



OIL & GAS DEVELOPMENT COMPANY LIMITED
PROCUREMENT DEPARTMENT (LOCAL), ISLAMABAD
SCHEDULE OF REQUIREMENT

Material : **SUPPLY OF TUBE BUNDLES**

Tender Enquiry No: **PROC/LF/PT/18365/21**

EVALUATION WILL BE CARRIED OUT ON ITEM WISE

Due Date:

Bid Bond Value : **ITEM WISE BELOW**

Attachment(if any) : **YES**

Sr No	Description	Quantity	Make/Brand offered	Unit	Unit Price (PKR) Inclusive Of All Taxes Except GST	Unit Price (PKR) Inclusive of GST	Total Price (PKR) Inclusive of GST	Delivery Period Offered	deviation from Tender Spec. If Any
1	TUBE BUNDLE FOR EA-402 DWG NO: PP-DKN-630 AS PER ATTACHED TOR	1		Number					
2	TUBE BUNDLE FOR EA-602 DWG NO: PP-DKN-107 AS PER ATTACHED TOR	1		Number					
3	TUBE BUNDLE FOR EA-608 DWG NO: PP-DKN-131 AS PER ATTACHED TOR	1		Number					
4	TUBE BUNDLE FOR EA-201 DRAWING #PP-DKN-628 AS PER ATTACHED TOR	1		Number					

Special Note: The prospective bidders also download the master set of Tender Document

- The prospective bidders may keep in touch with OGDCL web site for downloading the clarifications/amendments (if any) issued by OGDCL.
- BID VALIDITY 120 DAYS FROM TECHNICAL BID OPENING.DELIVERY IN 06 MONTHS FROM LPO ISSUE TO DAKHNI PLANT,JAND. BID BOND ITEM#1=RS.480,000/-,ITEM #2=RS.28,500/-, ITEM #3=30,000/-,ITEM #4=RS.60,000/- .PAYMENT AFTER DELIVERY & INSPECTION SITE.



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Mandatory Checklist

Please confirm the compliance of the following mandatory information along with the bid(s) (failing which bids(s) will not be accepted)

Documents	To be Attached with the Technical/Financial Bids	Compliance	
		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Original Bid Bond	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of NTN Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of GST Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Confirmation that the Firm is appearing on FBR's Active Taxpayer List	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped Annexure-A (Un-priced)	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped Annexure-B	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped Annexure-D	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped Annexure-L on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped Annexure-M on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped Annexure-N on Non-Judicial Stamp Paper duly attested by Notary Public	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped Annexure-A (Priced)	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped Annexure-C	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped Annexure-E	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>



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For the Vendors/Contractors who opt to submit Bank Draft/Call Deposit/Pay order against Bid Bond/Performance Bond, our Accounts Department has finalized an arrangement for online payment to such Vendors/Contractors, which will be processed through (IBFT & LFT) for which following information is required:

i.	IBAN No. (International Bank Account Number 24 Digit)	
ii.	Vendor Name as per Title of their Bank Account	
iii.	Contact No.of Company's CEO/ Owner (Mobile & Landline)	
iv.	Bank Name.	
v.	Bank Branch Name	

Name, Sign and Stamp of the authorized official of the Bidder(s) _____

Specifications of Tube Bundles

Sr#	Description	Parameters	Shell Side	Tube Side
1	Amine Reboiler EA-402 Type: AKU	Design Pressure Design Temperature Working Pressure Working Temperature Tube sheet design temperature Hydrotest Pressure Fluid Corrosion Allowance Welding efficiency X-ray Stress Relieving No of passes Design Code: ASME Sec VIII Div 1 (Summer 85) TEMA R. Additional code: NACE MR-0175, Material U Tubes: SA-213 TP 316 Material Tube sheet: SA-182 F316 Material Baffles: SA-240 316 DWG No: PP-DKN-630	50 Psi 138 °C 122/122 °C 150 °C 75 Psi 20% DEA Solution 3.2 mm 1 100% Yes 1	215 Psi 150 °C 157/141 °C 323 Psi Hot oil 3.2 mm 0.85 Spot No 2
2	NGL Fractionator Reboiler EA-602 Type: BGU	Design Pressure Design Temperature Working Pressure Working Temperature Tube sheet design temperature Hydrotest Pressure Fluid Corrosion Allowance Welding efficiency Radiography Stress Relieving No of passes Design Code: ASME Sec VIII Div 1 (Summer 85) TEMA R. Additional code: NACE MR-0175, Material U Tubes: SA-179 Material Tube sheet: SA-105 Material Baffles: SA-285 Gr. C DWG No: PP-DKN-107	340 Psi 296 °C 306 Psi 265/281.7 °C 344 °C 510 Psi NGL 3.2 mm 0.85 Spot No Split flow	230 Psi 344 °C 50 Psi 323.9/307.2 °C 345 Psi Hot Oil 3.2 mm 0.85 Spot No 2

3	De-Butanizer Reboiler EA-608 Type: BGU	Design Pressure Design Temperature Working Pressure Working Temperature Tube sheet design temperature Hydrotest Pressure Fluid Corrosion Allowance Welding efficiency Radiography Stress Relieving No of passes Design Code: ASME Sec VIII Div 1 (Summer 85) TEMA R. Additional code: NACE MR-0175, Material U Tubes: SA-179 Material Tube sheet: SA-105 Material Baffles: SA-285 Gr. C DWG No: PP-DKN-131	235 Psi 202 °C 207 Psi 182.2/186.1 °C 344 °C 353 Psi Natural Gasoline 3.2 mm 0.85 Spot No Split Flow	160 Psi 344 °C 20 Psi 226.7/210 °C 344 °C 240 Psi Hot Oil 3.2 mm 0.85 Spot No 2
4	Sour Gas Cooler EA-201 Type: AEU	Design Pressure Design Temperature Working Pressure Working Temperature Tube sheet design temperature Hydrotest Pressure Bubble Test Fluid Corrosion Allowance Welding efficiency X-ray Stress Relieving Design Code: ASME Sec VIII Div 1 (Summer 85) TEMA R. Additional code: NACE MR-0175, Material U Tubes: SA-213 TP 316 Material Tube sheet: SA-182 F304 Material Baffles: SA-240 304 DWG NO: PP-DKN-404	100 Psi 68 °C 64/41 °C 144 °C 150 Psi Cooling water 3.2 mm 0.85 Spot No	1265 Psi 144 °C 35/47 °C 1898 Psi 25 Psi Sour gas 3.2 mm 1 100% Yes

TERMS OF REFERENCES FOR SUPPLY AND FABRICATION OF TUBE BUNDLES

INSTALLED AT DAKHNI PLANT.

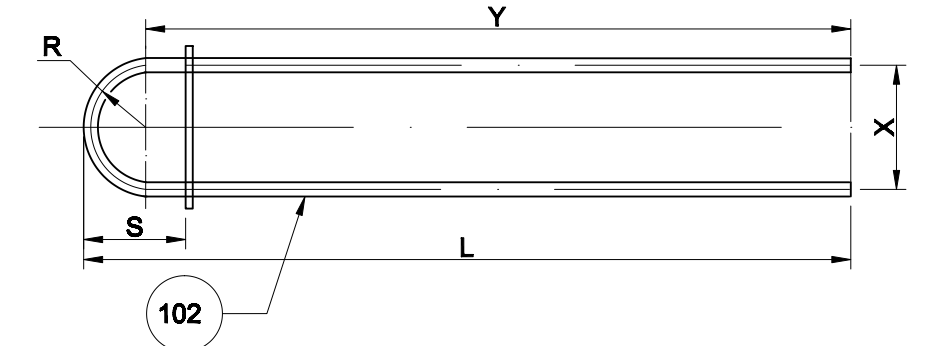
1. All the specifications / dimensions should be as per attached drawings

Sr#	Exchanger Description	Tag #	Drawing No	Type
1.	AMINE REBOILER	EA-402	PP-DKN-630	AKU Type
2.	NGL FRACTIONATOR REBOILER	EA-602	PP-DKN-107	BGU Type
3.	DE-BUTANIZER REBOILER	EA-608	PP-DKN-131	BGU Type
4.	SOUR GAS COOLER	EA-201	PP-DKN-628	AEU Type

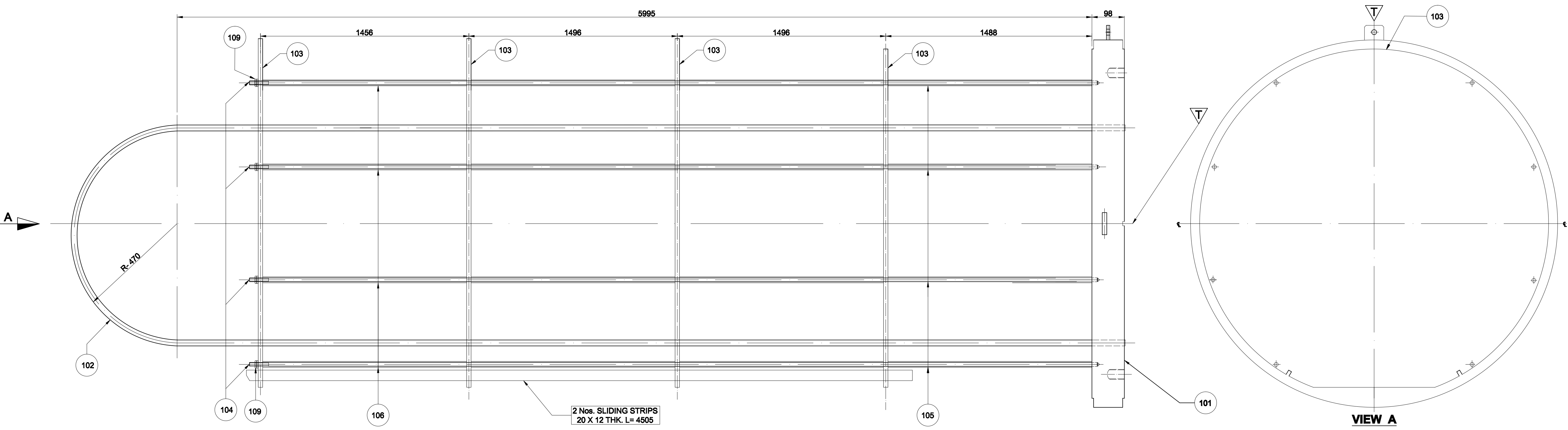
2. Bidder must review the drawings and if they have any query, they must be cleared 01 week before the opening date of technical bid.
3. **Financial Evaluation will be made item wise.**
4. Only U-stamp authorized manufacturers will be considered for technical evaluation. U Stamp certificate must be valid (minimum) since 2015. Copy of valid U Stamp certificate to be provide with technical bid.
5. U stamping of item#01 (EA-402 tube bundle) is required and all the cost of U stamping and its documentation/ drawings is in bidder scope.
6. Bidder should have experience of 05 years (2015~2020) for fabrication of high pressure vessels and heat exchangers. Also submit a list of its clients to which equipment of similar nature has been supplied most recently.
7. Tube material should be of American / European / Japanese origin and MTC's should be provide at the time of material inspection and to be provided with the shipment.
8. Stage inspections to be carried out at manufacturer site by OGDCL representative(s) and bidder will offer for inspection to OGDCL, at following stages;
 - a) After shipment of material and during fabrication.
 - b) Complete physical inspection, after completion of fabrication and before shipment of Tube Bundle.
9. Guarantee / warrantee for the tube bundle for a period of 24 months after shipment. During this period if any leakage/workmanship problem is observed in the tube bundle, the bidder will rectify the problem without any additional material/logistic/services cost.
5. **Delivery period: 06 months after issuance of LPO on FOR basis at Dakhni Plant.**
6. All the above terms & conditions should be clearly confirmed in technical bid and any non-compliance with the above terms and conditions should also be clearly mentioned in the bid.

TUBE BUNDLE DETAIL

TUBES DETAIL



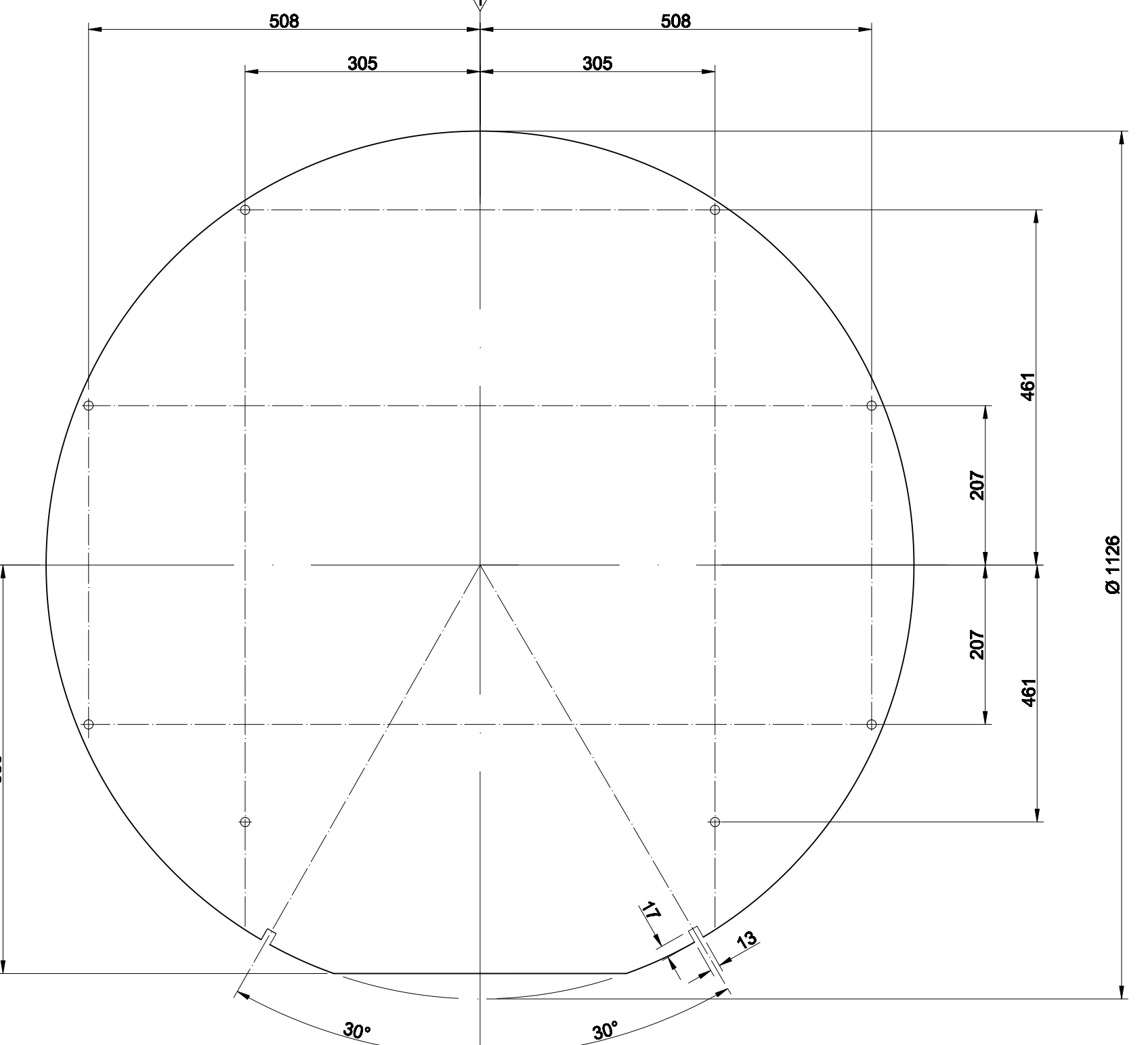
ROW	QTY.	R	X	Y	L	DEVELOP	S
1	43	29	58	6096	6134.5	12284	89.5
2	43	54.4	108.8		6159.9	12363	114.9
3	43	79.8	159.6		6185.3	12443	140.3
4	43	105.2	210.4		6210.7	12523	165.7
5	41	130.6	261.2		6236.1	12603	191.1
6	41	156	312		6261.5	12682	216.5
7	41	181.4	362.8		6286.9	12762	241.9
8	39	206.8	413.6		6312.3	12842	267.3
9	39	232.2	464.4		6337.7	12922	292.7
10	37	257.6	515.2		6363.1	13002	318.1
11	37	283	566		6388.5	13081	343.5
12	35	308.4	616.8		6413.9	13161	368.9
13	35	333.8	667.6		6439.3	13241	394.3
14	33	359.2	718.4		6464.7	13321	419.7
15	31	384.6	769.2		6490.1	13401	445.1
16	29	410	820		6515.5	13480	470.5
17	27	435.4	870.8		6540.9	13560	495.9
18	23	460.8	921.6		6566.3	13640	521.3



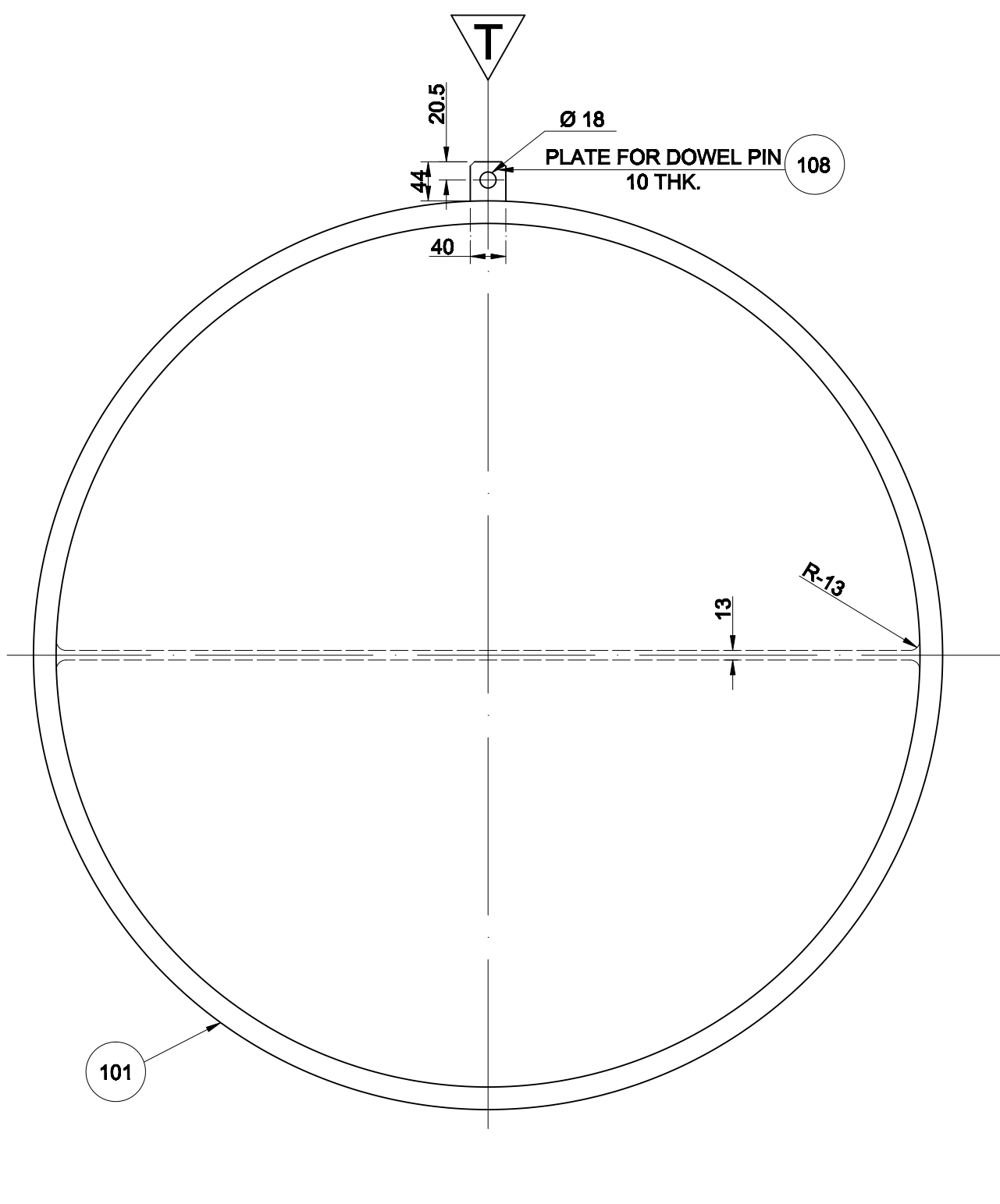
DESIGN DATA
CONSTRUCTION CODE : ASME VIII DIV. 1 (SUMMER 85) - TEMA, K

DESIGN DATA	SHELL SIDE	TUBE SIDE
DESIGN PRESSURE	3.5 Bar + F.V. (50 PSI+F.V.)	14.82 BAR [215PSI]
DESIGN TEMPERATURE	138 °C	150 °C
WORKING PRESSURE		
WORKING TEMPERATURE (INLET / OUTLET)	122 / 122 °C	157 / 141 °C
TUBE SHEET DESIGN TEMPERATURE	150 °C	
HYDROTEST PRESSURE	5.3 Bar (75 PSI)	22.4 Bar [323PSI]
BUBBLE TEST PRESSURE	1.7Bar [25PSI]	
FLUID	20% DEA SOLUTION	HOT OIL
CORROSION ALLOWANCE (ACCEPT EXCH. TUBES)	3.2 mm	3.2 mm
WELDING JOINT EFFICIENCY	1	0.85
X-RAY	100 %	SPOT
PRODUCTION TEST PLATE	/	/
STRESS RELIEVING	YES	NO
NUMBER OF PASSES	1	2
THERMAL INSULATION	YES	YES
INSPECTION	ASME "U" STAMP	
GEOM CAPEACITY	~ 17000 LITER	~ 2400 LITER
TUBE BUNDLE WEIGHT	7800 KG	

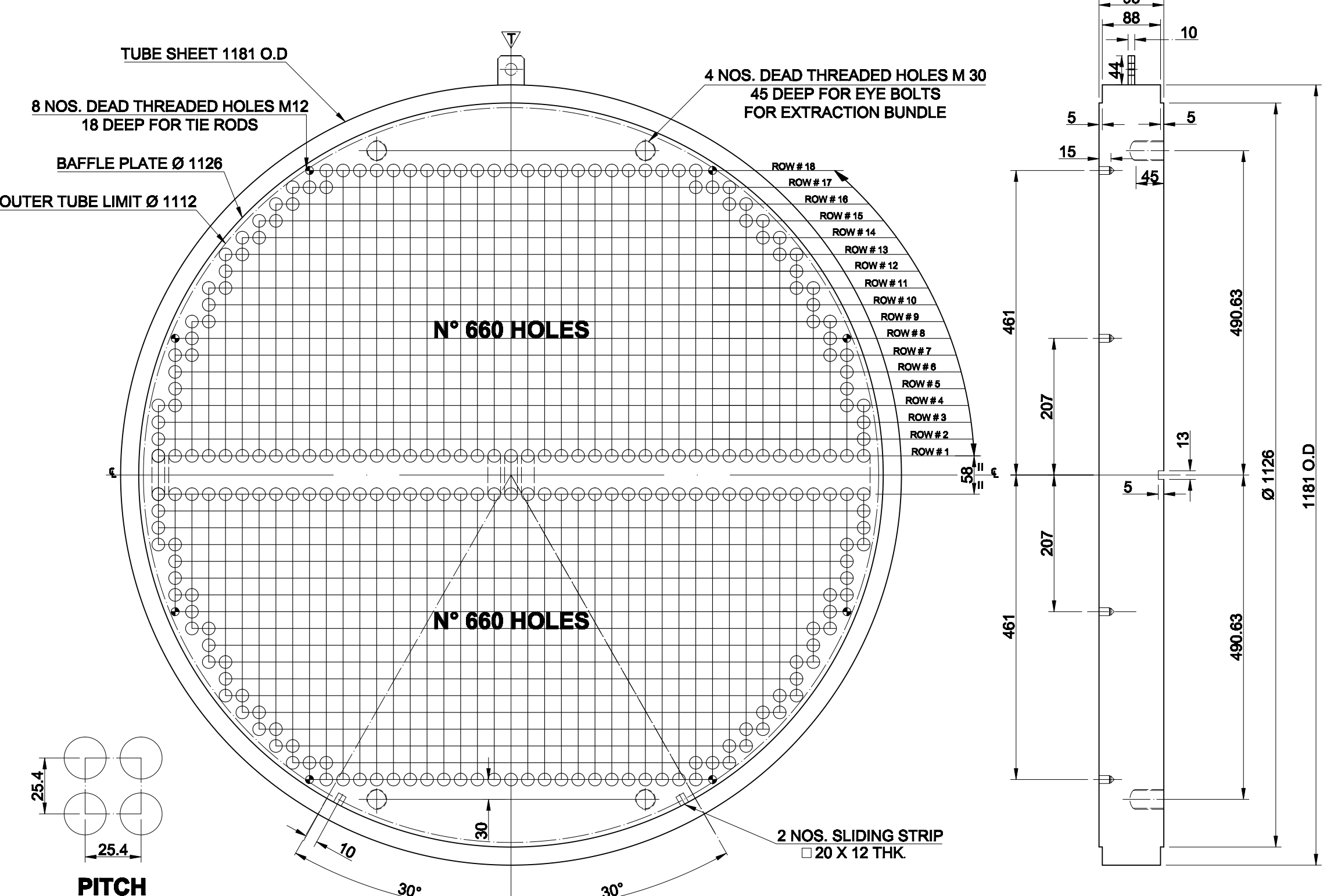
BAFFLE PLATES DETAIL



TUBE SHEET



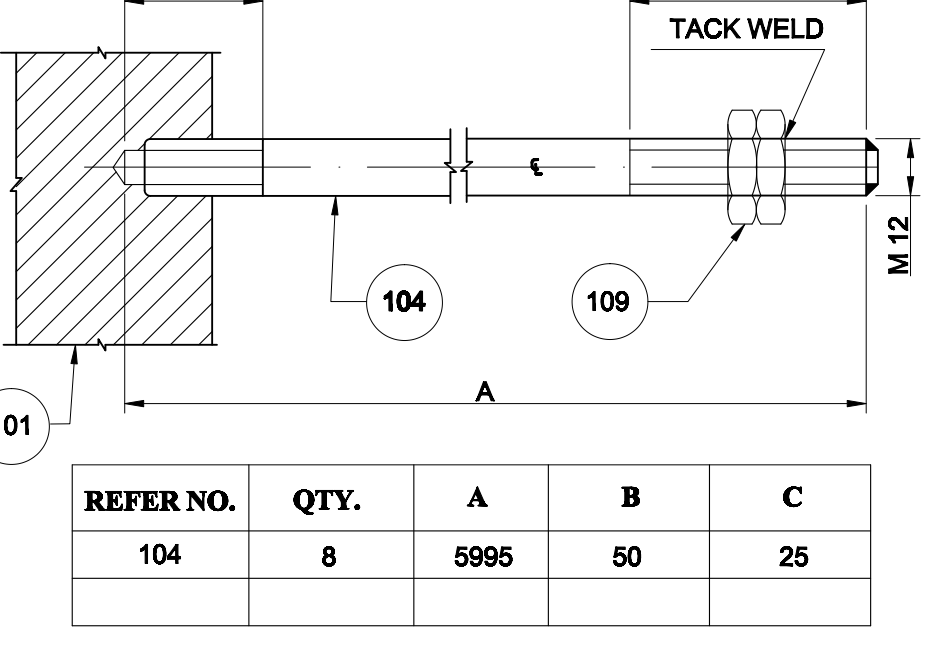
TUBES SHEET DETAIL



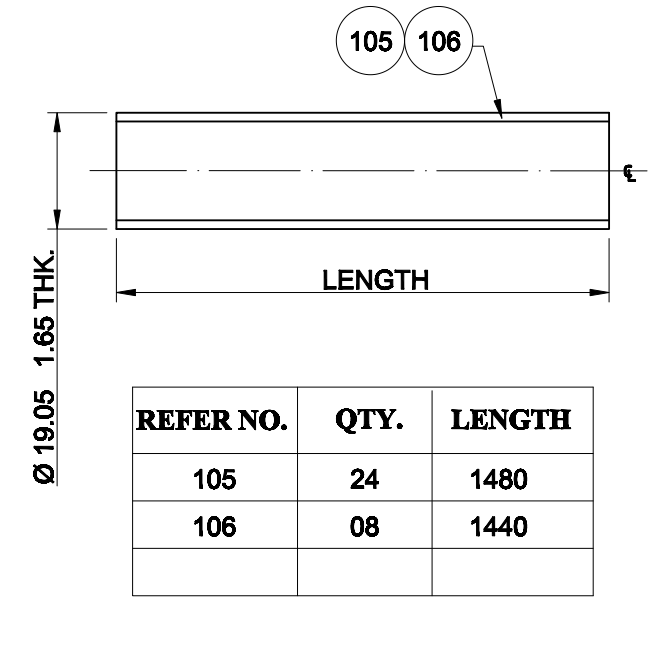
103 TYPE "A" 4 Nos. BEFFEL PLATES THK. 16 HOLES 14 DIA. FOR TIE RODS
DRILL LIKE TUBES SHEET BUT WITH HOLES 19.45 (+ 0.25) DIA (TO CHAMFER 0.5X45° BOTH SIDES)

1320 Nos. HOLE 19.25 (+0.05) DIA FOR 660 TUBES 19.05 DIA 16 BWG LENGTH AS PER TABLE PITCH 25.4

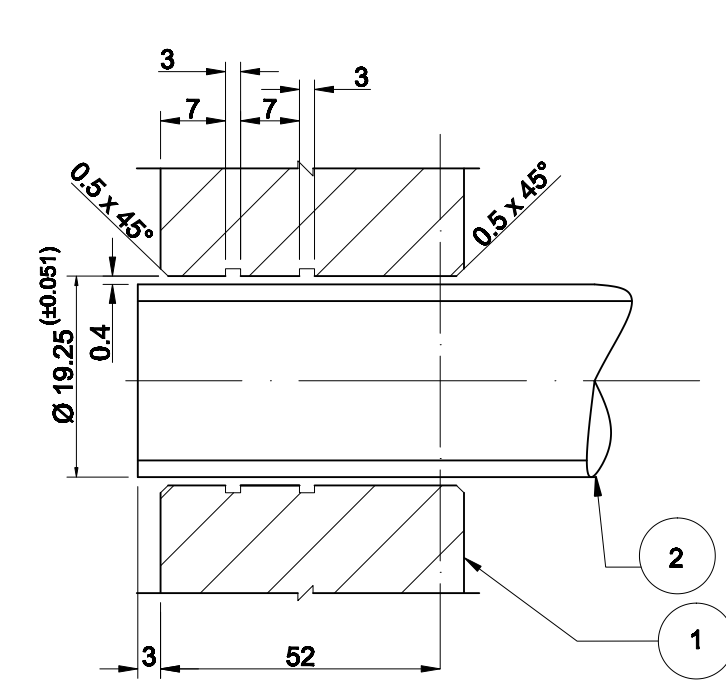
TIE RODS DETAIL



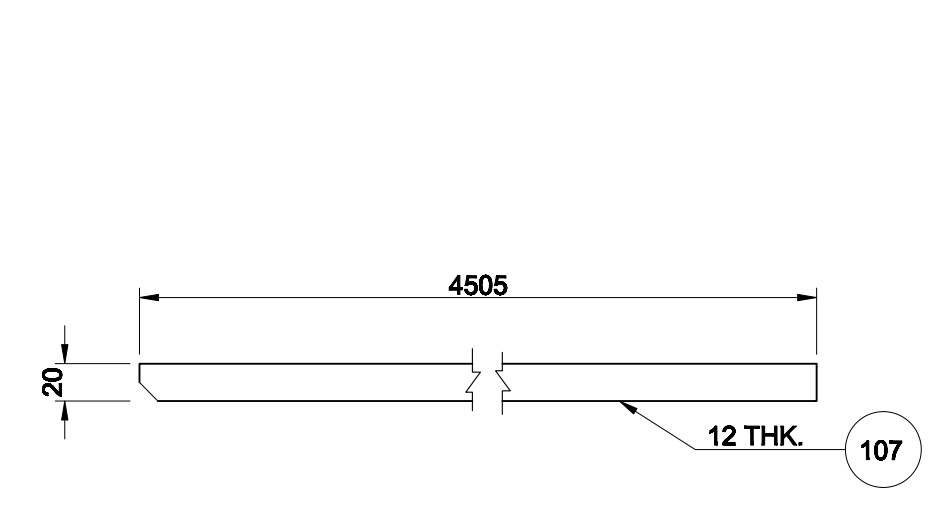
SPACER



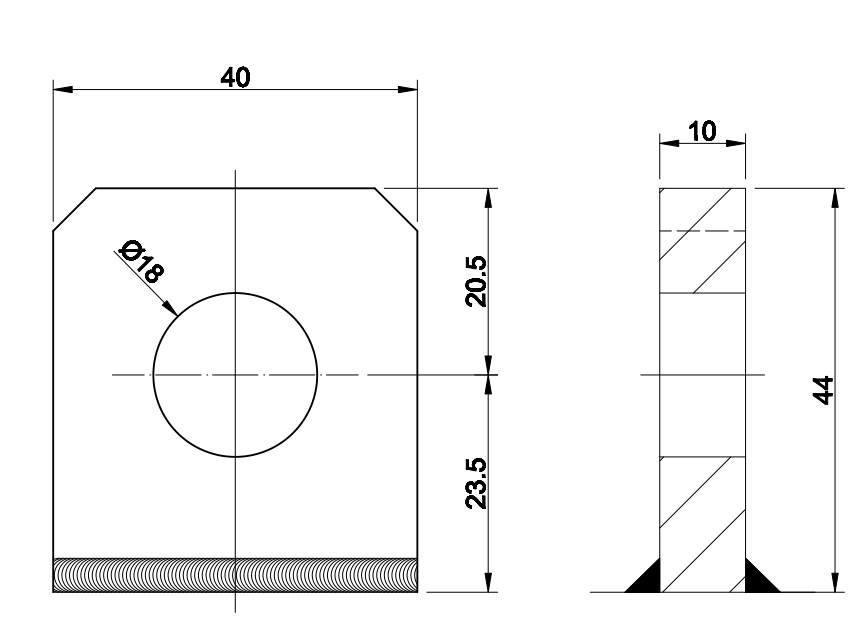
TUBES EXPENDER DETAIL



SLIDING STRIP DETAIL



DOWEL PIN DETAIL



GENERAL NOTES

- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETER OTHERWISE STATED
 - BUNDLE ACCEPT AFTER HYDROTEST
 - ▽ MATCH MARK FOR ASSEMBLY

MATERIAL LIST

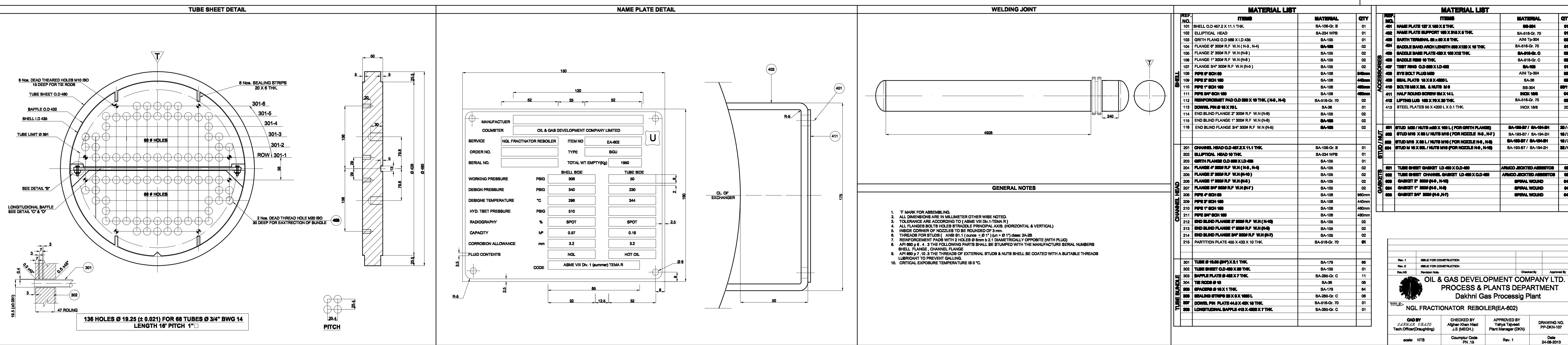
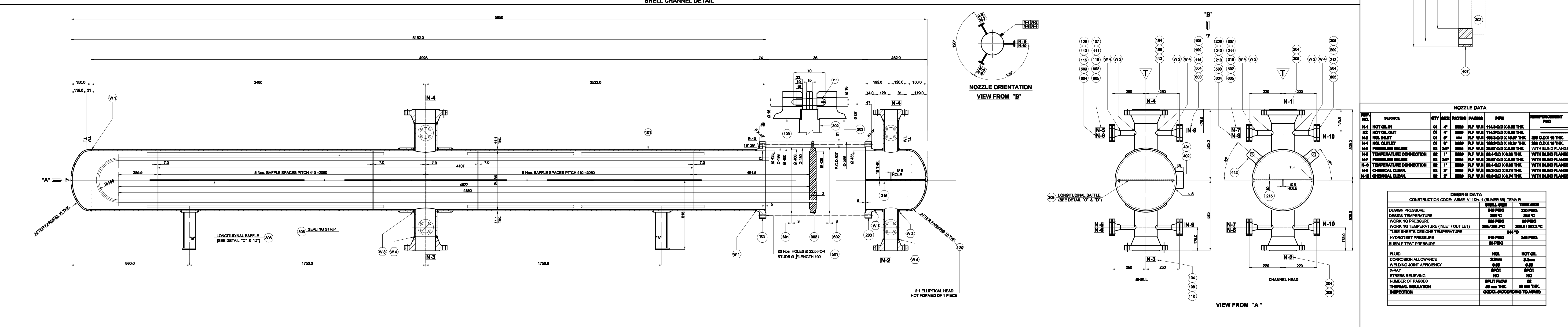
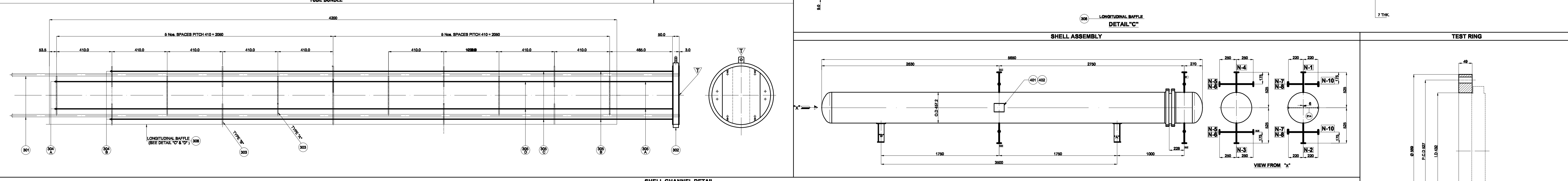
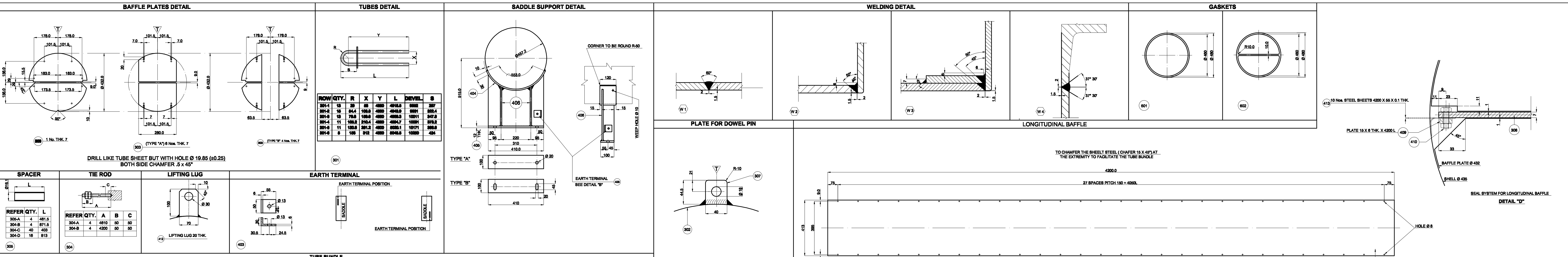
S. NO.	REFER NO.	ITEMS	MATERIAL	QTY.
1	101	TUBES SHEET 1181 O.D X 98 THK.	SA-182 F 316	01
2	102	U TUBES 19.05 Ø X 16 BWG	SA-213 TP 316	660
3	103	BAFFLE PLATS Ø 1126 X 16 THK.	SA-240 316	04
4	104	TIE RODS Ø M 12 X 5995 L	SA-240 316	08
5	105	SPACER 19.05 O.D. X 14 BWG X 1480 L	SA-213 TP 316	24
6	106	SPACER 19.05 O.D. X 14 BWG X 1440 L	SA-213 TP 316	08
7	107	SLIDING STRIPS 20x 12 THK x 4505 L	SA-36	02
8	108	PLATE FOR DOWEL PIN	SA-240 TP 316	01
9	109	NUTS M12	B-7	16

Rev. 1 RECHECKED ON 26-12-2020
 Rev. 0 ISSUE FOR CONSTRUCTION
 Rev. No Revision Note. Cad By Checked By Approved By

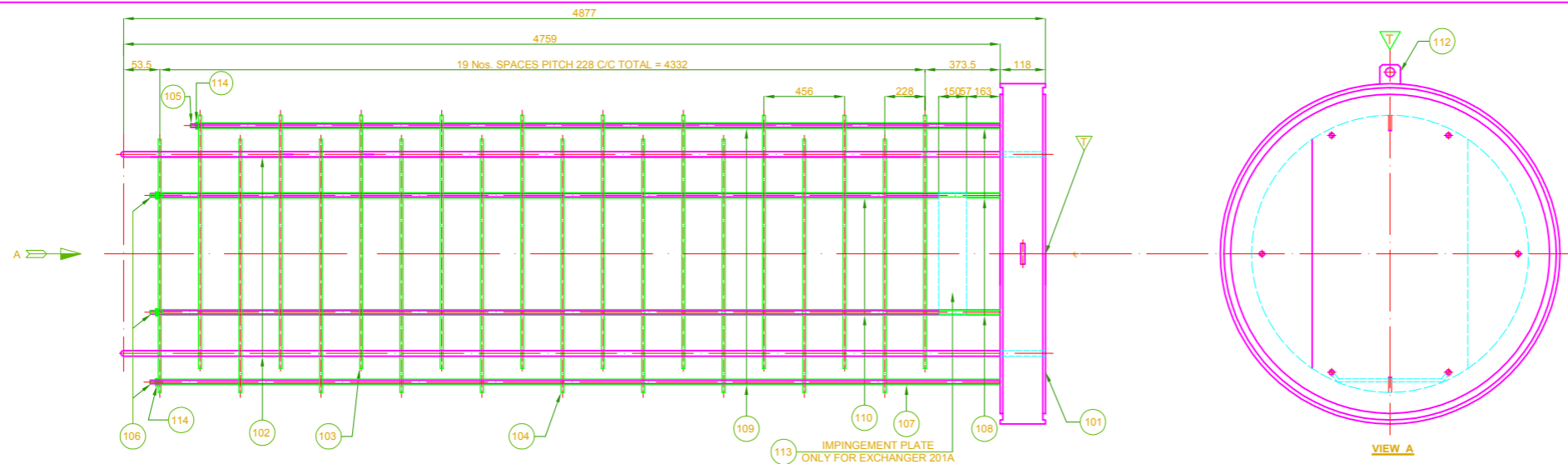
OIL & GAS DEVELOPMENT COMPANY LTD.
PLANTS & PROCESS DEPARTMENT
Dakhni Gas Processing Plant

TITLE:-
TUBE BUNDLE OF AMINE REBOILER EA-402 A/B TYPE-(AKU)

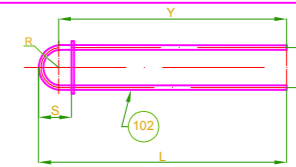
CAD BY S.A.R.W.A.S. O.S.A.F.D Tech. Officer (Drafting)	CHECKED BY Quaid Jamil I.C (Mech.)	APPROVED BY Hamid Ali Raza Plant Manager Dakhni	DRAWING NO. PP-DKN-630
Scale: NTS	Compuar Code PN_01	Rev. 1	Date 26-12-2020



TUBE BUNDLE DETAIL

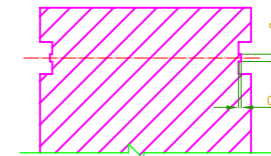


TUBES DETAIL

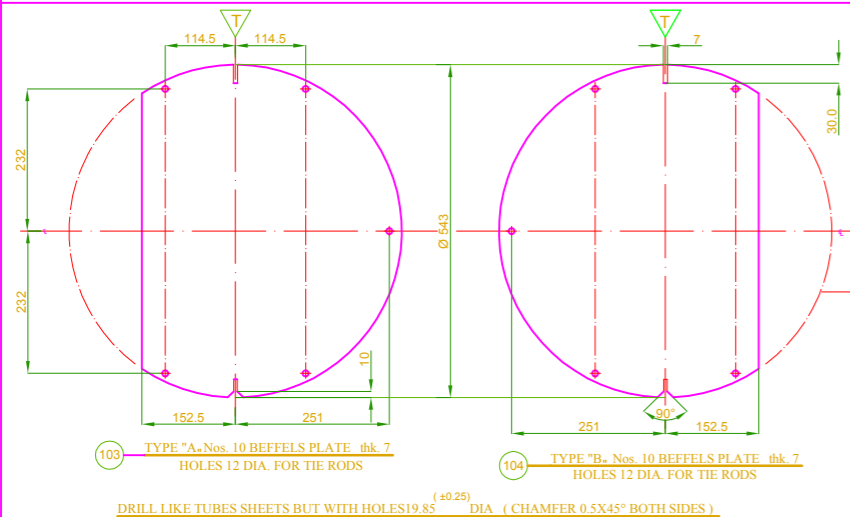


ROW	QTY.	R	X	Y	L	DEVELOP.	S
1	20	29	58	4877	4915.5	9845	88.1
2	19	54.4	108.8		4940.9	9925	113.
3	18	79.8	159.6		4966.3	10005	139.
4	18	105.2	210.4		4991.7	10085	164.
5	16	130.6	261.2		5017.1	10165	190.
6	16	156	312		5042.5	10245	215.
7	14	181.4	362.8		5067.9	10324	240.
8	10	206.8	413.6		5093.3	10404	266.
9	08	232.2	464.4		5118.7	10484	291.

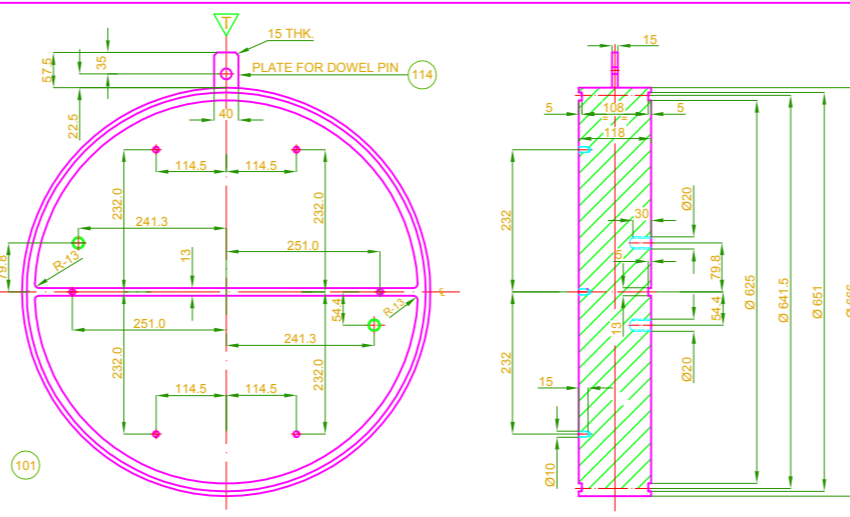
DETAIL "D,"



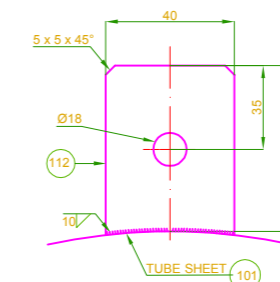
BAFFLE PLATES DETAIL



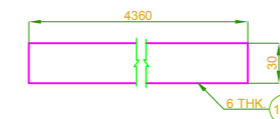
TUBE SHEET



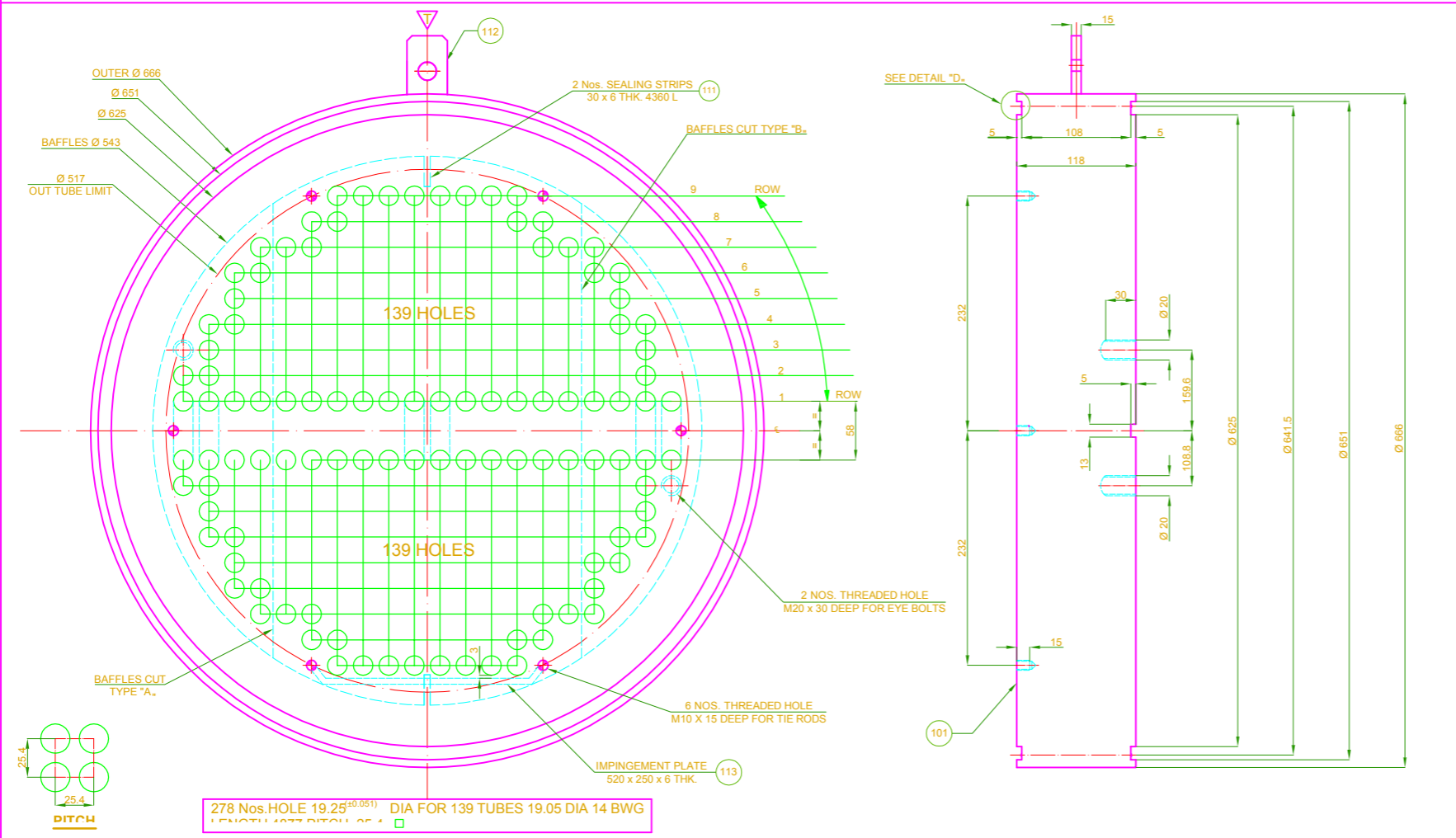
DETAIL OF DOWEL PIN PLATE



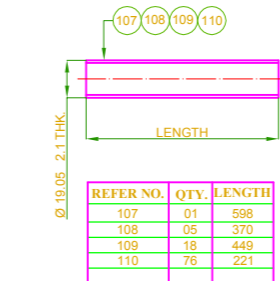
SEALING STRIP DETAIL



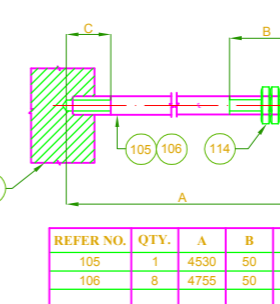
TUBES SHEET DETAIL



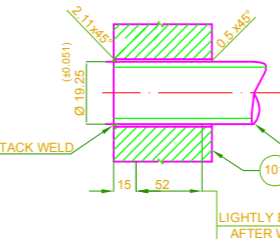
SPACER



TIE RODS DETAIL



TUBES HOLE DETAIL



DESIGN DATA

construction code	ASME VIII DIV. 1 (SUMMER 85) - TEMA "R." (TYPE AEU)	
DESIGN PRESSURE	SHELL SIDE 6.9 Bar / 100 Psi	TUBE SIDE 87.3 Bar / 1265 Psi
DESIGN TEMPERATURE	63 °C	144 °C
WORKING PRESSURE	---	---
WORKING TEMPERATURE (INLET / OUTLET)	64 / 41 °C	35 / 47 °C
TUBE SHEET DESIGN TEMPERATURE	144 °C	
HYDROTEST PRESSURE	10.4 Bar / 150 Psi	131 Bar/1898 Psi
BUBBLE TEST PRESSURE	---	1.7 Bar / 25 Psi
FLUID	COOLING WATER	SOUR GAS
CORROSION ALLOWANCE (Accept Exch. Tubes)	3.2 mm	3.2 mm
WELDING EFFICIENCY	0.85	1
X-RAY	SPOT	100 %
PRODUCTION TEST PLATE	SEE NOTE	
STRESS RELIEVING	NO	YES
NUMBER OF PASSES	1	2
INSULATION	/	/
INSPECTION	OGDCL (ACCORDING TO ASME)	
GEOM CAPEACITY	~ 740 LITER	~ 460 LITE
ADDITIONAL CODE	NACE RP-04-72 NACE MR -01-75/80	

MATERIAL LIST

REF. NO.	ITEMS	MATERIAL	QTY.
101	TUBES SHEET 666 O.D	SA-182 F 304	01
102	U TUBES 19.05 Ø 14 BWG	SA-213 TP 316	139
103	BAFFLE PLATS Ø 543 x 7 THK. (TYPE A)	SA-240 304	10
104	BAFFLE PLATS Ø 543 x 7 THK. (TYPE B)	SA-240 304	10
105	TIE RODS Ø 10 X 4530 L	AISI-304	01
106	TIE RODS Ø 10 X 4755 L	AISI-304	05
107	SPACER 19.05 O.D. 14 BWG	SA-213 TP 304	01
108	SPACER 19.05 O.D. 14 BWG	SA-213 TP 304	05
109	SPACER 19.05 O.D. 14 BWG	SA-213 TP 304	18
110	SPACER 19.05 O.D. 14 BWG	SA-213 TP 304	76
111	SEALING STRIPS 30 x 6 THK x 4360 L	SA-240 304	02
112	DOWEL PIN PLATE 57.5 x 40 x 15 THK.	SA-182 F 304	01
113	IMPINGEMENT PLATE 520 x 250 x 6 THK.	SA-213 TP 304	01
114	NUTS M12	AISI 304	12

NOTES:-

1. MATCH MARK FOR ASSEMBLY
2. ALL DIMENSIONS ARE IN MILLIMETER OTHERWISE STATED
3. BUNDLE ACCEPT AFTER HYDROTEST
4. PROVIDE PRODUCTION IMPACT TEST AS REQUIRED BY OGDCL
5. SEALING STRIPS SHOULD BE TACK WELD WITH BAFFLE PLATS.

Rev.2	Change in Spacer Thickness			
Rev.1	Issue For Fabrication			
Rev. 0	Issue For Approval			
Rev.No	Revision Note.	Cad By	Checked By	Approved E

OIL & GAS DEVELOPMENT COMPANY LTD.
PLANTS & PROCESS DEPARTMENT
Dakhni Gas Processing Plant

TITLE:-
TUBE BUNDLE OF SOUR GAS COOLER EA-201A/B TYPE-(AEU)

CAD BY SAJID AHMED Sr. Tech. Officer(Draughting)	CHECKED BY Bilal Khurshid J.E (Mech.)	APPROVED BY Hamid Raza Plant Manager	DRAWING NO PP-DKN-40
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