

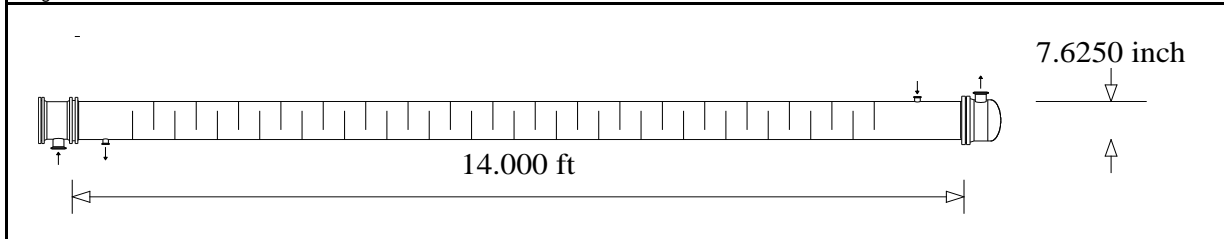


DATA SHEETS

	Qadirpur Badr Dehydration Plant Troubleshooting			
	DOC. TITLE	Lean Rich Glycol Exchanger Datasheet		
	DOC. NO	4929-DS-002		

Customer	Oil & Gas Development Company Ltd. (OGDCL)	Reference No.	
Address		Proposal No.	
Plant Location	Qadirpur Gas Field	Date	4/26/2018
Service of Unit	Rich/Lean Glycol	Rev	1
Size	7.6250 x 168.000 inch	Type	AEL
Surf/Unit (Gross/Eff)	173.18 / 171.61 ft2	Horz.	Connected In
		Shell/Unit	1
		Surf/Shell (Gross/Eff)	173.18 / 171.61 ft2

PERFORMANCE OF ONE UNIT					
Fluid Allocation		Shell Side		Tube Side	
Fluid Name		Lean Glycol		Rich Glycol	
Fluid Quantity, Total		2806.51		2903.01	
Vapor (In/Out)				32.4287	
Liquid		2806.51		2870.58	
Steam					
Water					
Noncondensables					
Temperature (In/Out)		399.99		110.70	
Specific Gravity		0.9624		1.1023	
Viscosity		0.5803		0.0171 V/L 13.829	
Molecular Weight, Vapor					
Molecular Weight, Noncondensables					
Specific Heat		0.7377		0.2894 V/L 0.552	
Thermal Conductivity		0.1070		0.0164 V/L 0.115	
Latent Heat				834.677	
Inlet Pressure		15.696		24.696	
Velocity		0.11		3.15	
Pressure Drop, Allow/Calc		2.000		1.000	
Fouling Resistance (min)		0.00100		0.00100	
Heat Exchanged Btu/hr		377481		81.9 F	
Transfer Rate, Service		26.85 Btu/ft2-hr-F		33.38 Btu/ft2-hr-F	
		Clean		Actual	
		36.47 Btu/ft2-hr-F			
CONSTRUCTION OF ONE SHELL					
		Shell Side		Tube Side	
Design/Test Pressure		150.000 /		150.000 /	
Design Temperature		450.00		450.00	
No Passes per Shell		1		1	
Corrosion Allowance		inch			
Connections		In inch 2 150#		2 150#	
Size & Rating		Out inch 2 150#		2 150#	
		Intermediate @		@	
Tube No.		151		OD 0.3750 inch	
		Thk(Avg) 0.0650 inch		Length 14.000 ft	
Tube Type		Plain		Pitch 0.4687 inch	
				Layout 30	
Shell		ID 7.6250 inch		OD inch	
Channel or Bonnet				Shell Cover	
Tubesheet-Stationary				Channel Cover	
Floating Head Cover				Tubesheet-Floating	
				Impingement Plate None	
Baffles-Cross		Type SINGLE-SEG.		%Cut (Diam) 26.2	
				Spacing(c/c) 4.0000	
Baffles-Long				Inlet 16.2986 inch	
Supports-Tube				Seal Type	
Bypass Seal Arrangement				U-Bend Type	
Expansion Joint				Tube-Tubesheet Joint	
Rho-V2-Inlet Nozzle		280.95 lb/ft-sec2		Type	
		Bundle Entrance 0.28		Bundle Exit 0.64	
Gaskets-Shell Side				lb/ft-sec2	
		Tube Side			
-Floating Head					
Code Requirements				TEMA Class	
Weight/Shell		1154.93		Filled with Water 1416.43	
				Bundle 426.56	
				lb	

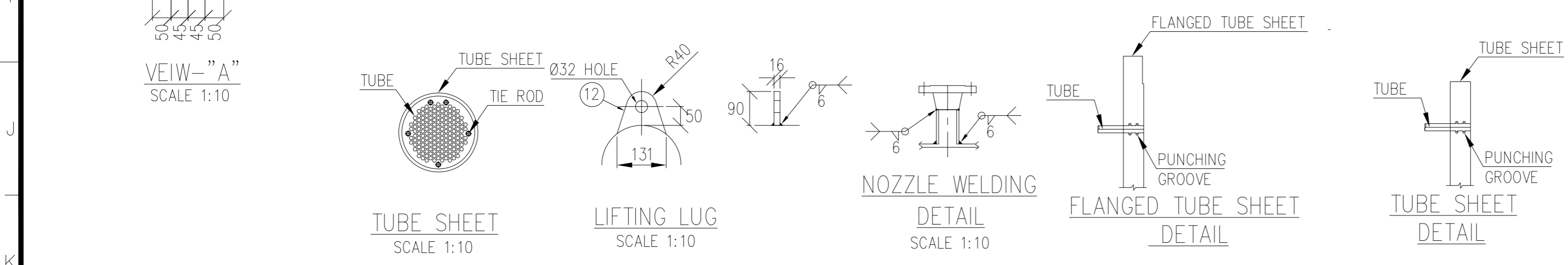
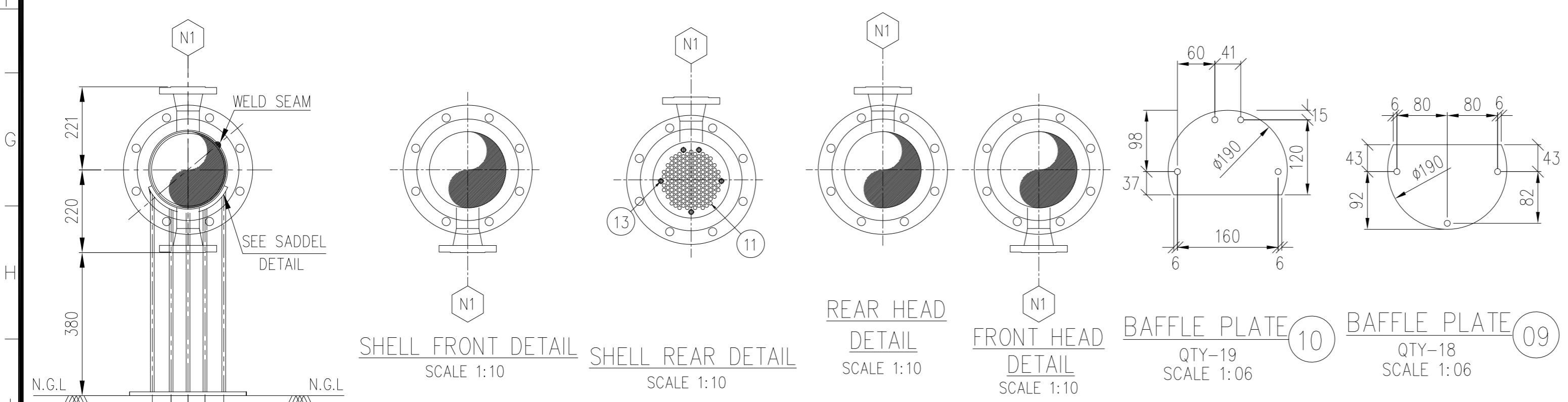
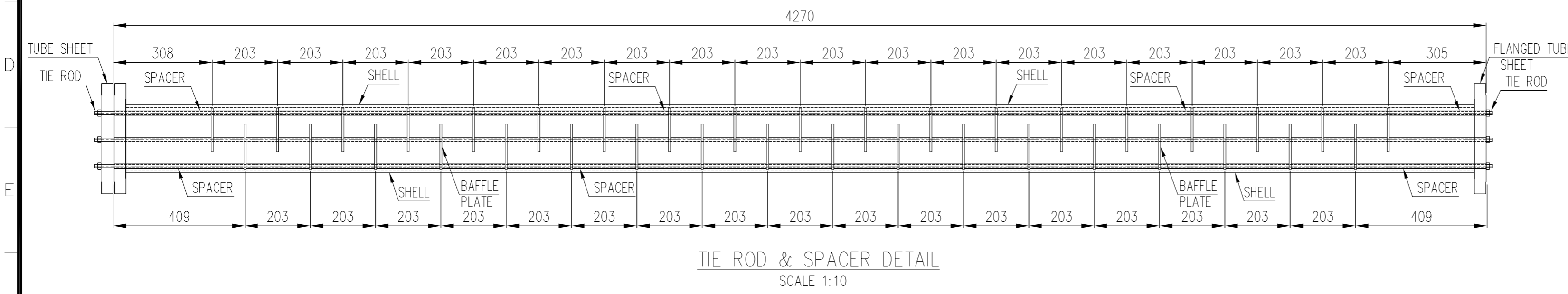
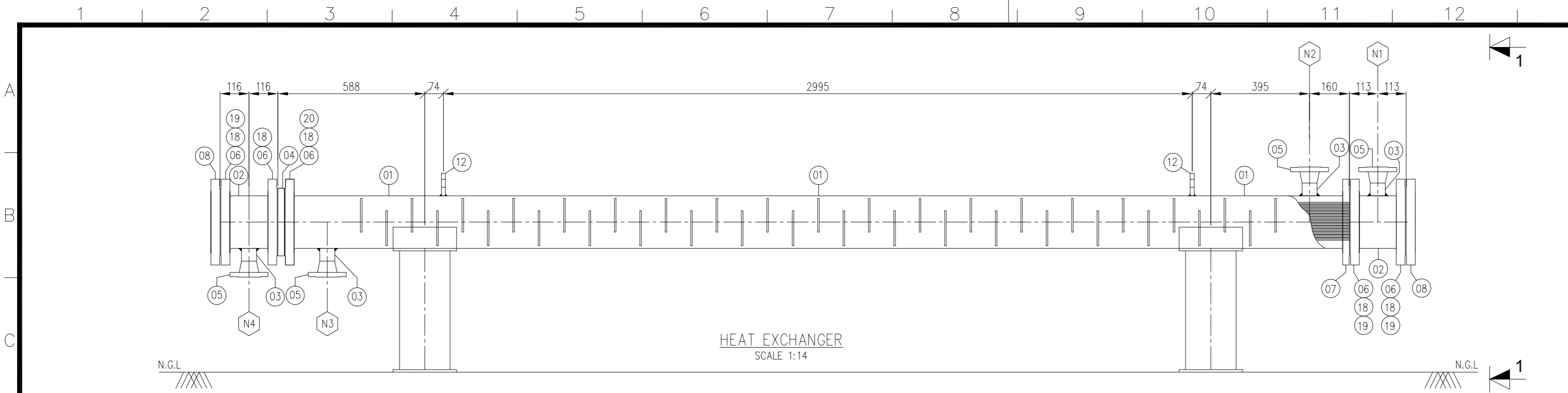


Remarks:

1. Vendor/Supplier to perform complete thermal and mechanical design of heat exchanger
2. Surface area and heat transfer results specified in datasheet are based on 126# of tubes, 21# of tubes are considered plug.
3. External insulation is required
4. Vendor/Supplier to select material of construction as per service requirement
5. Heat exchanger shall be as per ASME Code Sec VIII, Div 1
6. Full inspection as per code, U-stamp and spot radiography are required



DRAWINGS



BILL OF MATERIAL				
ITEM NO.	DESCRIPTION	MATERIAL	QTY	REMARKS
1	SHELL PLATE 4200x660, 9.525 mm THK	SA-516 Gr. 70	01	
2	SHELL PLATE 660x150, 9.525 mm THK	SA-516 Gr. 70	02	
3	PIPE #2" Sch. 40, 60mm LONG.	ASTM A-106 Gr. B	04	
4	TUBE SHEET #270mm 25.40mmThk.	SA-226 Gr.2	01	
5	FLANGE #2"-Sch. 40, 150# WN RF	ASTM A-105	04	
6	FLANGE #8" Sch 80 150# RF	SA-226 Gr.2	05	
7	FLANGED TUBE SHEET #343mm 27mmThk.	SA-226 Gr.2	01	
8	BLIND FLANGE #8" 150# RF	SA-226 Gr.2	02	
9	BAFFEL PLATE 6.53mm THK	SA-226 Gr.2	18	
10	BAFFEL PLATE 6.53mm THK	SA-226 Gr.2	19	
11	TUBE OD 9.53x4290mm LONG	SA-179	159	
12	LIFTING LUG x 16 THK.	SA-36	02	
13	TIE ROD M10, Ø10x4400mm LONG	SA-36	05	
14	SPACER#14 x 403mm LONG SCH.40	SA-53/A-106-B	02	
15	SPACER#14 x 302mm LONG SCH.40	SA-53/A-106-B	04	
16	SPACER#14 x 197mm LONG SCH.40	SA-53/A-106-B	35	
17	SPACER#14 x 95mm LONG SCH.40	SA-53/A-106-B	36	
18	GASKET #8" 150# RF	304 S.S	05	
19	3/4" STUD WITH 2 NUTS 110mm LG	A-193 GR.37 A-194 GR.2H	24	
20	3/4" STUD WITH 2 NUTS 140mm LG	A-193 GR.37 A-194 GR.2H	08	

MARK	NO REQ'D	SIZE	RATING	SERVICE	REMARKS
N4	1	#2"	150# R.F. W.N	RICH GLYCOL IN	
N3	1	#2"	150# R.F. W.N	LEAN GLYCOL OUT	
N2	1	#2"	150# R.F. W.N	LEAN GLYCOL IN	
N1	1	#2"	150# R.F. W.N	RICH GLYCOL OUT	

NOZZLES AND CONNECTIONS				
DESIGN & TEST CONDITION				
		SHELL SIDE	TUBE SIDE	
DESIGN CODE		ASME SECT. DIV.1		
DESIGN PRESS.& TEMP.		150 psig 450°F	150 psig	450°F
HYDRO'C TEST PRESS		200 psig	200 psig	
X' RAYED		FULL	FULL	
JOINT EFF.		85%	85%	
CORR.ALLOWANCE		3 mm	3 mm	
NUMBER OF PASSES		1	1	
EMPTY WEIGHT		633.6 Kg		

NOTES.

1. TUBE TO TUBESHEET JOINT SHALL BE MADE BY "GROOVE".
2. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
3. ALL DIMENSIONS, ELEVATIONS AND ORIENTATIONS TO BE VERIFIED BY THE CONTRACTOR BEFORE UNDERTAKING ANY KIND OF FABRICATION, CONSTRUCTION AND INSTALLATION WORK AT SITE.

REV.	DATE	ISSUED FOR REVIEW	DESCRIPTION OF REVISION	AHK	AV	APPR.
0	15/15/2018					

CONSULTANT : **PE PETROCHEMICAL ENGINEERING CONSULTANTS**
 C-2, BLOCK NO. 17, GULSHAN-E-IBRAHIM, NEAR NATIONAL STADIUM, KARACHI-75300, PAKISTAN.
 TEL: +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

CLIENT : **OIL & GAS DEVELOPMENT COMPANY LIMITED**

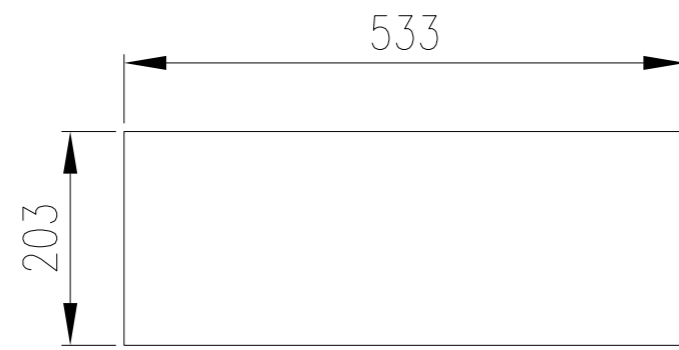
PROJECT : **QADIRPUR BADAR DEHYDRATION PLANT**

TITLE : **GENERAL ARRANGEMENT FOR HEAT EXCHANGER**

JOB NO. 4929	DRAWING. NO. 4929-GA-001	SHEET NO. 1 OF 2	SCALE: -	SHEET SIZE A2
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BILL OF MATERIAL

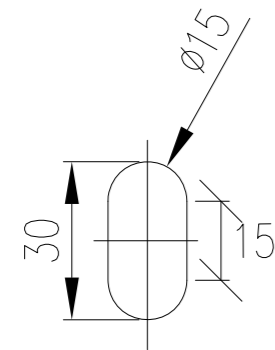
SR#	DISCRIPTION	MATERIAL	QTY	REMARKS
01	WEB PLATE 10mm THK	SA-36	02	
02	FIXED PLATE 10mm THK	SA-36	01	
03	SLIDE PLATE 10mm THK	SA-36	01	
04	SIDE PLATE 10mm THK	SA-36	04	
05	RIB PLATE 10mm THK	SA-36	04	
06	RIB PLATE 10mm THK	SA-36	02	
07	WEAR PLATE 10mm THK	SA-36	02	
08	EARTHING LUG 40x40x10mm THK	SA-36	01	



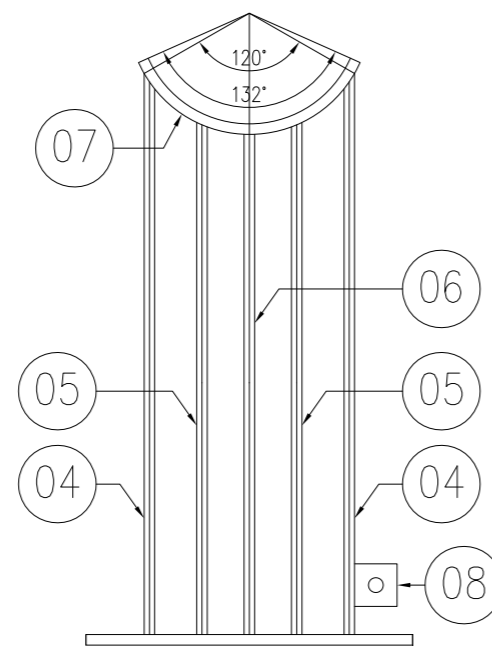
(04) SIDE PLATE 10 THK
QTY -04
SCALE 1:10



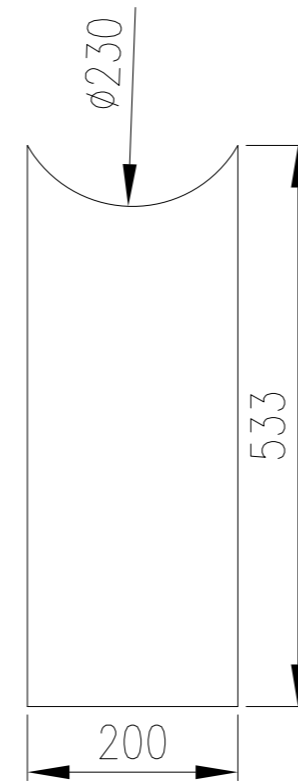
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QTY -04
SCALE 1:10



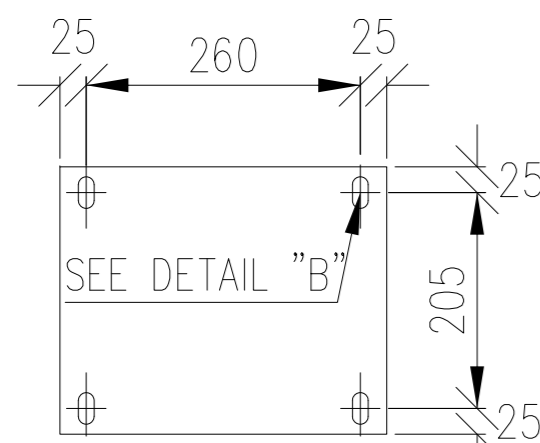
DETAIL-"B"



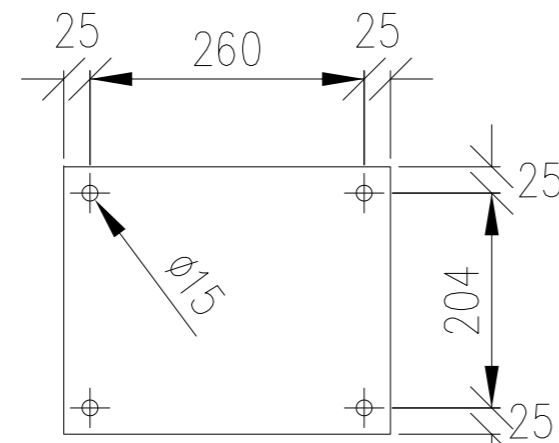
SADDEL DETAIL
SCALE 1:10



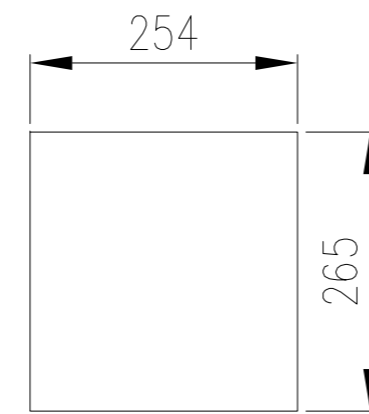
(01) WEB PLATE 10 THK
QTY -02
SCALE 1:10



(03) SLIDE PLATE 10 THK
QTY -01
SCALE 1:10



(02) FIXED PLATE 10 THK
QTY -01
SCALE 1:10



(07) WEAR PLATE 10 THK
QTY -02
SCALE 1:10



(06) RIB PLATE 10 THK
QTY -02
SCALE 1:10

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0	15/15/2018	ISSUED FOR REVIEW	AHK	AV	

CONSULTANT : **PC PETROCHEMICAL ENGINEERING CONSULTANTS**
C-2, BLOCK NO. 17, GULSHAN-E-IQBAL, NEAR NATIONAL STADIUM, KARACHI-75300. PAKISTAN.
 TEL. +92 (21) 34827780, 34961088, FAX: +92 21 34961089, E-Mail: contact@pcec.com.pk web site: www.pcec.com.pk

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JOB NO. 4929	DRAWING. NO. 4929-GA-001	SHEET NO. 2 OF 2	SCALE: -	SHEET SIZE A2
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