



Toase-e Park Sanati Gohar Ofogh
Petrochemical Co.
**CONCEPTUAL, BASIC and DETAIL DESIGN
ENGINEERING OF STYRENE PARK OFFSITE**



Document Title: Chiller (Evaporator) Outline Drawing

Document No.: EI027-HSE-VD – ME– DWG– 008- R3

Rev. R3

Page 1 of 10

STYRENE PARK OFFSITE

Document Title:

Chiller (Evaporator) Outline Drawing

Rev.	Issued Date	DESCRIPTION	PREPARED	CHECKED	APPROVED
R2	16-11-2024	IFA	F.sh	M.O	A.M
R2	16-09-2024	IFA	F.sh	M.O	A.M
R1	08-07-2024	IFA	F.sh	M.O	A.M
R0	15-05-2024	IFA	F.sh	M.O	A.M



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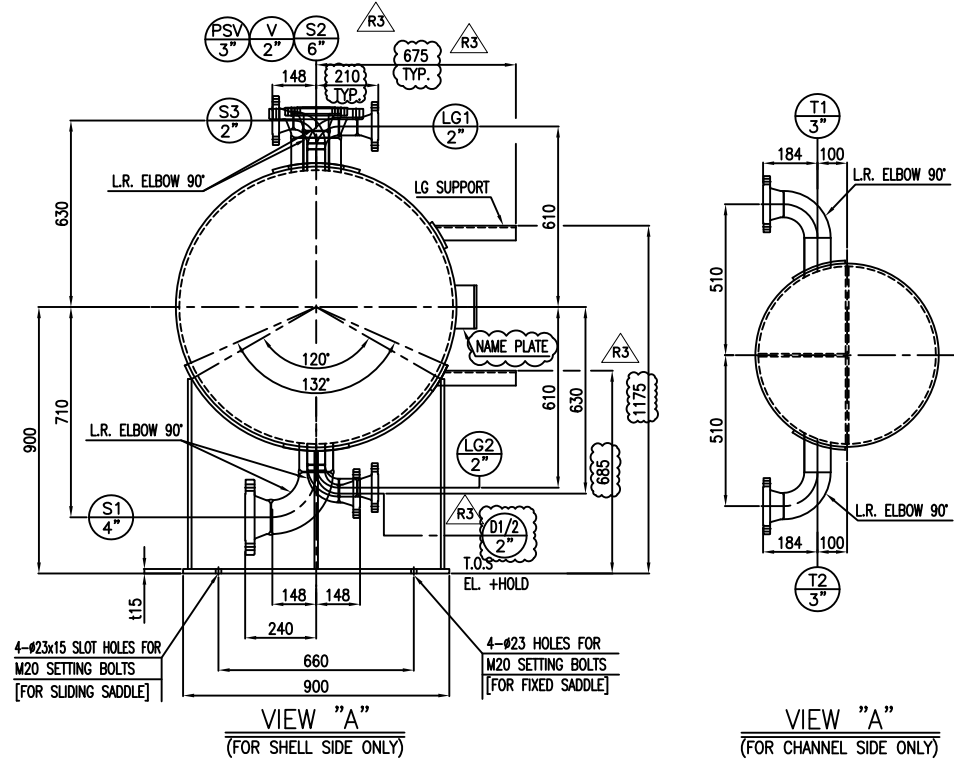
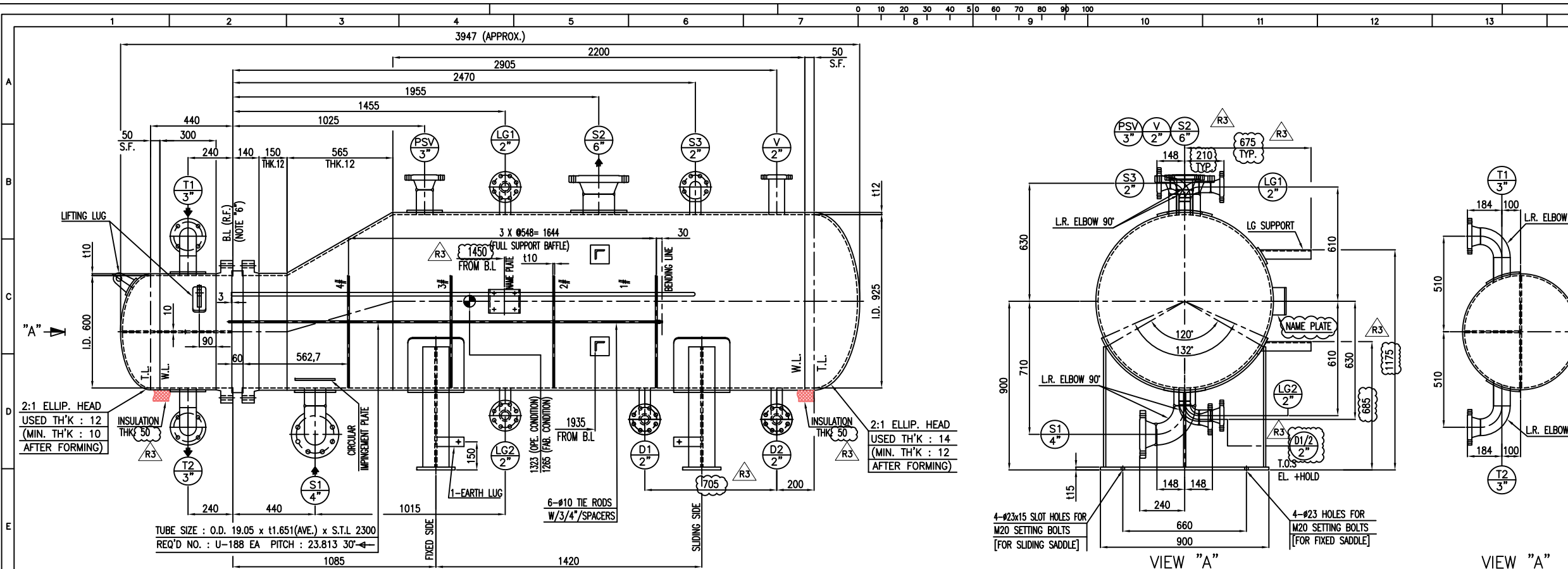
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Rev. R3

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REVISION RECORD SHEET

Page Page	Revisions							Page	Revisions						
	R0	R1	R2	R3	R4	R5	R6		R0	R1	R2	R3	R4	R5	R6
1	X	X	X	X				41							
2	X	X	X	X				42							
3	X	X	X	X				43							
4	X	X	X	X				44							
5	X	X	X	X				45							
6	X	X	X	X				46							
7	X	X	X	X				47							
8	X	X	X	X				48							
9	X	X	X	X				49							
10	X	X	X	X				50							
11								51							
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40								80							



- NOTES
- UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN MILLIMETERS.
 - UNLESS OTHERWISE NOTED OUTSIDE PROJECTION OF NOZZLES ARE MEASURED FROM C.L. OF EXCHANGER TO THE EXTREME FACE OF NOZZLE.
 - ALL WELDS CONTINUOUS EXCEPT NOTED.
 - BOLT HOLES FOR FLANGES SHALL BE STRADDLED TO EQUIPMENT MAIN AXIS.
 - ALL R.F. FLANGES SHALL HAVE SMOOTH FINISH FACING WITH RA= 3.2mm TO RA= 6.3mm.
 - BASE LINE (B.L.) INDICATES THE GASKET CONTACT SURFACE OF TUBE SHEET.
 - REINFORCING PADS FOR NOZZLES SHALL BE TAPPED WITH AT LEAST ONE (1) TELL TALE HOLE NPT 1/4" WITH VENT PIPE.
-
- DIMENSIONS REFER TO BAFFLES ARE MEASURED FROM C.L.O.F EACH PLATE.
 - GASKET MATERIAL FOR ASME B16.20. SPIRAL WOUND (t4.5)
 - FILLER: GRAPHITE
 - INNER RING: 304 S.S.
 - HOOP: 304 S.S.
 - OUTER RING: 304 S.S.
 - GASKET MATERIAL: SPIRAL WOUND (t4.5)
 - FILLER: GRAPHITE
 - INNER RING: 304 S.S.
 - HOOP: 304 S.S.
 - SPARE PART (OPTIONAL)
- | CONSTRUCTION & COMMISSIONING | |
|------------------------------|-----------------|
| GASKETS | 100% |
| STUD BOLTS & NUTS | 5% (MIN. 2SETS) |
- ALL EXPOSED SURFACE SHALL BE PAINTED AS FOLLOWS: EXPOSED SURFACE FOR EXTERNAL PARTS: EIO27-HSE-VD-QC-PRO-002 EXPOSED SURFACE OF INTERNAL: NOT PARTS REQUIRED
 - 1/1.4 FACTOR FOR LOAD COMBINATION HAS BEEN APPLIED
 - TUBES SHALL BE SEAMLESS
 - GASKET CONTACT SURFACE OF TUBE SHEET & GIRTH FLANGE: RA= 1.6µm (MAX)
 - FURTHER DETAILS TO BE ADDED FOR DISCLAIMER PURPOSES SUCH AS AFTER HYDROTEST TO BE CLEANED AND DRIED.

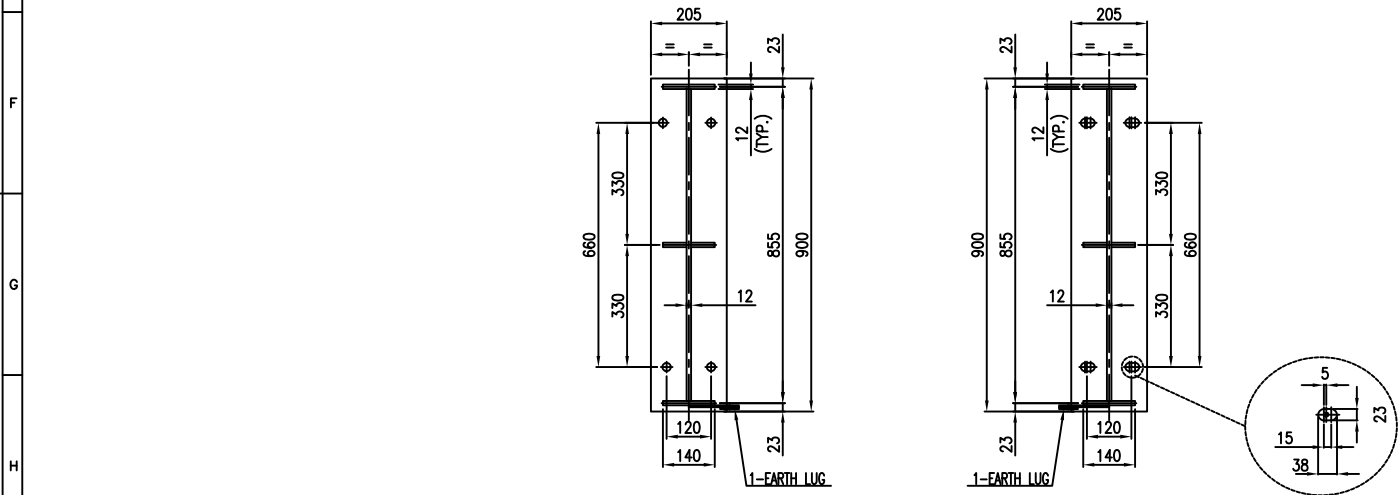


TABLE FOR FOUNDATION LOAD DATA

WIND		SEISMIC (NOTE 13)	
SHEAR (kgf)	MOMENT (kgf-m)	SHEAR (kgf)	MOMENT (kgf-m)
478	430	970	873

MATERIALS

	SHELL	GENERAL
BARREL	SA516-70N	SLIDING BAR/ROD SA516 70/SA36
FLANGES	SA350-LF2 CL.1N	SEALING STRIP SA516 70
NOZZLE FROM PIPE	SA333-6	DUMMY TUBE/SEAL ROD -
NOZZLE FROM PLATE	SA516-70N	BLINDED NOZZLE BOLT/NUT SA320 L7/SA194-4
NOZZLE FLANGES	SA350-LF2 CL.1N	BLINDED NOZZLE GASKET SEE NOTE "9"
COUPLINGS & PLUGS	-	TEST RING SA-266 2
NOZZLE REINF. PAD	SA516-70N	GASKETS
EXCHANGERS SUPPORTS	SA283-C	SHELL/COVER -
SUPPORT WEAR PLATE	SA516-70N	SHELL/TUBESHEET SEE NOTE "10"
STIFFENING RINGS	SA516-70N	CHANNEL/TUBESHEET SEE NOTE "10"
EXPANSION JOINT	-	CHANNEL/COVER -
LINING	-	FLOATING HEAD -
SHELL COVER		FLOATING HEAD
BARREL	-	COVER -
COVER	-	FLANGES -
FLANGES	-	SPLIT RING -
CHANNEL		BOLTS & NUTS
BARREL	SA516-70N	SHELL/COVER -
FLANGES	SA266-2N	SHELL/CHANNEL SA320-L7/SA194-4
COVER	SA516-70N	CHANNEL/COVER -
FLAT COVER	-	FLOATING HEAD -
NOZZLE FROM PIPE	SA106-B	SETTING BOLTS/NUTS SA193 B7 / SA194 2H
NOZZLE REINF.	SA516-70N	TUBE BUNDLE
NOZZLE FLANGES	SA105N	TUBES SA334-6
COUPLINGS & PLUGS	-	TUBESHEETS SA350-LF2 CL.1N
NOZZLE REINF. PAD	SA516-70N	BAFFLES/SUPPORTS/IMP. PLATE SA516-70
PARTITION PLATES	SA516-70N	TIE RODS & SPACERS SA36/SA179

DESIGN DATA

CODE	ASME SEC. VIII DIV.1 (2021 ED.)	TYPE	H-BKU
TEMA CLASS	TEMA 10TH ED. (CLASS "R")	CODE STAMP	NO
LOCAL REGULATION	NO	WIND / SEISMIC CODE	UBC 97
FLUID	PROPANE	STYRENE	WIND EXPOSURE / VELOCITY (km/h) D / 125
PRESS. (barg)	22/F.V.	6.8	Ca/Cv/Nv
TEMP. (°C)	120/85	85	SEISMIC IMPROVANCE FACTOR/RESPONSE FACTOR 1.25 / 3
DESIGN (INT.EXT.)	-	-	INSULATION (TYPE/THK.) COLD (60) COLD (50)
STEAM OUT CONDITION	-	-	R3 - R3
OPER. (IN/OUT)	PRESS. barg	3.813	4.5
TEMP. (°C)	1.24/1	15.2/5	FIRE PROOFING (mm) SEE NOTE "12"
CORROSION ALLOWANCE (mm)	3	3	PAINTING
JOINT EFFICIENCY (S/H)	1.0/1.0	1.0/1.0	TUBE TO TUBESHEET JOINT
RADIOGRAPHY (S/H)	FULL/FULL	FULL/FULL	NO. OF PASS 1(ONE) 4(FOUR)
HYDRO. TEST PRESS. (SHOP/FIELD)	28.6/28.6	8.84/8.84	WEIGHT
HYDRO. TEST TYPE	(U-900) NOTE (3)	(U-900) NOTE (3)	BUNDLE (KG) 840
PNEUM. TEST PRESS. barg	-	-	ERECTION (KG) 2,850
M.D.M.T (°C)	-45	-29	EMPTY (KG) 2,850
MAWP (HOT & CORRODED) barg	22	6.8	OPER. (KG) 4,250
M.A.P (NEW & COLD) barg	22	6.8	FULL WATER (KG) 4,900
P.W.H.T	NO	NO	VOLUME (M³) 1.65
IMPACT TEST	NO	NO	FLUID DENSITY (kg/m³) 532.9
S.R OF HEAD AFTER COLD FORMING	YES	YES	MEAN METAL TEMP. (°C) 918.4
			SHELL SIDE TUBE SIDE

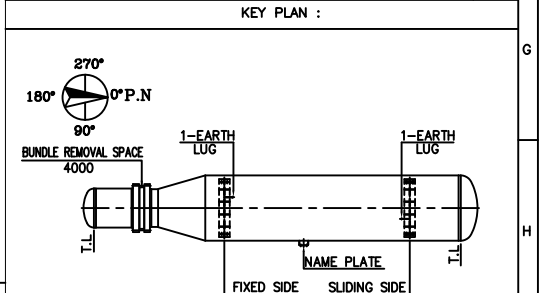
NOZZLE LIST

NOZZLE MARK	Q'TY	SIZE (INCH)	FLANGE RATING	SCH.	SERVICE	H/EX. C.L. PROJECTION	REINF. PAD TH'K	O.D.
S1	1	4"	ASME B16.5 300# WNRF	120	SHELL SIDE INLET	SEE DWG.	12	220
S2	1	6"	ASME B16.5 300# WNRF	80	SHELL SIDE OUTLET	671	12	300
T1	1	3"	ASME B16.5 150# WNRF	80	CHANNEL SIDE INLET	SEE DWG.	10	190
T2	1	3"	ASME B16.5 150# WNRF	80	CHANNEL SIDE OUTLET	SEE DWG.	10	190
D1	1	2"	ASME B16.5 300# LWNRF	160	SHELL SIDE DRAIN	SEE DWG.	-	-
D2	1	2"	ASME B16.5 300# LWNRF	160	OIL RECOVERY	SEE DWG.	-	-
LG1	1	2"	ASME B16.5 300# WNRF	160	LEVEL GAUGE	SEE DWG.	-	-
LG2	1	2"	ASME B16.5 300# WNRF	160	LEVEL GAUGE	SEE DWG.	-	-
PSV	1	3"	ASME B16.5 300# WNRF	160	PRESSURE SAFETY VALVE	675	12	190
V	1	2"	ASME B16.5 300# LWNRF	t16.6	VENT	675	-	-
S3	1	2"	ASME B16.5 300# WNRF	160	SHELL SPARE/PURGE	SEE DWG.	-	-

LEGEND

B.L. = BASE LINE
 C.L. = CENTER LINE
 M.D.M.T. = MIN. DESIGN METAL TEMPERATURE
 N. = NORMALIZED
 O.T.L. = OUTER TUBE LINE
 C.O.G. = CENTER OF GRAVITY
 T.O.G. = TOP OF GROUTING
 W.P. = WORKING POINT

REFERENCE DRAWING	DWG NO.	REV.
-	-	-



REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
R3	11.10.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.
R2	09.14.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.
R1	06.27.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.
R0	04.21.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.

CLIENT

CONSULTING ENGINEER

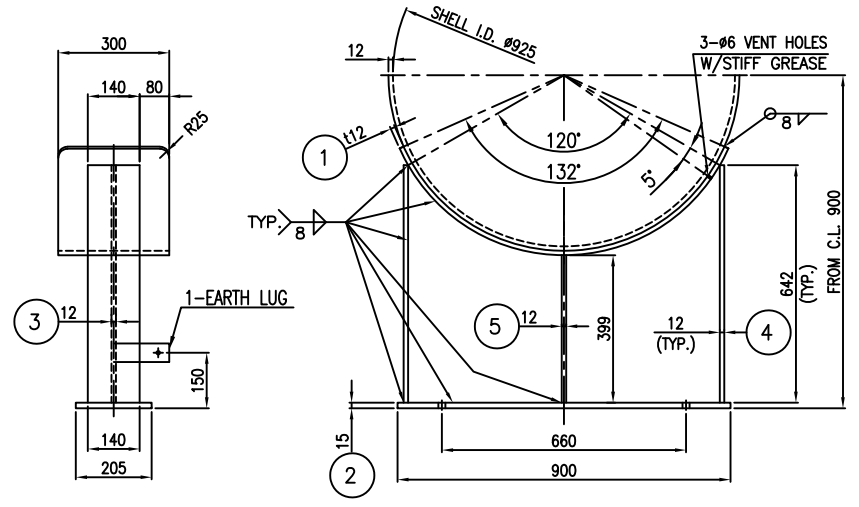
PROJECT: **STYRENE PARK OFFSITE**

DRAWING TITLE: **GENERAL ARRANGEMENT DRAWING FOR CHILLER (EVAPORATOR)**

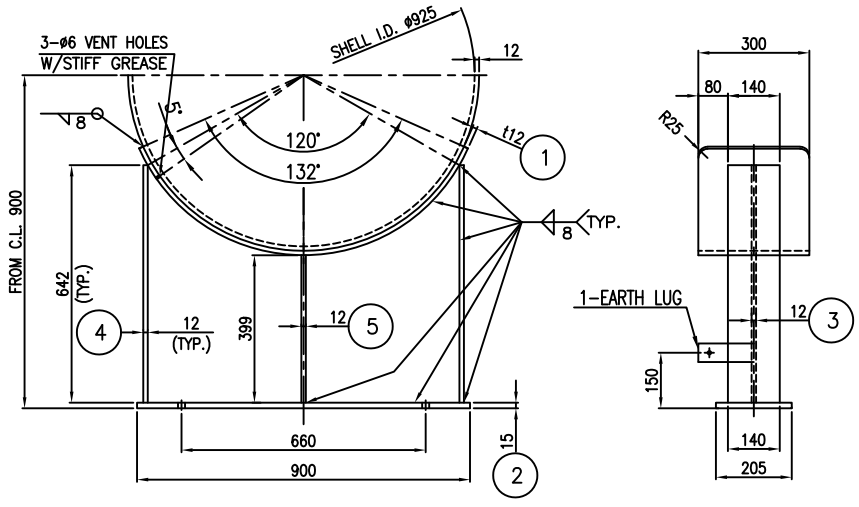
DRAWING NO.	REV.	SIZE	SCALE	SHEET
EIO27-HSE-VD-ME-DWG-008	R3	A3	NTC	1 of 8

"A"

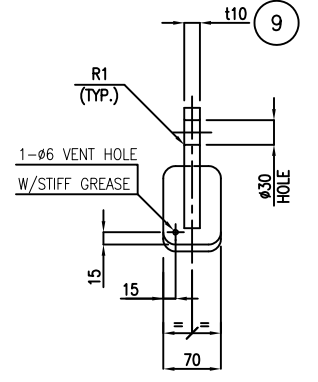
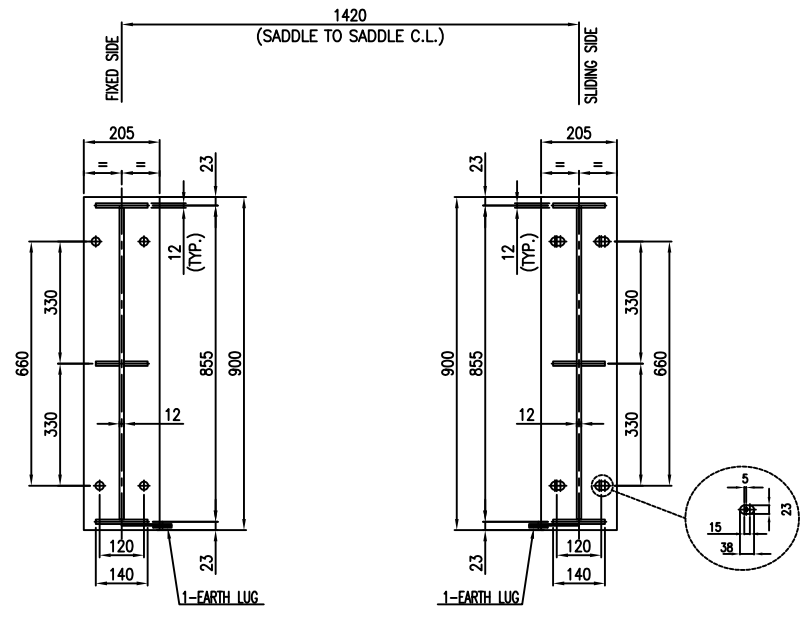
"A"



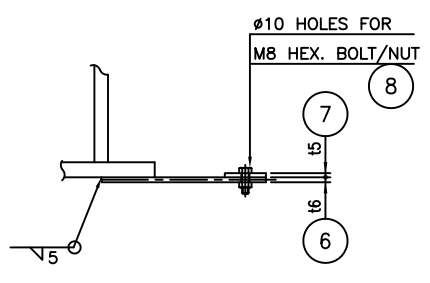
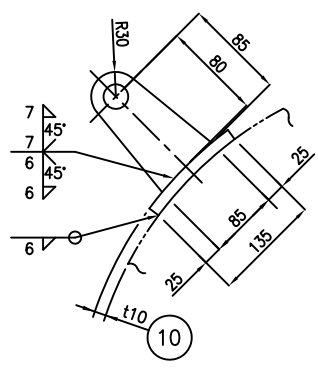
FIXED SIDE



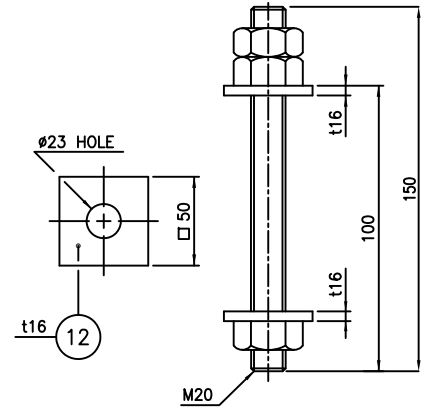
SLIDING SIDE



LIFTING LUG DETAIL
(FOR CHANNEL SIDE)



EARTH LUG



SETTING B/2NS/2W

NOTES

- UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN MILLIMETERS.
- SINCE CABLE LUG IS TINNED COPPER, TINNED CARBON STEEL EARTH LUG.

FOR ONE SET

PART NO.	PART NAME	MATERIAL	REGULAR QUANTITY	SPARE QUANTITY	SPECIFICATION	REMARK
12	WASHER	SA283-C	32		M8 x 135 (HT DP GRV)	
11	SETTING BOLT/2NUTS	SA193-B7/SA194-2H	8SETS		M20 x 150 (HT DP GRV)	
10	REINF. PAD	SA516-70N	3		t12 x 70 x 135	
9	LIFTING LUG	SA283-C	3		t20 x 85 x 122	
8	HEX. BOLT/NUT	S.S. 304	2SETS		M8 x L25	
7	COPPER PLATE	SEE NOTE "2"	2		t5 x 50 x 50	
6	EARTH LUG	S.S. 304	2		t6 x 50 x 150	
5	SUPPORT RIB	SA283-C	4		t12 x 140 x 399	
4	SUPPORT RIB	SA283-C	4		t12 x 140 x 642	
3	WEB PLATE	SA283-C	2		t12 x 642 x 843	
2	BASE PLATE	SA283-C	2		t15 x 205 x 900	
1	WEAR PLATE	SA516-70N	2		t12 x 300 x 1107	

BILL OF MATERIAL

REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
R2	09.14.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.
R1	07.21.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.
R0	06.27.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.

CLIENT



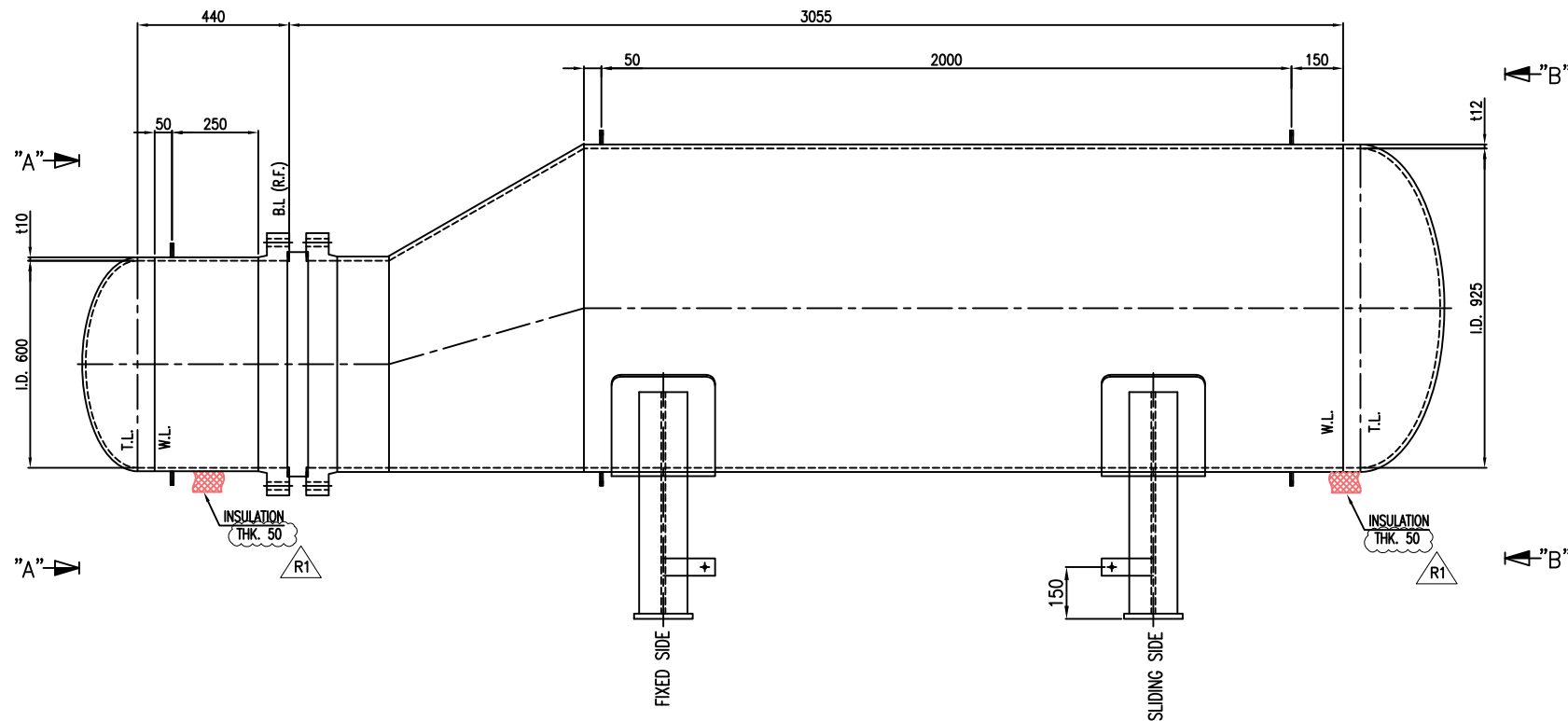
پتروشیمی توسعه پارک
صنعتی گوهر آهنگ

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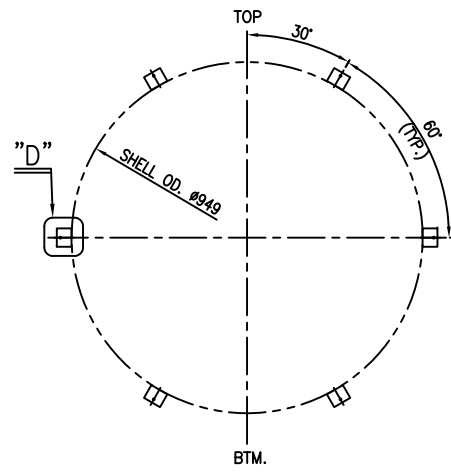
PROJECT: **STYRENE PARK OFFSITE**

DRAWING TITLE: **SADDLE DETAIL DRAWING FOR CHILLER (EVAPORATOR)**

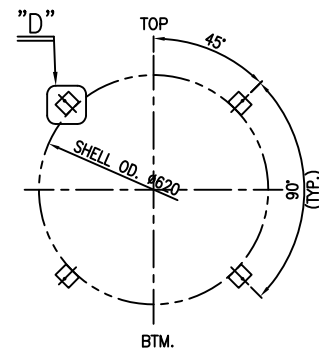
DRAWING NO.	REV.	SIZE	SCALE	SHEET
EIO27-HSE-VD-ME-DWG-008	R2	A3	NTC	5 of 8



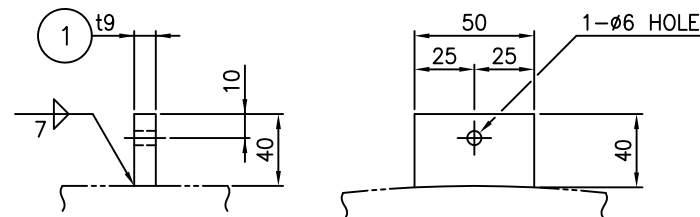
ELEVATION VIEW



VIEW "B"-"B"



VIEW "A"-"A"



DETAIL "D"

NOTES

1. UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE IN MILLIMETERS.

* FOR ONE SET

PART NO.	PART NAME	MATERIAL	QUANTITY		SPECIFICATION	REMARK
			REGULAR	SPARE		
1	INSUL SUPT CLIP	SA516-70N	16	19 x 40 x 50		

BILL OF MATERIAL

REV.	ISSUE DATE	DESCRIPTION	PREPARED	CHECKED	APPROVED
R1	10.18.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.
RO	06.27.2024	ISSUED FOR APPROVAL (IFA)	D.SH.	M.O.	A.M.

CLIENT



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PROJECT: **STYRENE PARK OFFSITE**

DRAWING TITLE:
**INSULATION CLIP DRAWING FOR
CHILLER (EVAPORATOR)**

DRAWING NO.	REV.	SIZE	SCALE	SHEET
EI027-HSE-VD-ME-DWG-008	R1	A3	NTC	7 of 8

