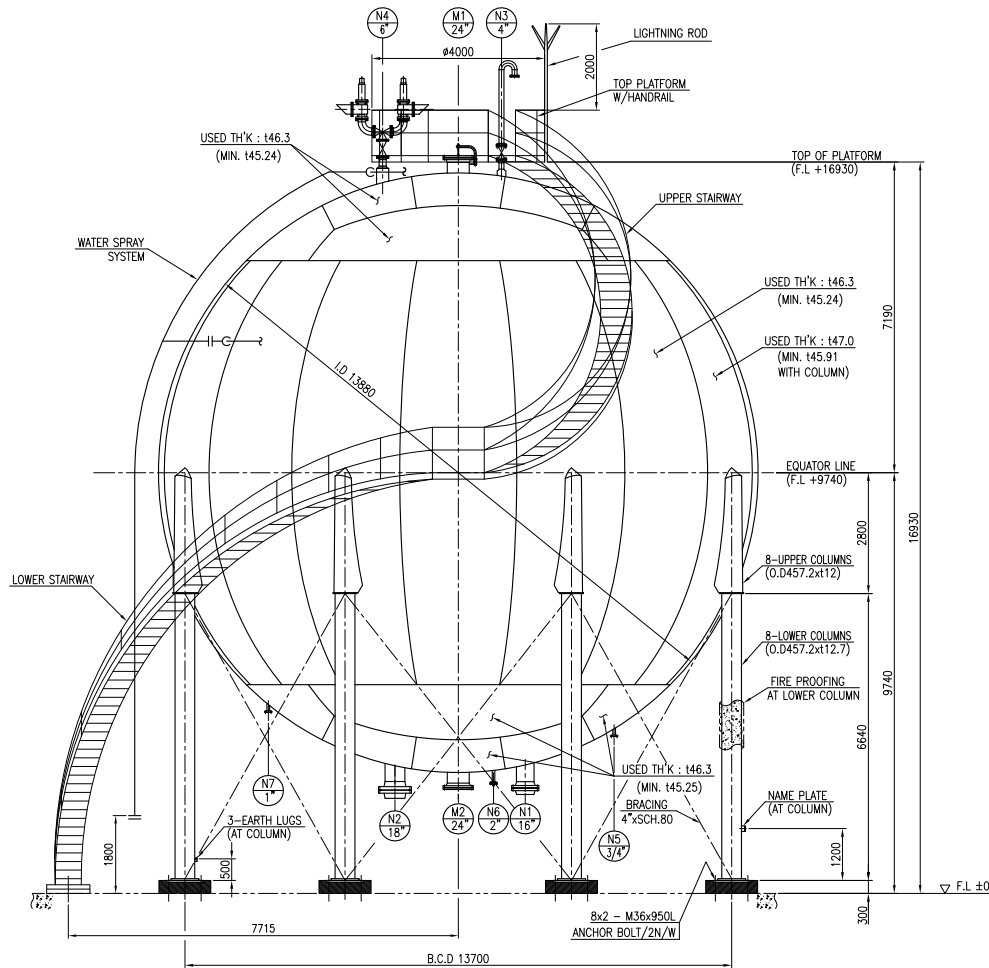
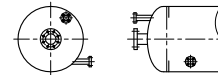
DESIGN DATA		
DESIGN CODE	ASME SEC. VIII DIV.2-2010 EDITION & KGS AC 111-2011	
STAMP	ASME "U2" STAMP & KGS STAMP	
FLUID NAME	GO2 GAS	
UNIT	set	
NET CAPACITY	1400.126 m³	
NOMINAL CAPACITY	1400.126 m³	
OPERATING	PRESSURE	2.5 (25) MPaG (Bar)
	TEMPERATURE	35 °C
	PRESSURE	2.9 (29) MPaG (Bar)
DESIGN	TEMPERATURE MAX.	40 °C
	TEMPERATURE MIN.	-10 °C
TEST PRESS.	HYDROSTATIC	4.41 (44.97) MPaG (Bar)
	PNEUMATIC	N/A MPaG (Bar)
WIND VELOCITY	45 m/s	
SEISMIC FACTOR	0.2	
RADIOGRAPHY	FULL	
JOINT EFFICIENCY	100% RT(B.W), 400% MT	
CORROSION ALLOWANCE	SHELL	NOZZLE SUPPORT
	1 mm	1 mm
	1 mm	0 mm
INSULATION	NO	
FIRE PROOFING(COLUMN)	50 mm	
STRESS RELIEVING (P.W.H.T)	YES (SEE NOTE 10)	



MATERIAL SPECIFICATION		
SHELL	SA537-CL2	
UPPER COLUMN	SA537-CL2	
LOWER COLUMN	API 5LB	
BRACING THE ROD	API 5LB	
NOZZLE NECK	SA106-B	
INTERNAL PIPE/FITTING	SA106-B	
FORGED FLANGES & COVERS	SA105	
FORGED NECK	SA350-LF2 CL2	
INTERNAL SUPPORT LUGS	SA537-CL2	
EXTERNAL LUGS	SA537-CL2	
STUD BOLT/NUT (MANHOLE)	SA193-B7 / SA194-2H	
EXT. BOLT/NUT	SA193-B7 / SA194-2H	
GASKET	SEE NOTE 7.	
PAINTING	AS PER SPEC.	
NAME PLATE, EARTH LUG	SA240-304 / SS400	
STAIRWAY	SS400	
ANCHOR BOLTS/NUTS	SA307-B / SA563-A	
PLATFORM & STEP	GRATING (H.D.GALV.)	
WEIGHT ESTIMATED		
EMPTY WEIGHT	250.9	TON
OPERATING WEIGHT	310.2	TON
FULL WATER WEIGHT	1400.1	TON
HYDROSTATIC TEST WEIGHT	1651.1	TON

GENERAL NOTES

- ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE NOTED. (특별히 명시되지 않은 모든 치수는 mm 기준임.)
- INTERNAL WELD SURFACE OF INSTRUMENT NOZZLE TO BE FULLY FLUSHED. (INSTRUMENT용 노즐의 내측 용접 표면은 매끈하게 해야 한다.)
- ALL WELDS SHALL BE CONTINUOUS, UNLESS OTHERWISE NOTED. (특별히 명시되지 않은 모든 용접은 연속으로 한다.)
- FLANGE BOLT HOLE ARE TO STRADDLE THE NORTH/SOUTH AND VERTICAL/HORIZONTAL CENTER LINES. (노즐 플랜지의 보홀은 수평면 아래 그림과 같이 N-S 평면 또는 수직/수평면에 일치시켜야 한다.)
- NOZZLE PROJECTIONS ARE FROM TANGENTIAL LINE OR CENTERLINE OF VESSEL TO FLANGE FACE. (NOZZLE PROJECTION은 TANGENTIAL LINE 또는 VESSEL CL에 FLANGE 면까지만 기준임.)
- GASKET SEATING SURFACES SHALL HAVE 125 TO 250 AARH. (가asket 접촉면은 125-250 AARH 정도.)
- GASKET MATERIAL : SPIRAL WOUND GASKET (14.5)
 - FILLER : GRAPHITE
 - HOOP : 304 S.S
 - INNER RING : 304 S.S
 - OUTER RING : CARBON STEEL
- WELD JOINT OF CATEGORY A,B & C FOR PRESSURE PART SHALL BE EXAMINED WITH FULL R/T AND MT OR PT. WELD JOINT OF CATEGORY D FOR PRESSURE PART SHALL BE EXAMINED WITH FULL U/T AND MT OR PT. MT OR PT SHALL BE DONE TO THE PARTS NONE-PRESSURE PARTS REMOVED/ATTACHED FROM/TO PRESSURE PART PLATE. (PRESSURE PART WELD JOINT TYPE A,B,C는 FULL R/T+(MT 또는 PT)를 한다. PRESSURE PART WELD JOINT TYPE D는 FULL U/T+(MT 또는 PT)를 한다. PRESSURE PART에 NONE-PRESSURE PART를 용접으로 붙이거나 제거하는 MT 또는 PT를 한다.)
- MINIMUM PREHEATING TEMPERATURE FOR ALL THE WELDMENTS OF PRESSURE PARTS SHALL BE 95°C. (압력 부위 용접시 최소 95°C 예열하고 할 것. ASME SEC. VIII DIV.2 TABLE 6.8)
- PWHT SHALL BE TREATED AT TEMPERATURE OF 595°C ±30°C DURING 2HOUR PLUS 15MIN. (PWHT는 595°C ±30°C에서 2시간 15분 할 것. ASME SEC. VIII DIV.2 TABLE 6.8 용접후 열처리에 대한 요건.)



NO.	DATE	REVISIONS & DESCRIPTION	DRAWN	CHECKED	REVIEWED	APPROVED