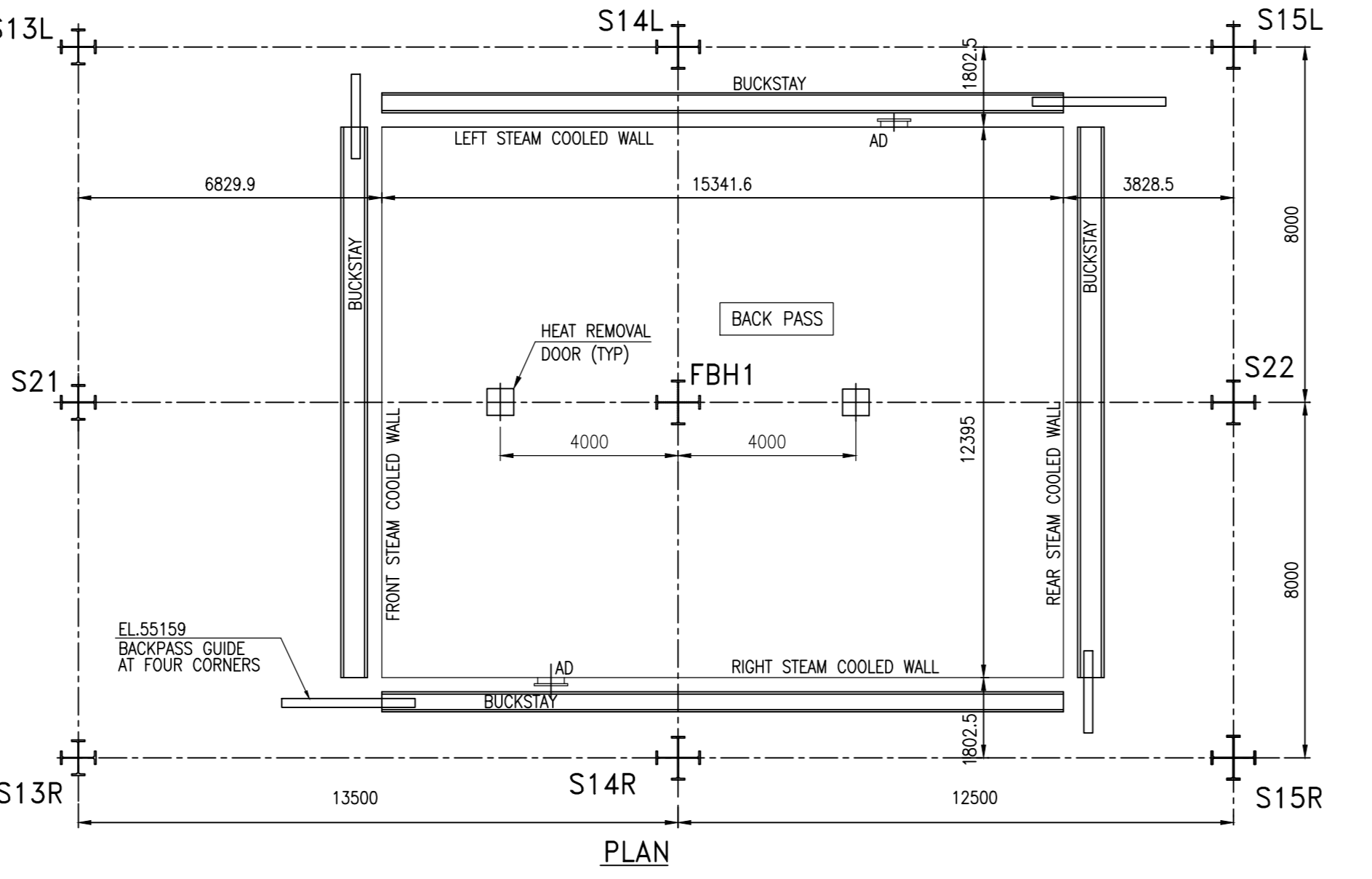


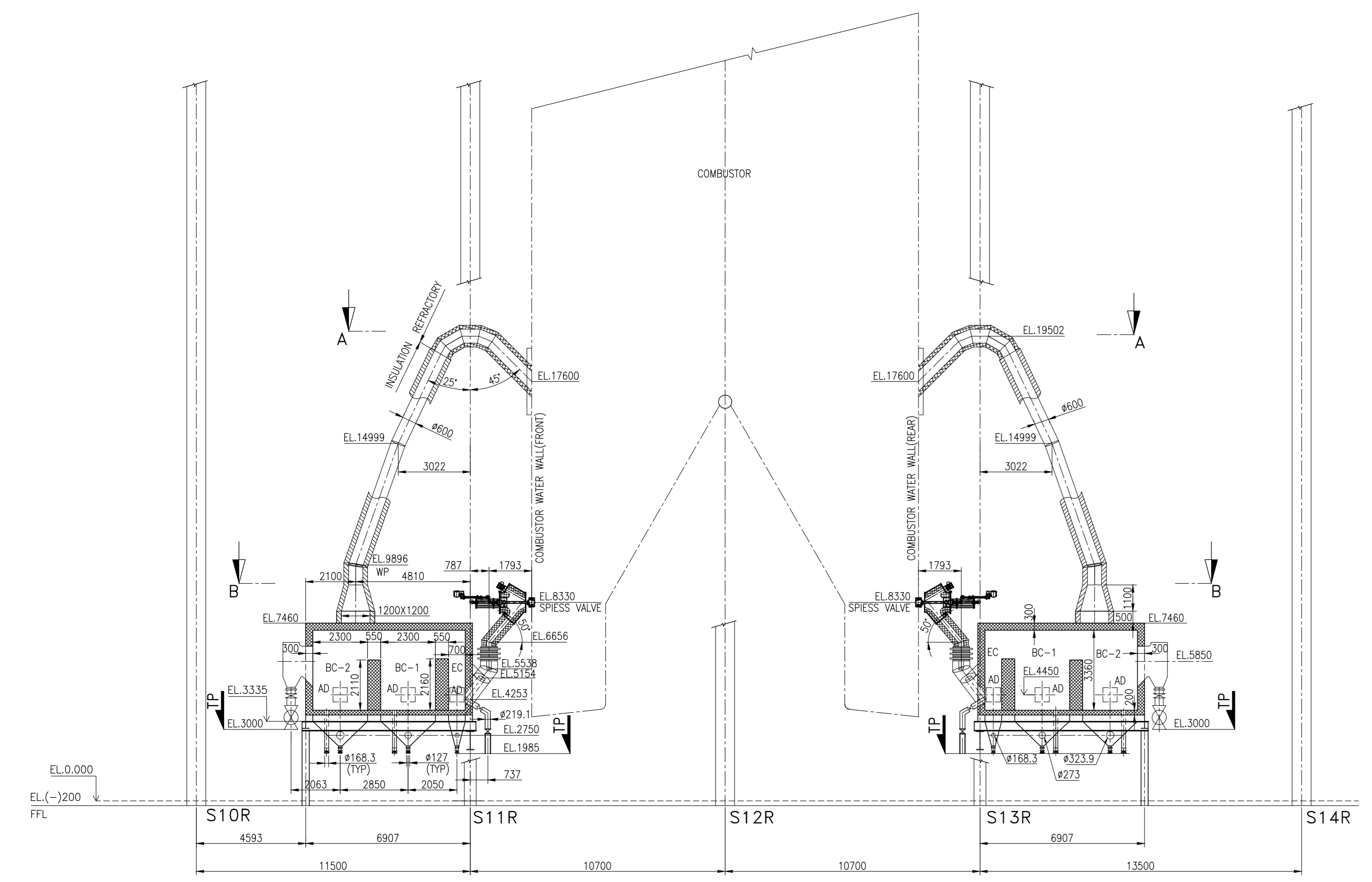
LEGEND:

SL.No.	DESCRIPTION	SYMBOL
01	BUCKSTAYS	— — BS.
02	LEVELLER GUIDE	
03	TEMPERATURE POCKET	+ T
04	PRESSURE POCKET	+ P
05	HEAT REMOVAL DOOR (600x600) MAN HOLE DOOR (600x600)	⊕ AD
06	LONG RETRACTABLE SOOT BLOWER	≡ LRSB

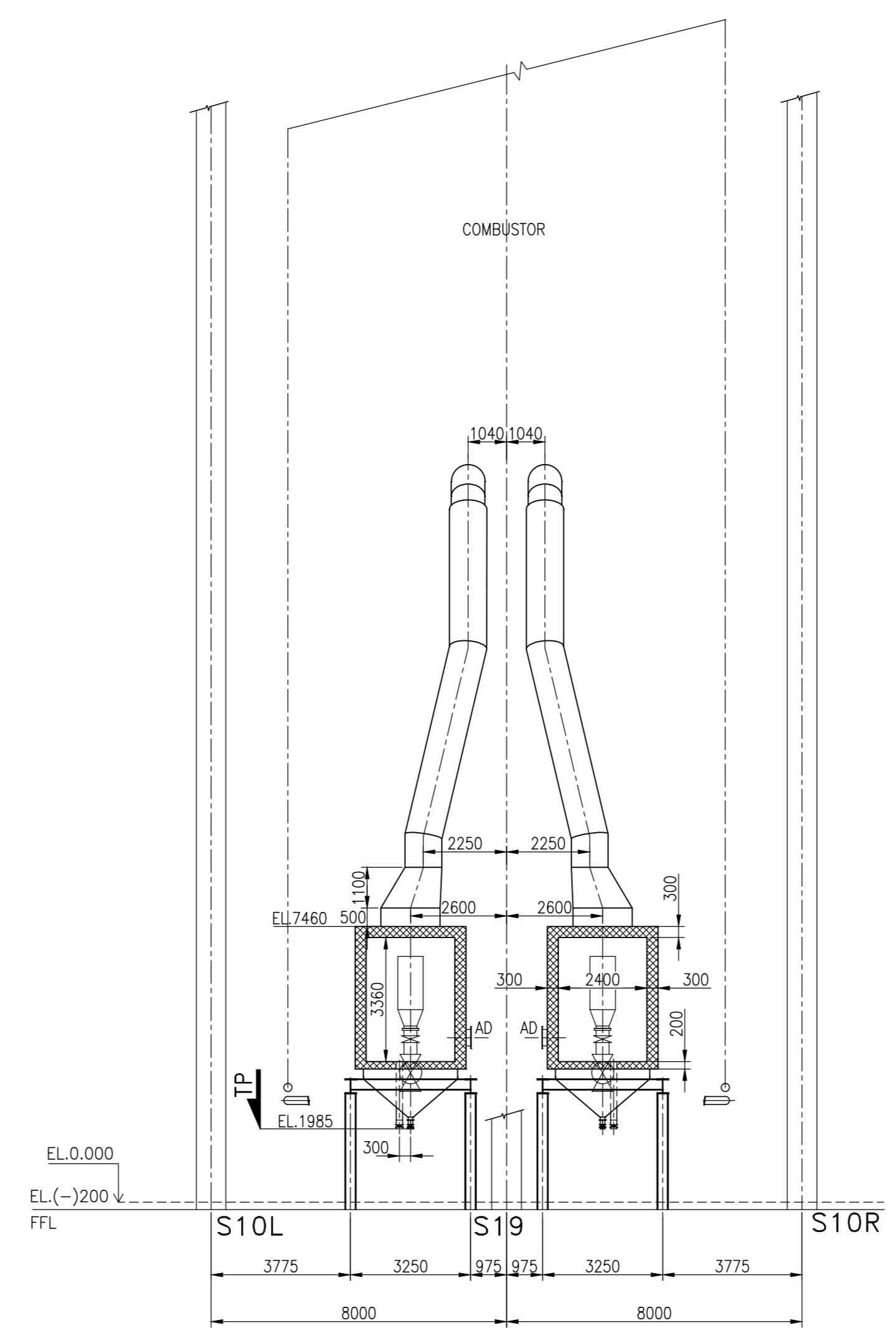


- NOTES:**
- FOR NOTES, LEGEND & REFERENCE DRAWINGS REFER GENERAL ARRANGEMENT OF BOILER-ELEVATION DRG No. ... 0-00-511-33475
 - THIS DRAWING IS TO BE READ ALONG WITH DRG No. 0-00-515-93510 LOCATION OF FURNACE OPENINGS AND BUCKSTAYS (COMBUSTOR)
 - ACCESS DOOR SIZE 600x600.

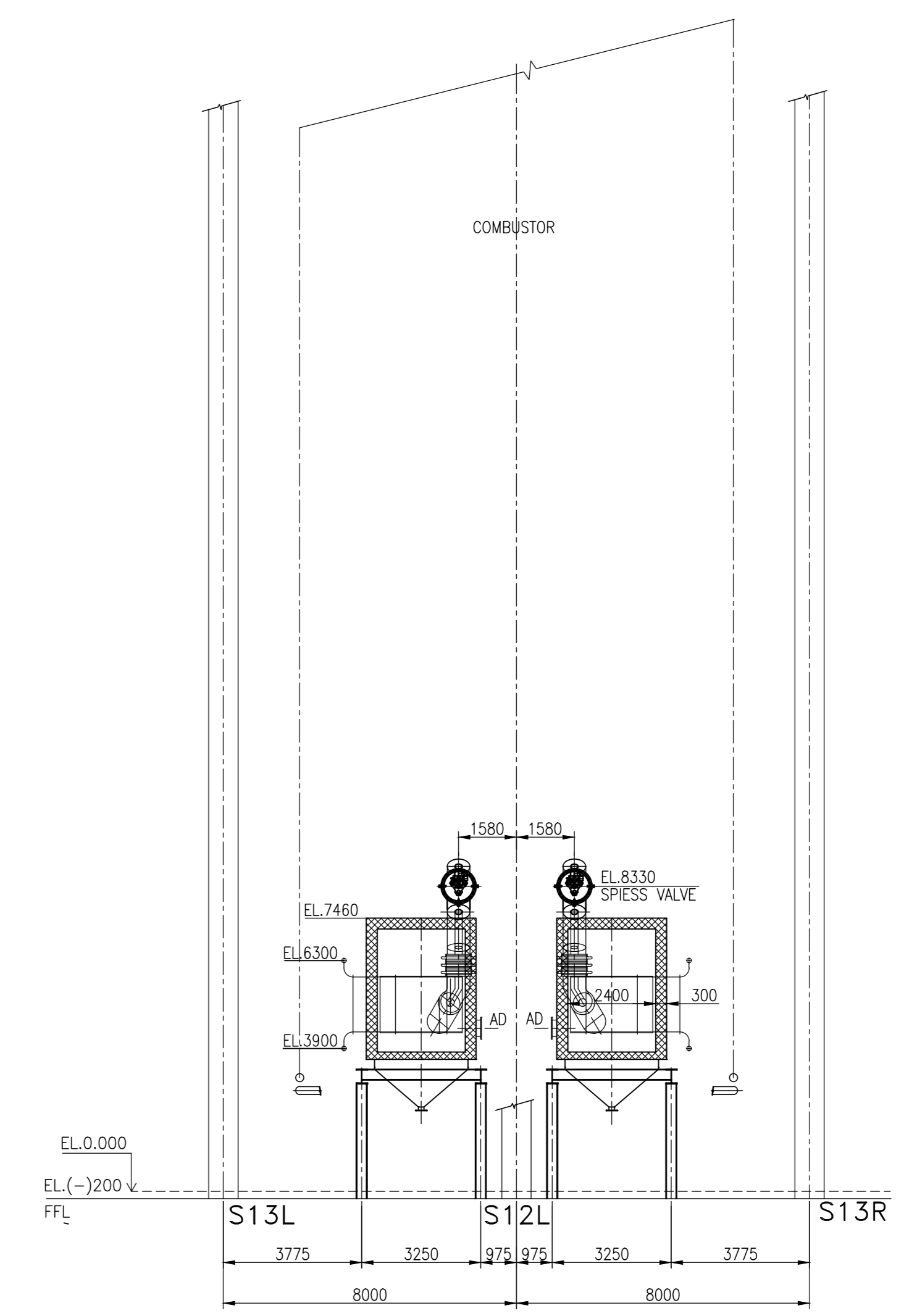
REV	DATE	ALTD CHD APPD	CUSTOMER DRG. No.	CUSTOMER No.
			5316 & 5317	5316 & 5317
			BECL Bhavangar Energy Company Limited	
			TATA CONSULTING ENGINEERS LIMITED MUMBAI	
			PROJECT 2x250 MW LIGNITE BASED TPP AT PADVA, BHAVANGAR DISTRICT, GUJARAT. CFBC BOILER 2x250 TPA, 170kg/cm ² (g), 54TC/54TC	
			BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHIRAPALLI-620 014.	
			DRAWN: M.DHARMALINGAM	TITLE
			CHECKED: KARE ASHOK KUMAR	LOCATION OF FURNACE OPENINGS AND BUCKSTAYS (BACKPASS)
			APPROVED: S.GANARAJ	
			DATE: 19.04.2011	
			ALL DIMENSIONS ARE IN MILLIMETRES	DRG No.
			SCALE: 1:125	0-00-515-93511
				REV. 00



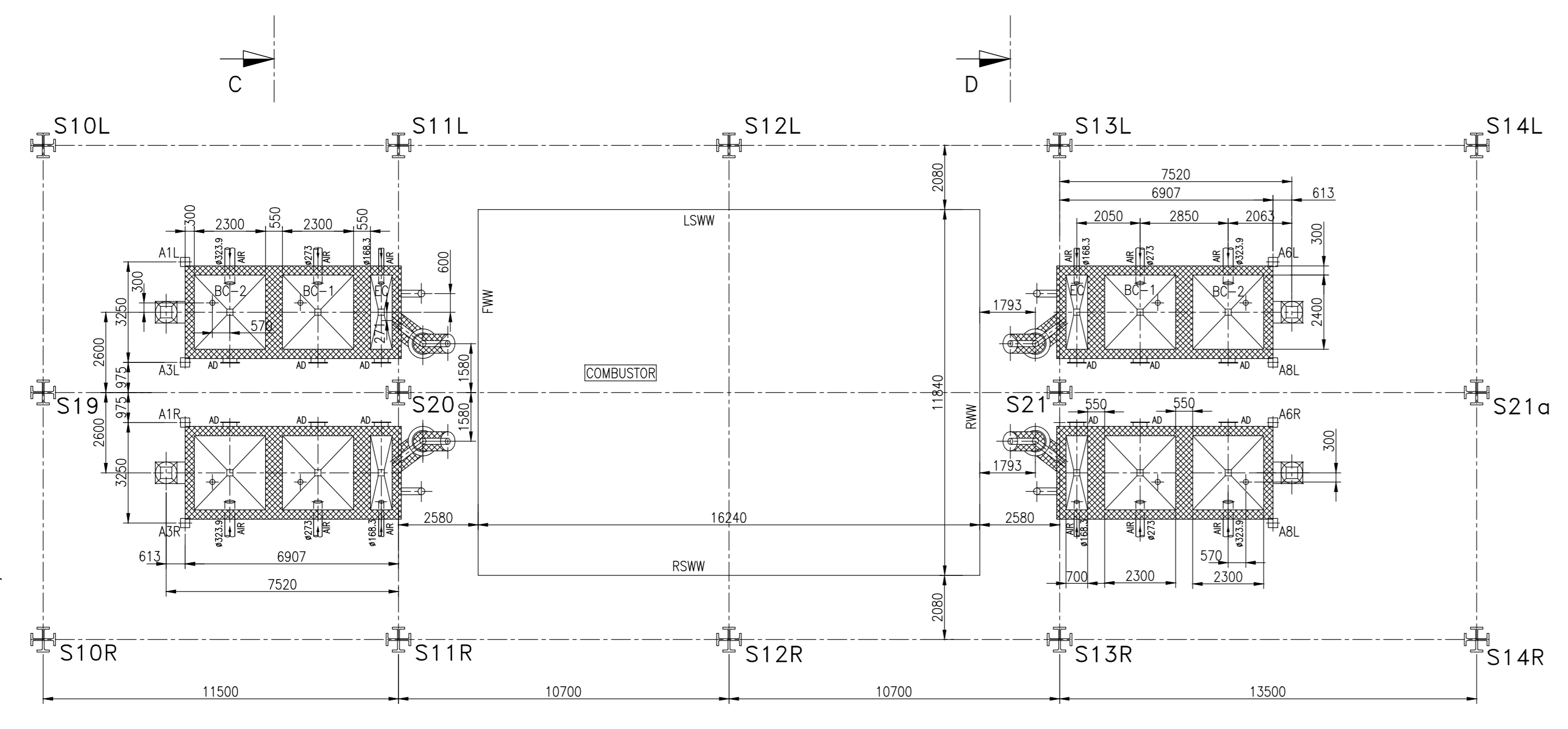
ELEVATION



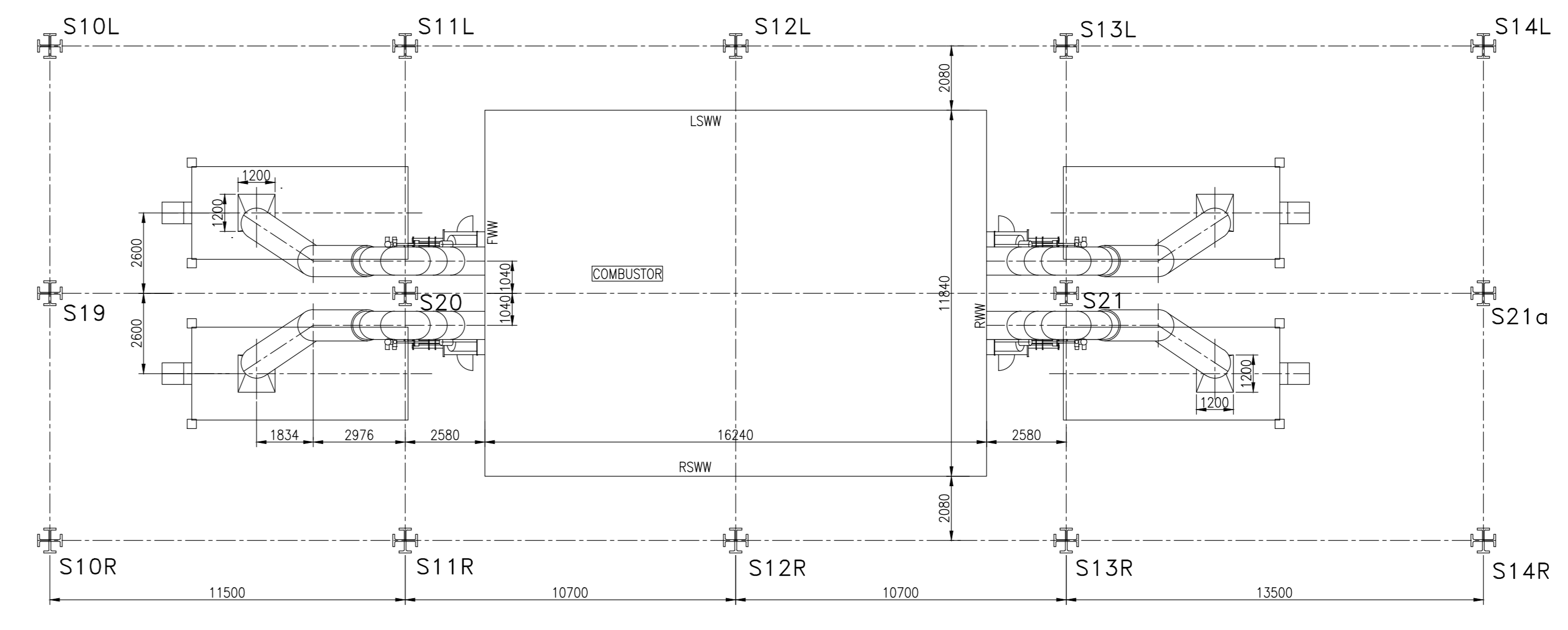
SECTION-CC



SECTION-DD



PLAN (SECTION-BB)



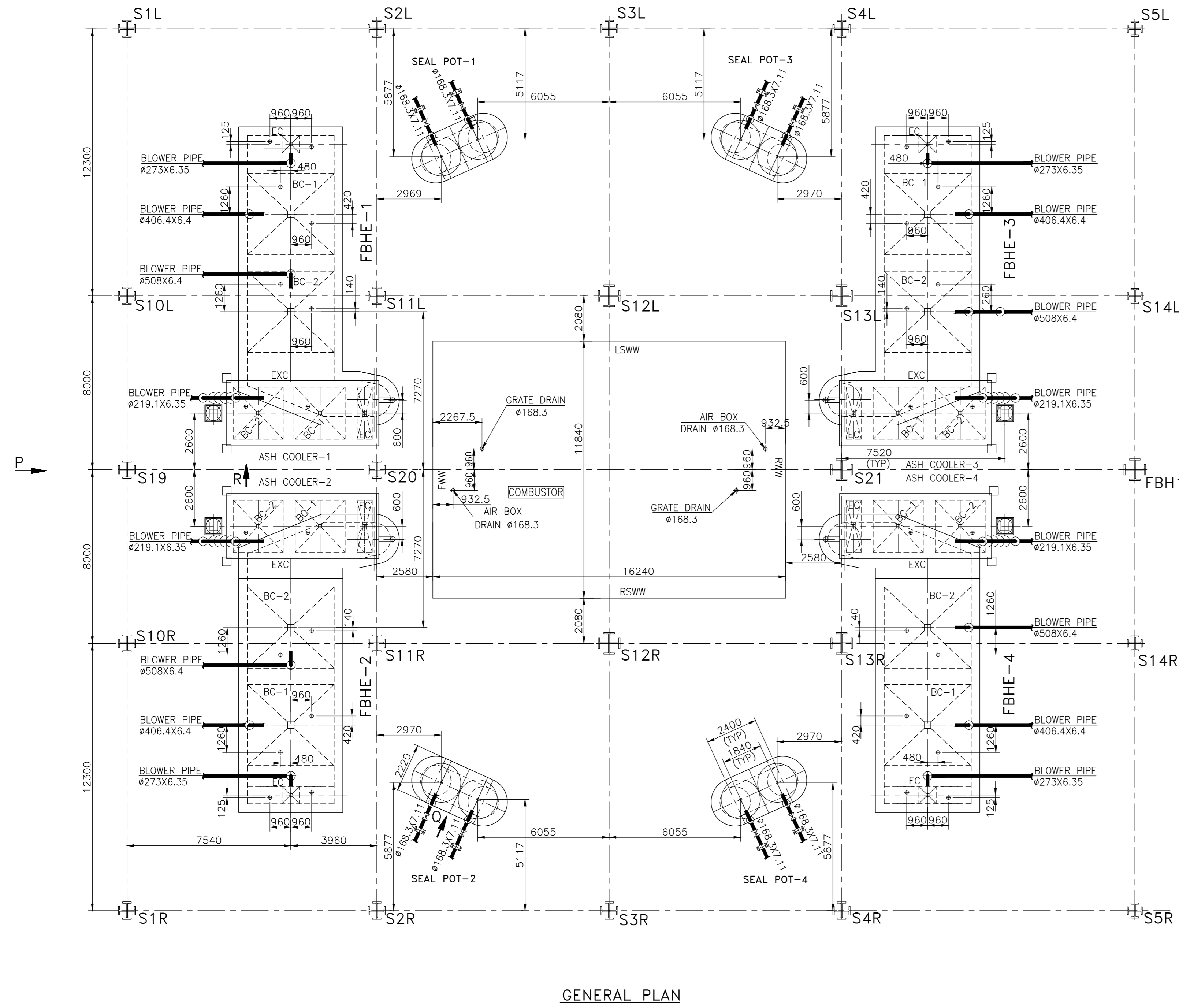
PLAN (SECTION-AA)

NOTES:

- FOR NOTES, LEGEND AND REFERENCE DRAWINGS REFER GENERAL ARRANGEMENT BOILER - ELEVATION DRAWING NO : 0-00-511-993475
- TP INDICATES BHEL/TRICHY SCOPE.

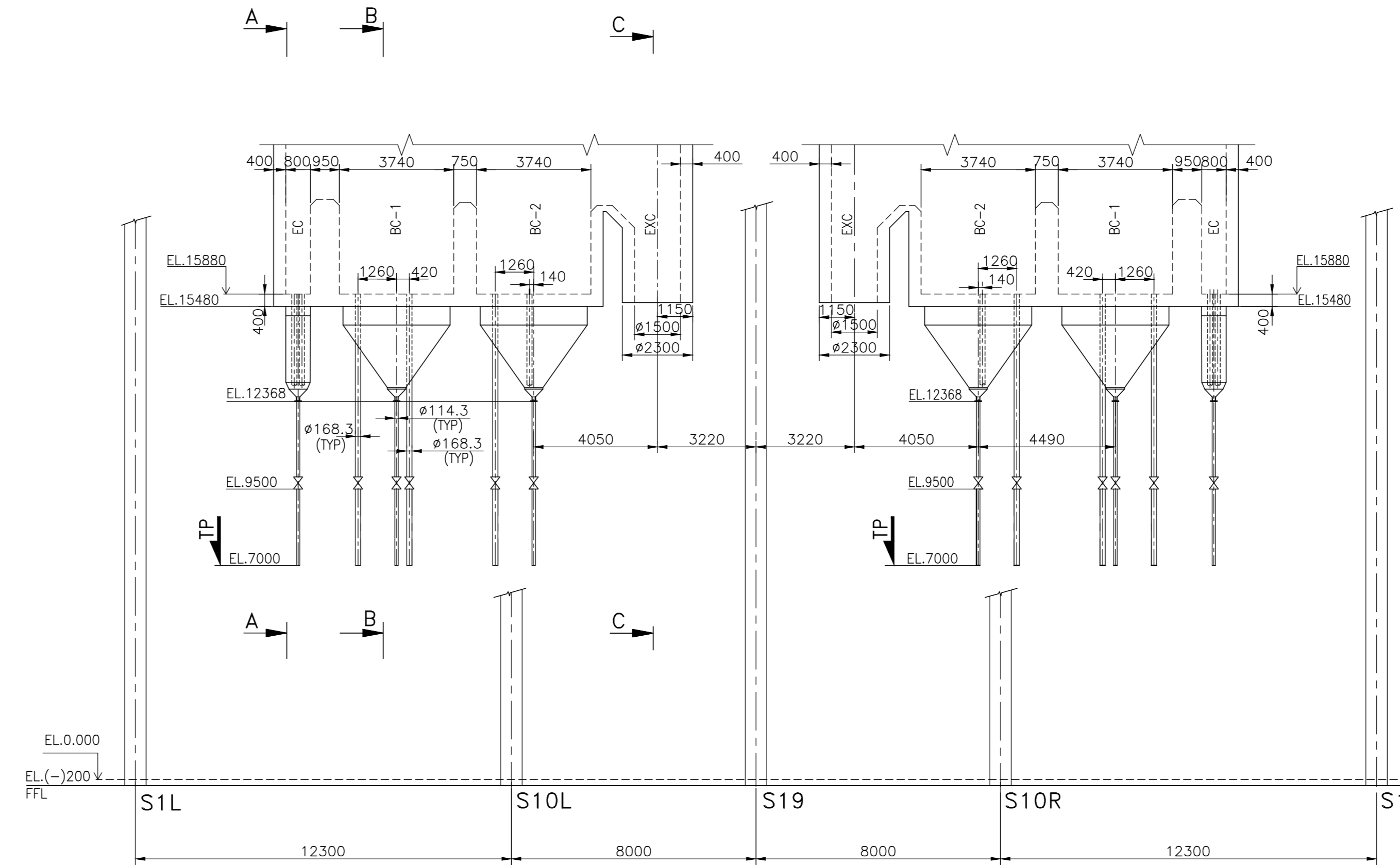
REV	DATE	ALT TO	CUSTOMER DRG.No.	BHEL CUSTOMER No.
		CHD		5316 & 5317
		APPD		
ZONE			CUSTOMER	BECL
			CONSULTANT	Bhavnagar Energy Company Limited TATA CONSULTING ENGINEERS LIMITED MUMBAI
			PROJECT	2x250 MW LIGNITE BASED TPP AT PADVA, BHAVNAGAR DISTRICT, GUJARAT. CFBC BOILER 2x810 TPH, 175kg/cm ² (g), 540°C/540°C
				BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHIRAPALLI-620 014.
			DRAWN	N.BALAMURUGAN
			CHECKED	K.ASHOK KUMAR
			APPROVED	S.GNANARAJ
			DATE	19.03.2011
			TITLE	ASH COOLER AND VENT PIPE ARRANGEMENT
			ALL DIMENSIONS ARE IN MILLIMETRES	BHEL DRG No.
			SCALE 1:125	0-00-515-93518
				REV. 00

LOCATION OF FBHE, SEAL POT & ASH COOLER WIND BOX ARRANGEMENT.

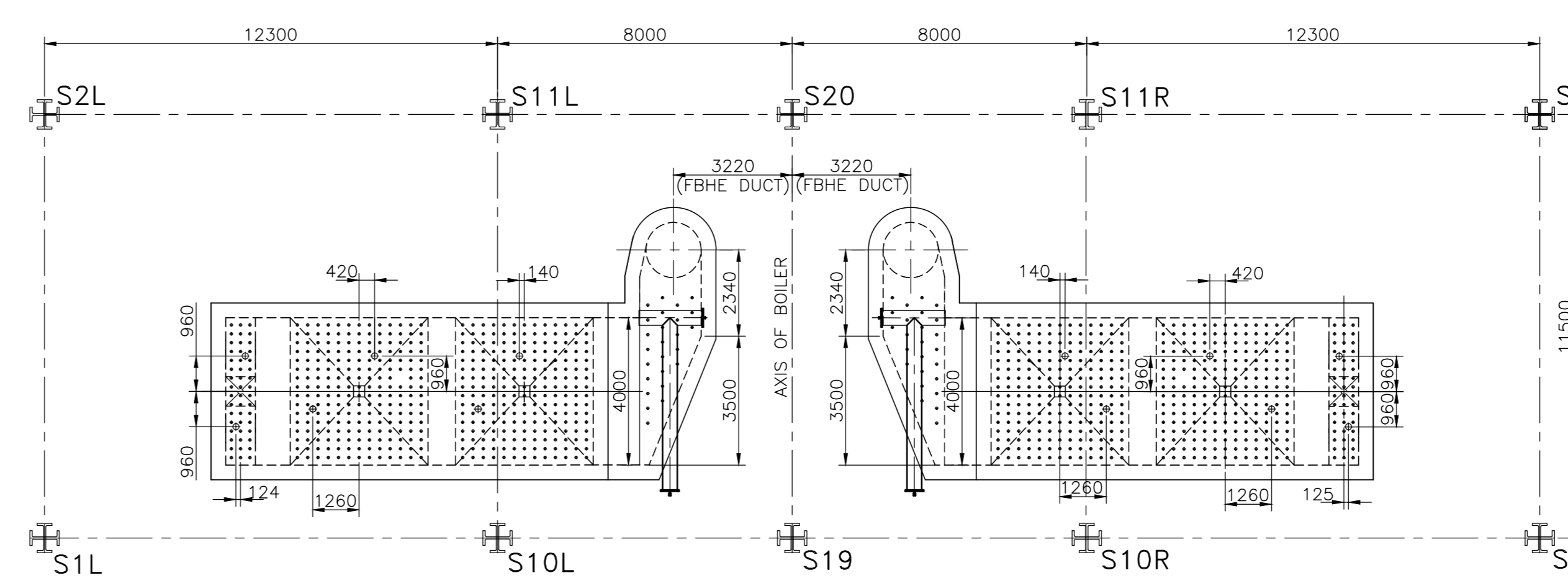


GENERAL PLAN

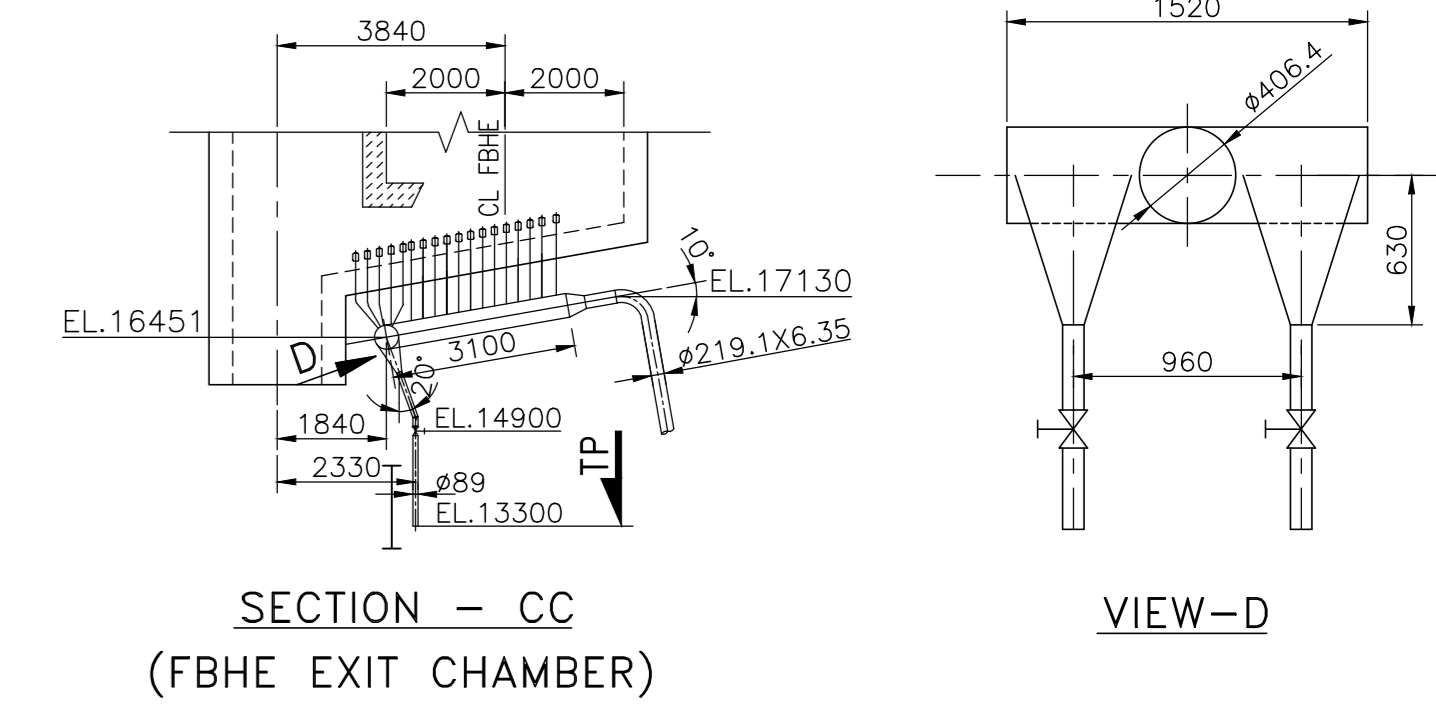
FBHE WIND BOX ARRANGEMENT.



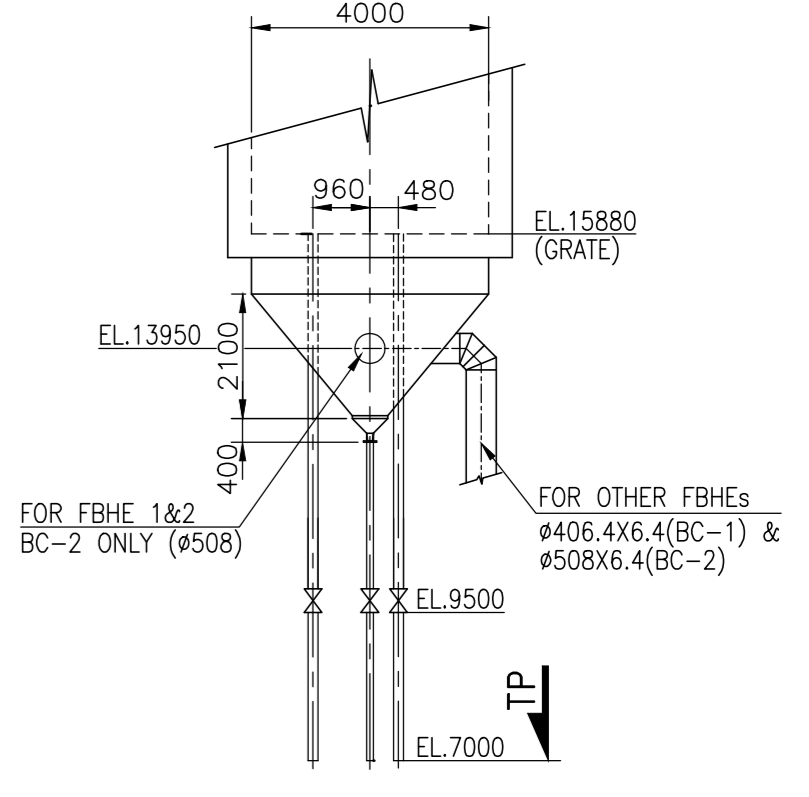
VIEW - P (ELEVATION)



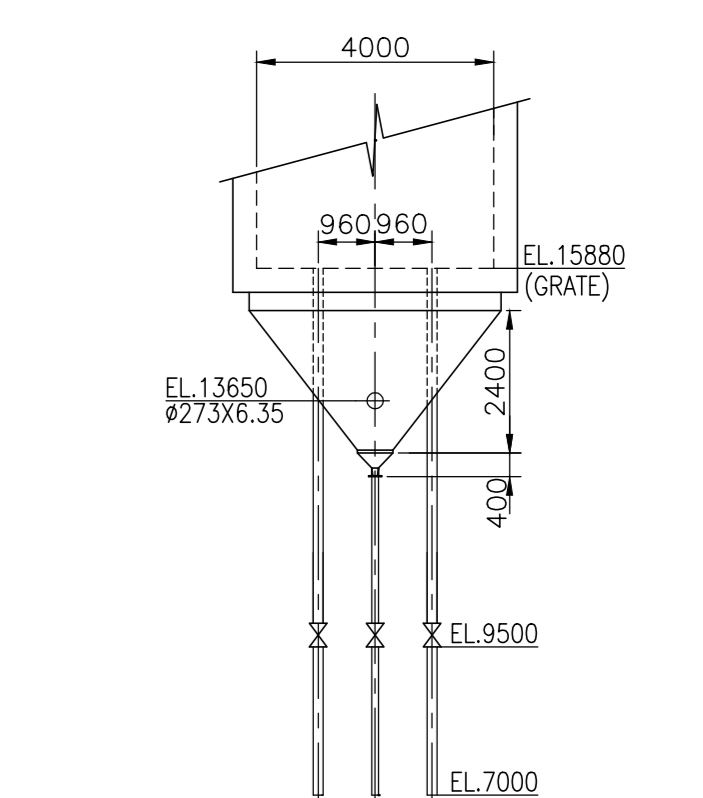
VIEW - P (PLAN)



SECTION - CC (FBHE EXIT CHAMBER)

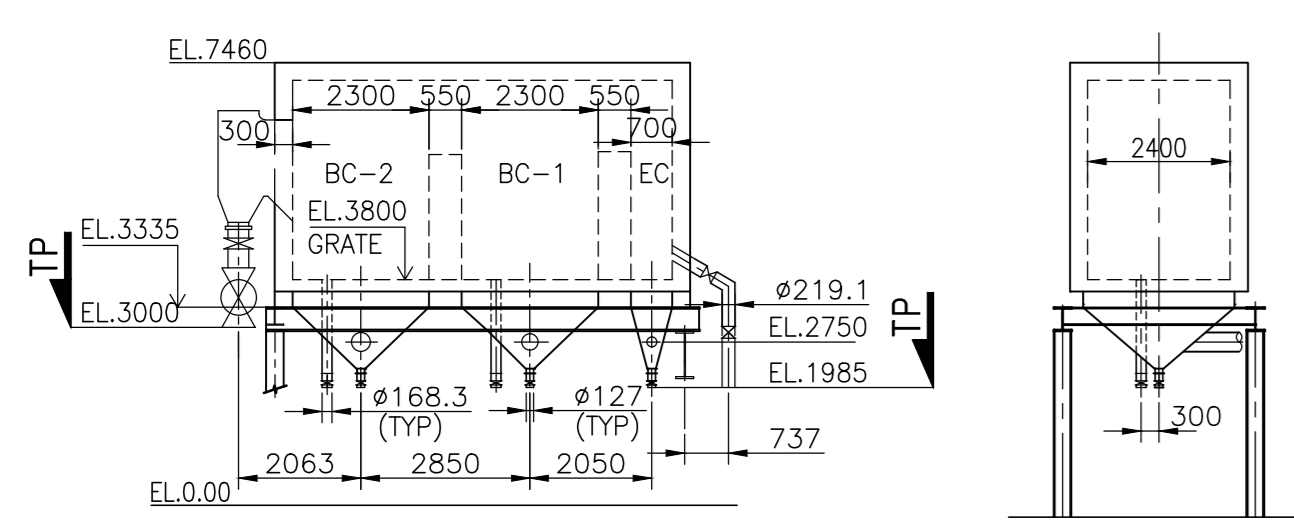


SECTION - BB (FBHE BUNDLE CHAMBER)



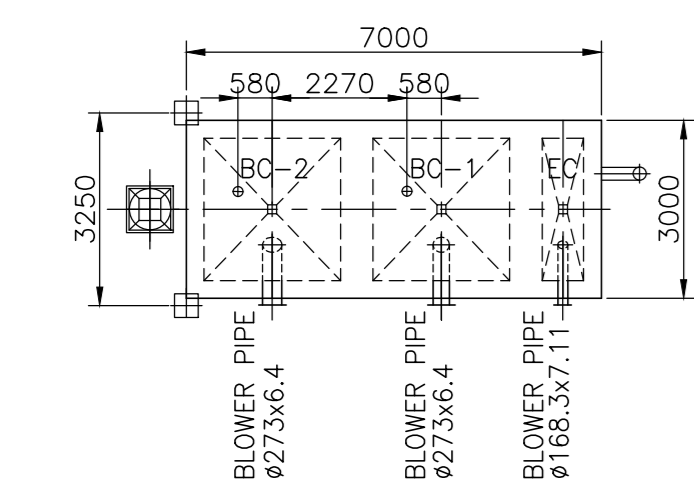
SECTION - AA (FBHE EMPTY CHAMBER)

ASH COOLER WIND BOX ARRANGEMENT.



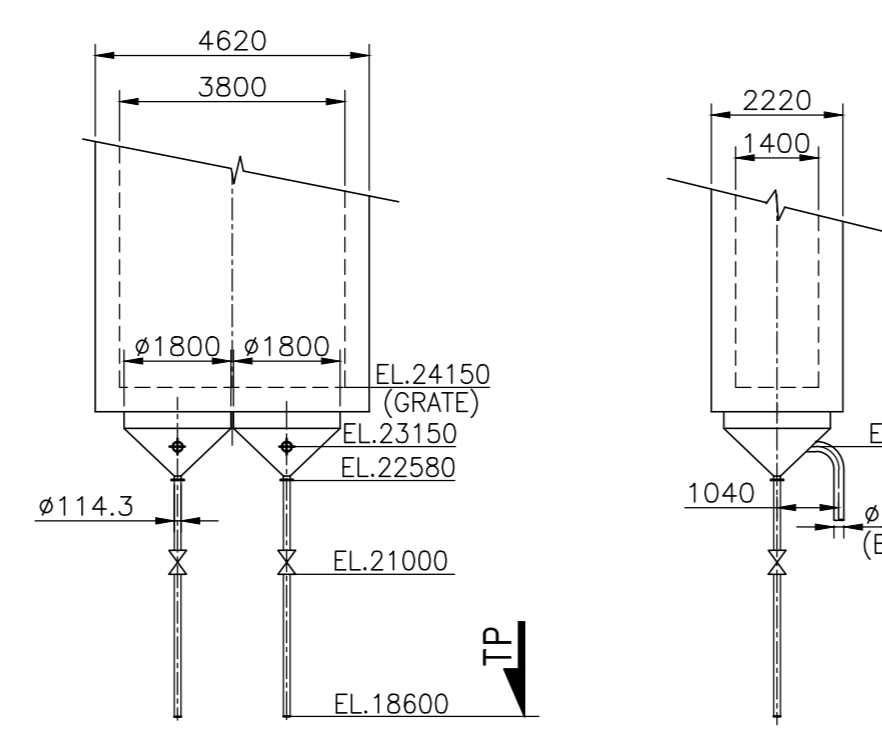
VIEW - R (ELEVATION)

SIDE VIEW



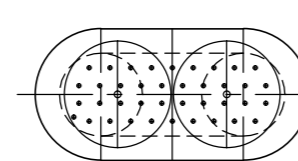
PLAN

SEAL POT WIND BOX ARRANGEMENT.

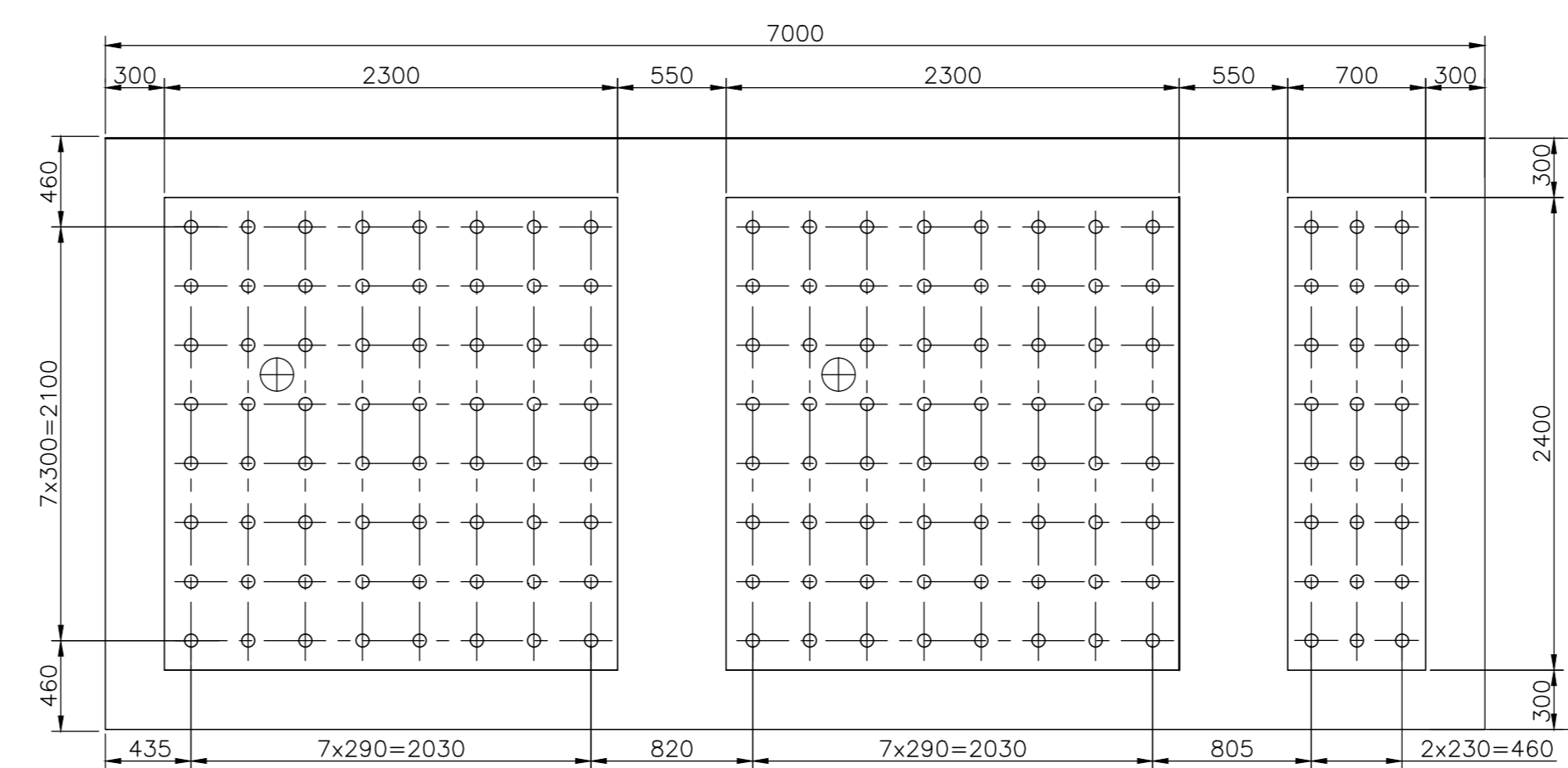


VIEW - Q (ELEVATION)

SIDE VIEW



PLAN

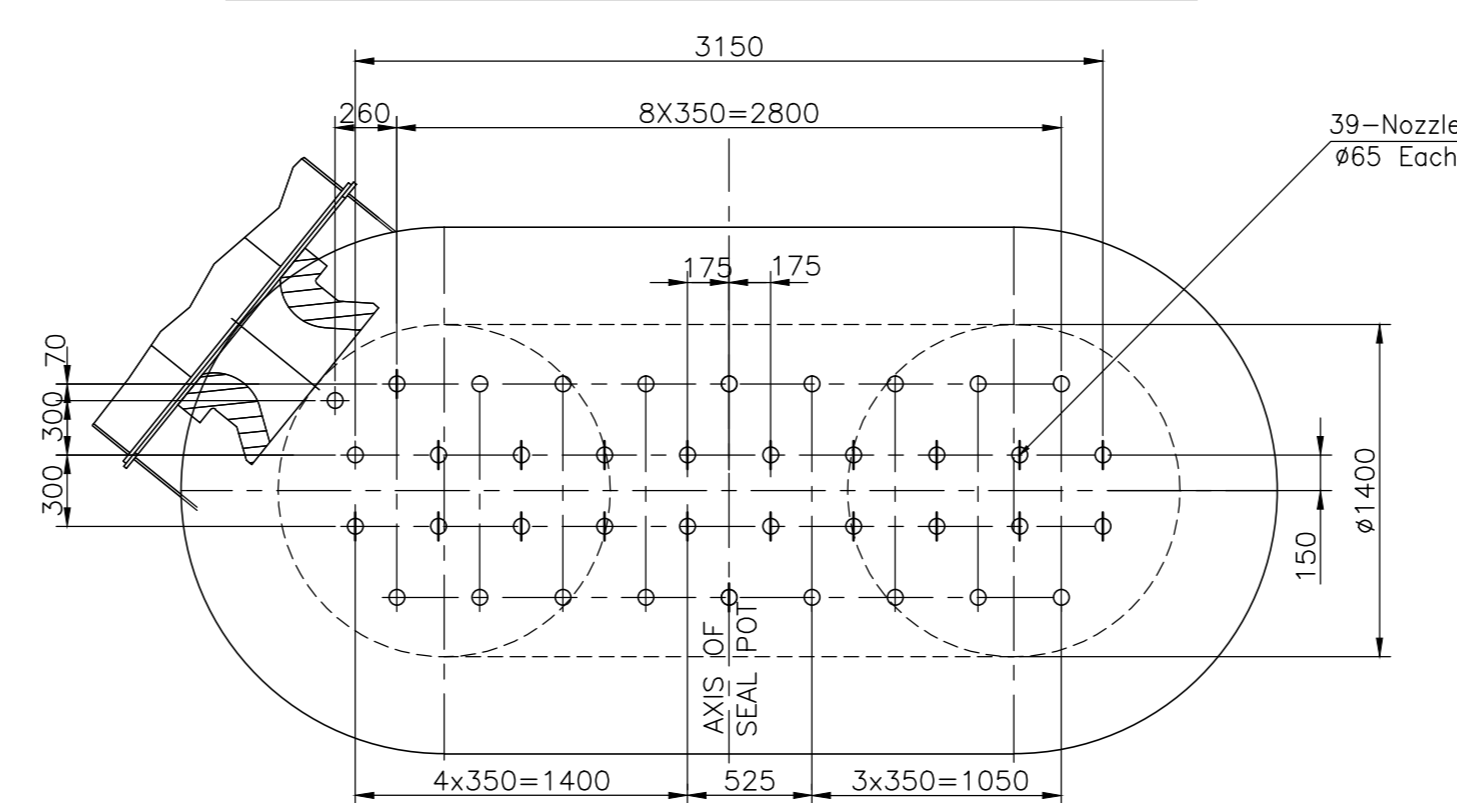


BUNDLE CHAMBER-2 64 NOZZLES #65

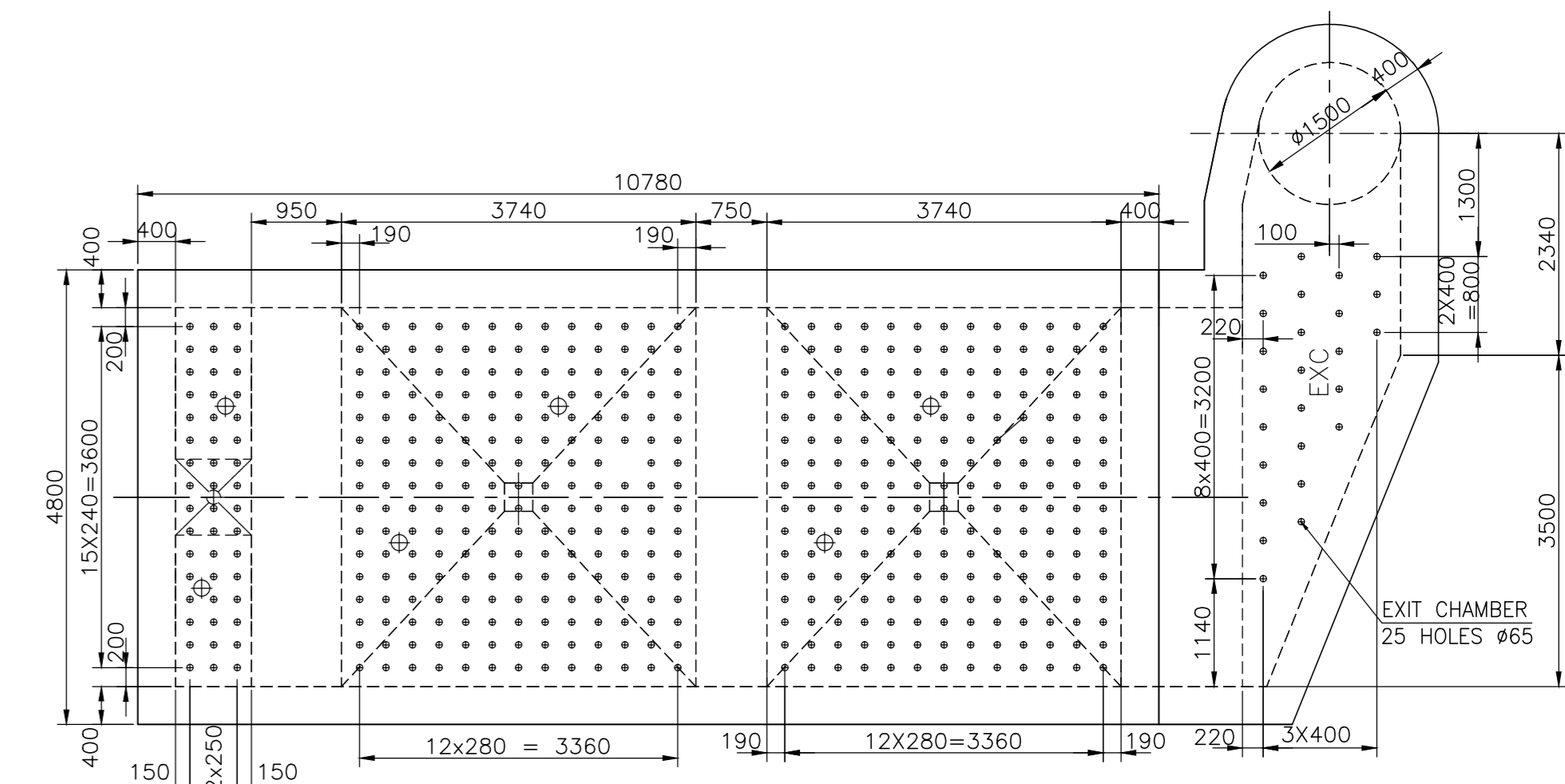
BUNDLE CHAMBER-1 64 NOZZLES #65

EMPTY CHAMBER 24 NOZZLES #65

ASH COOLER NOZZLE GRATE ARRANGEMENT



SEALPOT NOZZLE GRATE ARRANGEMENT.



EMPTY CHAMBER 46 NOZZLES #65

BUNDLE CHAMBER-1 206 NOZZLES #65

BUNDLE CHAMBER-2 206 NOZZLES #65

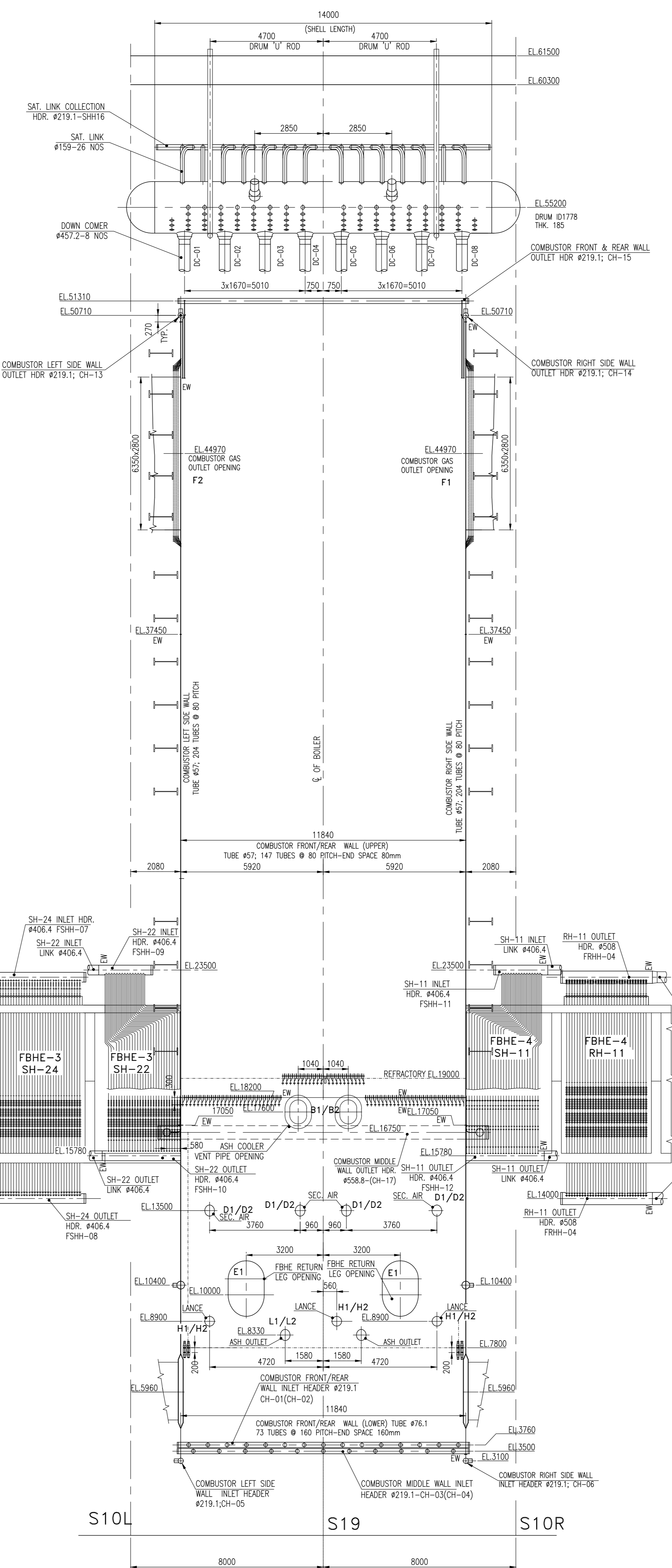
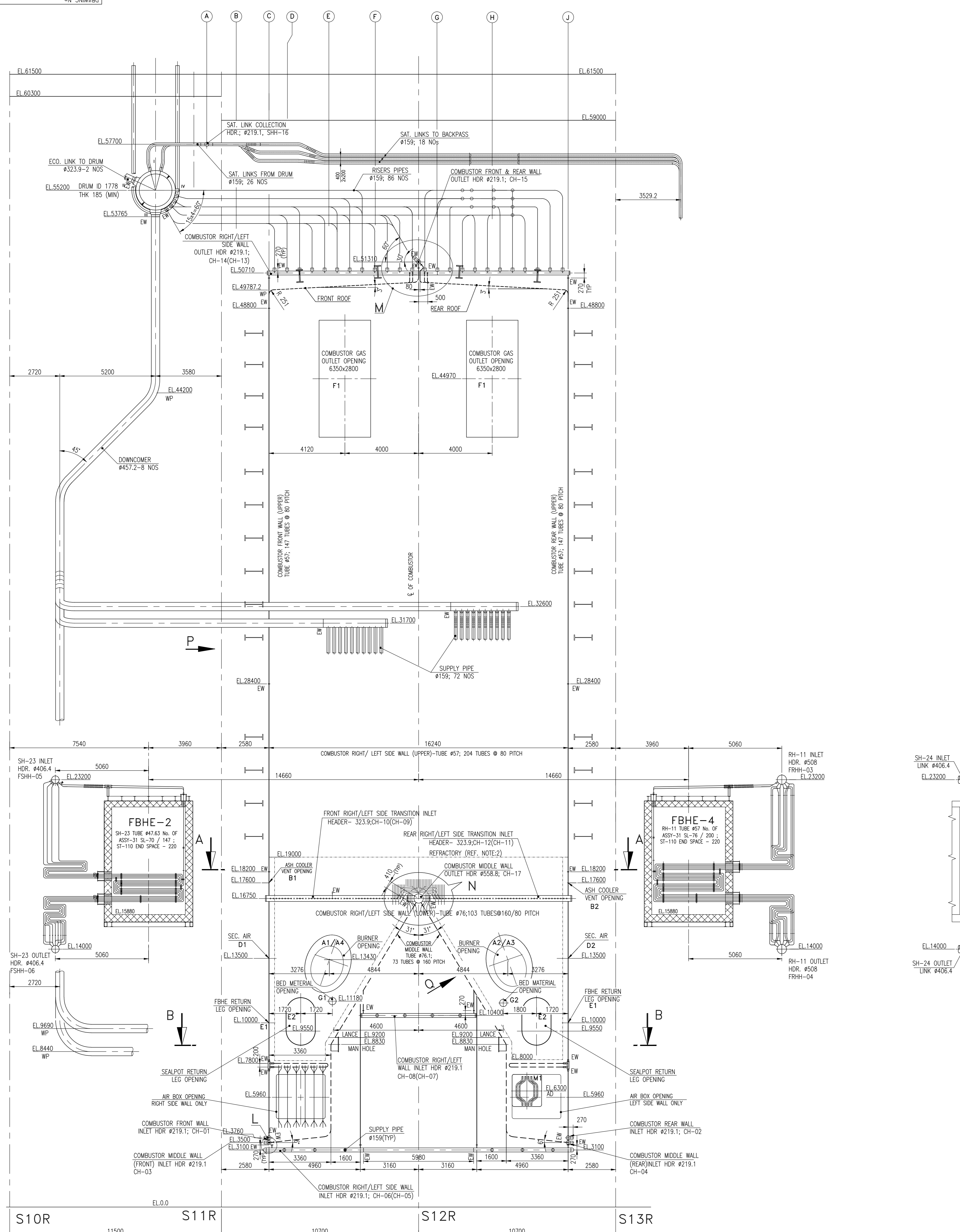
FBHE NOZZLE GRATE ARRANGEMENT.

- LEGEND:
- FBHE - FLUIDIZED BED HEAT EXCHANGER
 - EC - EMPTY CHAMBER
 - BC - BUNDLE CHAMBER
 - EXC - EXIT CHAMBER

REV	DATE	ALTD	CHKD	APPRD	CUSTOMER DRG.No.	BHEL CUSTOMER No.
						5316 & 5317

CUSTOMER	BECL	
CONSULTANT	Bhavangar Energy Company Limited	
PROJECT	2x250 MW LIGNITE BASED TPP AT PADVA, BHAVNAGAR DISTRICT, GUJARAT. CFBC BOILER 2x810 TPH, 175kg/cm ² (g), 540°C/540°C	
	BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHIRAPALLI-620 014.	

DRAWN	N.BALAMURUGAN	TITLE	WIND BOXES FOR FBHE, SEAL POT & ASH COOLER
CHECKED	K.ASHOK KUMAR		
APPROVED	S.GNANARAJ		
DATE	12.05.2011		
ALL DIMENSIONS ARE IN MILLIMETRES		BHEL DRG No.	0-00-515-93519
SCALE 1:125		REV.	00



COMBUSTOR OPENING DETAILS

SLNO	OPENING NOMENCLATURE	DESCRIPTION	OPENING SIZE	ELEVATION	NO.OFF	LOCATION
1	A1/A2	START UP BURNER	ELLIPSE 1707/2246	EL. 13430	2	COMBUSTOR RIGHT SIDE WALL
2	A3/A4	START UP BURNER	ELLIPSE 1707/2246	EL. 13430	2	COMBUSTOR LEFT SIDE WALL
3	B1	ASH COOLER VENT PIPE	ØIA 600	EL. 17600	2	COMBUSTOR FRONT WALL
4	B2	ASH COOLER VENT PIPE	ØIA 600	EL. 17600	2	COMBUSTOR REAR WALL
5	C1	SEC. AIR NOZZLE	ØIA 400	EL. 10500	6	COMBUSTOR MIDDLE WALL (REAR)
6	C2	SEC. AIR NOZZLE	ØIA 400	EL. 13500	3	COMBUSTOR MIDDLE WALL (FRONT)
7	C3	SEC. AIR NOZZLE	ØIA 400	EL. 10500	6	COMBUSTOR MIDDLE WALL (FRONT)
8	C4	SEC. AIR NOZZLE	ØIA 400	EL. 13500	3	COMBUSTOR MIDDLE WALL (REAR)
9	D1	SEC. AIR NOZZLE	ØIA 400	EL. 13500	4	COMBUSTOR FRONT WALL
10	D2	SEC. AIR NOZZLE	ØIA 400	EL. 13500	4	COMBUSTOR REAR WALL
11	E1	FBHE TO COMBUSTOR	ØIA 1500	EL. 10000	2	COMBUSTOR FRONT WALL
12	E1	FBHE TO COMBUSTOR	ØIA 1500	EL. 10000	2	COMBUSTOR REAR WALL
13	E2	SEALPOT TO COMBUSTOR	ØIA 1400	EL. 9550	2	COMBUSTOR LEFT SIDE WALL
14	E2	SEALPOT TO COMBUSTOR	ØIA 1400	EL. 9550	2	COMBUSTOR RIGHT SIDE WALL
15	F1	GAS OUTLET OPENING	6350 x 2800	EL. 44970	2	COMBUSTOR RIGHT SIDE WALL
16	F2	GAS OUTLET OPENING	6350 x 2800	EL. 44970	2	COMBUSTOR LEFT SIDE WALL
17	G1,G2	BED MATERIAL OPENING	ØIA 219.1	EL. 11180	2	COMBUSTOR LEFT SIDE WALL
18	G1,G2	BED MATERIAL OPENING	ØIA 219.1	EL. 11180	2	COMBUSTOR RIGHT SIDE WALL
19	H1	OIL LANCE	ØIA 168.3	EL. 8900	3	COMBUSTOR FRONT WALL
20	H2	OIL LANCE	ØIA 168.3	EL. 8900	3	COMBUSTOR REAR WALL
21	J1	OIL LANCE	ØIA 168.3	EL. 9200	2	COMBUSTOR MIDDLE WALL (FRONT)
22	J2	OIL LANCE	ØIA 168.3	EL. 9200	2	COMBUSTOR MIDDLE WALL (REAR)
23	L1	COMBUSTOR ASH DISCHARGE	ØIA 400	EL. 8330	2	COMBUSTOR FRONT WALL
24	L2	COMBUSTOR ASH DISCHARGE	ØIA 400	EL. 8330	2	COMBUSTOR REAR WALL
25	K1	MANHOLE	550x600	EL. 8830	1	COMBUSTOR MIDDLE WALL (FRONT)
26	K2	MANHOLE	550x600	EL. 8830	1	COMBUSTOR MIDDLE WALL (REAR)
27	M1	ACCESS DOOR (AR BOX)	550x600	EL. 6300	1	COMBUSTOR RIGHT SIDE WALL
28	M2	ACCESS DOOR (AR BOX)	550x600	EL. 6300	1	COMBUSTOR LEFT SIDE WALL

NOTES:

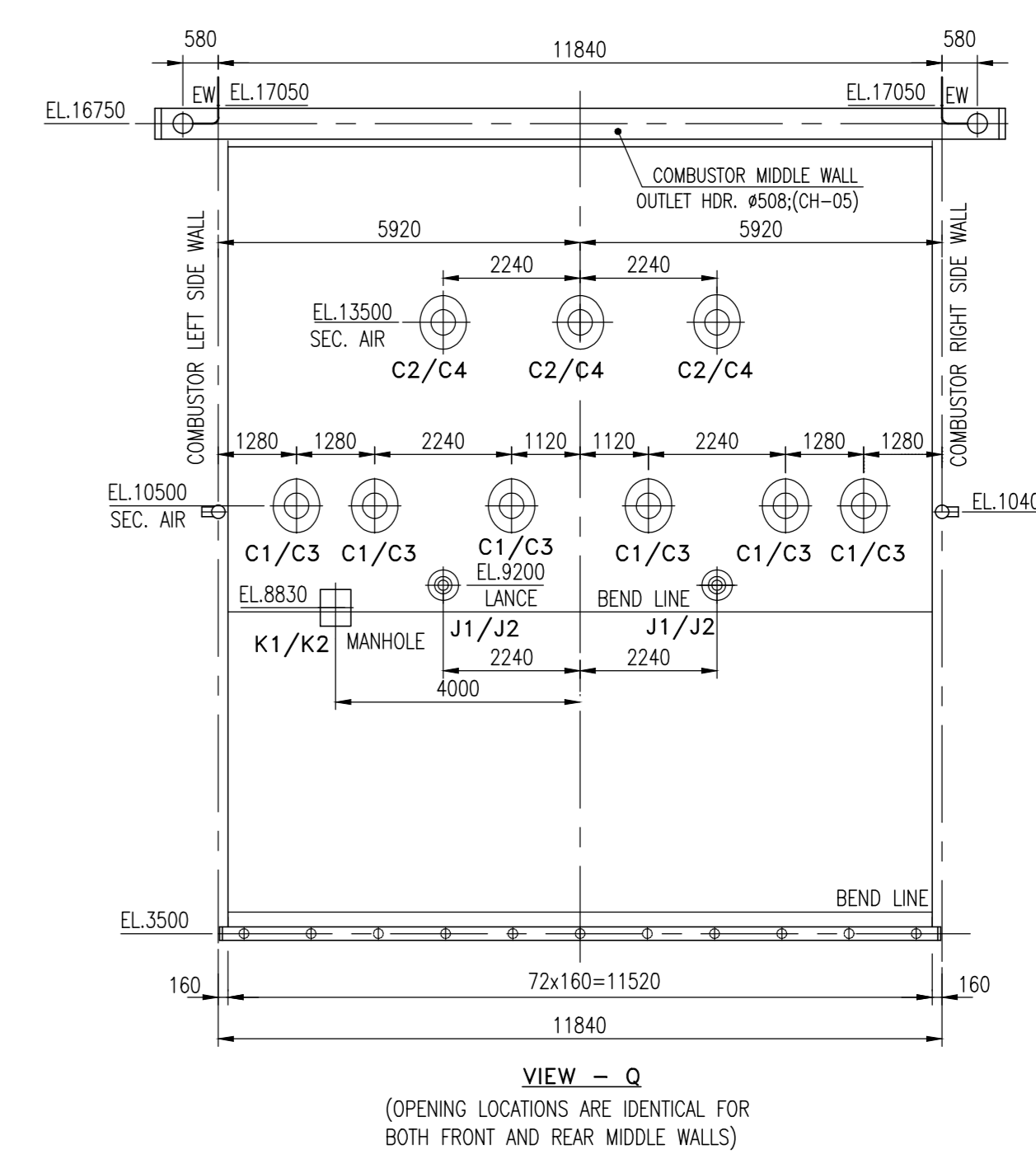
- DESIGN, MANUFACTURE AND INSPECTION AS PER IFR.
- REFRACTORY LINING IS TO BE PROVIDED IN LOWER PORTION OF COMBUSTOR WALLS FROM EL.7800 TO EL.19000. IT MUST BE ENSURED THAT NO CARBON STEEL WATER WALL TUBES ARE THERE ABOVE THE REFRACTORY.
- TRANSITION HEADERS ARE PROVIDED FOR LEFT AND RIGHT SIDE WALL AT MIDDLE WALL OUTLET HDR. ELEVATION. b) IN FRONT AND REAR WALLS, LOWER AND UPPER WALLS ARE CONNECTED BY 'Y' PIECES.
- FRONT ROOF PANEL WITH COMBUSTOR FRONT&REAR WALL OUTLET HEADER ERECTION JOINT MAY PREFERABLY BE COMPLETED FIRST, AND THEN THE REAR ROOF PANEL & LOOSE TUBES WITH HEADER ERECTION JOINT MAY BE DONE TO ENSURE PROPER WELDING ACCESSIBILITY.
- LEGEND FOR OPENINGS ON COMBUSTOR AND OPENING DETAILS ARE INDICATED IN THE ABOVE TABLE. THE DETAILS OF OPENINGS ARE SHOWN IN DRG. NO. 0-00-521-98305.
- FOR SECTION-AA, BB AND DETAIL-L, M, N REFER DRG. NO. 0-00-521-98313.
- FOR ALL WALLS OF COMBUSTOR, METAL SPARY OF 250 MICRON THICKNESS SHALL BE APPLIED AS FOLLOWS:
 - FOR A HEIGHT OF 3 METER, STARTING FROM 100mm BELOW THE REFRACTORY LEVEL (FROM EL.18900 TO EL.21900) FOR CORNER 10 TUBES.
 - FOR A HEIGHT OF 1 METER, STARTING FROM 100mm BELOW THE REFRACTORY LEVEL (FROM EL.18900 TO EL.19900) FOR THE REMAINING TUBES.

REFERENCE DRAWINGS

- PPA-ARRANGEMENT OF BACKPASS 0-00-521-98301
- PPA-CEILING LOADING PLAN 0-00-521-98302
- PPA-COMBUSTOR UPPER PANEL ARRANGEMENT 0-00-521-98303
- PPA-COMBUSTOR LOWER PANEL ARRANGEMENT 0-00-521-98304
- PPA-COMBUSTOR OPENING DETAILS 0-00-521-98305
- PPA-COMBUSTOR FLUE GAS OUTLET OPENING 0-00-521-98306
- PPA-RISER PIPES ARRANGEMENT 0-00-521-98307
- PPA-DOWNCOMER AND SUPPLY PIPES ARRANGEMENT (LEFT SIDE) 0-00-521-98308
- PPA-DOWNCOMER AND SUPPLY PIPES ARRANGEMENT (RIGHT SIDE) 0-00-521-98309
- PPA-FBHE PLAN VIEW 0-00-521-98310
- PPA-FBHE SH-23 & RH-11 COIL ARRANGEMENT 0-00-521-98311
- PPA-FBHE SH-21 & SH-11 COIL ARRANGEMENT 0-00-521-98312
- PPA-FBHE SH-12 & SH-22 COIL ARRANGEMENT 0-00-521-98348
- PPA-FBHE RH-12 & SH-24 COIL ARRANGEMENT 0-00-521-98349
- PPA-SECTIONAL VIEWS AND AIR BOX DETAILS 0-00-521-98313
- PPA-ARRANGEMENTS OF LINES AND LINKS (PLAN VIEW) 0-00-521-98314
- PPA-ARRANGEMENTS OF LINES AND LINKS (FRONT & RIGHT SIDE VIEW) 0-00-521-98315
- PPA-ARRANGEMENTS OF LINES AND LINKS (REAR & LEFT SIDE VIEW) 0-00-521-98316

LEGEND

- PPA - PRESSURE PARTS ARRANGEMENT
- EL - ELEVATION
- EW - ERECTION WELD
- WP - WORK POINT
- TOS - TOP OF STEEL
- BOS - BOTTOM OF STEEL
- DESH - DE SUPER HEATER
- DC - DOWNCOMER
- BS - BUCKSTAY
- FBHE - FLUIDISED BED HEAT EXCHANGER
- SH - SUPER HEATER
- RH - REHEATER



CUSTOMER DRG.No. _____ BHEL CUSTOMER No. **5316 & 5317**

BECL
Bhavangar Energy Company Limited

CUSTOMER
TATA CONSULTING ENGINEERS LIMITED
MUMBAI

PROJECT
2x250 MW LIGNITE BASED TPP AT PADVA, BHAVNAGAR DISTRICT, GUJARAT.
CFBC BOILER 2x810 TPH, 175kg/cm² (g), 540°C/540°C

BHARATS HEAVY ELECTRICALS LTD.,
BOILER PLANT UNIT, TIRUCHIRAPALLI-620 014.

REV 02 DATE 10.10.11 ALD/K.PALANAPPAN CHD/TARAKESH KANAKALA APPD/ALBERTWILLIAM
ZONE 1 DOWNCOMER ELEVATION UPDATED AS PER PPA-DOWNCOMER ARRANGEMENT DRAWING.
2 NOTE-4 UPDATED FOR PROPER ERECTION SEQUENCE.

REV 01 DATE 26.04.11 ALD/K.PALANAPPAN CHD/TARAKESH KANAKALA APPD/ALBERTWILLIAM
ZONE 1 COMBUSTOR OPENING LOCATIONS AND TABLE UPDATED AS PER LATEST AEL DRGS.
2 DRAWING UPDATED INLINE WITH OTHER DETAILED PPA ARRANGEMENT DRAWINGS.

DRAWN K.PALANAPPAN
CHECKED LAIBERT WILLIAM
APPROVED TRADHA KRISHNAN
DATE 07-09-2010

TITLE
PPA-ARRANGEMENT OF COMBUSTOR AND FBHE

SCALE 1:100

BHEL DRG No. **0-00-521-98300**

REV. **02**

CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF TATA CONSULTING ENGINEERS LIMITED AND MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

