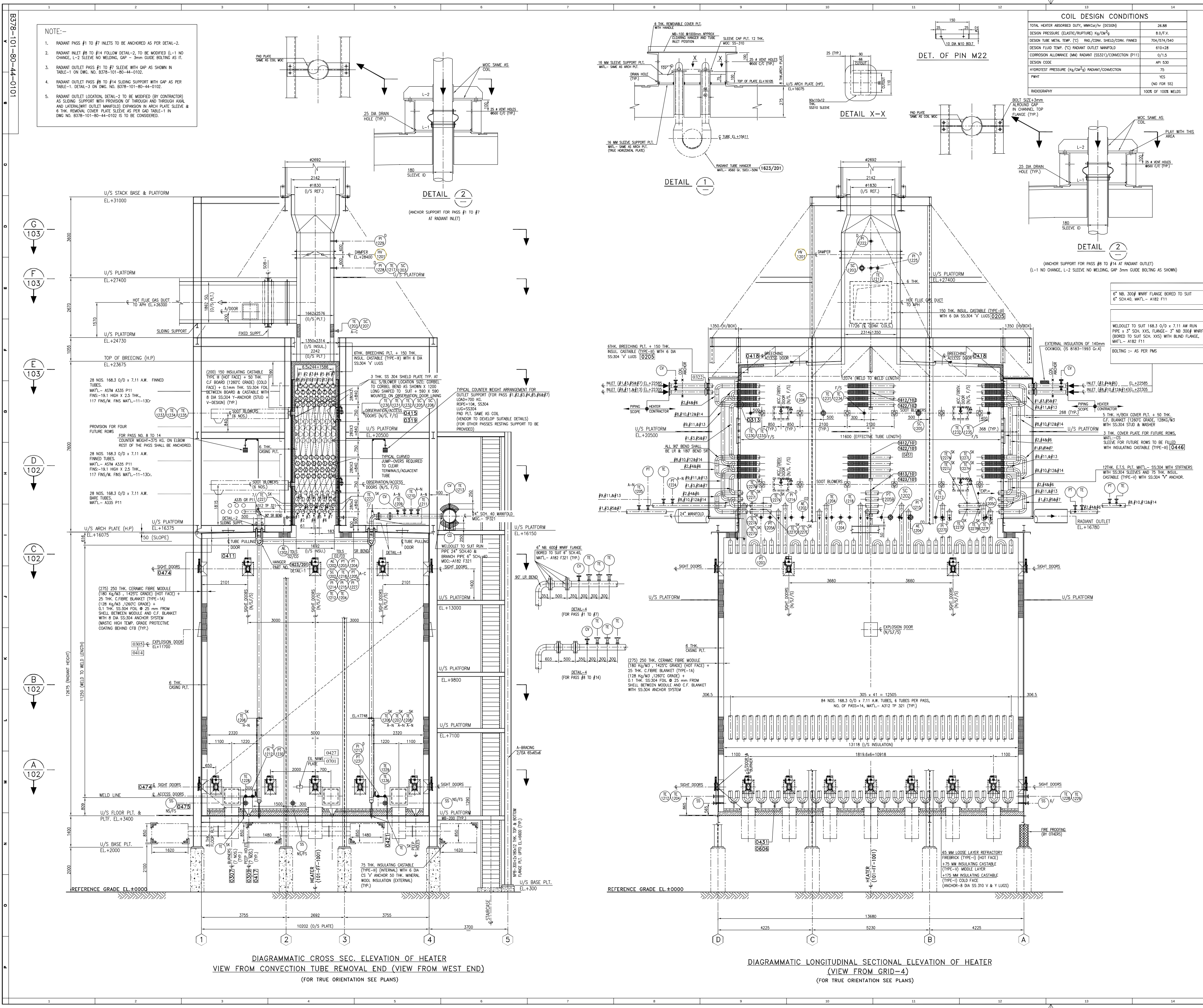




REF. DWG. NO.

B378-101-16-43-0002	EQUIPMENT LAYOUT FOR PH UNIT
B378-101-80-44-1100	FOUNDATION LAYOUT
B378-101-80-44-0102	GENERAL ARRANGEMENT PLAN-1
B378-101-80-44-0103	GENERAL ARRANGEMENT PLAN-2
B378-101-80-44-1104	GENERAL ARRANGEMENT STACK
B378-101-80-44-1105	TUBE SUPPORT CASTINGS
B378-101-80-44-0106	API SYSTEM DUCTING LAYOUT PLAN
B378-101-80-44-0107	API SYSTEM DUCTING LAYOUT ELEVATION
B378-101-80-44-0108	MAIN MEMBER STRUCTURE CONFIGURATION-ELEVATION
B378-101-80-44-0109	MAIN MEMBER STRUCTURE CONFIGURATION-PLANS
B378-101-80-44-1404	GENERAL NOTES

NOTES:-

- ALL DIMENSIONS ARE IN MM.
- DO NOT SCALE DRAWING ASK IF IN ANY DOUBT.

1. TYPICAL NOTATIONS:-

A	SECTION PLANS OR DETAILS.
181/203	CROSS REFERENCE DRG. NO. IF LEFT BLANK, DENOTES DETAIL APPEARS ON SAME DRAWING SHEET.
1	DENOTES COLUMN GRID NO.
TE 3803	DENOTES AUXILIARY CONNECTIONS
0417	DENOTES STANDARD DRAWING NO.
SS	DENOTES GRATING MAIN BAR SPAN
FS	SLIDING SUPPORT
RS	FIXED SUPPORT

SKIN THERMOCOUPLE DETAILS.

TAG NO.	LOCATION
11227 - A TO N	CONNECTION BOTTOM MOST SHOCK TUBES
11206 - A TO N	5TH TUBE FROM RADIANT OUTLET
11207 - A TO N	3RD TUBE FROM RADIANT OUTLET
11208 - A TO N	AT RADIANT OUTLET

ALL INSTRUMENT TAG NOS SHALL BE PRE FIXED WITH '1'.

Eg. TE-1228 SHOULD BE READ AS TE-11228.

HOLDS:- (TO BE REMOVED BY HEATER CONTRACTOR)

- FLOOR CUTOUTS (BURNERS, PEEP HOLES, SKIN THERMOCOUPLE LOCATION, WASTE GAS NOZZLE LOCATION.

WIND DIRECTION

MAIN PIPE-RACK

KEY PLAN

D 19/01/2022	ISSUED FOR ENGINEERING	MB	AV	RP
C 27/01/2022	ISSUED FOR ENGINEERING	MB	AV	RP
B 07/01/2022	ISSUED FOR BIOS/COMMENTS	MB	AV	RP
A 10/09/2021	ISSUED FOR BIOS/COMMENTS	MB	PKA/AV	RP

REV. DATE REVISIONS BY CHKD/APPD/PMPC

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गैल इंडिया लिमिटेड

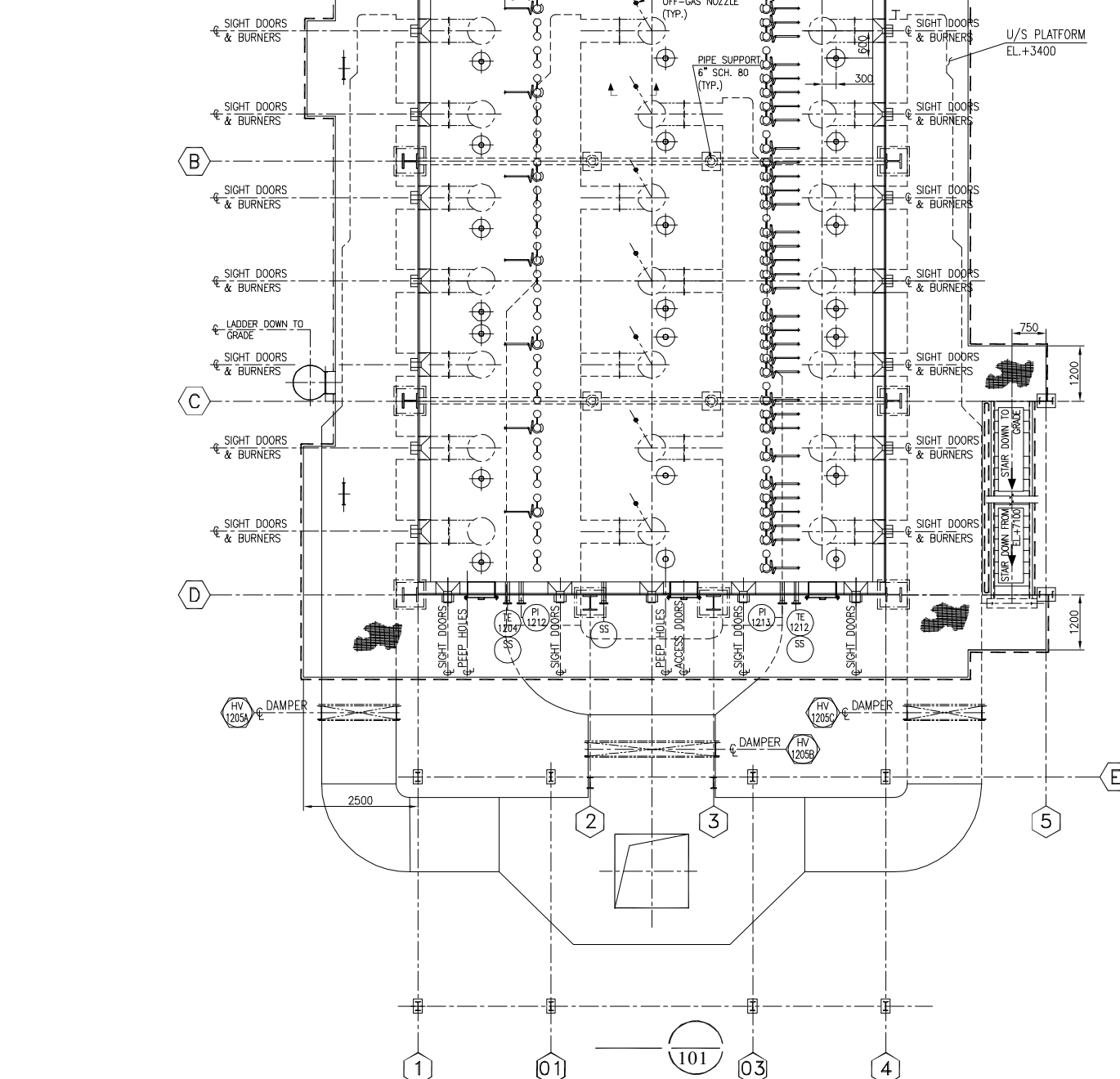
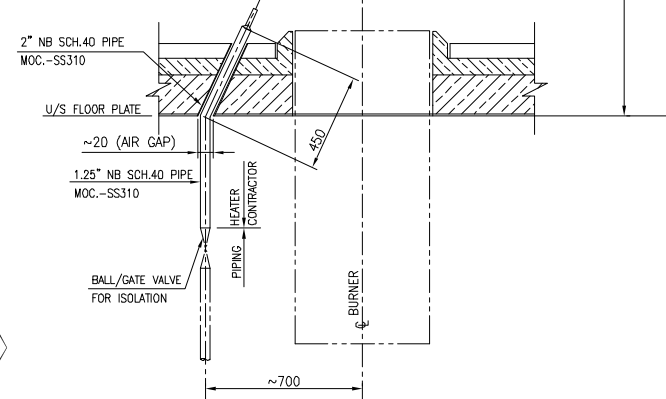
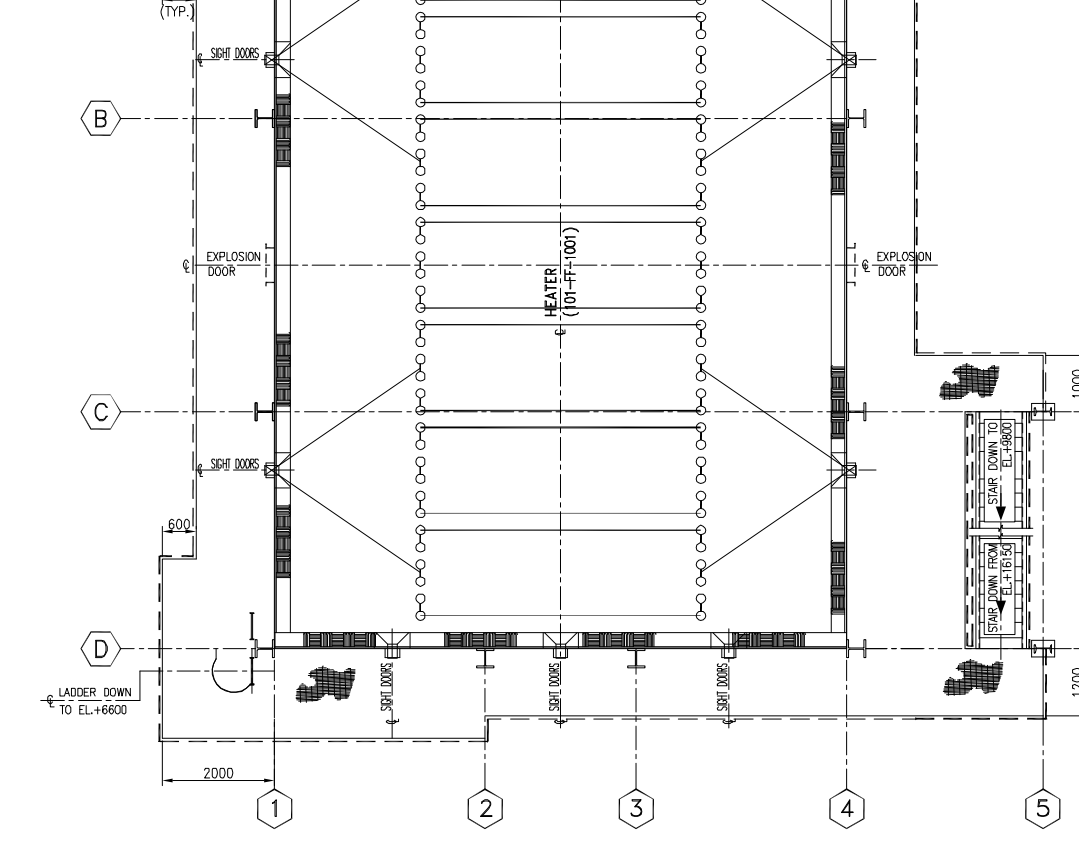
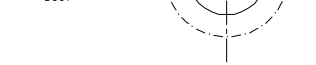
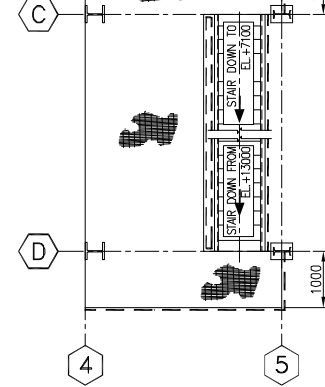
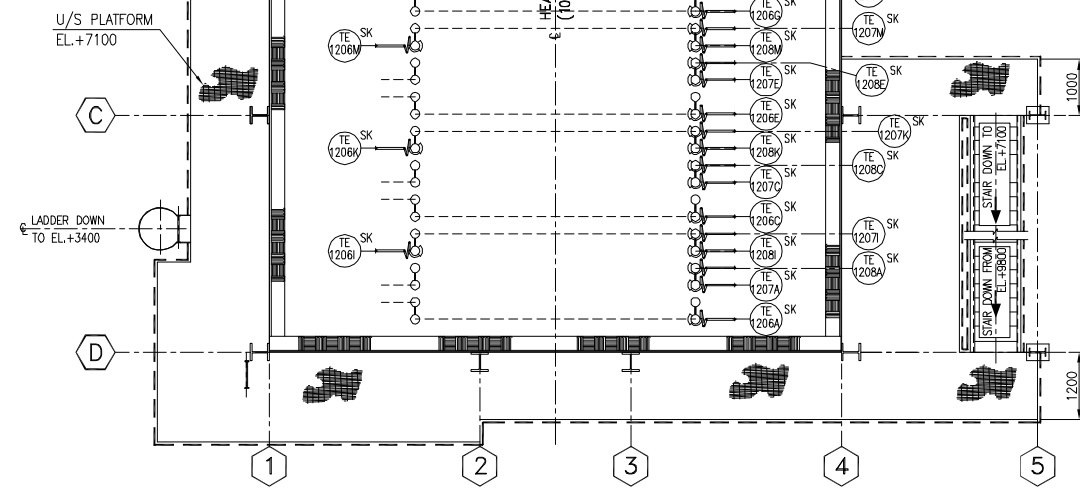
GAIL (INDIA) LIMITED

USAR, MAHARASHTRA

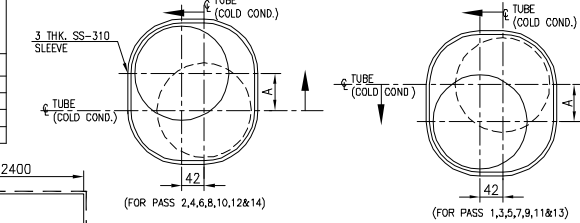
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	उत्तराखण्ड प्रदेश		USAR, MAHARASHTRA, INDIA

SCALE	JOB NO.	UNIT	DIVN.	DEPT.	DWG. NO.	REV.
1:55	8378101	101	1	1	101	1

3-1641-0500 REV.2 A0-1189 x 841



PASS NO
PASS #1,#2,#8	
PASS #3,#4,#10
PASS #5,#6,#12
PASS #7 & #14



REF. DWG. NO.	REFERENCE DRAWING TITLE
B378-101-80-44-0101	GENERAL ARRANGEMENT CROSS SECTION & LONGITUDINAL SECTION

NOTES :-

1. OF BLANKET SHALL BE INHIBITED FOR CHLORIDE LEVEL LESS THAN 10PPM. A 0.15MM THK SS 304 FOR WHP OVER THE PIPING / MANHOLE TO AVOID DIRECT CONTACT OF THE INSULATION TO STEEL SURFACING.
2. THE CONTRACTOR SHALL PROVIDE A METHOD(S) FOR SUPPORTING THE BLANKET INSULATION TO PREVENT EXCESSIVE SAGGING, PARTICULARLY ON VERTICAL LINES.

O	19.05.2022	ISSUED FOR ENGINEERING	VB	AV	RP	
C	27.01.2022	ISSUED FOR ENGINEERING	VB	AV	RP	
B	07.01.2022	ISSUED FOR BIDS/COMMENTS	VB	AV	RP	
A	10.09.2021	ISSUED FOR BIDS/COMMENTS	VB	PK/AV	RP	
REV	DATE	REVISIONS	BY	CHKD	APPD	POWER



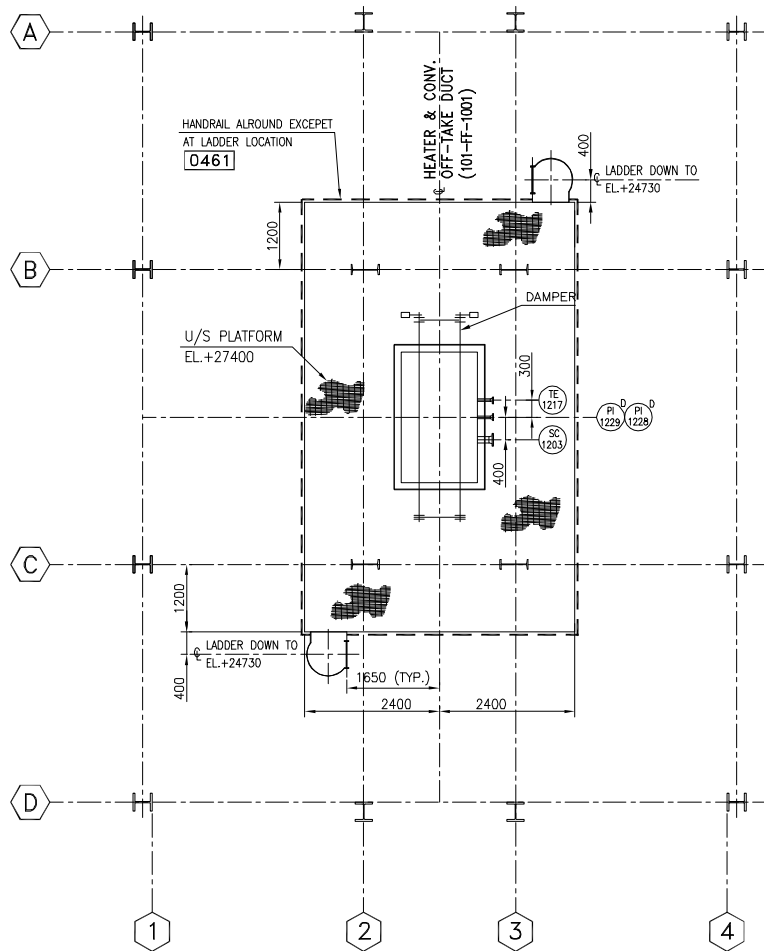
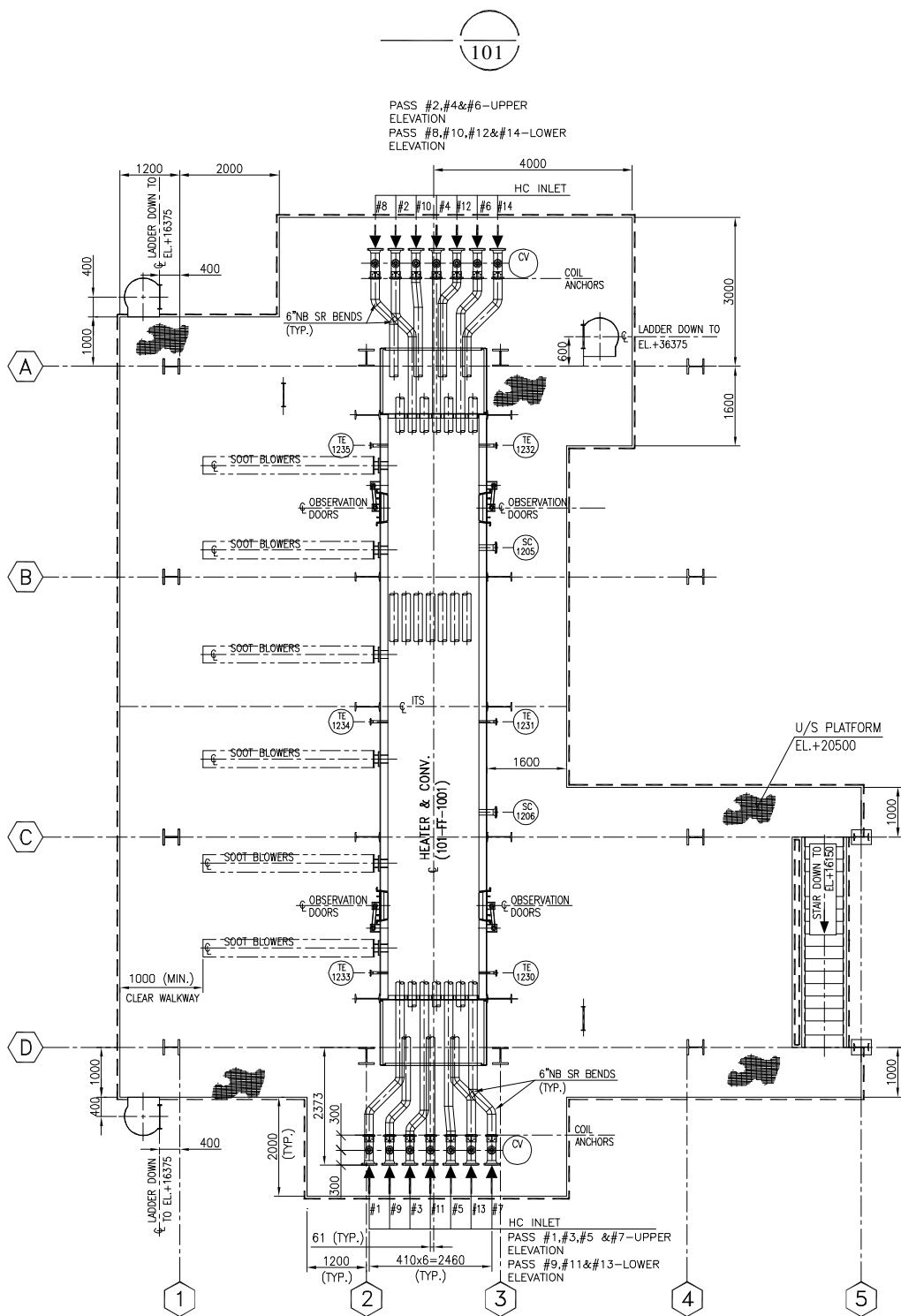
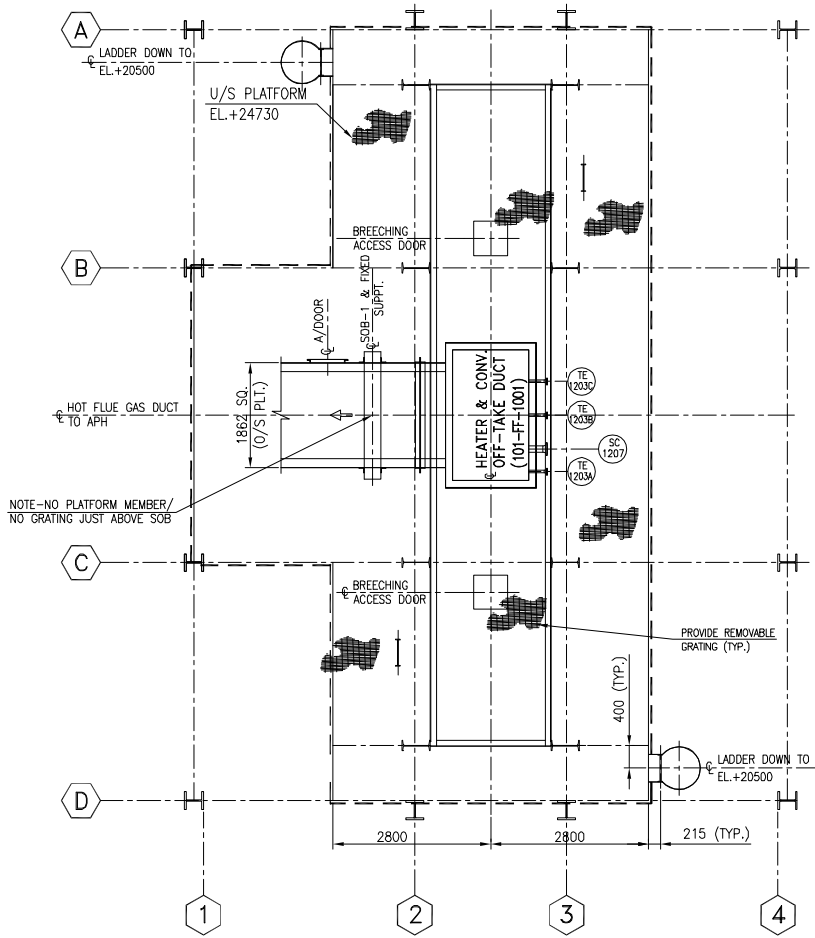
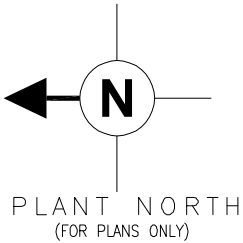
500	केटीए पीडीएच पीपी परियोजना उत्तर महाराष्ट्र	500 KTA PDH - PP PROJECT USAR, MAHARASHTRA INDIA
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SCALE	JOB NO.				UNIT			DIVN.		DEPT.		DWG. NO.				REV.
1:66.6	B	3	7	8	1	0	1	8	0	4	4	0	1	0	2	0
15							16									

अनुमति प्राप्त न होने पर इस दस्तावेज़ का प्रयोग नहीं किया जाना चाहिए। यह दस्तावेज़ केवल संदर्भ के लिए है। इस दस्तावेज़ में कोई भी त्रुटि या त्रुटिपूर्ण जानकारी का प्रयोग नहीं किया जाना चाहिए।
अनुमति प्राप्त न होने पर इस दस्तावेज़ का प्रयोग नहीं किया जाना चाहिए। यह दस्तावेज़ केवल संदर्भ के लिए है। इस दस्तावेज़ में कोई भी त्रुटि या त्रुटिपूर्ण जानकारी का प्रयोग नहीं किया जाना चाहिए।

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B378-101-80-44-0103



REF. DWG. NO.	REFERENCE DRAWING TITLE
B378-101-80-44-0101	GENERAL ARRANGEMENT CROSS SECTION & LONGITUDINAL SECTION
B378-101-80-44-0102	GENERAL ARRANGEMENT PLAN-I

NOTES :-

REV.	DATE	REVISIONS	BY	CHKD	APPD	PERMTC
B	19.05.2022	ISSUED FOR ENGINEERING	WB	AV	RP	
C	27.01.2022	ISSUED FOR ENGINEERING	WB	AV	RP	
B	07.01.2022	ISSUED FOR BIS/COMMENTS	WB	AV	RP	
A	10.09.2021	ISSUED FOR BIS/COMMENTS	WB	PK/AV	RP	

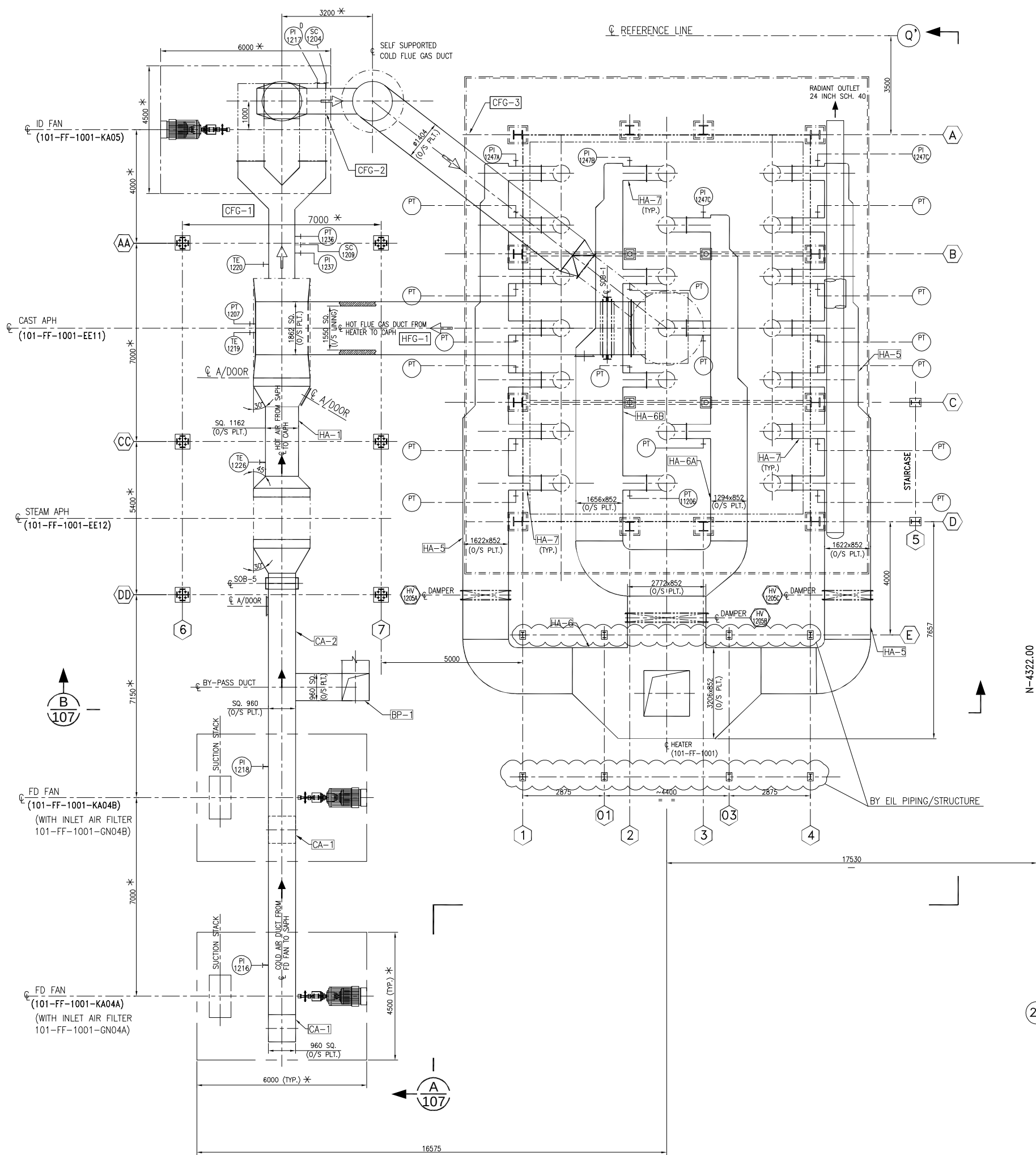
 						
गैल इंडिया लिमिटेड (A Govt. of India Undertaking)		ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)				
 गैल इंडिया लिमिटेड GAIL (INDIA) LIMITED (A Govt. of India Undertaking)		 गैल इंडिया लिमिटेड GAIL (INDIA) LIMITED (A Govt. of India Undertaking)				
500 कैंटीन पीओएच पीवी परियोजना उत्तर महाराष्ट्र भारत		500 KTA POH - PP PROJECT USAR, MAHARASHTRA INDIA				
कैंटीन पीओएच पीवी परियोजना उत्तर महाराष्ट्र		GENERAL ARRANGEMENT PLAN-II				
SCALE	JOB NO.	UNIT	DIVN.	DEPT.	DWG. NO.	REV.
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15		16				



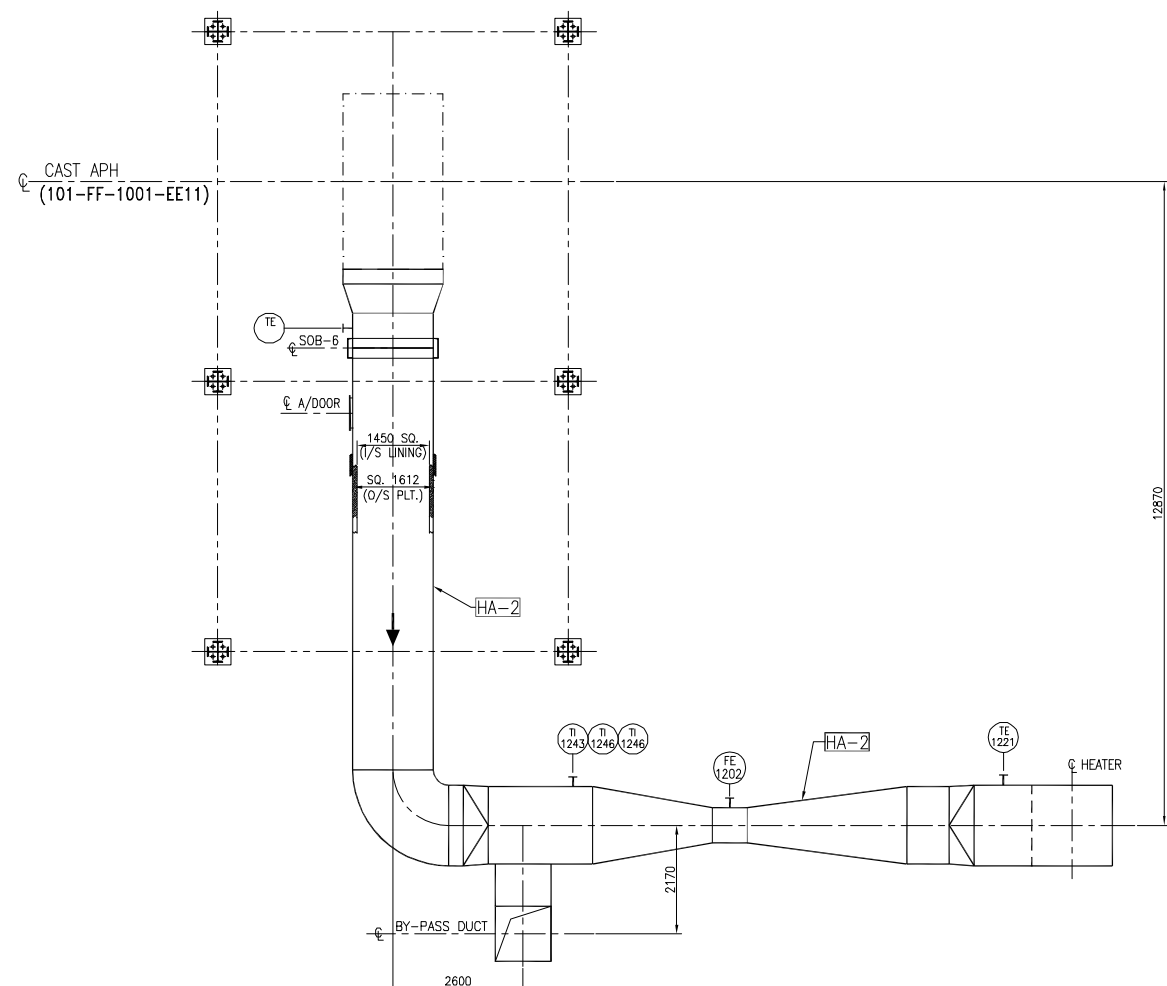
LIST OF DAMPERS / SHUT-OFF BLADES FOR REACTOR CHARGE HEATER & APH SYSTEM (101-FF-1001)				
S.NO.	TAG NO.	LOCATION	DUCT ORIENTATION	REMARKS
1.	HV-1201	BELOW STACK BASE	VERTICAL	PNEUMATIC OPERATED/ MANUAL OPERATION
2.	HV-1202	CA-1	INCLINED	MANUAL SELF OPENING/CLOSING
3.	HV-1203	CA-1	INCLINED	"
4.	HV-1204	BP-1	VERTICAL	PNEUMATIC OPERATED/ MANUAL OPERATION
5.	HV-1205 HV-1206 HV-1207	HA-4	VERTICAL	PNEUMATIC OPERATED/ MANUAL OPERATION
6.	SOB-1	HFG-1	HORIZONTAL	MANUAL OPERATION
7.	SOB-2	CFG-3	HORIZONTAL	MANUAL OPERATION
8.	SOB-3	CA-1	INCLINED	MANUAL OPERATION
9.	SOB-4	CA-1	INCLINED	MANUAL OPERATION
10.	SOB-5	CA-2	HORIZONTAL	MANUAL OPERATION
11.	SOB-6	HA-2	HORIZONTAL	MANUAL OPERATION

DUCT DETAILS FOR REACTOR CHARGE HEATER & APM SYSTEM (101-FF-1001)										
DUCT MARK	SERVICE	DUCT FLOW AREA (M ²)	DUCT SIZE (O/S PLT.)	INSULATION TYPE	THK.	TIE BACK			CASING METAL THK "2"	REMARKS
						TYPE	MATL.	SPEC./ DWG.		
CA-1	COLD AIR FROM FD PAN DISC. TO DUCT CA-2	0.9	960 SQ.	—	—	—	—	—	360	
CA-2	COLD AIR FROM CA-2 TO STEAM APM	0.9	960 SQ.	—	—	—	—	—	360	
BP-1	TOTAL AIR BYPASS (SAPH+CAPH)	0.9	960 SQ.	50mm MINERAL WOOL	—	WIRE MESH +CLADDING	—	—	360	
BP-2	TOTAL AIR BYPASS (SAPH+CAPH)	0.9	1112 SQ.	⊙ ⊙	—	WIRE MESH +CLADDING	G+AL	REFER TENDER	360	
HA-1	HOT AIR FROM STEAM APM TO CAPH	1.0	1162 SQ.	⊙ ⊙	—	—	G+AL	" "	360	
HA-2	HOT AIR FROM CAPH TO HEATER	2.1	1612 SQ.	⊙ ⊙	—	—	—	" "	360	
HA-3	FLOW ELEMENT DUCT (VERTICAL)	1.49	1592	—	—	—	—	" "	360	
HA-4	HOT AIR DISTRIBUTION HEADER	2.1	1612 SQ. 3206#852	⊙ ⊙	—	—	—	" "	360	
HA-5	HOT AIR DISTRIBUTION DUCT TO SIDE BURNERS	1.0	1622#852 AS PER DWG.	⊙ ⊙	—	—	—	" "	360	
HA-6A	HOT AIR DISTRIBUTION DUCT TO MIDDLE BURNERS	0.78	1294#852 AS PER DWG.	⊙ ⊙	—	—	—	" "	360	
HA-6B	HOT AIR DISTRIBUTION DUCT TO MIDDLE BURNERS	1.03	1656#852 AS PER DWG.	⊙ ⊙	—	—	—	" "	360	
HA-7	INDIVIDUAL DUCT TO BURNER	*	AS PER BURNER DWG.	⊙ ⊙	—	—	—	" "	360	
HFG-1	HOT FLUE GAS DUCT FROM HEATER TO CAST APM	2.4	1862 SQ.	⊙ ⊙	150	6 DAY T. LUGS (INTERNAL)	SS304	—	80	#
CFG-1	COLD FLUE GAS DUCT FROM CAST APM TO ID FAN	1.3	920#1732	⊙	—	6 DAY T. LUGS + WIRE MESH + CLADDING	G+AL	7-17-205	80	#
CFG-2	COLD FLUE GAS DUCT FROM ID FAN TO GRADE MOUNTED CFG DUCT	1.3	1400 #	⊙	—	—	—	—	80	#
CFG-3	COLD FLUE GAS DUCT FROM GRADE MOUNTED CFG DUCT TO STACK	1.3	1400 #	⊙	—	—	—	—	80	

REF. DWG. NO.	REFERENCE DRAWING TITLE																								
B378-101-80-44-0101	GENERAL ARRANGEMENT CROSS SEC. & LONG. SECTION																								
B378-101-80-44-0107	API SYSTEM DUCTING LAYOUT - ELEVATION																								
B378-101-80-45-11112A	PIPING AND INSTRUMENTATION DIAGRAM FOR AIR PREHEATING SYSTEM OF REACTOR CHARGE HEATER																								
NOTES :- 1. 1. TYPICAL NOTATION <table border="0"> <tr> <td></td> <td>DENOTES CUMULATIVE FOUNDATION</td> <td>FS- DENOTES FIXED BOLTED SUPPORT</td> </tr> <tr> <td></td> <td>DENOTES AIR FLOW DIRECTION</td> <td>SS- DENOTES SLIDING SUPPORT</td> </tr> <tr> <td></td> <td>DENOTES FLUE GAS FLOW DIRECTION</td> <td>GS- DENOTES DUCT GUIDE SUPPORT</td> </tr> <tr> <td>CA-2</td> <td>DENOTES DUCT DESCRIPTION</td> <td>RS- DENOTES RESTING SUPPORT</td> </tr> <tr> <td></td> <td>DENOTES DAMPER TAG NO.</td> <td>WW- DENOTES WATER WASHING</td> </tr> <tr> <td></td> <td>DENOTES CUMULATIVE GRID LINE</td> <td></td> </tr> <tr> <td>TE 9620</td> <td>DENOTES AUXILIARY CONNECTION (ALL INSTRUMENT TAG NOS)</td> <td></td> </tr> <tr> <td></td> <td>DENOTES PIPING GRID LINE</td> <td></td> </tr> </table>			DENOTES CUMULATIVE FOUNDATION	FS- DENOTES FIXED BOLTED SUPPORT		DENOTES AIR FLOW DIRECTION	SS- DENOTES SLIDING SUPPORT		DENOTES FLUE GAS FLOW DIRECTION	GS- DENOTES DUCT GUIDE SUPPORT	CA-2	DENOTES DUCT DESCRIPTION	RS- DENOTES RESTING SUPPORT		DENOTES DAMPER TAG NO.	WW- DENOTES WATER WASHING		DENOTES CUMULATIVE GRID LINE		TE 9620	DENOTES AUXILIARY CONNECTION (ALL INSTRUMENT TAG NOS)			DENOTES PIPING GRID LINE	
	DENOTES CUMULATIVE FOUNDATION	FS- DENOTES FIXED BOLTED SUPPORT																							
	DENOTES AIR FLOW DIRECTION	SS- DENOTES SLIDING SUPPORT																							
	DENOTES FLUE GAS FLOW DIRECTION	GS- DENOTES DUCT GUIDE SUPPORT																							
CA-2	DENOTES DUCT DESCRIPTION	RS- DENOTES RESTING SUPPORT																							
	DENOTES DAMPER TAG NO.	WW- DENOTES WATER WASHING																							
	DENOTES CUMULATIVE GRID LINE																								
TE 9620	DENOTES AUXILIARY CONNECTION (ALL INSTRUMENT TAG NOS)																								
	DENOTES PIPING GRID LINE																								
DIMENSIONS MARKED * TO BE FINALIZED BY CONTRACTOR																									
2. CONTRACTOR TO ENSURE COMPLIANCE TO THE PRIDS. 3. API SYSTEM ENGINEERING IS TO BE FINALIZED BY HEATER CONTRACTOR AFTER AVAILABILITY OF API SYSTEM DETAILS AT THEIR END. 4. ENGINEERING & PROCUREMENT (EQUIPMENT SIZES) SHALL BE DONE TAKING INTO ACCOUNT THE SPACE CONSTRAINTS & FOUNDATION CLEARANCE REQUIREMENT. 5. THE EXPANSION JOINTS & LOCATION OF FIXED/RESTING/SLIDING SUPPORTS SHALL BE FINALIZED BY HEATER CONTRACTOR. 6. ALL INSTRUMENTS TAG NO. SHALL BE PR-FIXED WITH-IN-1.																									



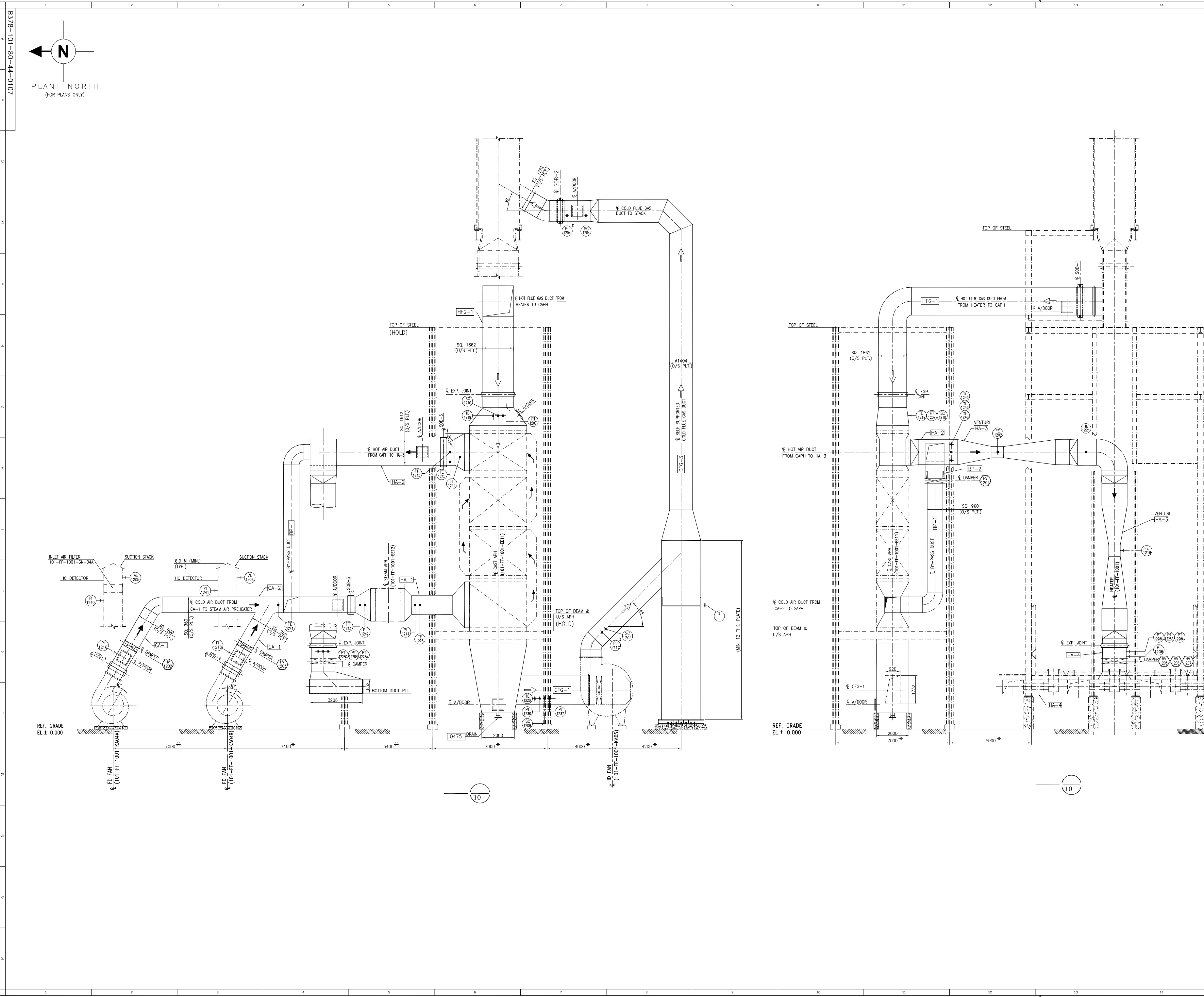
PLAN OF OVER ALL DUCTING



PLAN OF HOT AIR DUCTING AFTER CAPH

[illegible]

यह दस्तावेज भारतीय प्रौद्योगिकी विभाग के अधीन है। इसका उपयोग केवल अभियंताओं द्वारा ही किया जा सकता है।
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REF. DWG. NO.
B378-101-80-44-0101
B378-101-80-44-0106

REFERENCE DRAWING TITLE
GENERAL ARRGT. CROSS SECTION & LONG. SECTION
APH SYSTEM DUCTING LAYOUT - PLAN

NOTES :-

REV.	DATE	REVISIONS	BY	CHKD	APPD	PEMPC
A	10.08.2021	ISSUED FOR BIDS/COMMENTS	MB	AV	RP	
B	07.01.2022	ISSUED FOR BIDS/COMMENTS	MB	AV	RP	
C	27.01.2022	ISSUED FOR ENGINEERING	MB	AV	RP	
D	19.05.2022	ISSUED FOR ENGINEERING	MB	AV	RP	

ENGINEERS INDIA LIMITED
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GAIL (India) Limited

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GAIL (INDIA) LIMITED
USAR, MAHARASHTRA

500 केटीए पीडीएच - पीपी प्रोजेक्ट
USAR, MAHARASHTRA
INDIA

REACTOR CHARGE HEATER
(101-FF-1001)

APH SYSTEM DUCTING LAYOUT
ELEVATION
REACTOR CHARGE HEATER
(101-FF-1001)

SCALE 1:75

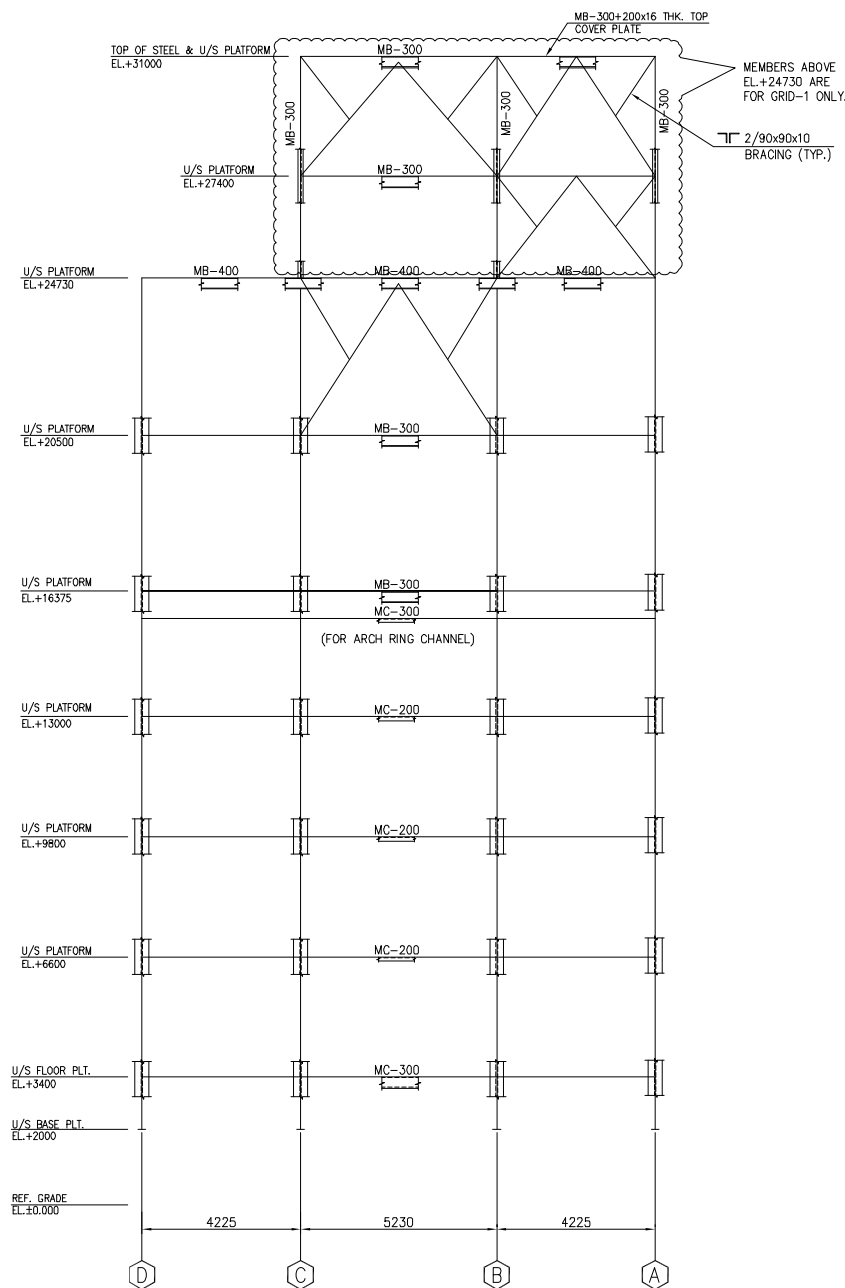
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UNIT 804401070

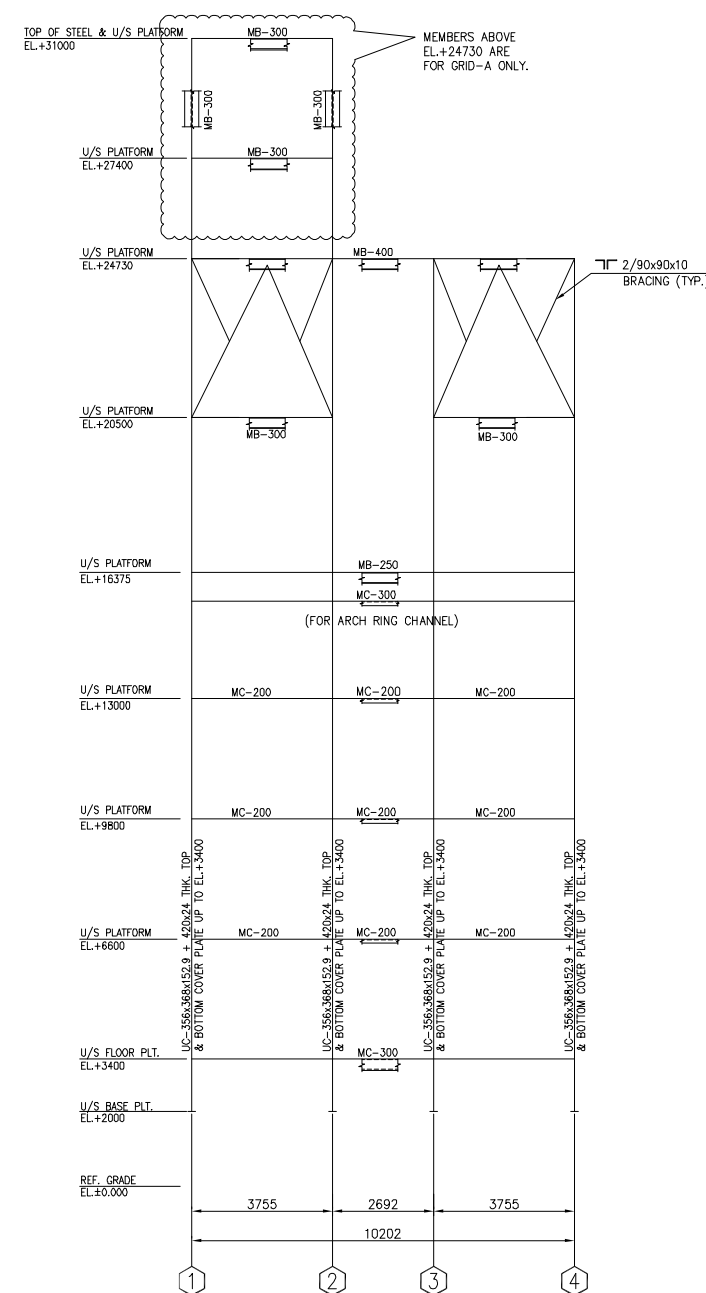
DIVN DEPT DWG. NO. REV.

3-1641-0500 REV.2 A0-1189 x 841

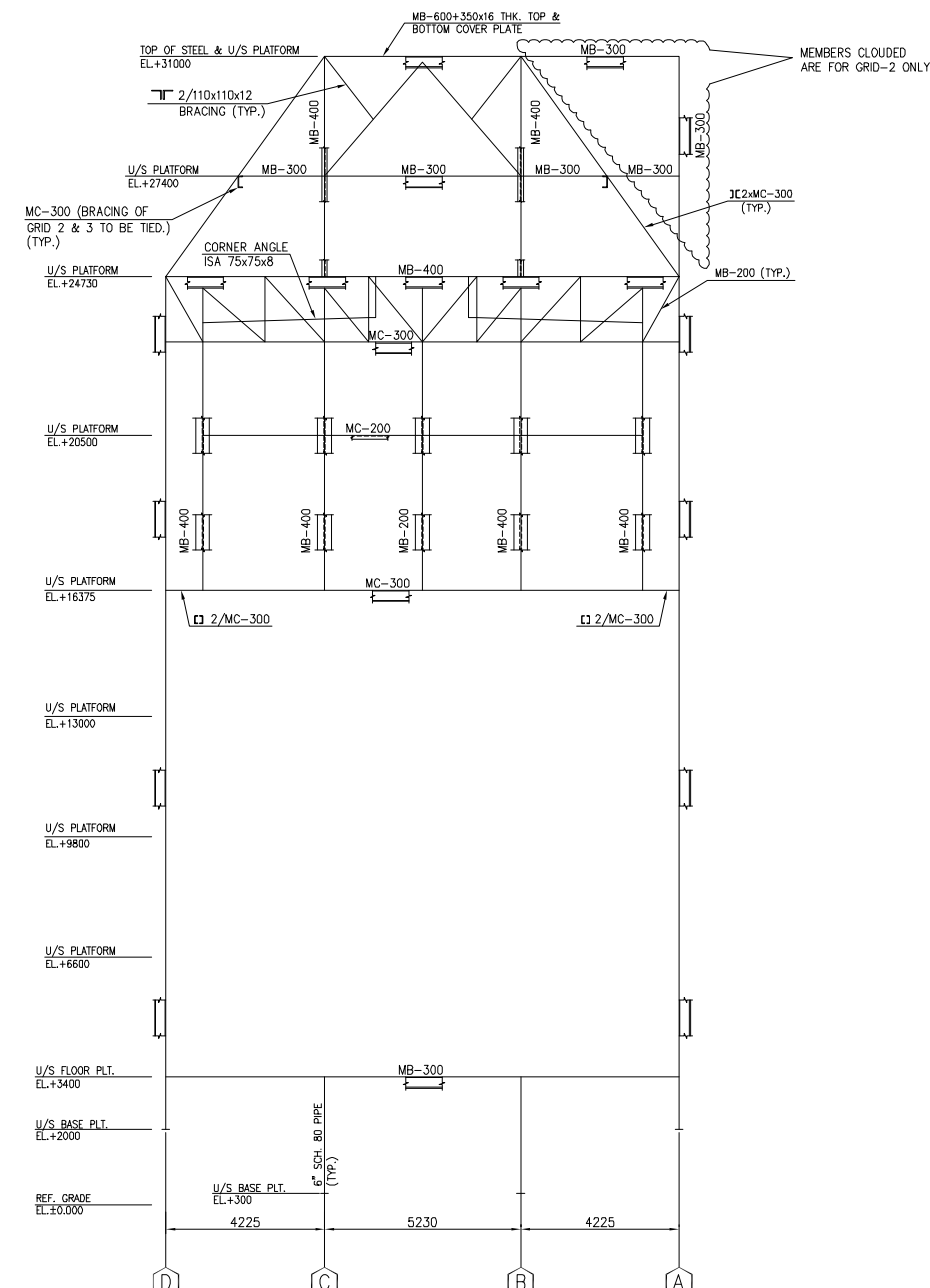
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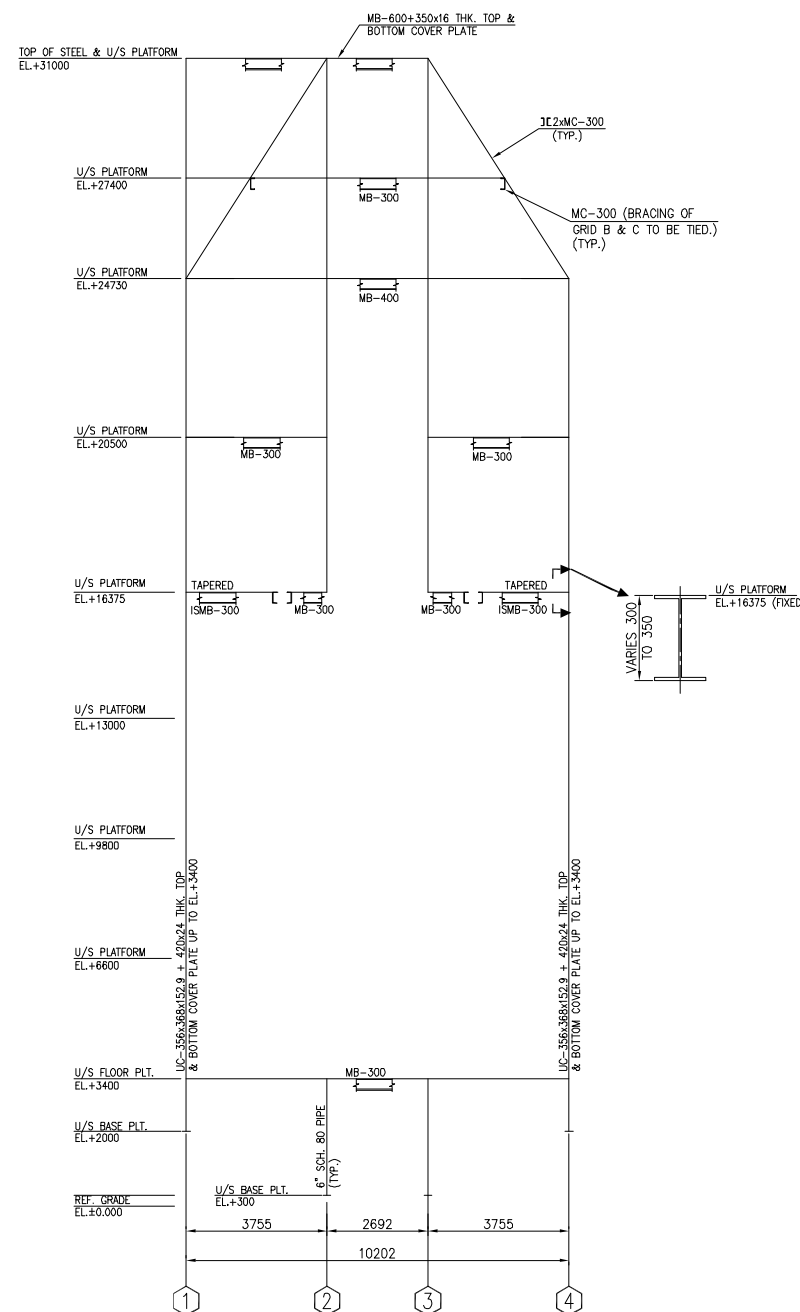
MAIN MEMBER STEEL FRAME WORK
VIEW ON GRID-1 & 4



MAIN MEMBER STEEL FRAME WORK VIEW
ON GRID-A & D



MAIN MEMBER STEEL FRAME WORK
VIEW ON GRID-2 & 3



MAIN MEMBER STEEL FRAME WORK VIEW
ON GRID-B & C

REF. DWG. NO.	REFERENCE DRAWING TITLE
B378-101-80-44-0101	GENERAL ARRANGEMENT CROSS SECTION
B378-101-80-44-0109	STRUCTURAL CONFIGURATION - PLANS

NOTES :-

1. ALL DIMENSIONS ARE IN MM.
2. DRAWING TO BE READ IN CONJUNCTION WITH THE HEATER GA DRAWINGS.
3. ADDITIONAL MEMBERS WHEREVER REQUIRED FOR PLATFORM STOPS, PIPING, SUPPORTS, SUPPORT REMOVING PLATE, SIZES ETC. SHALL BE ENGINEERED & PROVIDED BY CONTRACTOR.
4. ALL ANGLES AND SECTIONS NOT SPECIFICALLY DETAILLED SHALL BE SIMILAR TO PREVIOUS DETAILS USED FOR SIMILAR CONNECTIONS AND SHALL BE APPROVED BY FABRICATOR.
5. PLAIN HORIZONTAL BRACING TO BE LOWERS TO CARRY GRATING SUPPORT MEMBERS MATCH C/O OF BRACING TO CENTRE LINE OF CONNECTING BEAMS WHERE REQUIRED.
6. WHEREVER IN THE BRACING ARRANGEMENT DOUBLE BACK TO BACK ANGLE HAVE BEEN PROVIDED, THE SPACING BETWEEN THE TWO ANGLES SHALL BE AS A MINIMUM TO THE THICKNESS OF THE ANGLE PLATE AND SHALL BE SUFFICIENT TO BE TAKEN AS BACK TO BACK.
7. STANDARD ORIENTATION SHALL BE AS PER THE GENERAL ARRANGING DRAWING / STANDARD ORIENTATION FOR THESE TYPE OF HEATER, HEATER VENDOR TO DISCUSS IN CASE OF ANY DOUBT.
8. SQUARE MEMBERS FOR PLATFORM, DUCT SUPPORTS ETC SHALL BE DESIGNED & WORKED OUT BY CONTRACTOR.
9. ALL JOINTS AND STIFFENERS SHALL BE DESIGNED AND DETAILLED BY THE CONTRACTOR.

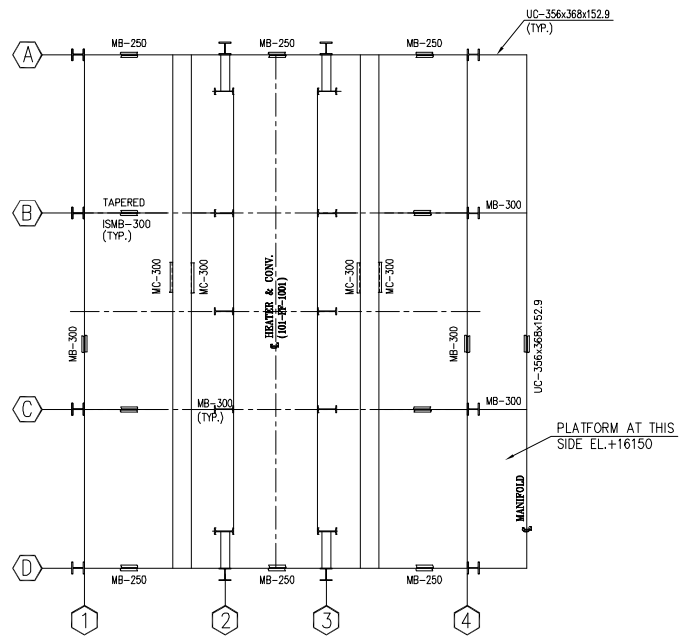
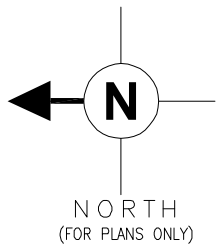
[illegible]

 इंजीनियर्स इंडिया लिमिटेड ENGINEERS' INDIA LIMITED (A Govt. of India Undertaking)															
 GAIL (India) Limited		गेल इंडिया लिमिटेड GAIL (INDIA) LIMITED USAR, MAHARASHTRA													
500 कैंटीन पीडियर फोर्से परियोजना उत्तर महाराष्ट्र						500 KTA PDH – PP PROJECT USAR, MAHARASHTRA INDIA									
101 1001						101 1001									
SCALE	JOB NO	UNIT	DIVN	DEPT	DWG. NO	REV.									
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15						16									

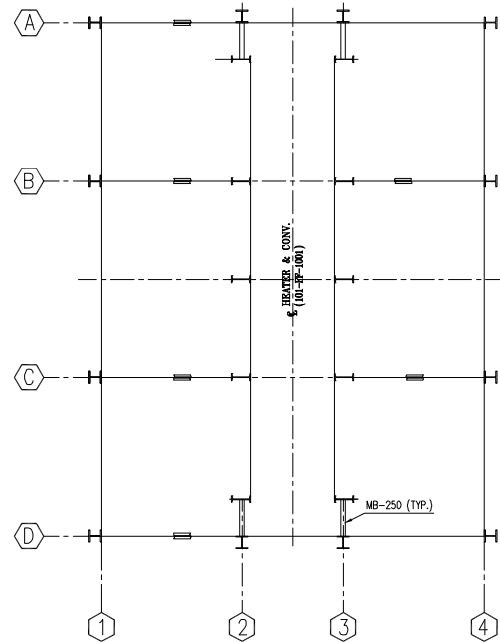
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आपके द्वारा इस फॉर्म पर दिए गए डिजाइन, दस्तावेज और विवरण केवल उद्देश्य से लोन किए जा रहे हैं कि आप उन्हें अपने कर्तव्य के लिए उपयोग करेंगे। हम आपको स्पष्ट रूप से सूचित किया जाता है कि आप इनका प्रतिकृति नहीं बना सकते हैं, न ही इसे किसी भी प्रकार की पुनर्विक्रय या अन्यथा उपयोग करने की अनुमति दी जाती है।

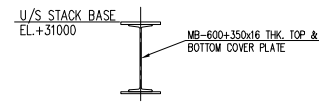
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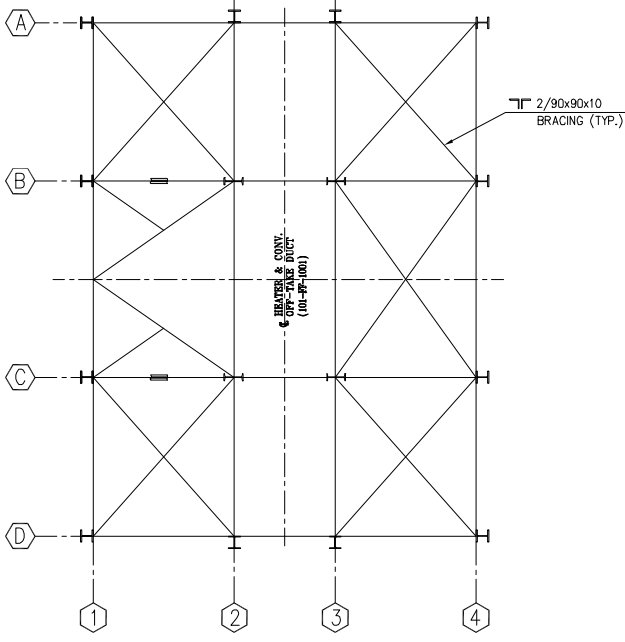
PLAN AT EL.+16375



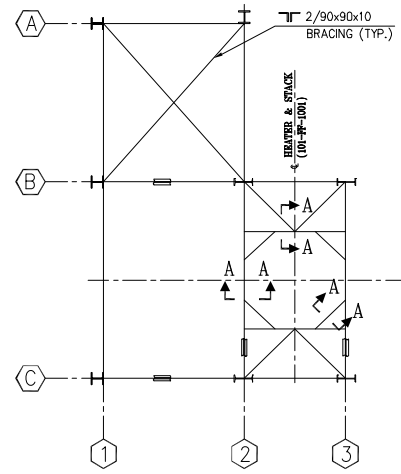
PLAN AT EL.+20500



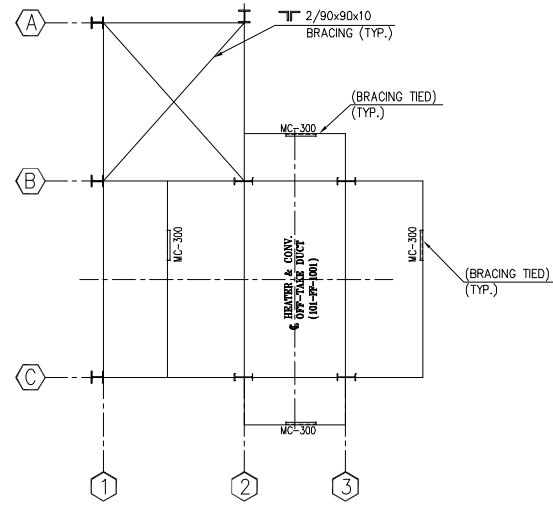
SECTION A-A



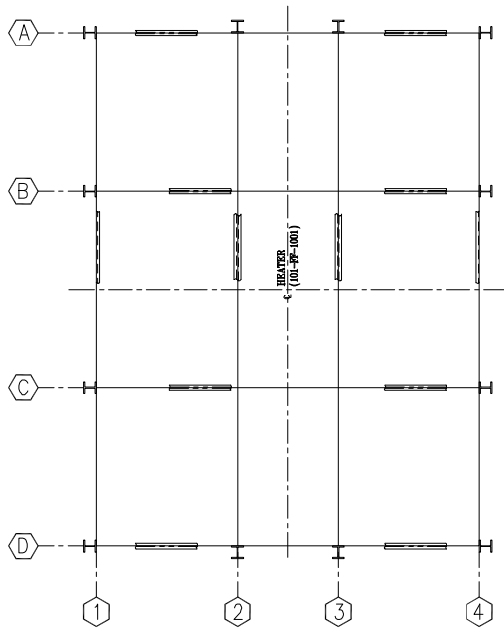
PLAN AT EL.+24730



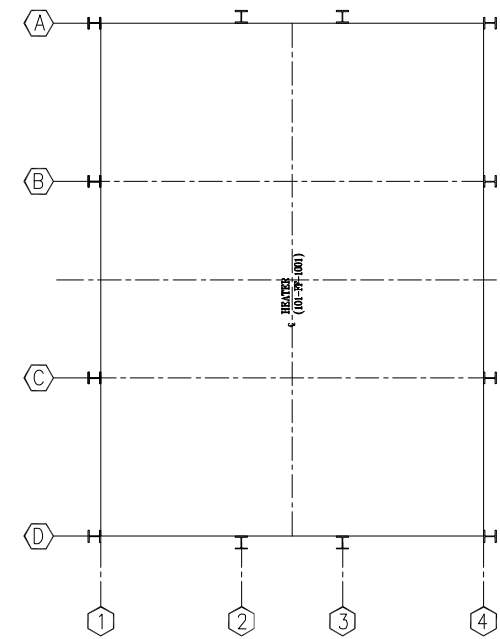
PLAN AT EL.+31000



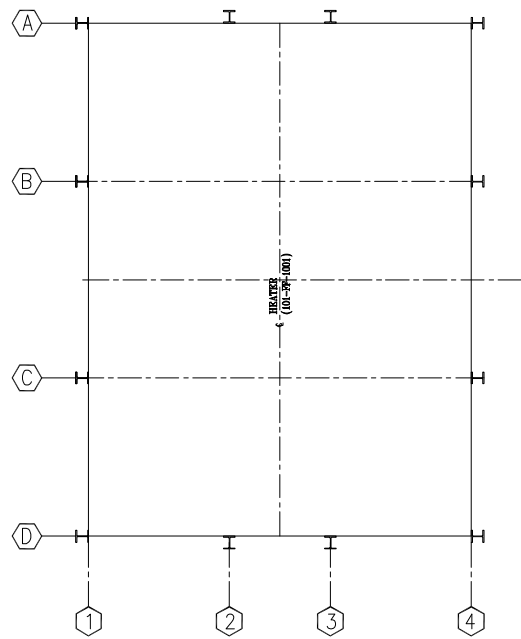
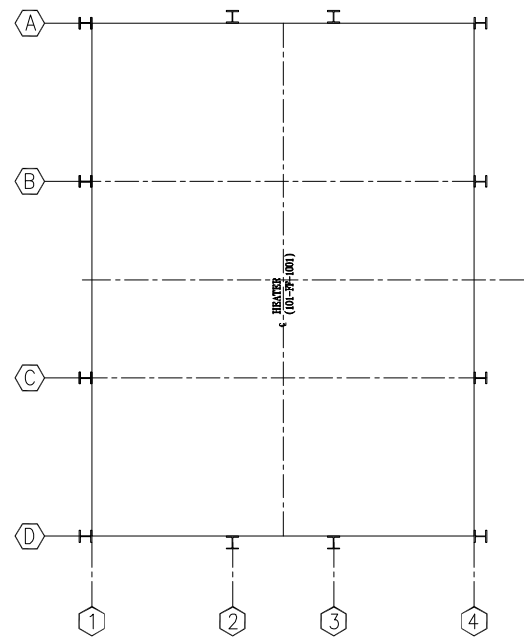
PLAN AT EL.+27400



PLAN AT EL.+3400



PLAN AT EL.+6600

PLAN AT EL.+9800

PLAN AT EL.+13000

REF. DWG. NO.	REFERENCE DRAWING TITLE
B378-101-80-44-0102	GENERAL ARRANGEMENT PLANS-I
B378-101-80-44-0103	GENERAL ARRANGEMENT PLANS-II
B378-101-80-44-0108	STRUCTURAL CONFIGURATION - ELEVATIONS

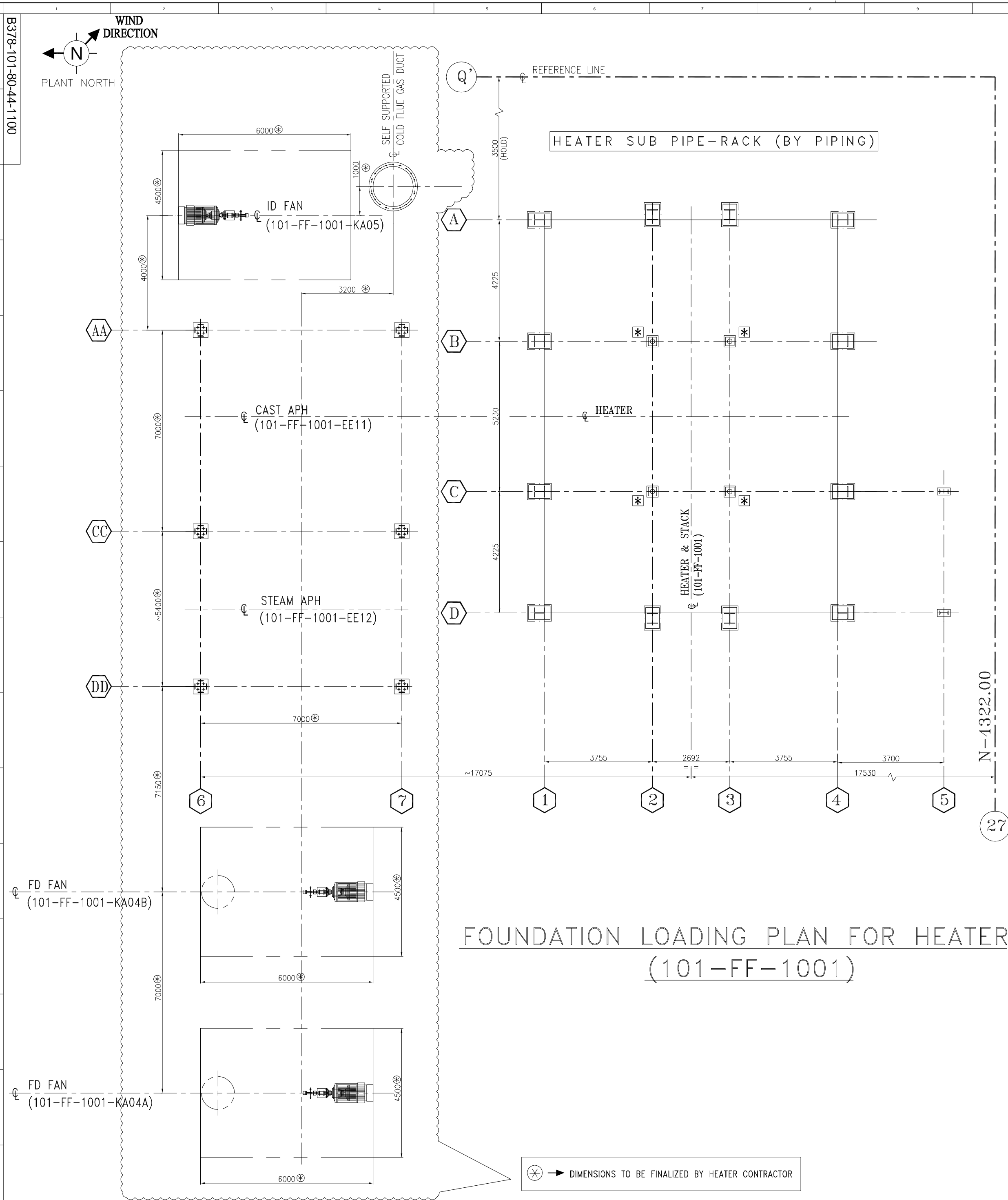
NOTES :-

1. ALL PLATFORM TIEING MEMBER FROM COLUMN TO BE MIN. ISMB-200 U.O.N.
OTHER TIEING MEMBER FROM HEATER TO PLATFORM TO BE ISMC-150 AS A
MIN. U.O.N.

[illegible]

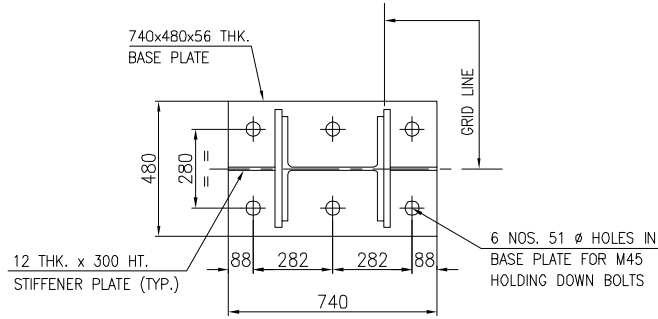
																			
इंडियन लिमिटेड (एकता परचरक कए उपक्रम)										ENGINEERS INDIA LIMITED (A Govt. of India Undertaking)									
गैल इंडिया लिमिटेड GAIL (INDIA) LIMITED USAR, MAHARASHTRA										गैल इंडिया लिमिटेड GAIL (INDIA) LIMITED USAR, MAHARASHTRA									
500 शैटर पीपीडरक पीपी परपोजेक उखर महाराष्ट्र										500 KTA PDH -- PP PROJECT USAR, MAHARASHTRA INDIA									
101 1001										101 1001									
SCALE JOB NO. UNIT										DIVN. DEPT. DWG. NO. REV.									
1:66.6 B 3 7 8 1 0 1										8 0 4 0 1 0 9 0									
15										16									

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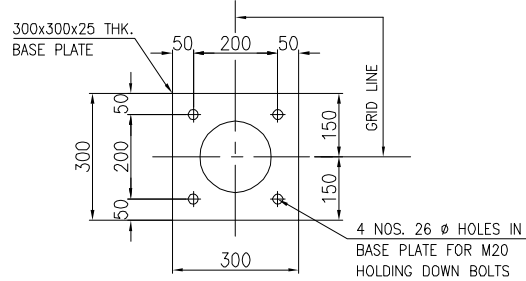


FOUNDATION LOADING FOR REACTOR CHARGE HEATER (101-FF-1001)																					
(LOADS IN METRIC TONNES, AT EL.+2000)																					
COL. NO	GRAVITY LOAD (INCLUDING LIVE LOAD)	WIND LOAD					EARTHQUAKE LOAD					PIPING LOAD									
		W		E		V	W		E		N	S		V	W		E		N	S	
		MAX.	V MIN.	H	V		H	V	H	V		H	V		H	V	H	V		H	V
1-A	100	35		±13	±44	±17	±69	±17	±47	±10	±44	±10	±2	±5							
1-B	100	35		±13	±12	±2	±40	±17	±10	±3	±22	±10	±4	±1							
1-C	100	35		±13	±12	±2	±40	±17	±10	±3	±22	±15	±4	±1							
1-D	100	35		±13	±44	±17	±69	±17	±47	±10	±44	±29	±4	±5							
2-A	95	35		±4	±28	±13	±17	±6	±25	±8	±10	±5	±2	±5							
2-D	95	35		±4	±28	±13	±17	±6	±25	±8	±10	±15	±2	±5							
3-A	95	35		±4	±28	±13	±17	±6	±25	±8	±10	±5	±2	±5							
3-D	95	35		±4	±28	±13	±17	±6	±25	±8	±10	±10	±2	±5							
4-A	93	35		±13	±44	±17	±69	±17	±47	±10	±44	±21	±4	±5							
4-B	93	35		±13	±12	±8	±40	±17	±10	±3	±22	±5	±4	±1							
4-C	93	35		±13	±12	±8	±40	±17	±10	±3	±22	±1	±4	±1							
4-D	93	35		±13	±44	±17	±69	±17	±47	±10	±44	±1	±4	±5							
(LOADS IN METRIC TONNES, AT EL.+300) (FOR STAIRCASE COLUMN)																					
5-C	20	7		±3	±5	±4	±10	±3	±6	±3	±6	±2	±1	±1							
5-D	20	7		±3	±5	±4	±10	±3	±6	±3	±6	±2	±1	±1							

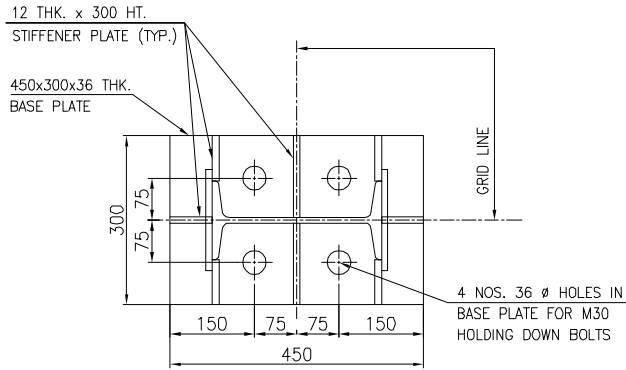
THE COLUMN MARKED * TO BE DESIGNED FOR GRAVITY LOAD = 15 TONS,
UPLIFT = 4 TONS & HORIZONTAL SHEAR = 3 TON



BASE PLATE DETAIL
COLUMNS NO. 1-A, 1-B, 1-C, 1-D,
2-A, 2-D, 3-A, 3-D,
4-A, 4-B, 4-C & 4-D
U/S BASE PLATE EL.+2000



BASE PLATE DETAIL
COLUMNS NO. 2-B, 2-C, 3-B & 3-C
U/S BASE PLATE EL.+300

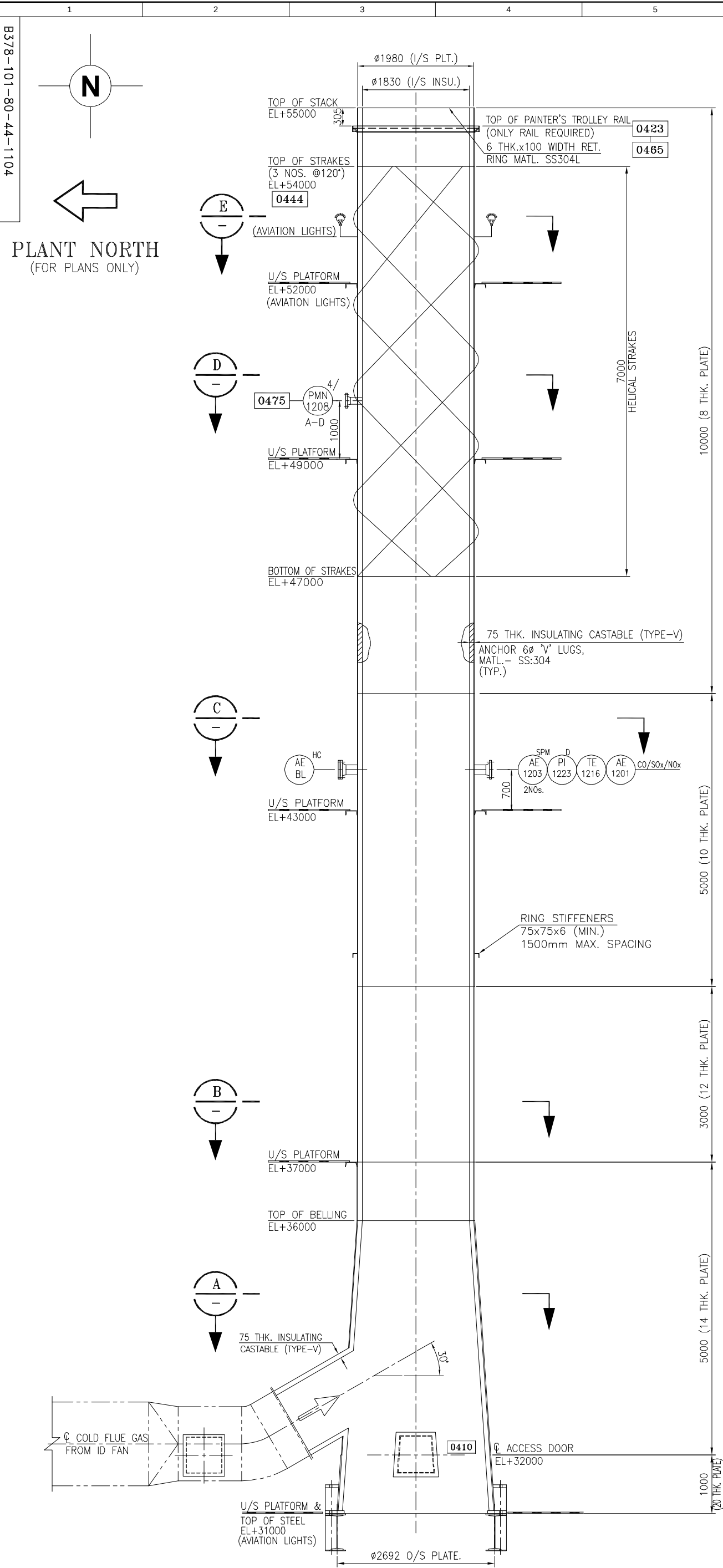


BASE PLATE DETAIL
COLUMNS NO. 5-C & 5-D
U/S BASE PLATE EL.+300

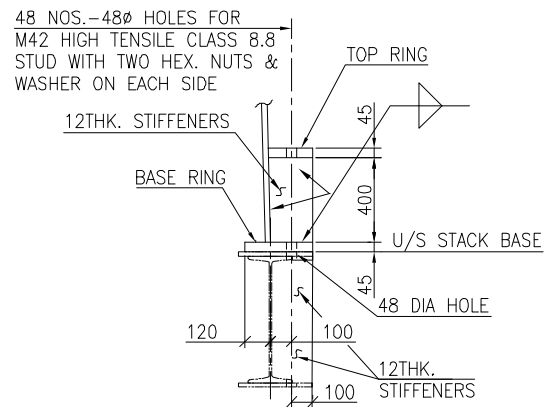
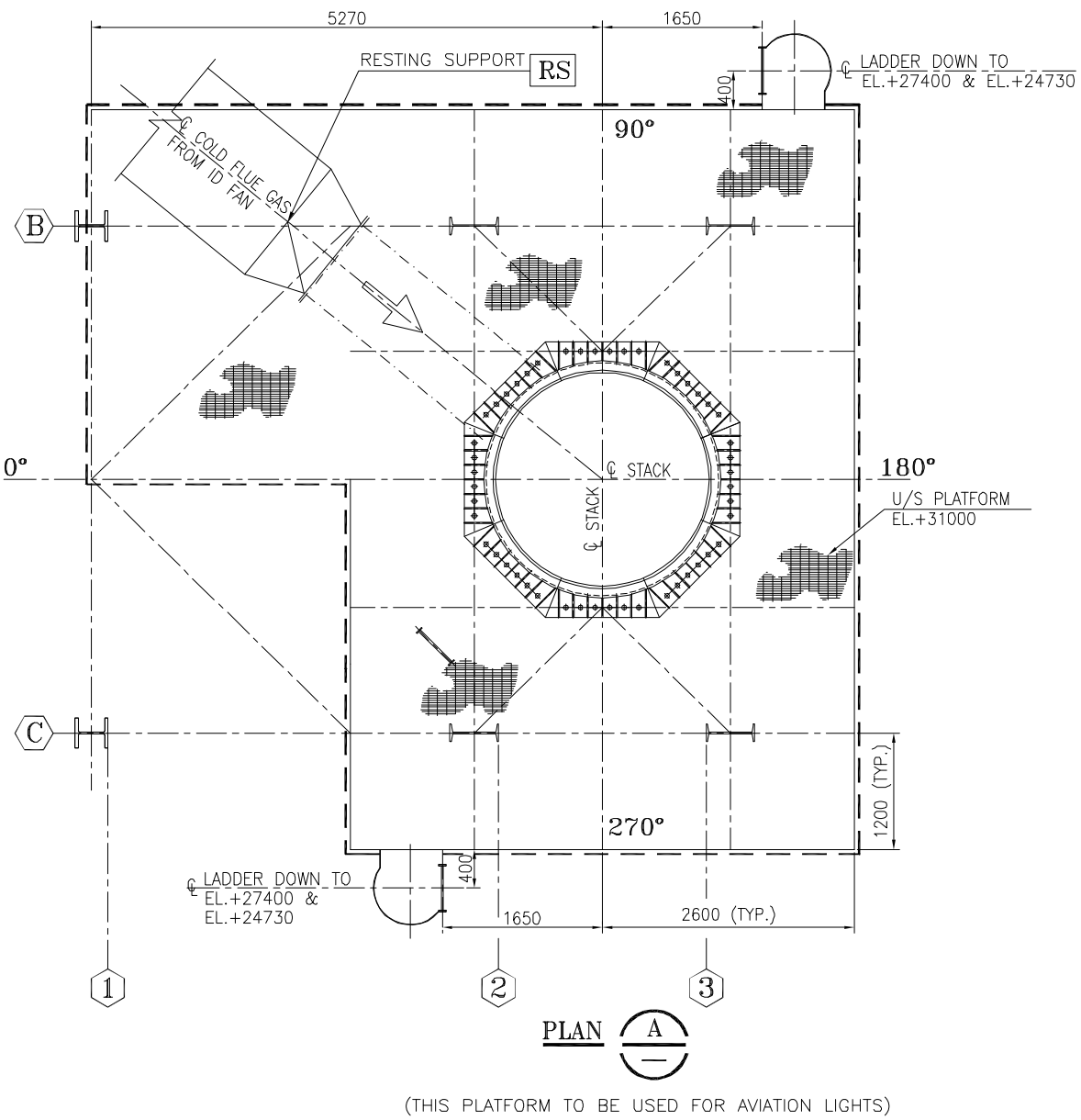
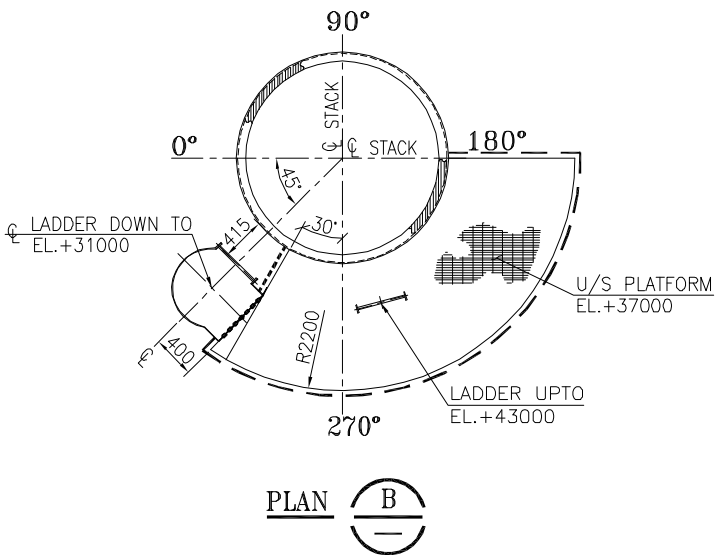
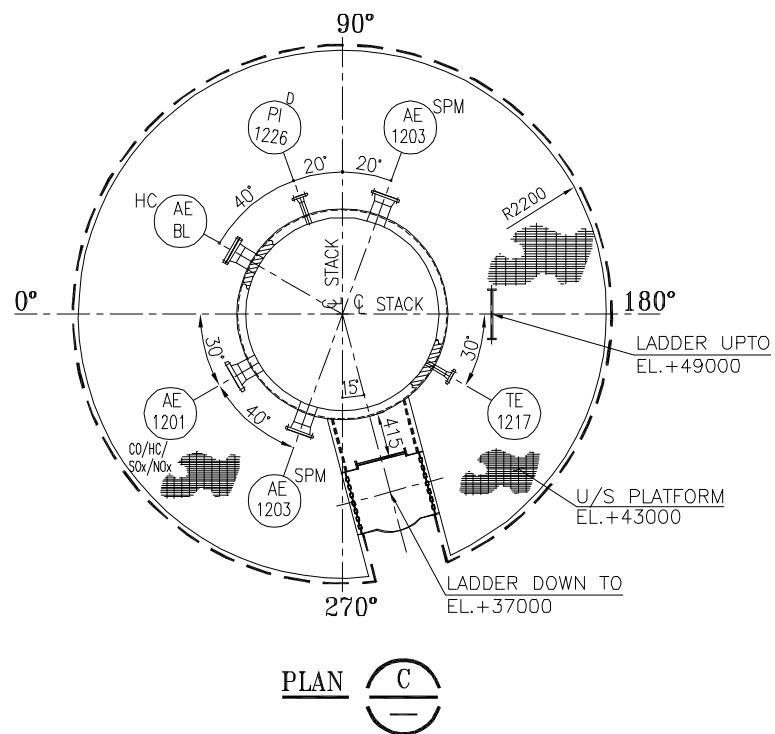
[illegible]

प्रष्ठुत आर्थिक एवं वित्तीय विवरण इन्जिनियर्स इंडिया लिमिटेड की संतुष्टि है। ये प्रभुता प्राप्त किए गए हैं और अगला वर्ष के अंत तक प्रयोग होगा और यह प्रभुता प्राप्त करने वाले प्रभुताधारकों को निहितक रूप में दो वर्षों तक देना होगा।

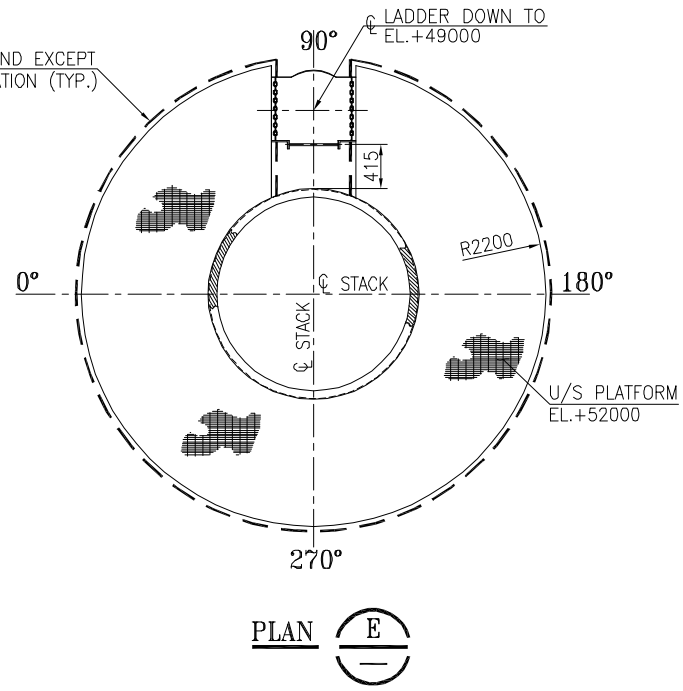
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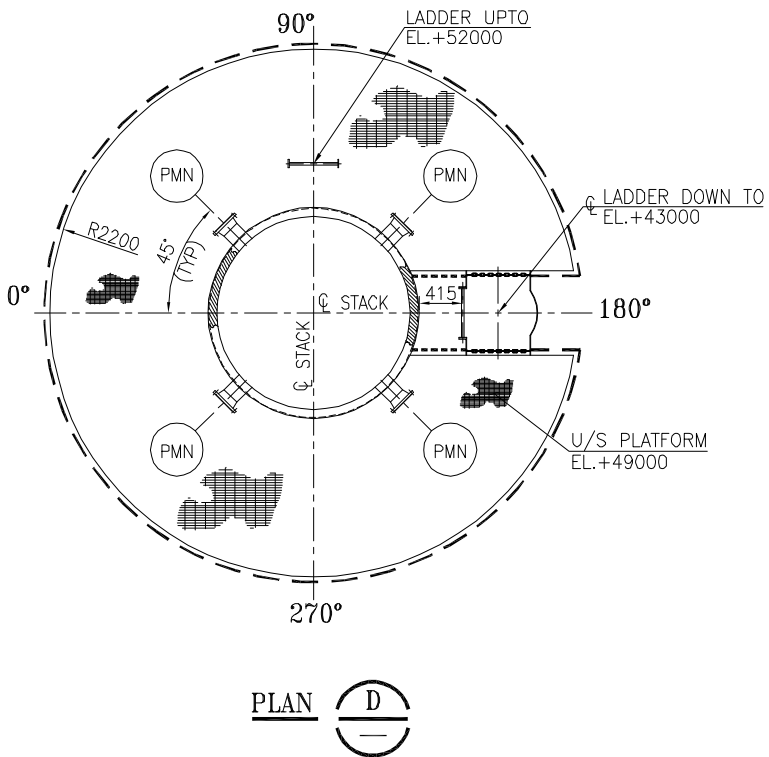
ELEVATION OF STACK



STACK CHAIR DETAIL



(THIS PLATFORM TO BE USED FOR AVIATION LIGHTS)

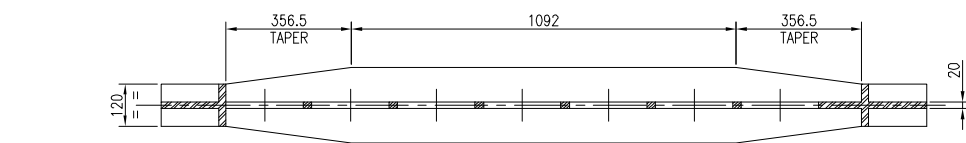
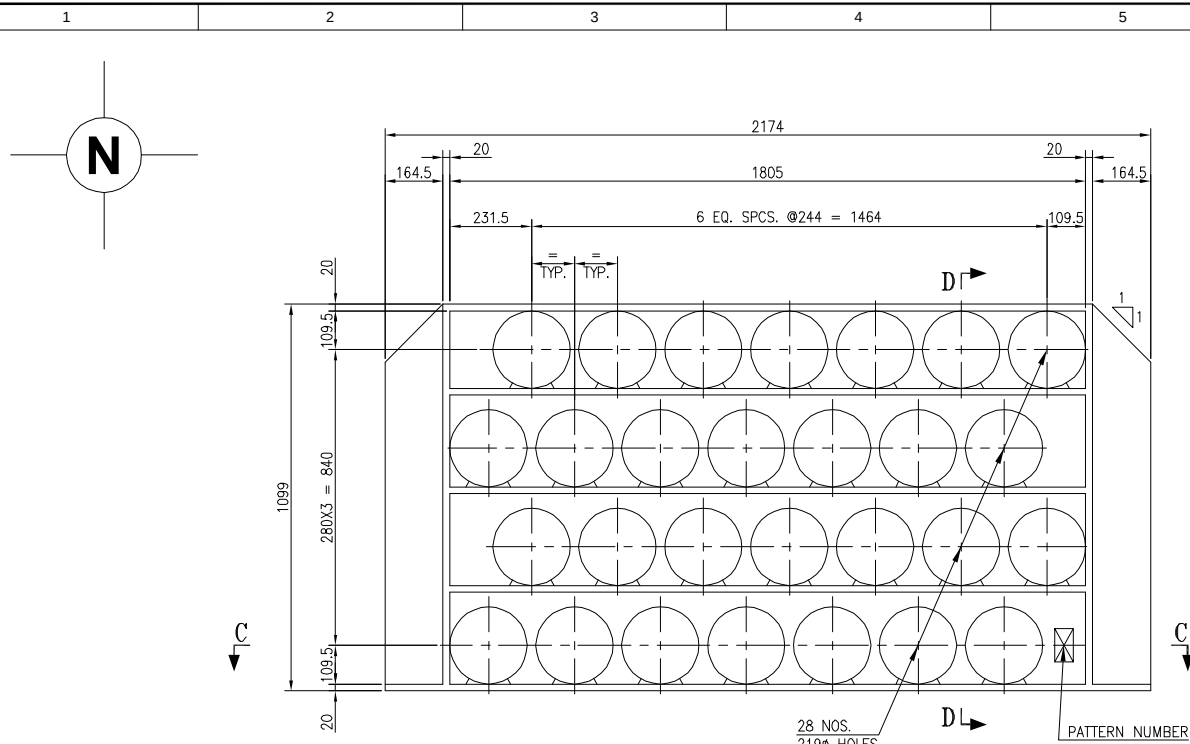


PLAN

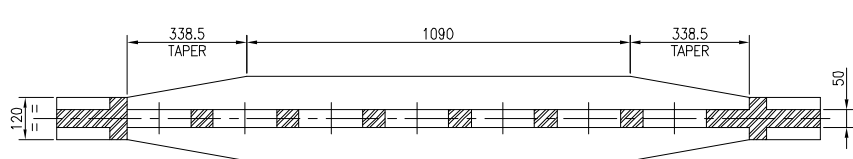
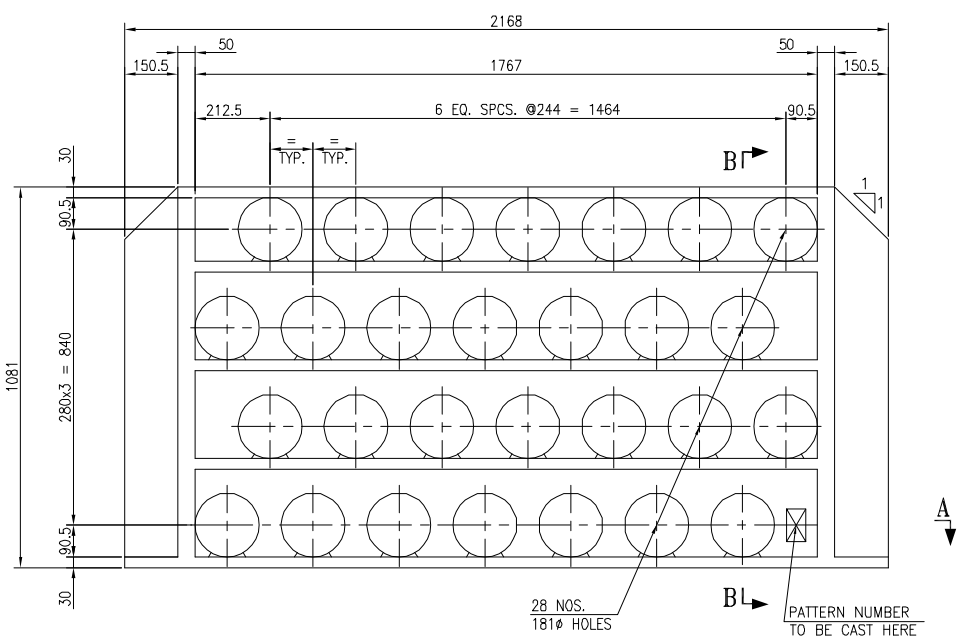
[illegible]

प्रस्तावित आरेख एवं इसमें निर्दिष्ट विवरण इंजीनियर्स इंडिया लिमिटेड की संपत्ति है और उधारकर्ता ने यह स्पष्ट समझौता किया है कि न तो उन्हें प्रम. अधिकार दिया जाएगा, न प्रकल्प की जागी, न उधार दिए जाएंगे, न प्रकल्प किए जाएंगे और न ही संपत्ति और किसी प्रयोग के अलावा इनका कोई अन्य प्रयोग होगा और यह प्रयोग उधार देने वाले द्वारा उधारकर्ता को निर्दिष्ट रूप से ही नहीं प्रकल्पित से होगा ।
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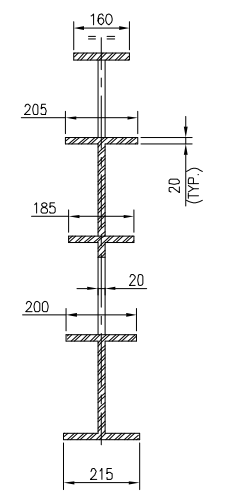
B378-101-80-44-1105



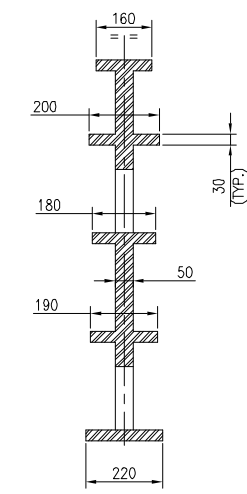
SECTION C-C
DETAIL OF INTERMEDIATE TUBE SHEET
PATTERN NO. B378/1612/101



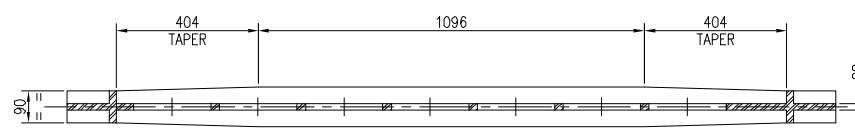
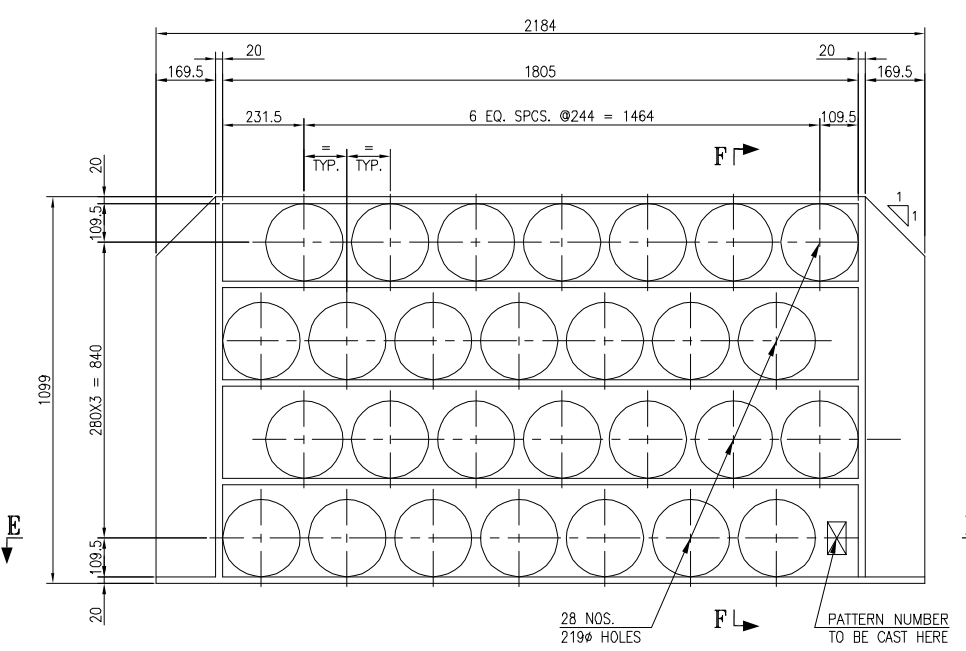
SECTION A-A
DETAIL OF INTERMEDIATE TUBE SHEET
PATTERN NO. B378/1613/101



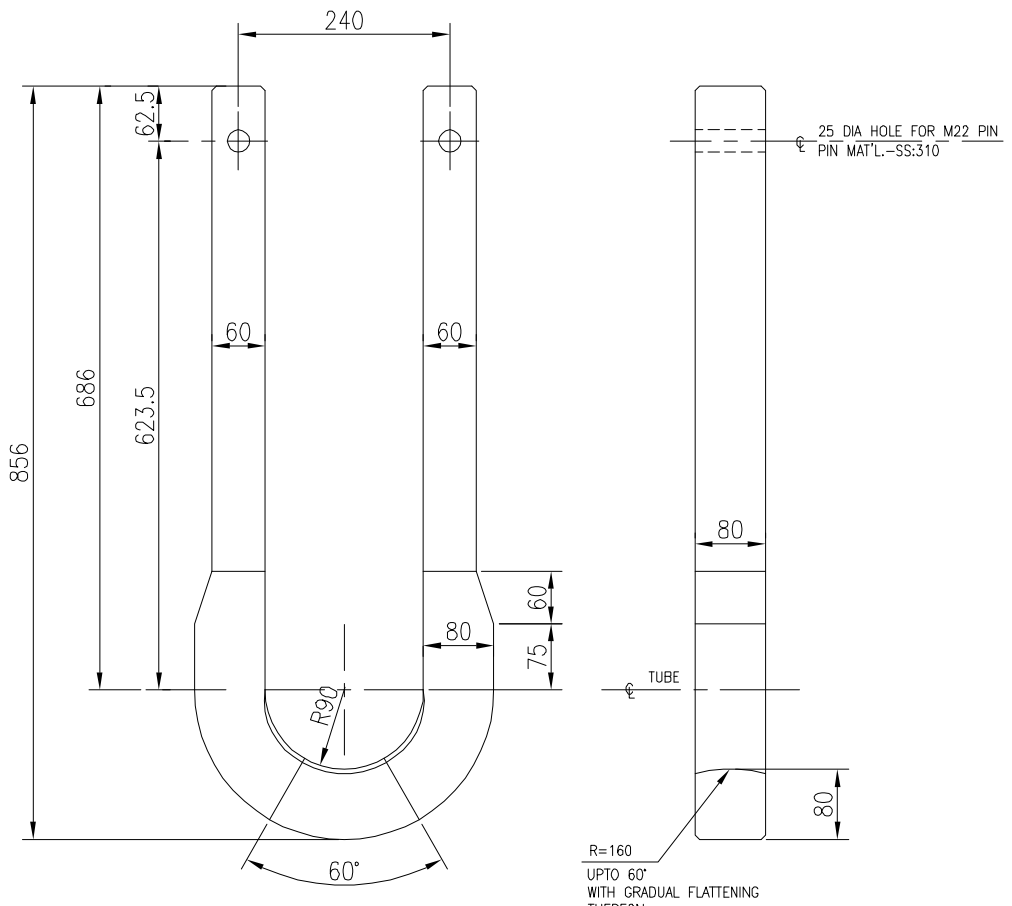
SECTION D-D



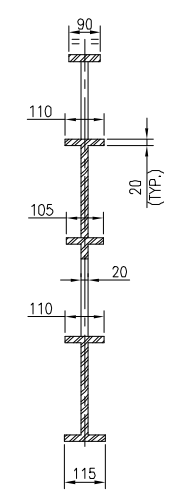
SECTION B-B



SECTION E-E
DETAIL OF INTERMEDIATE TUBE SHEET
PATTERN NO. B378/1612/102



DET. OF RAD. TUBE HANGER
MATL- A351 Gr. HK 40
PART NO. B378/1623/201



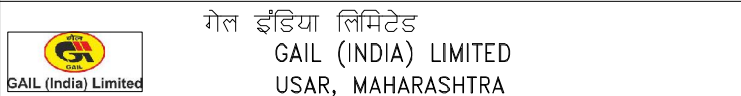
SECTION F-F

- NOTES :-**
- TYPICAL NOTATION
1613/101 DENOTES PART NO.
 - ALL DIMENSIONS ARE IN mm U.O.N.
 - ALL BEARING SURFACES TO BE FREE FROM BURRS AND SHARP EDGES.
 - MANUFACTURE, TESTING AND SUPPLY ARE TO BE AS PER IIL STD. SPEC. FOR TUBE SUPPORT CASTING 6-17-0007 U.O.N. IN DRAWING.
 - AREAS OF RADIOGRAPHY ON PRODUCTION CASTINGS ARE INDICATED BY HATCHING AS SHOWN BELOW
- NO DRAFT ON SEATING SURFACE
- INSPECTION OF CASTINGS SHALL CONFORM TO ASTM E 446 SEVERITY LEVEL 3 SHALL APPLY IN ALL CATEGORIES EXCEPT CRITICAL & FLANGE AREAS. CRITICAL AREAS (SUPPORT AREAS / BOTTOM FLANGE AREAS) SHALL CONFORM TO SEVERITY LEVEL 2.
- 6 mm RADIUS ON EDGES AND CORNERS U.O.N EXCEPT AT HOLES.
 - HOLES TO BE IN LINE AND PARALLEL AND AT 90° TO THE WEB.
 - DO NOT SCALE THE DRG. SEEK CLARIFICATION IF IN DOUBT.
 - SEEK CLARIFICATION IF ANY,BEFORE TAKING UP ACTUAL PRODUCTION OF CASTING.
 - ALL MATING PARTS SHALL BE CHECKED FOR CORRECT FIT AT SHOP PRIOR TO DESPATCH OF ALL ITEMS.
 - WEIGHT OF ALL CASTINGS SHALL BE WORKED OUT BY THE BIDDER & TO BE FURNISHED IN THE OFFER AS WELL AS IN THEIR RESPECTIVE FABRICATION DRAWINGS.
 - BEARING SEATS TO BE 30° EACH SIDE OF VERTICAL C OF THE HOLE FOR FULL WIDTH OF UNDERLYING FLANGE.
- SMOOTH FINISH
- NO DRAFT ON SEATING SURFACE
- ALL FLANGE WIDTHS SHALL BE SYMMETRICAL ABOUT C OF ITS.
 - QUANTITIES SHOWN ARE INSTALLED QUANTITIES ONLY. HOWEVER, CONTRACTOR TO CHECK THE TOTAL NO. REQUIRED AS PER QAD. FOR SPARES REFER TENDER DOCUMENT.
 - IF DRAFT TAPER IS PROVIDED ON FLANGES, THE MIN. FLANGE THICKNESS SHALL BE MAINTAINED AS INDICATED. THE TOP SURFACE SHALL BE KEPT HORIZONTAL & THE BOTTOM SURFACE SHALL NOT PROJECT IN TO THE HOLE.
 - THE GAP BETWEEN OUTER EDGES OF THE ITS & INNER FACE OF CASING SHALL BE ENSURED TO ACCOUNT FOR THERMAL EXPANSION. THIS SHALL SUITABLY BE COVERED IN RELATED QAP/ITP.

BILL OF MATERIAL FOR CAST TUBE SUPPORTS (INSTALLED QUANTITIES EXCLUDING SPARES)				
PART NO.	MATERIAL	EIL STD. NO.	QUANTITY	REMARKS
CONVECTION INTERMEDIATE TUBE SHEETS				
1613/101	A 351 Gr HK 40	AS PER DETAIL	1	BOTTOM TUBE SHEET
1612/101	A 297 Gr HF	DO	1	2nd TUBE SHEET FROM BOTTOM
1612/102	A 297 Gr HF	DO	2	3rd & 4th TUBE SHEET FROM BOTTOM
CONVECTION ITS SUPPORT BRACKETS				
1623/101	A 351 Gr HK 40	7-17-0164	2	BOTTOM TUBE SHEET
1622/101	A 297 Gr HF	7-17-0163	2	2nd TUBE SHEET FROM BOTTOM
1622/102	A 297 Gr HF	7-17-0101	4	3rd & 4th TUBE SHEET FROM BOTTOM
RADIANT ROOF TUBE HANGER				
1623/201	A 351 Gr HK 40	AS PER DETAIL	42	RADIANT ROOF TUBE HANGER



ENGINEERS INDIA LIMITED
(A Govt. of India Undertaking)



GAIL (INDIA) LIMITED
USAR, MAHARASHTRA

500 केटीएच पीडीएच पीसी परियोजना
उत्तर महाराष्ट्र

500 KTA PDH - PP PROJECT
USAR, MAHARASHTRA
INDIA

101-FF-1001

TUBE SUPPORT CASTINGS
101-FF-1001

SCALE	JOB NO.	UNIT	DIVN.	DEPT.	DWG. NO.	REV.
1:10	B 3 7 8	1 0 1	8 0	4 4	1 1 0 5	0