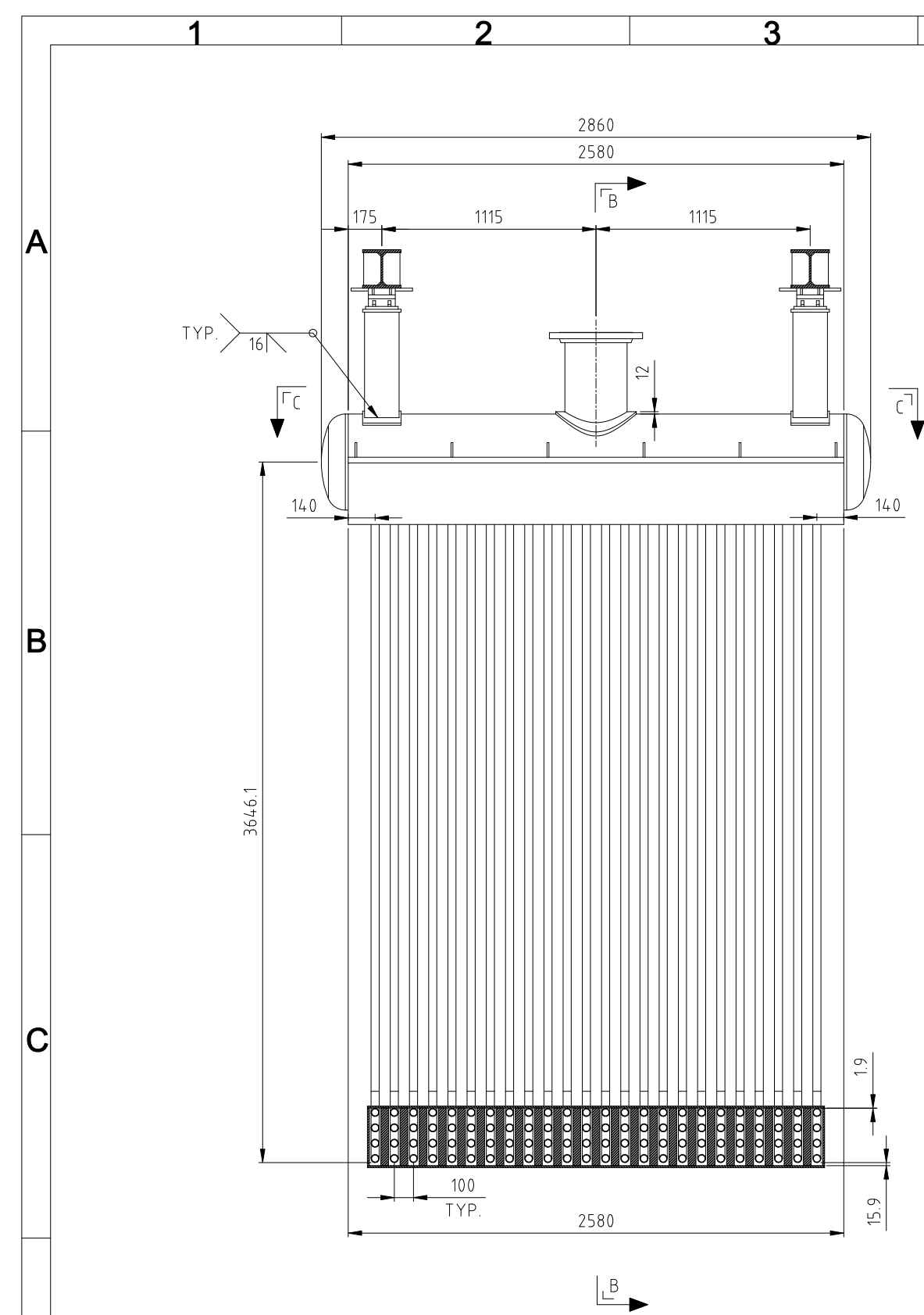
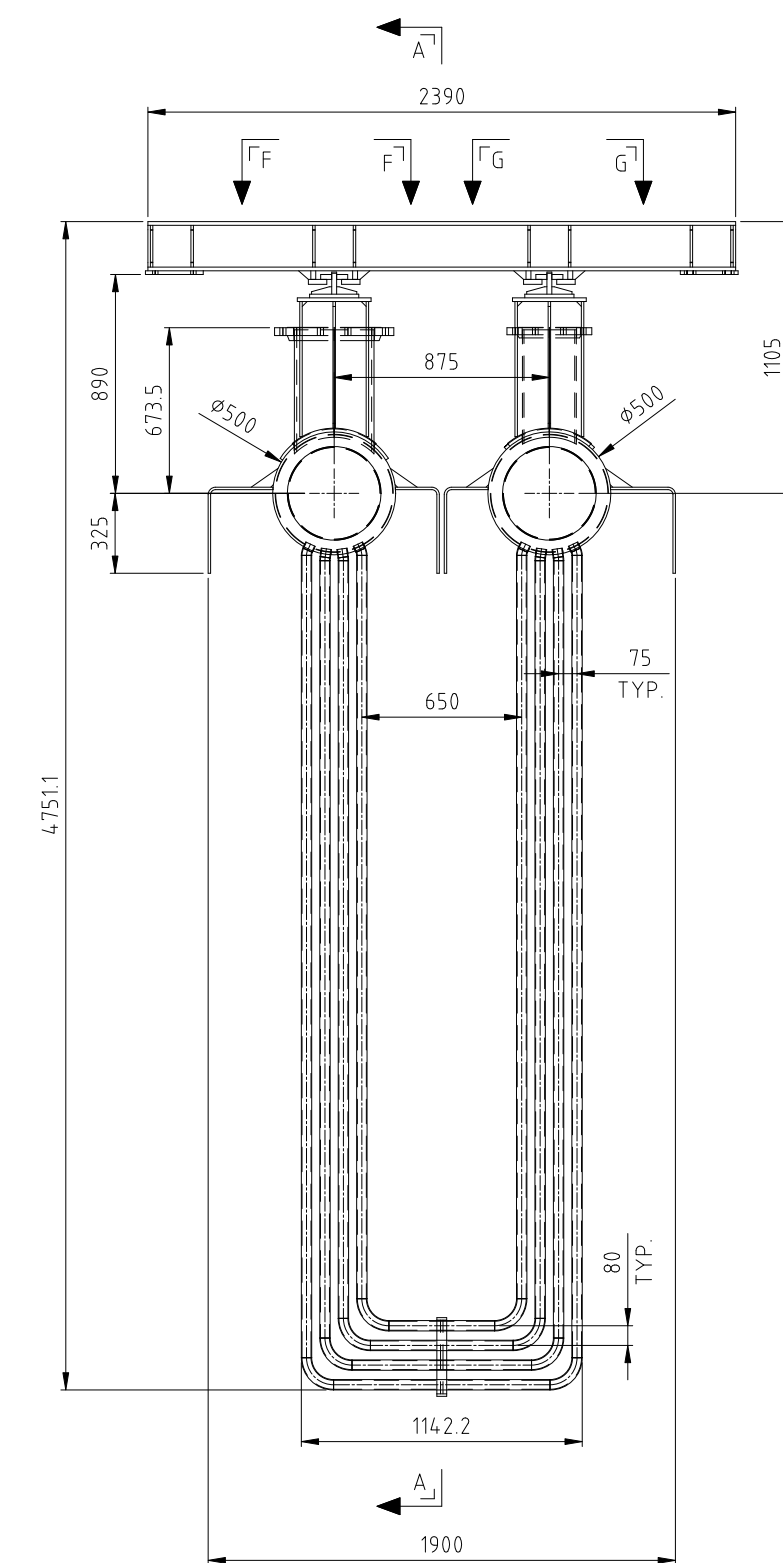
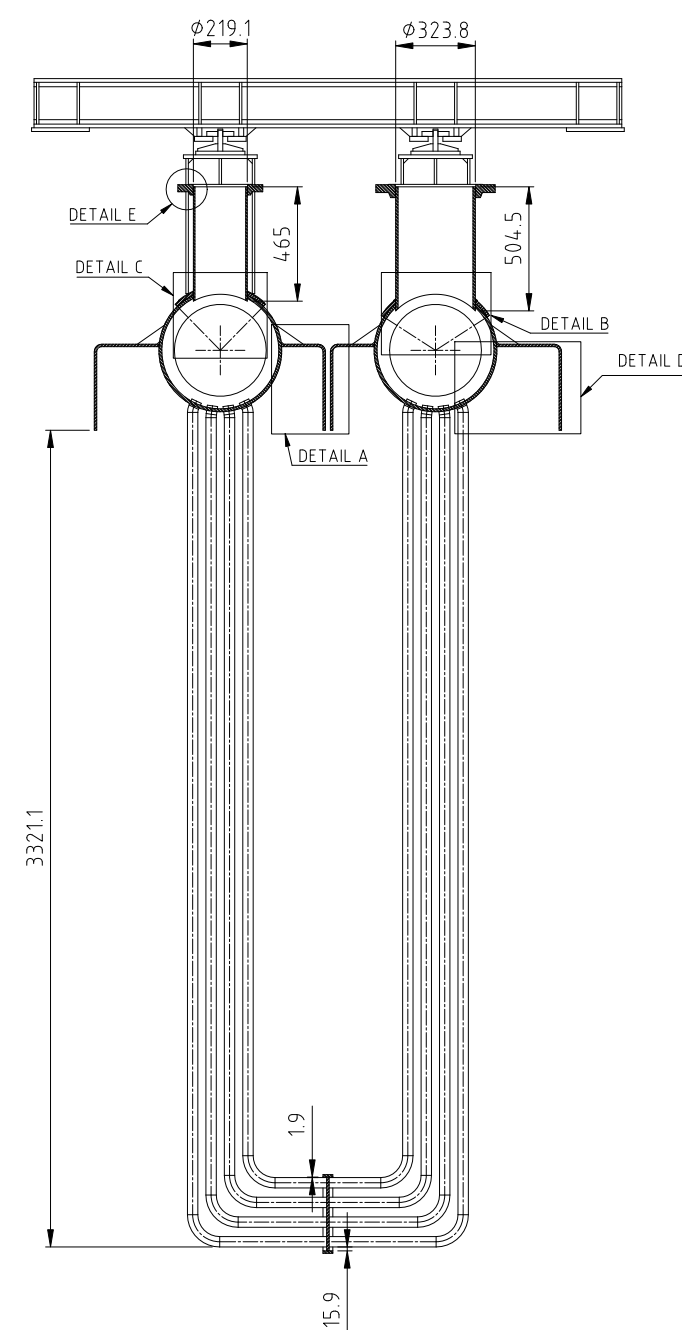




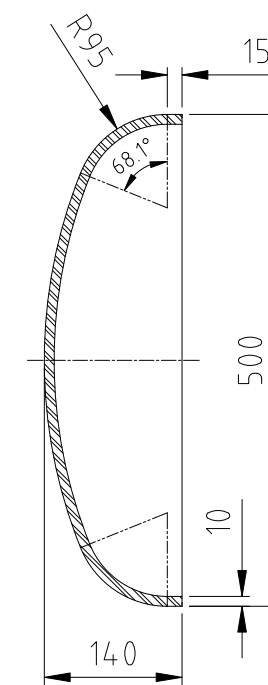
SECTION A-A



FRONT VIEW

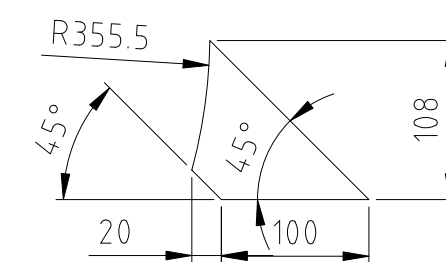


SECTION B-B



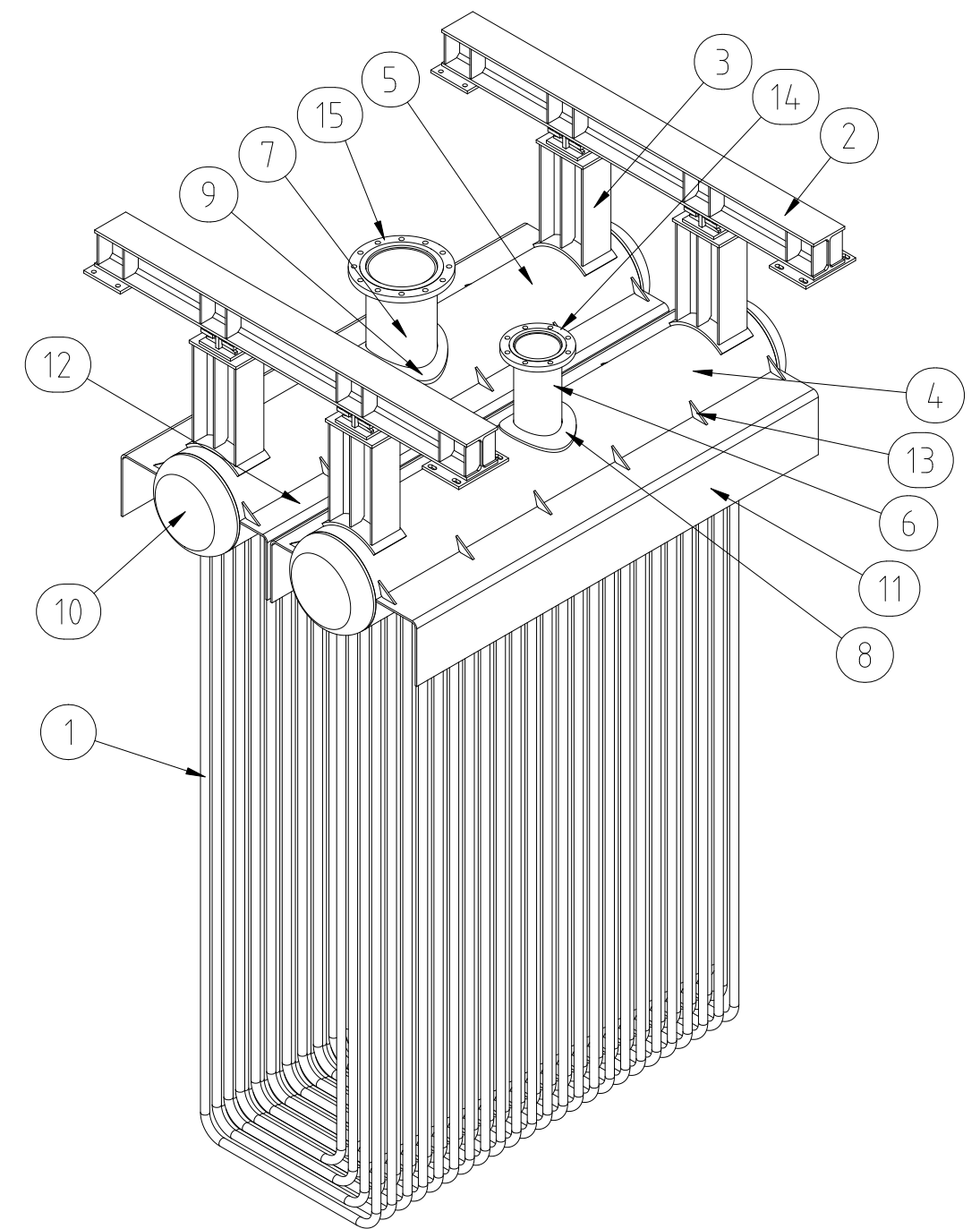
ITEM 10

SCALE 4:30



ITEM 13

SCALE 1:5

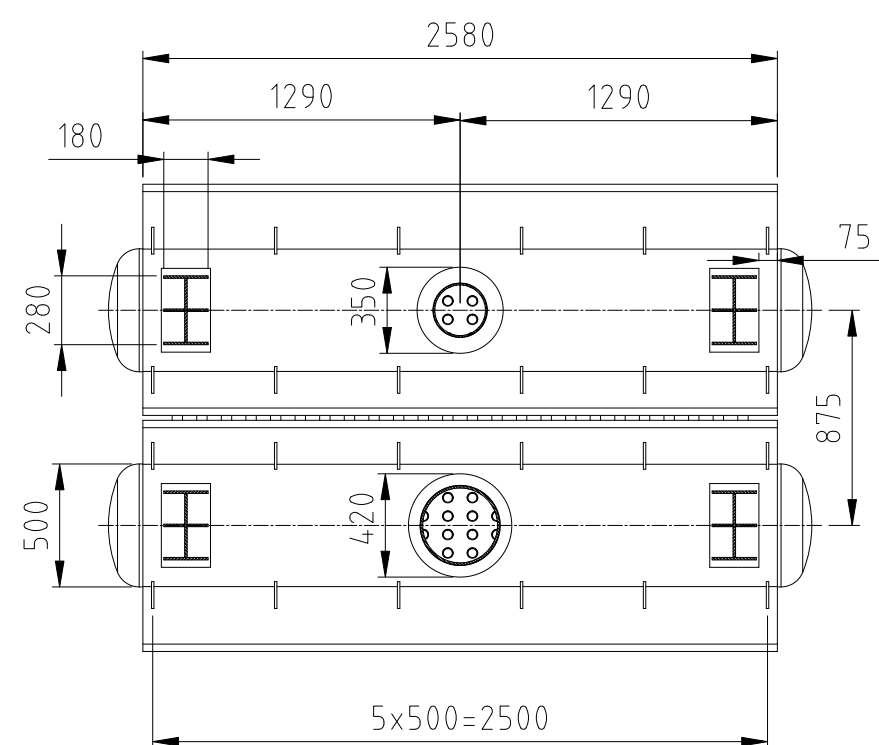


ISOMETRIC VIEW

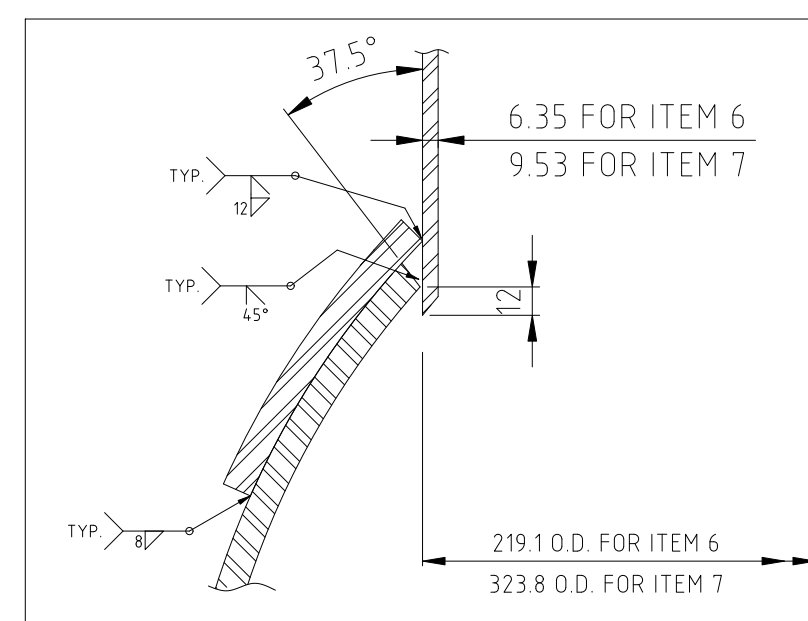
DESIGN PRESSURE : 3.5 bar(g) @475°C
WORKING PRESSURE : 2.242 bar(g) @475°
TEST PRESSURE : 5 bar(g) 475°C
DESIGN TEMPERATURE : -TUBES: 475°C
-OUTLET HEADER: 475°C
-INLET HEADER: 100°C

NOTE:

1. ALL DIMENSIONS GIVEN IN MILLIMETERS.
2. 2 UNITS ARE REQUIRED FOR THIS ASSEMBLY.
3. BILL OF MATERIAL : ALL QUANTITIES ARE GIVEN FOR 1 BUNDLE UNIT. LENGTH OF ROLLED SHAPES AND ALL PLATE DIMENSIONS ARE GIVEN IN MILLIMETERS. ALL WEIGHTS ARE GIVEN IN KILOGRAMS. TOTAL WEIGHT IS GIVEN FOR 1 BUNDLE WITHOUT REFRACTORY.
4. ROLLED PLATE ITEM (4/38/5) IS BILLED TO ITS FINAL SIZE REQUIREMENTS. FAB SHOP PLATE SIZE AVAILABILITY IS TO DICTATE THE FINAL ASSEMBLY AS SHOWN.
5. SHOP REQUIRED WELDED DUCT SEAMS , BOTH LONGITUDINAL AND TRAVERSE SHALL NOT BE LOCATED IN THE VICINITY OF:
 - (a) INTERSECTING DUCTS OR THEIR REINFORCEMENT PLATES.
 - (b) DUCT SUPPORT LEGS.
 - (c) LIFTING OR HANGER LUGS.
6. FOR SUPPORT ITEMS PLEASE REFER TO SHEET 3,4.
7. FOR REFRACTORY ITEMS PLEASE REFER TO SHEET 5.
8. NON-DESTRUCTIVE TESTING OF WELDS SHALL BE PERFORMED BASED ON THE FOLLOWING MINIMUM REQUIREMENTS. THE CONTRACTOR SHALL PREPARE AND SUBMIT INSPECTION RECORDS FOR NON-DESTRUCTIVE TESTING, FOLLOWING, AWS D11 GUIDELINES FOR MINIMUM INFORMATION TO BE REPORTED. THE OWNER/ENGINEER RESERVES THE RIGHT TO DEMAND RADIOGRAPHIC OR OTHER TESTS OF WELDS WHEREVER HE CONSIDERS NECESSARY AND THE FABRICATOR SHALL BE PREPARED TO CARRY OUT THE TESTS AS DIRECTED BY THE ENGINEER.
 - 100% VISUAL INSPECTION AND MEASUREMENT OF EXTERNAL DIMENSIONS BY APPROPRIATE GAUGES FOR ALL WELDS
 - 100% ULTRASONIC INSPECTION FOR FULL PENETRATION GROOVE WELDED JOINTS.
 - 100% RADIOGRAPHICALLY TESTED (RT) IN ACCORDANCE WITH ASME BPVC SECTION V
 - 10% MAGNETIC PARTICLE INSPECTION OF THE LENGTH OF EACH FILLET WELD.
9. STUD BOLTS AND NUTS FOR FLANGE CONNECTIONS SHALL BE SUPPLIED BY MANUFACTURER ACCORDING TO ASME B16.5 AND B16.20
10. TOTAL WEIGHT FOR 1 BUNDLE UNIT WITH REFRACTORY IS APPROXIMATELY 5100 kg.
11. FOR LEAKAGE TEST PLEASE REFER TO RELATED SECTION OF THE ENQUIRY.
12. ALL HOLES TO BE DRILLED MECHANICALLY OR BY LASER. PLASMA CUTTING OF HOLES IS NOT APPROVED.

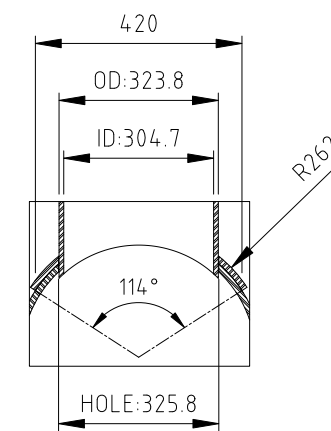


SECTION C-C



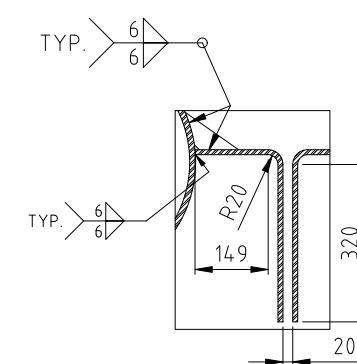
DETAIL F

SCALE 1:3



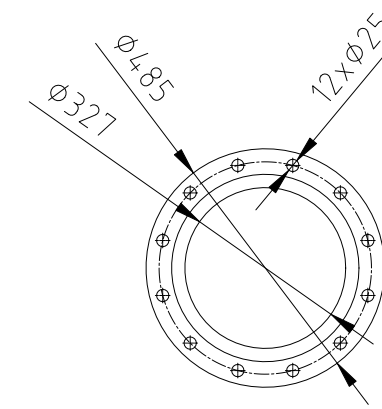
DETAIL B

SCALE 1:15



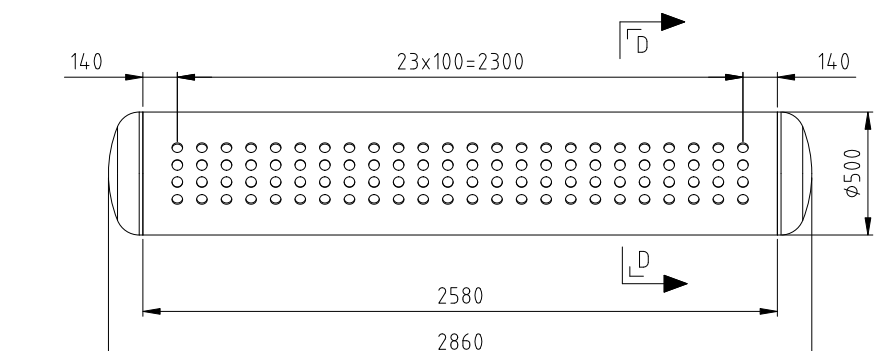
DETAIL A

SCALE 1:15

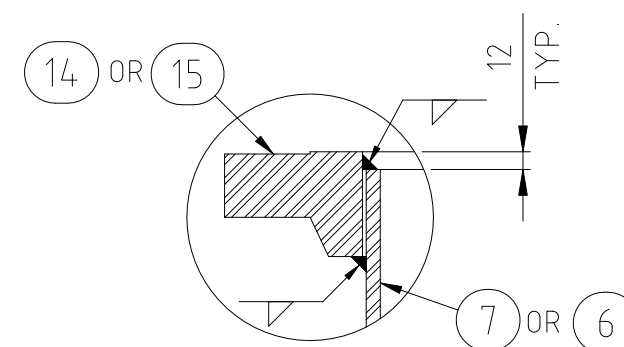


VIEW F-F

SCALE 1:15

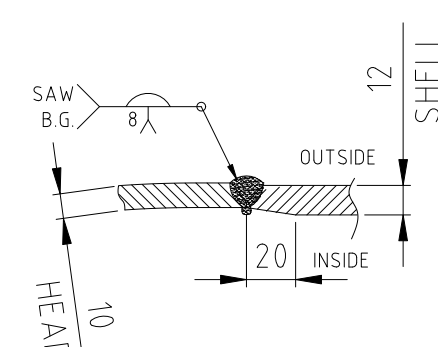


ITEM 4,5 BOTTOM VIEW

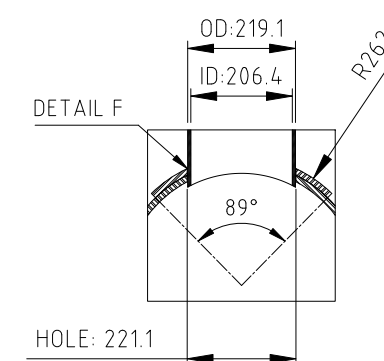


DETAIL E

SCALE 1:5

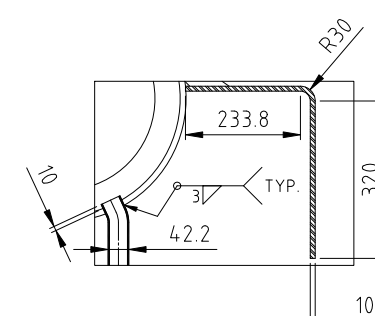


SHELL TO HEAD WELD



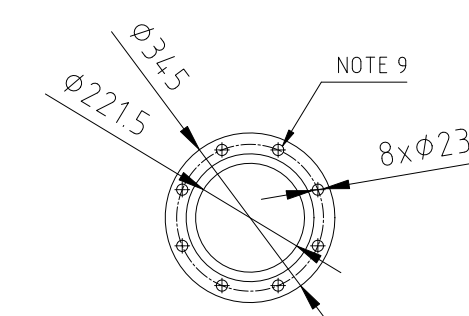
DETAIL C

SCALE 1:15



DETAIL I

SCALE 1:15

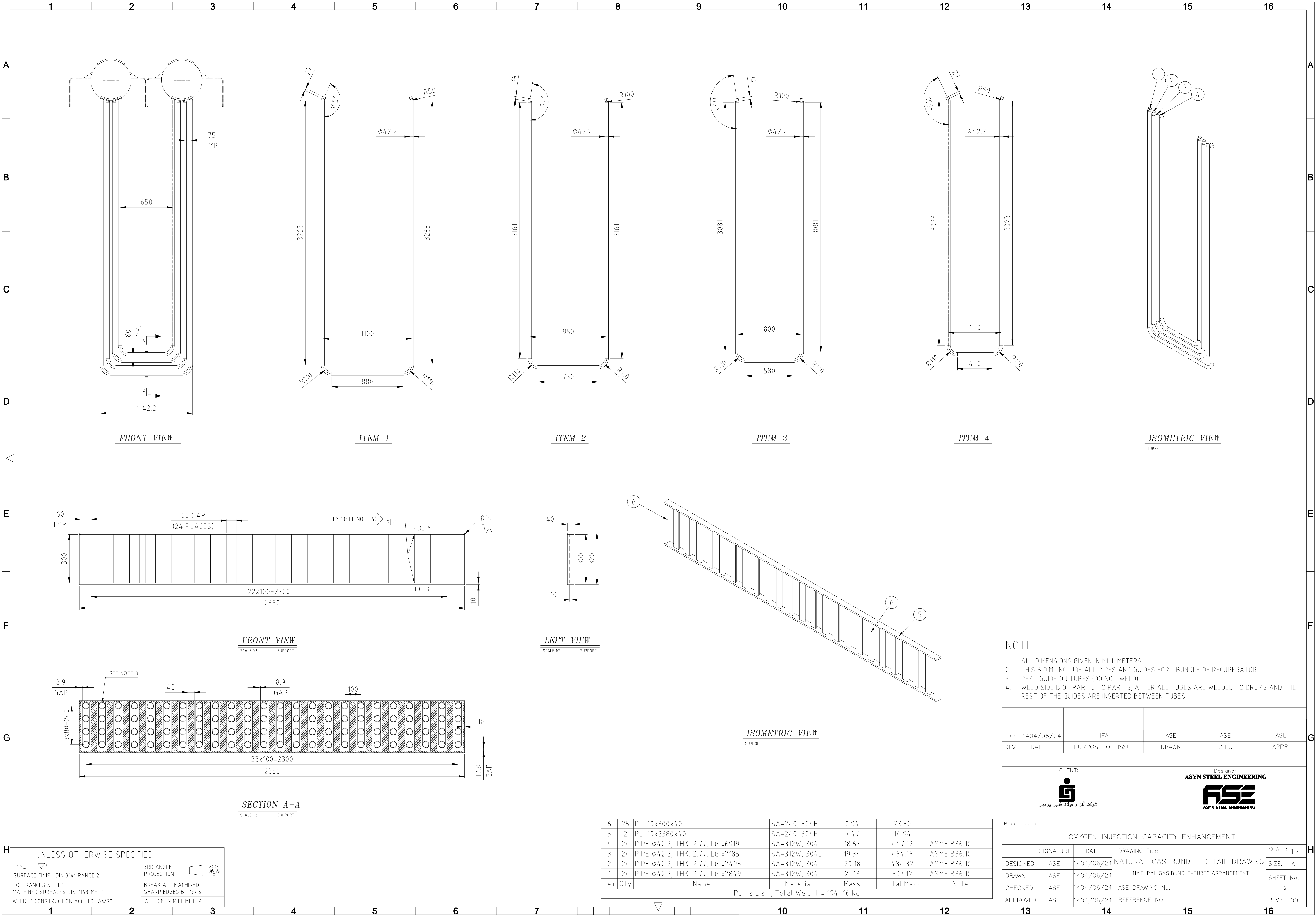


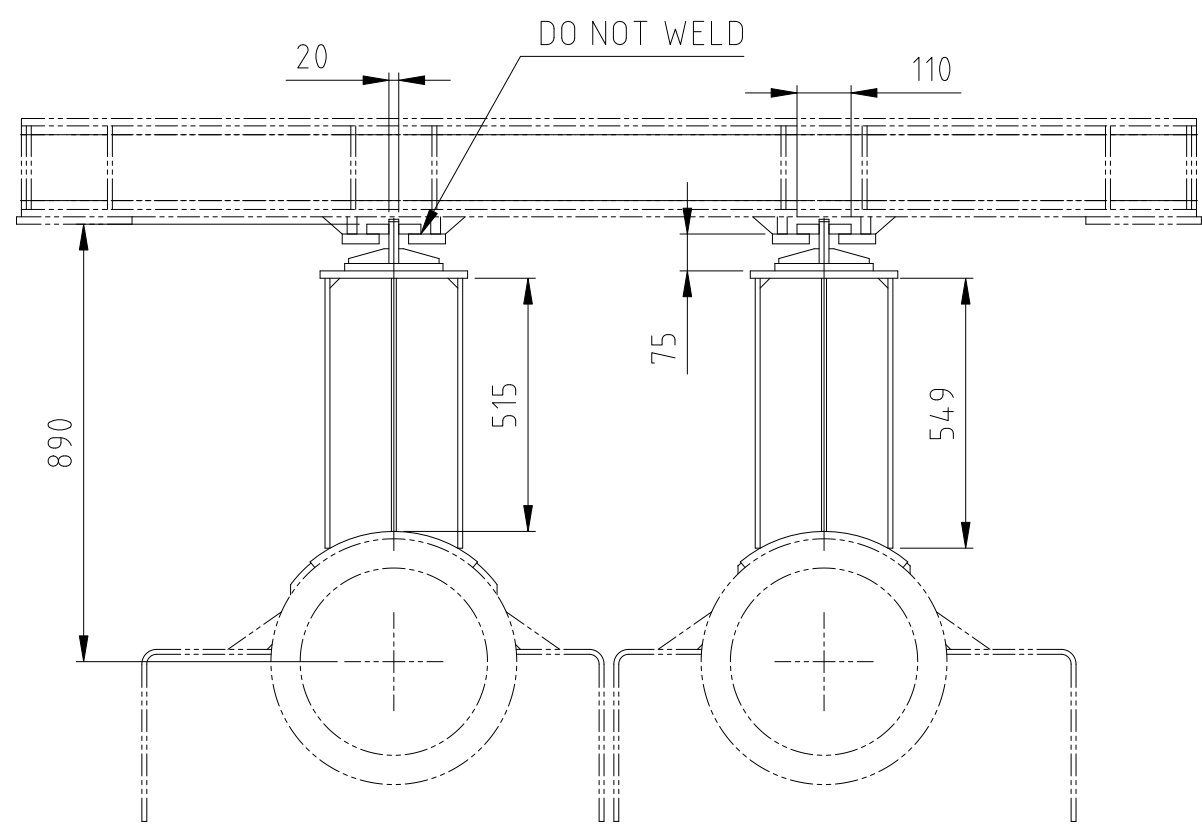
VIEW G-G

SCALE 1:15

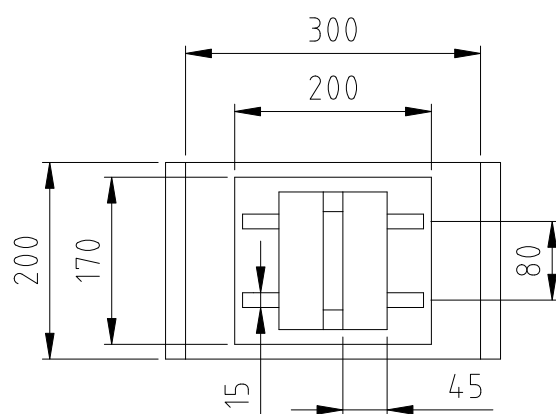
15	1	SLIP-ON FLANGE DN300, 150# R.F.	ASTM A182	28.69	28.69	ASME B16.5
14	1	SLIP-ON FLANGE DN200, 150# R.F.	ASTM A182	13.18	13.18	ASME B16.5
13	24	PL. 120 x 108 THK. 10	SA-240, 304H	0.43	10.32	
12	2	PL. 2580 x 516 THK. 10	SA-240, 304H	104.51	209.02	
11	2	PL. 2580 x 601 THK. 10	SA-240, 304H	121.72	243.44	
10	4	ELLIPTICAL CAP Ø500, THK. 10	SA-240, 304H	23.23	92.92	ASME SEC. VIII
9	1	PAD OD:420, ID: 305, THK. 12,	SA-240, 304H	6.39	6.39	ROLLED PLATE
8	1	PAD OD:350, ID: 222, THK. 12,	SA-240, 304H	6.12	6.12	ROLLED PLATE
7	1	PIPE Ø323.8, THK. 9.53, LG=505	SA-312W, 304H	35.16	35.16	ASME B36.10
6	1	PIPE Ø219.1, THK. 6.35, LG=465	SA-312W, 304H	15.28	15.28	ASME B36.10
5	1	INLET DRUM Ø500, THK. 12, LG=2580	SA-240, 304H	354.89	354.89	ROLLED PLATE
4	1	OUTLET DRUM Ø500, THK. 12, LG=2580	SA-240, 304H	359.65	359.65	ROLLED PLATE
3	1	COLD FEED SUPPORT 2	VAR.	239.08	239.08	
2	1	COLD FEED SUPPORT 1	VAR.	389.54	389.54	
1	1	TUBES ARRANGEMENT	VAR.	194.16	194.16	
Item	Qty	Name	Material	Mass	Total Mass	Note

00	1404/06/24	IFA	ASE	ASE	ASE		
REV.	DATE	PURPOSE OF ISSUE	DRAWN	CHK.	APPR.		
CLIENT:  شرکت آهن و فولاد غدیر ایرانیان			Designer: ASYN STEEL ENGINEERING 				
Project Code							
OXYGEN INJECTION CAPACITY ENHANCEMENT							
	SIGNATURE	DATE	DRAWING Title:			SCALE: 1:30	
DESIGNED	ASE	1404/06/24	NATURAL GAS BUNDLE DETAIL DRAWING			SIZE: A1	
DRAWN	ASE	1404/06/24	BUNDLE ASSEMBLY				
CHECKED	ASE	1404/06/24	ASE DRAWING No.		SHEET No.:		
APPROVED	ASE	1404/06/24	REFERENCE NO.		REV.: 00		



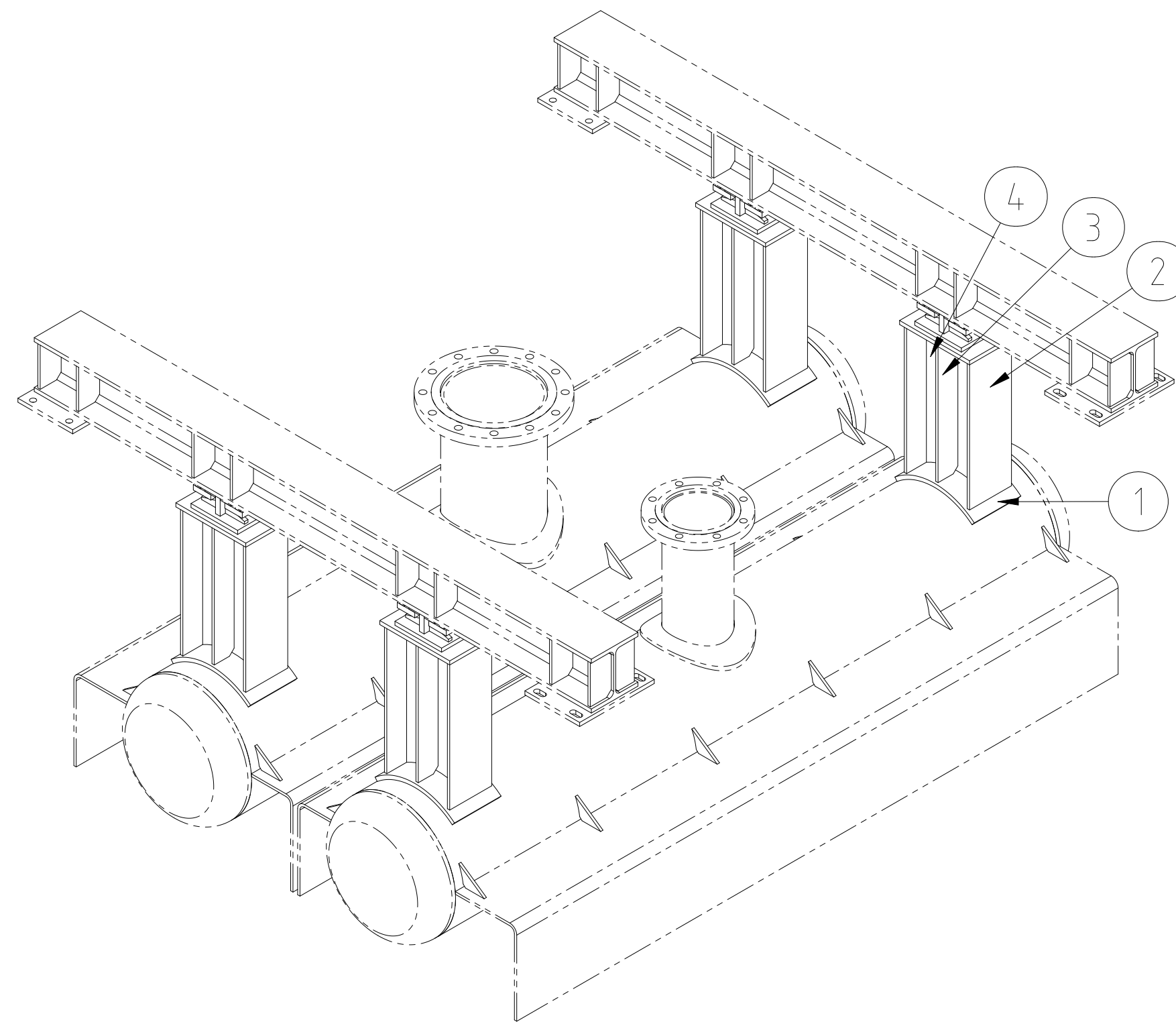


FRONT VIEW

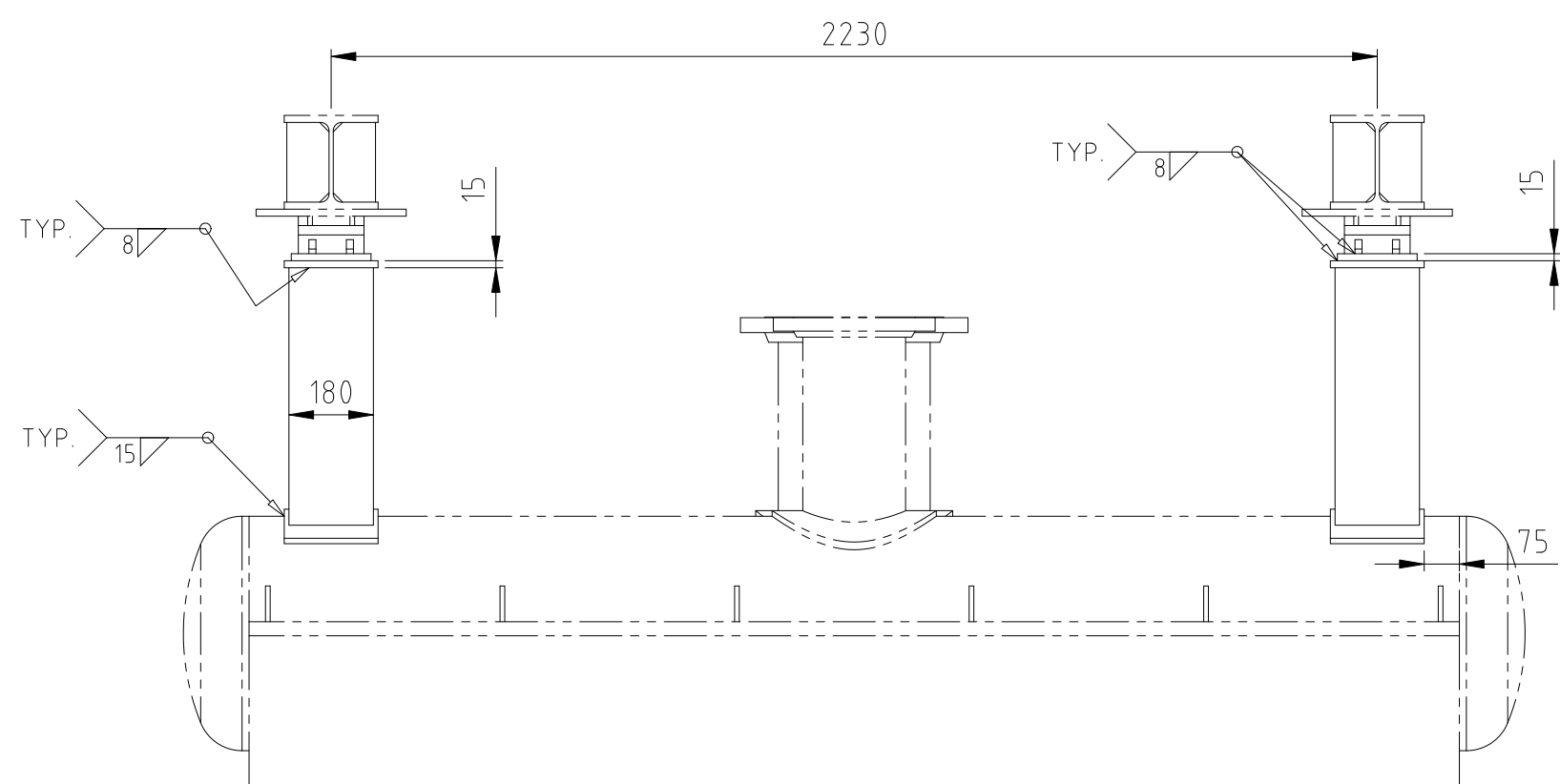


TOP VIEW

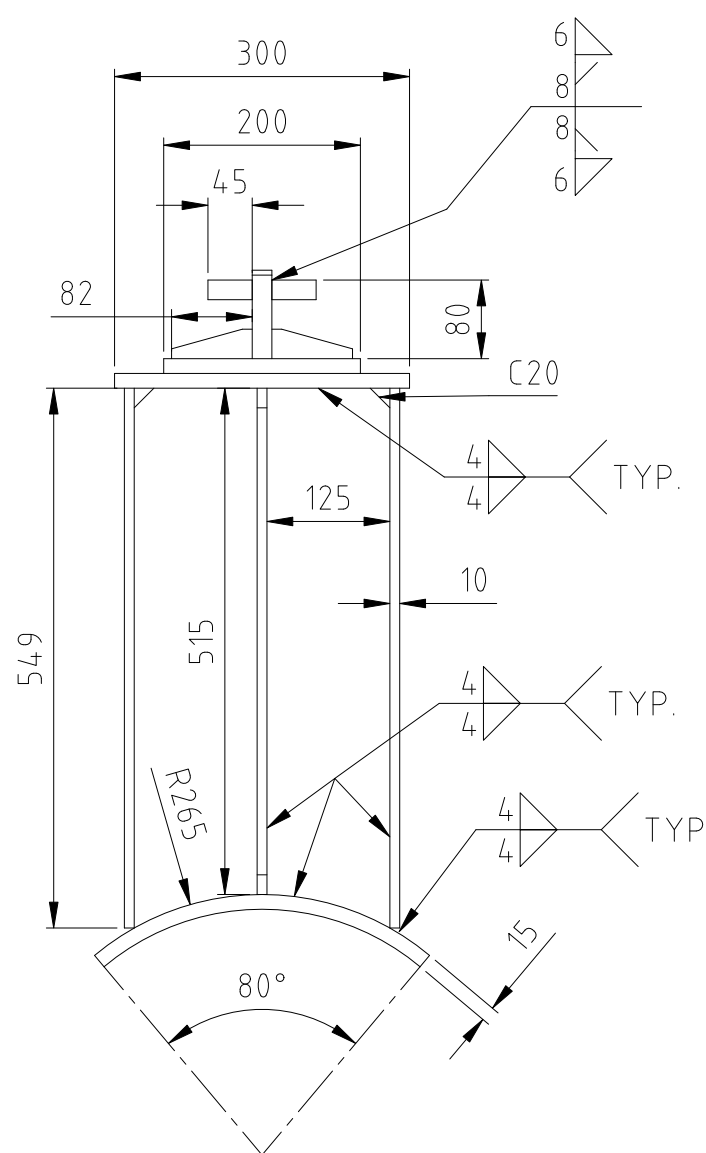
SCALE 2:15



ISOMETRIC VIEW

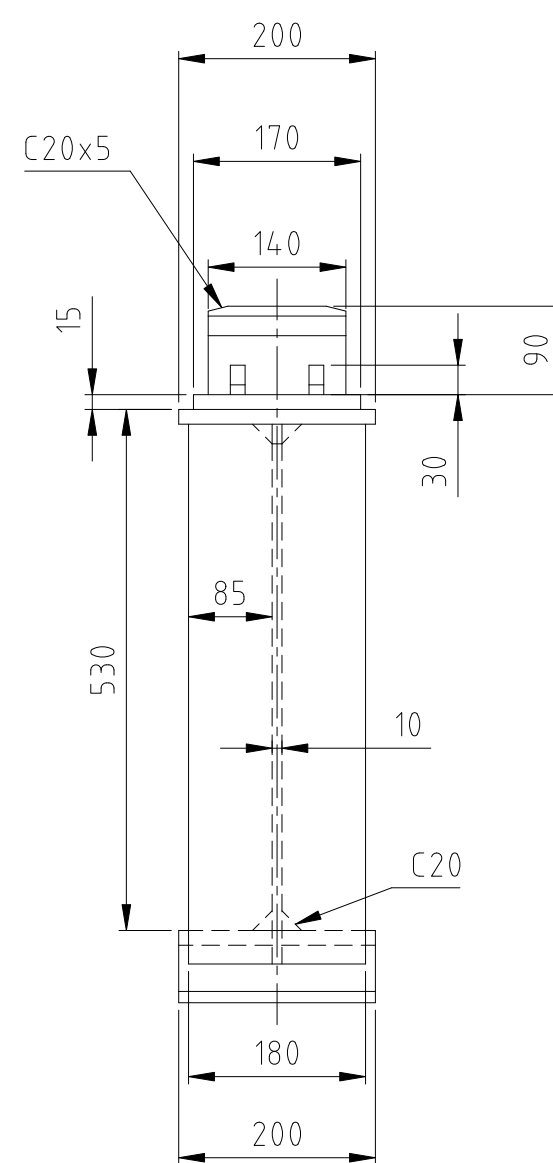


SIDE VIEW



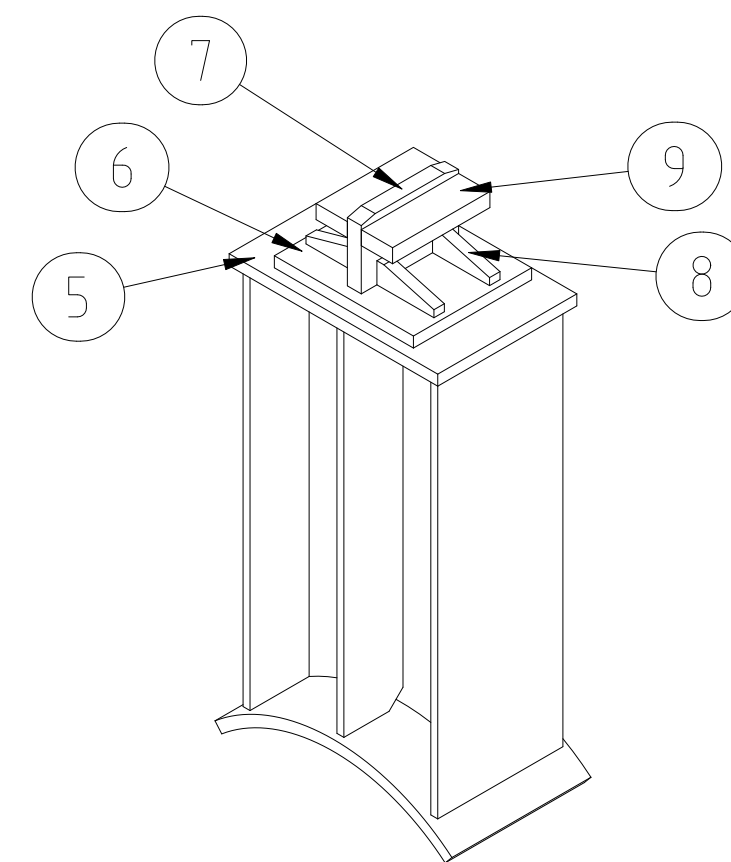
FRONT VIEW

SCALE 2:15



SIDE VIEW

SCALE 2:15

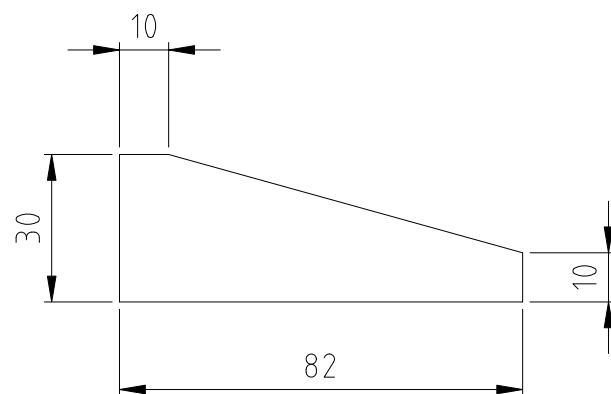


ISO VIEW

NOTE:

- ALL DIMENSIONS GIVEN IN MILLIMETERS.
- THIS B.O.M. INCLUDE ALL SUPPORTS FOR 1 BUNDLE OF RECUPERATOR.

00	1404/06/24	IFA	ASE	ASE	ASE
REV.	DATE	PURPOSE OF ISSUE	DRAWN	CHK.	APPR.
CLIENT:  شرکت آهن و فولاد غدیر ایرانیان			Designer: ASYN STEEL ENGINEERING ASYN STEEL ENGINEERING		
Project Code					
OXYGEN INJECTION CAPACITY ENHANCEMENT					
	SIGNATURE	DATE	DRAWING Title:		SCALE: 1:15
DESIGNED	ASE	1404/06/24	NATURAL GAS BUNDLE DETAIL DRAWING		SIZE: A1
DRAWN	ASE	1404/06/24	NATURAL GAS BUNDLE-SUPPORTS		SHEET No.: 4
CHECKED	ASE	1404/06/24	ASE DRAWING No.		
APPROVED	ASE	1404/06/24	REFERENCE NO.		REV.: 00

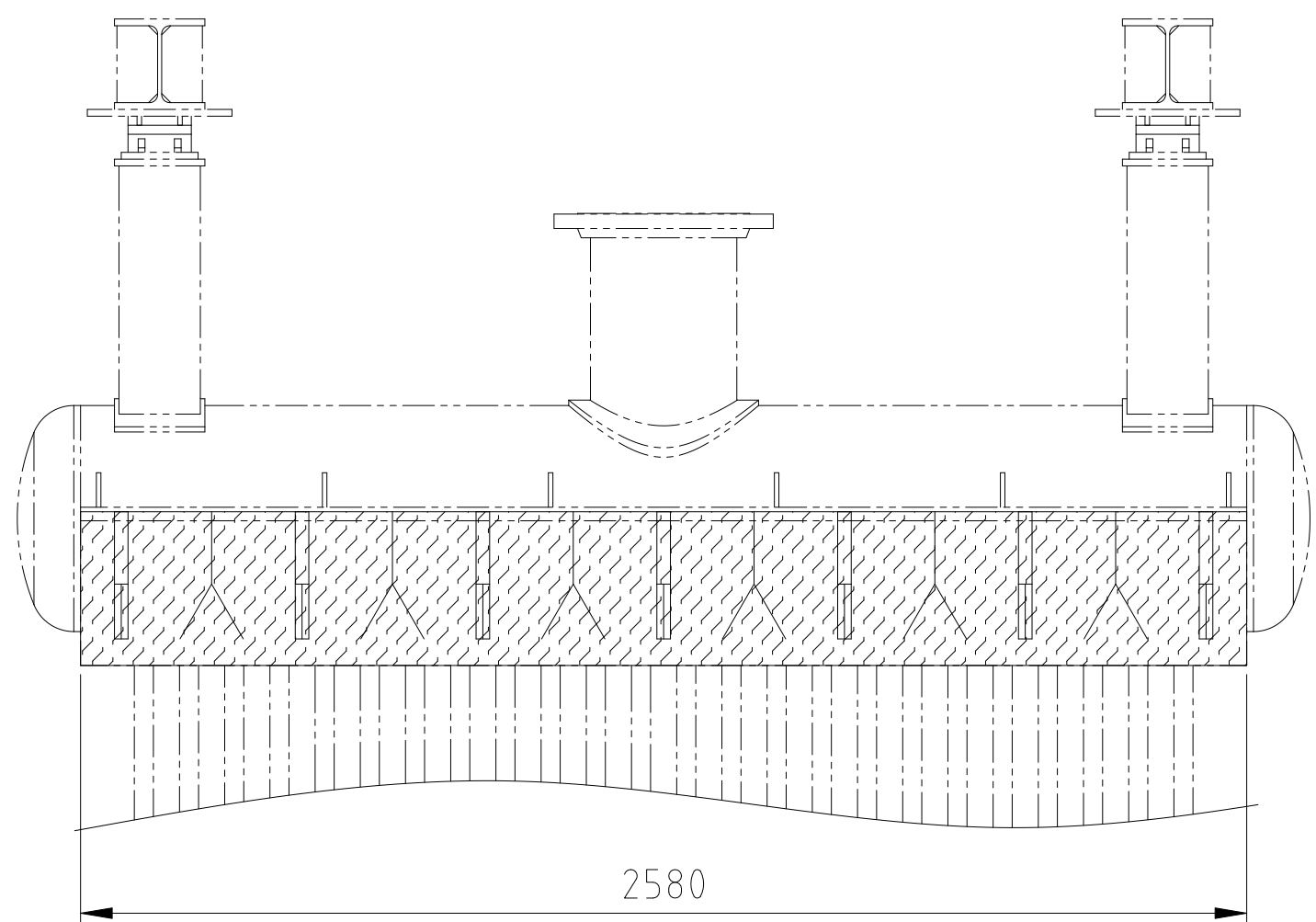


ITEM 8

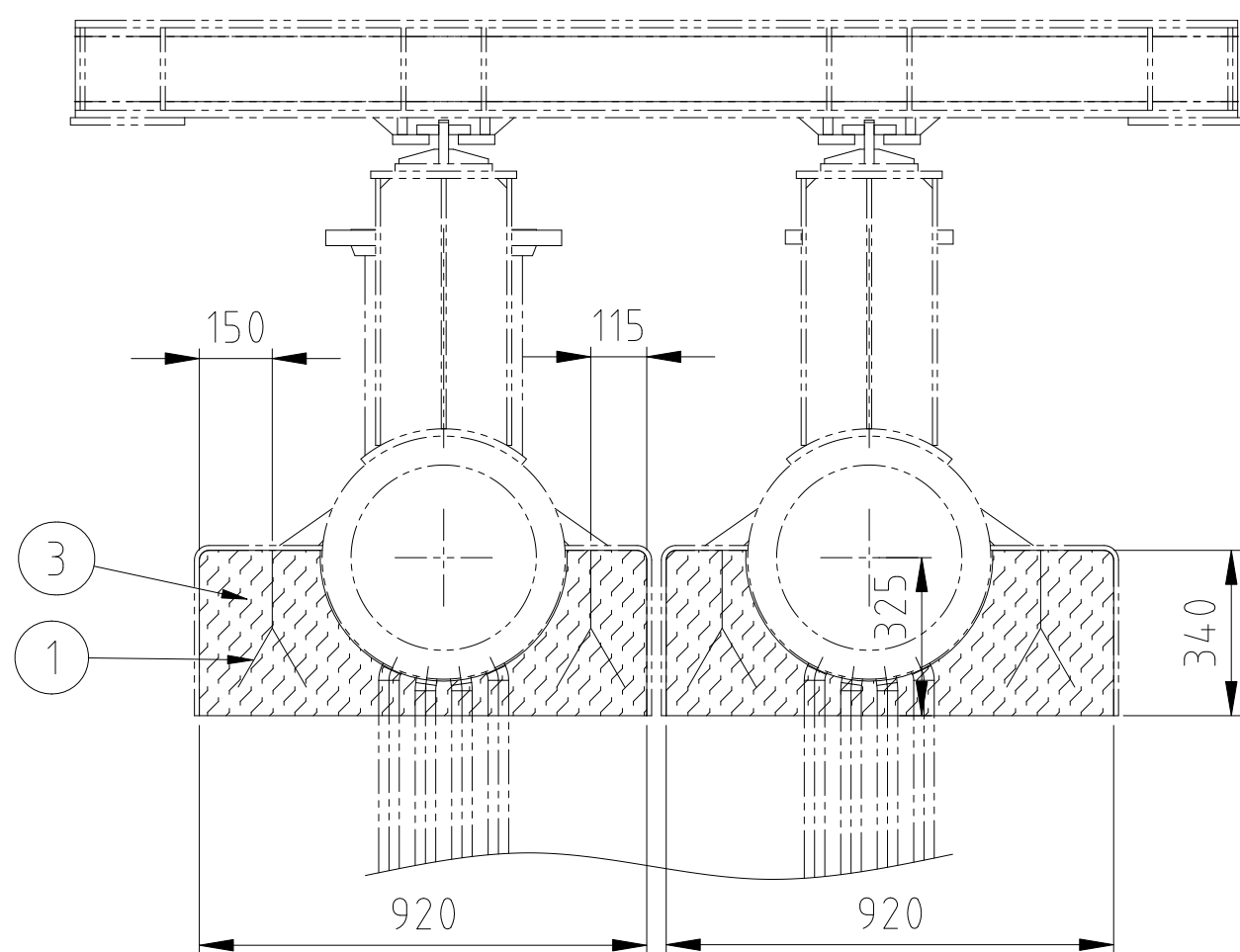
SCALE 10:15

9	8	PL. 140 x 45 THK. 20	SA-240, 304H	0.74	5.92	
8	16	PL. 82 x 30 THK. 15	SA-240, 304H	0.22	3.52	
7	4	PL. 140 x 90 THK. 20	SA-240, 304H	1.62	6.48	
6	4	PL. 200 x 170 THK. 15	SA-240, 304H	4.00	16.00	
5	4	PL. 300x 200 THK. 15	SA-240, 304H	7.07	28.28	
4	4	PL. 549 x 125 THK. 10	SA-240, 304H	5.39	21.56	
3	8	PL. 515 x 85 THK. 10	SA-240, 304H	3.44	27.52	
2	8	PL. 549 x 180 THK. 10	SA-240, 304H	7.76	62.08	
1	4	PAD. 719 x 200 THK. 15	SA-240, 304H	16.93	67.72	
Item	Qty	Name	Material	Mass	Total Mass	Note
Parts List , Total Weight = 239.08 kg						

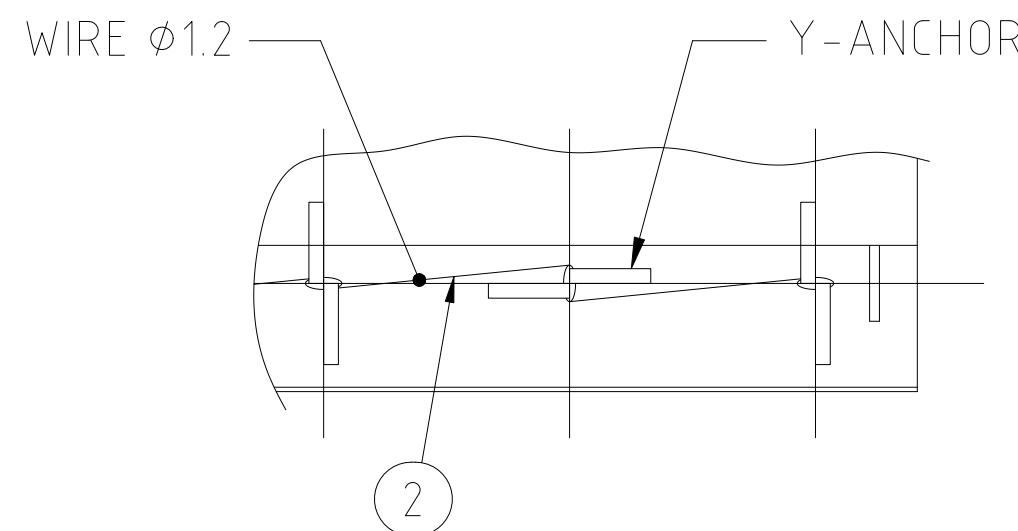
UNLESS OTHERWISE SPECIFIED	
	3RD ANGLE PROJECTION
SURFACE FINISH DIN 3141 RANGE 2	
TOLERANCES & FITS:	BREAK ALL MACHINED SHARP EDGES BY 1x45°
MACHINED SURFACES DIN 7168"MED"	ALL DIM IN MILLIMETER
WELDED CONSTRUCTION ACC. TO "AWS"	



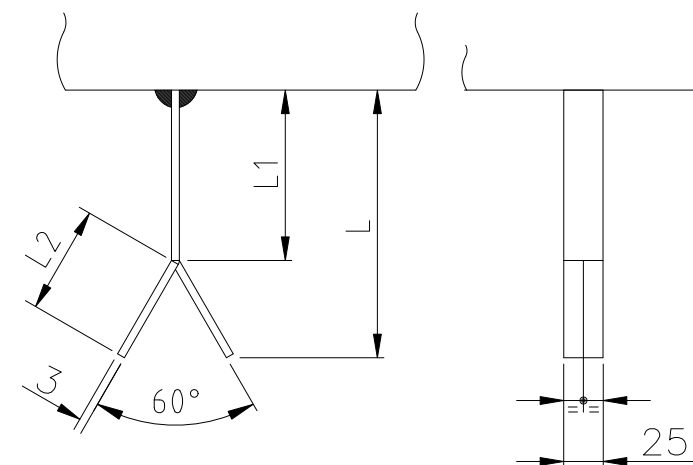
SIDE VIEW



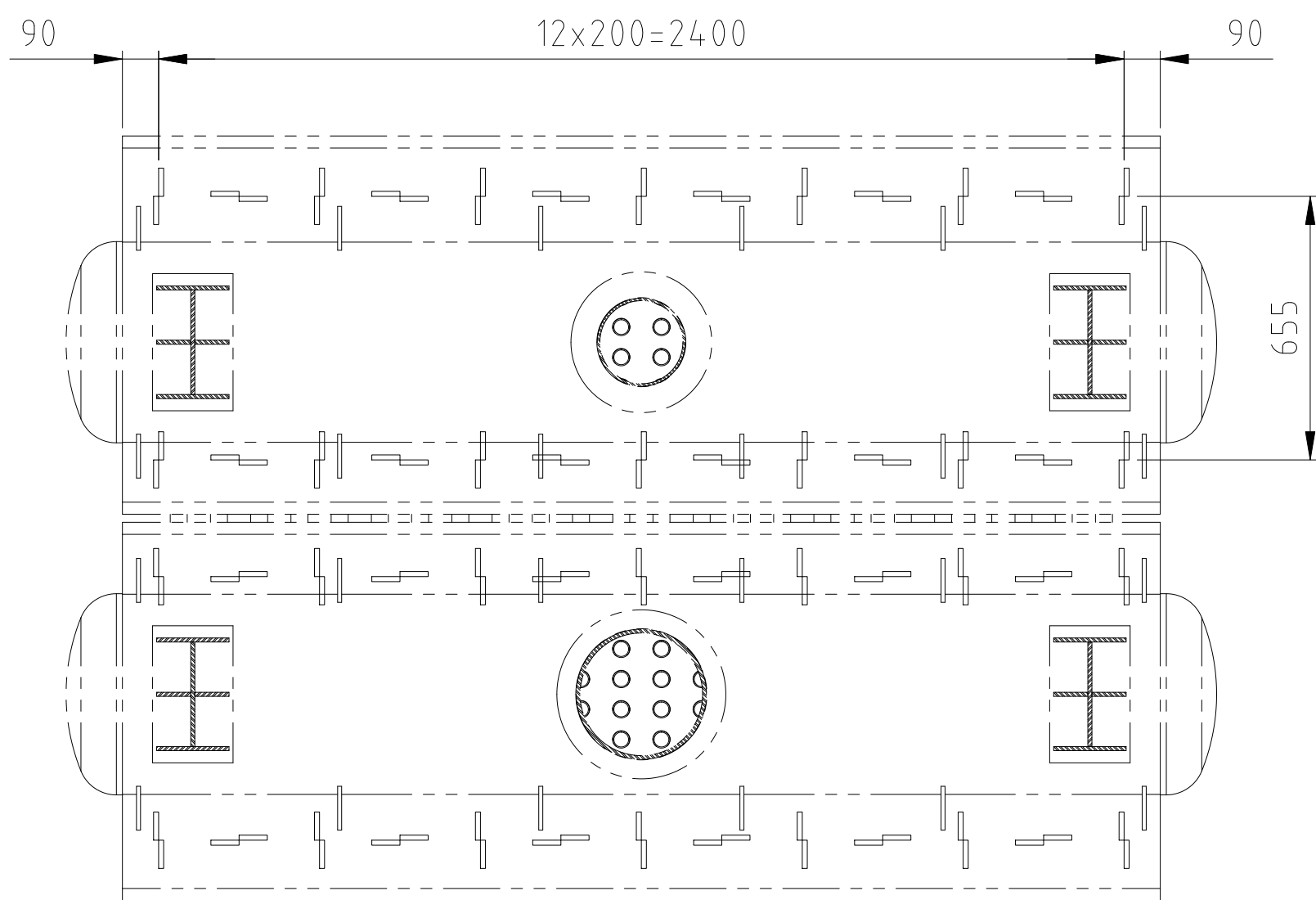
FRONT VIEW



SCHEMATIC WIRING



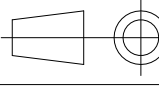
TYPE	L	L1	L2
1	281	160	140



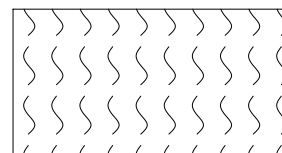
TOP VIEW

- NOTE:
- ALL DIMENSIONS ARE GIVEN IN MILLIMETERS.
 - TO SEE NATURAL GAS ASSEMBLY REFER TO SHEET 1
 - VOLUME OF ITEM 3 IN PARTS LIST, IS GIVEN IN M³
 - THIS B.O.M. INCLUDE ALL REFRACTORY AND ANCHORS FOR ONE BUNDLE.

00	1404/06/24	IFA	ASE	ASE	ASE
REV.	DATE	PURPOSE OF ISSUE	DRAWN	CHK.	APPR.
CLIENT:  شركت آهن و فولاد غدیر ایرانیان			Designer:  ASYN STEEL ENGINEERING		
Project Code					
OXYGEN INJECTION CAPACITY ENHANCEMENT					
	SIGNATURE	DATE	DRAWING Title:		SCALE: 1:15
DESIGNED	ASE	1404/06/24	NATURAL GAS BUNDLE DETAIL DRAWING		SIZE: A1
DRAWN	ASE	1404/06/24	REFRACTORY DETAIL		SHEET No.: 5
CHECKED	ASE	1404/06/24	ASE DRAWING No.		
APPROVED	ASE	1404/06/24	REFERENCE NO.		REV.: 00

UNLESS OTHERWISE SPECIFIED	
 SURFACE FINISH DIN 3141 RANGE 2	3RD ANGLE PROJECTION 
TOLERANCES & FITS: MACHINED SURFACES DIN 7168 "MED" WELDED CONSTRUCTION ACC. TO "AWS"	BREAK ALL MACHINED SHARP EDGES BY 1x45° ALL DIM IN MILLIMETER

108-1



LIGHTWEIGHT INSULATING CASTABLE (LOW IRON)

Item	Qty	Name	Material	Mass/Volume	Total Mass	Note
3	1	LIGHTWEIGHT INSULATING CASTABLE (LOW IRON)	-	1.05	1.05	CODE 108-1
2	1	WIRE Ø1.2 mm x 50 m	310 S.S	0.50	0.50	
1	52	Y-ANCHOR 3 x 25 x 300 (TYPE 53)	310 S.S	0.18	9.36	

Parts List for Refractory Detail