

LEGEND

Table with 2 columns: Abbreviation and Description. Includes items like AD ACCESS DOOR, BS BUCKSTAY, ECO ECONOMISER, FBHE FLUID BED HEAT EXCHANGER, etc.

BOILER PARAMETERS:-

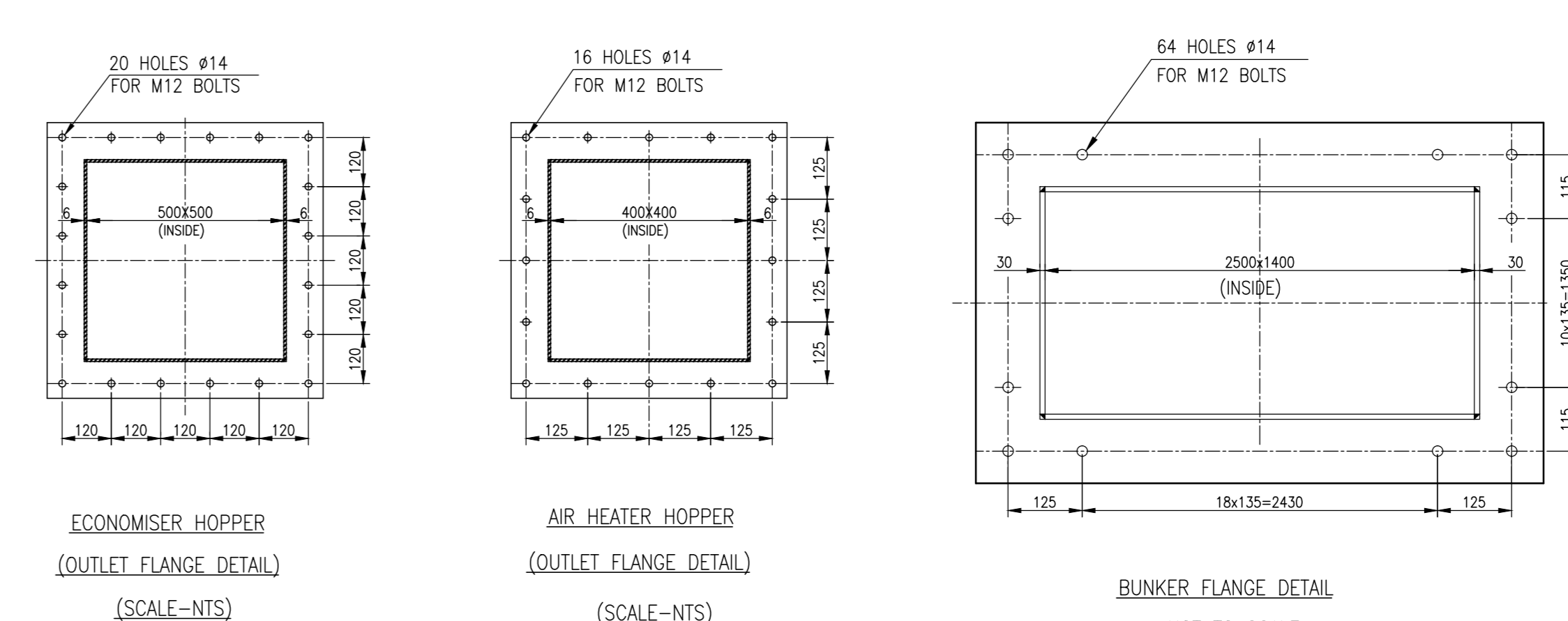
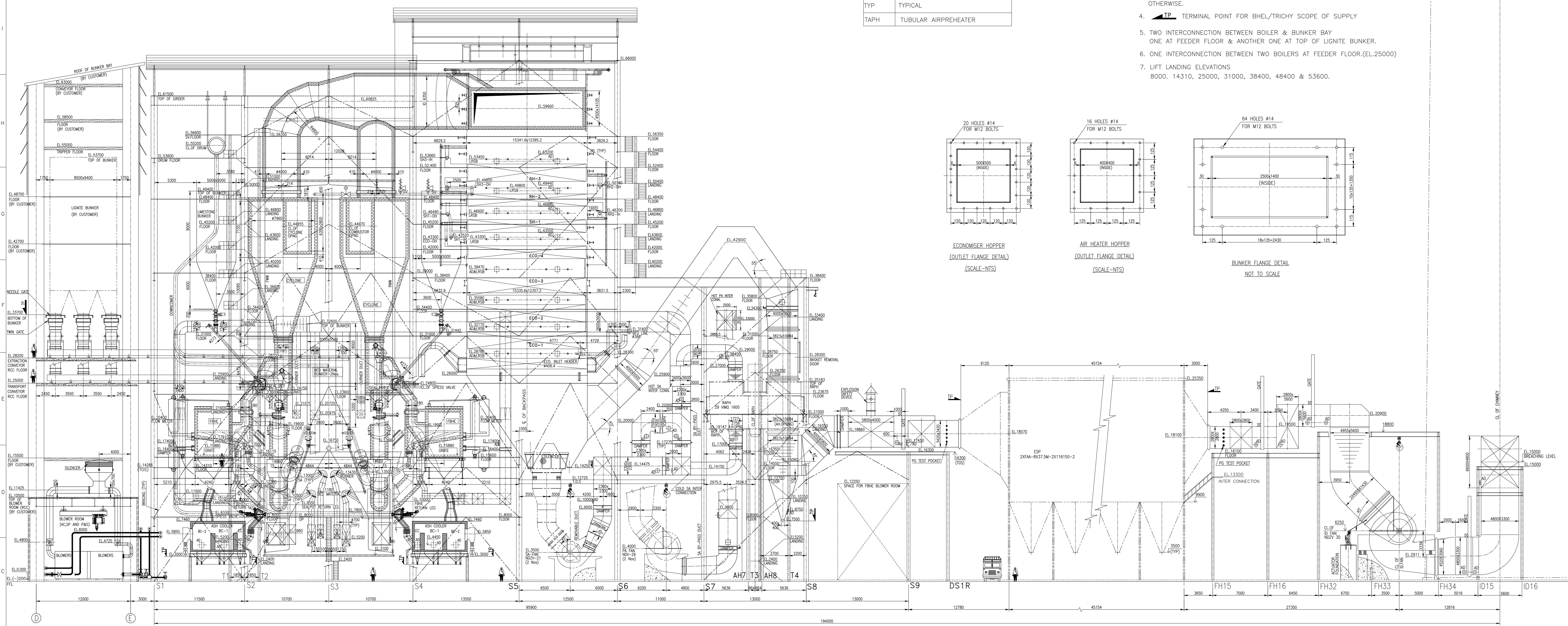
- 1. STEAM FLOW AT SH OUTLET HEADER..... 810 T/H
2. STEAM PRESSURE AT SH OUTLET HEADER..... 175 Kg/cm (g)
3. STEAM TEMPERATURE AT SH OUTLET HEADER..... 540°C ± 5°C
4. STEAM FLOW AT RH INLET HEADER..... 685.15 T/H
5. STEAM PRESSURE AT RH INLET HEADER..... 44.92 Kg/cm (g)
6. STEAM PRESSURE AT RH OUTLET HEADER..... 42.57 Kg/cm (g)
7. STEAM TEMPERATURE AT RH OUTLET HEADER..... 540°C ± 5°C

DESCRIPTION OF THE UNIT:-

2x250 MW CIRCULATING FLUIDISED BED, NATURAL CIRCULATION, SEMI OUTDOOR, LIGNITE FIRED BOILER.

NOTES

- 1. ALL ELEVATIONS ARE MARKED WITH RESPECT TO T.G.HALL FINISHED FLOOR LEVEL AS +0.0m WHICH CORRESPONDS TO RL.46.90M
2. ALL DUCT DIMENSIONS REPRESENT INSIDE DIMENSIONS ONLY.
3. INNER RADIUS OF ALL DUCT BENDS IS 300mm, UNLESS SPECIFIED OTHERWISE.
4. TP TERMINAL POINT FOR BHEL/TRICHY SCOPE OF SUPPLY
5. TWO INTERCONNECTION BETWEEN BOILER & BUNKER BAY ONE AT FEEDER FLOOR & ANOTHER ONE AT TOP OF LIGNITE BUNKER.
6. ONE INTERCONNECTION BETWEEN TWO BOILERS AT FEEDER FLOOR.(EL.25000)
7. LIFT LANDING ELEVATIONS 8000, 14310, 25000, 31000, 38400, 48400 & 53600.

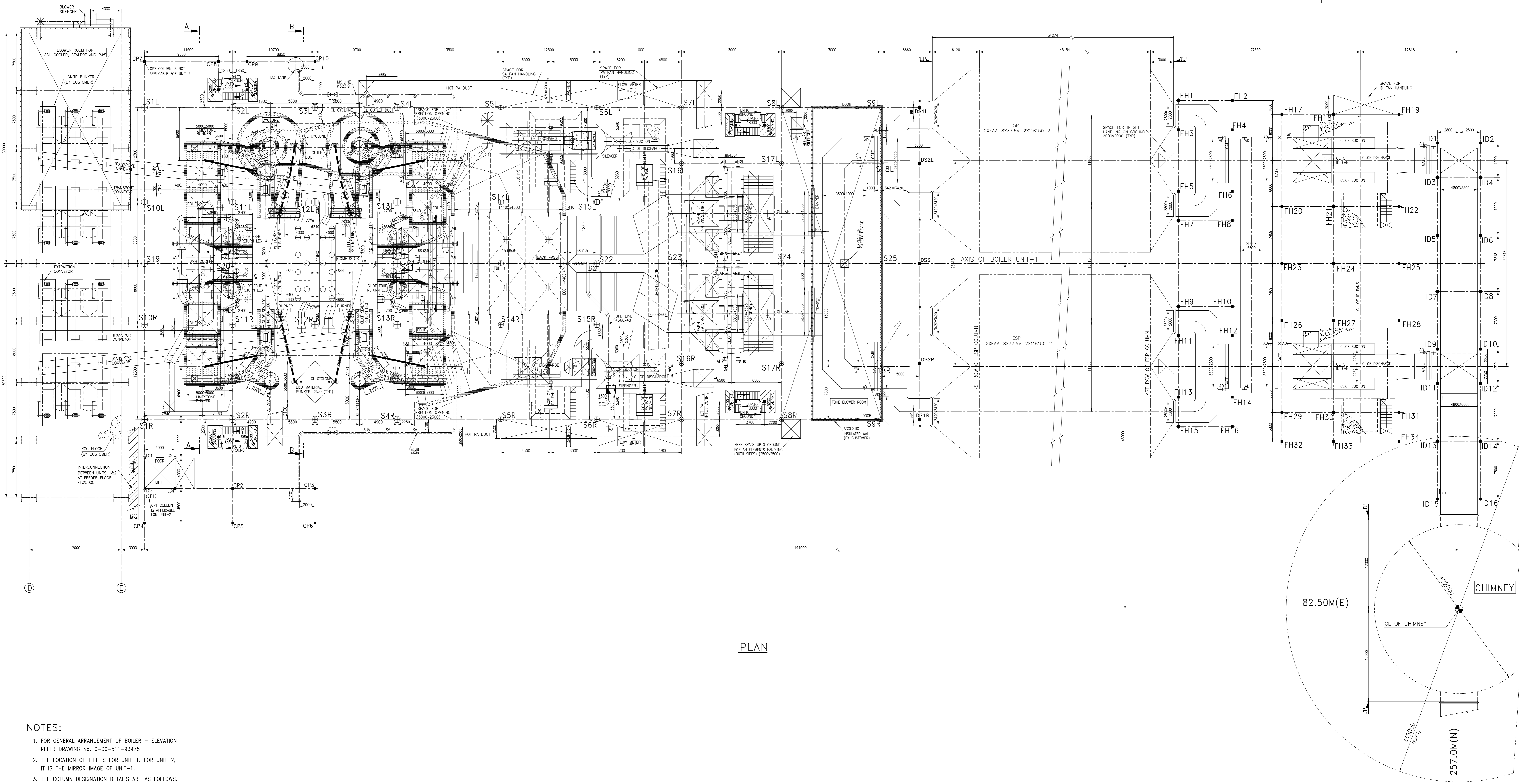
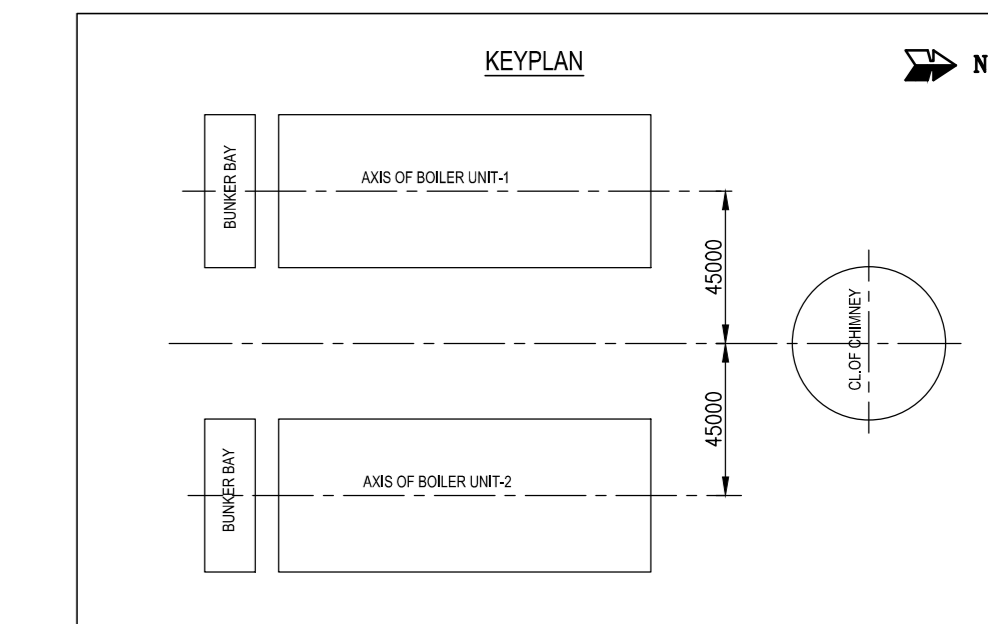


ELEVATION

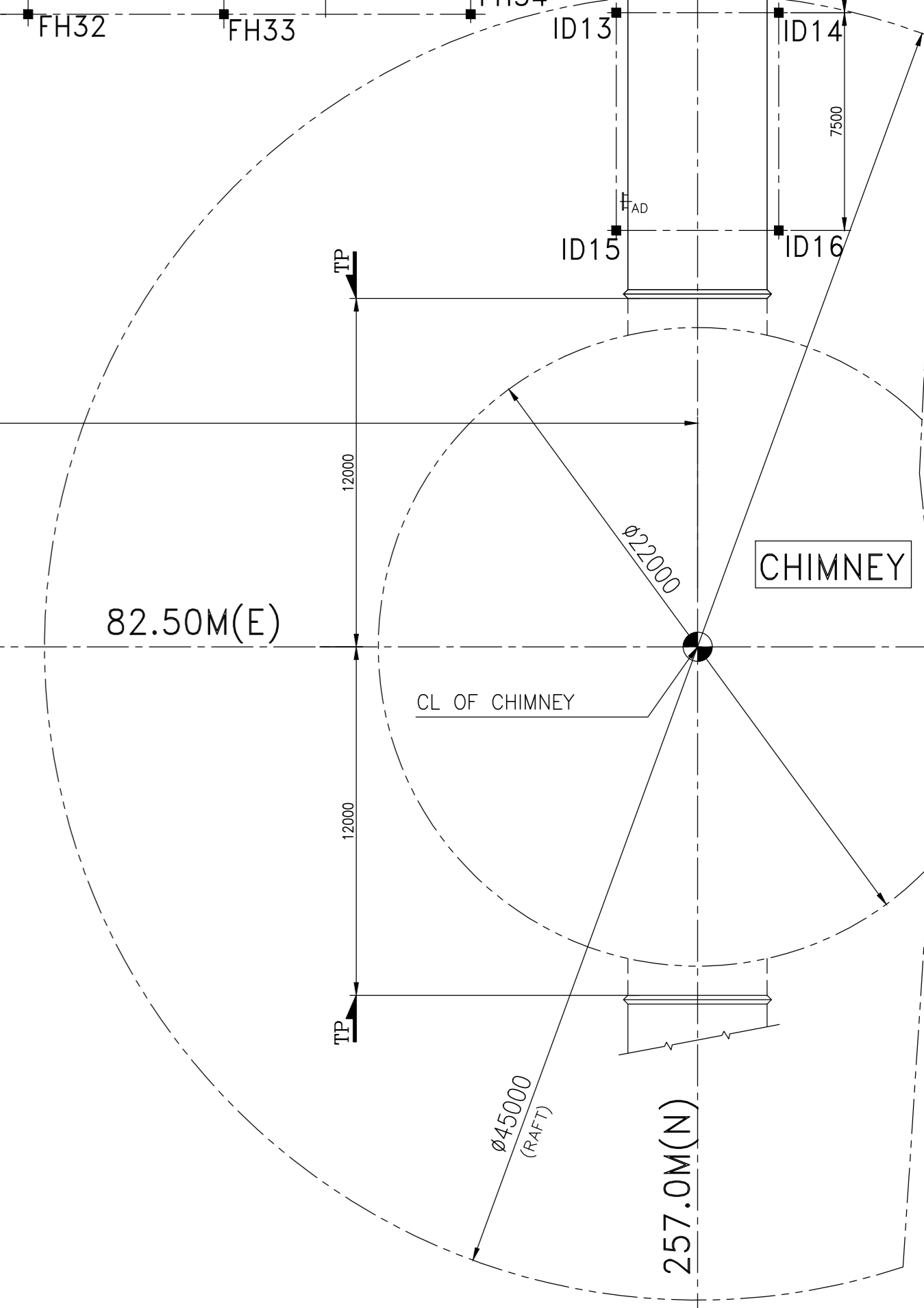
REFERENCE DRAWINGS:

- 1. G.A. OF BOILER ELEVATION 0-00-511-93475
2. G.A. OF BOILER PLAN 0-00-511-93476
3. G.A. OF SECTION-AA & BB 0-00-511-93482
4. FLOOR PLAN FOR ID SYSTEM 1-00-512-92080
5. FLOOR PLAN AT EL.5000 1-00-512-92067
6. FLOOR PLAN AT EL.8000 0-00-512-93485
7. FLOOR PLAN AT EL.15600 0-00-512-93486
8. FLOOR PLAN AT EL.19600 0-00-512-93487
9. FLOOR PLAN AT EL.23600 0-00-512-93488
10. FLOOR PLAN AT EL.28200 0-00-512-93490
11. FLOOR PLAN AT EL.31000 0-00-512-93491
12. FLOOR PLAN AT EL.34400 0-00-512-93492
13. FLOOR PLAN AT EL.38400 0-00-512-93493
14. FLOOR PLAN AT EL.42000 0-00-512-93494
15. FLOOR PLAN AT EL.45200 0-00-512-93495
16. FLOOR PLAN AT EL.48400 0-00-512-93496
17. FLOOR PLAN AT EL.52400 0-00-512-93497
18. FLOOR PLAN AT EL.56600 0-00-512-93498
19. INTERCONNECTION BETWEEN LIFT TO BOILER-2 2-00-512-91602
20. KEY PLAN OF BOILER (GROUND FLOOR) 0-00-512-93483
21. LAYOUT OF ID SYSTEM 0-00-515-93500
22. ASH COOLERS & VENT PIPE ARRANGEMENT 0-00-515-93518
23. SUGG.ROUT OF CRIT.PIPING(MS,HRH,CRH&BFD) 0-00-515-93514
24. LAYOUT OF BUNKER & FUEL FEEDING 0-00-515-93506
25. LIME STONE FEEDING ARRANGEMENT 0-00-515-93508
26. BED MATERIAL FEEDING ARRANGEMENT 0-00-515-93509
27. LAYOUT OF COLD PRIMARY AIR DUCTING 0-00-515-93501
28. LAYOUT OF COLD SECONDARY AIR DUCTING 0-00-515-93502
29. LAYOUT OF HOT PRIMARY AIR DUCTING 0-00-515-93503
30. LAYOUT OF HOT SECONDARY AIR DUCTING (SHEET 01 OF 02) 0-00-515-93504
31. LAYOUT OF HOT SECONDARY AIR DUCTING (SHEET 02 OF 02) 0-00-515-93505
32. LAYOUT OF FLUE GAS DUCTING (BP TO AH) 0-00-515-93512
33. LAYOUT OF FULE GAS DUCTING (AH TO ESP) 0-00-515-93513
34. LOCATION OF FURNACE OPENING&BUCKSTAYS (COMBUSTOR) 0-00-515-93510
35. LOCATION OF FURNACE OPENING&BUCKSTAYS (BACKPASS&AH) 0-00-515-93511
36. WIND BOXES FOR FBHE, SEAL POT & ASH COOLER 0-00-515-93519
37. LAYOUT OF BLOWER PIPING (FBHE) 0-00-515-93515
38. LAYOUT OF BLOWER PIPING (FBHE) 0-00-515-93516
39. LAYOUT OF BLOWER PIPING (UNIT-2) (D&E ROW COLUMNS) 0-00-515-93507
40. COLD AIR ARRANGEMENT FOR BED LANCES & CURTAIN AIR 0-00-515-93483
41. EQUIPMENT DESIGNATION 2-00-515-91579

Revision table and project information block. Includes columns for REV, DATE, and descriptions of changes. Also contains customer details for BECL and Bhavnagar Energy Company Limited, and drawing title 'GENERAL ARRANGEMENT OF BOILER-ELEVATION'.

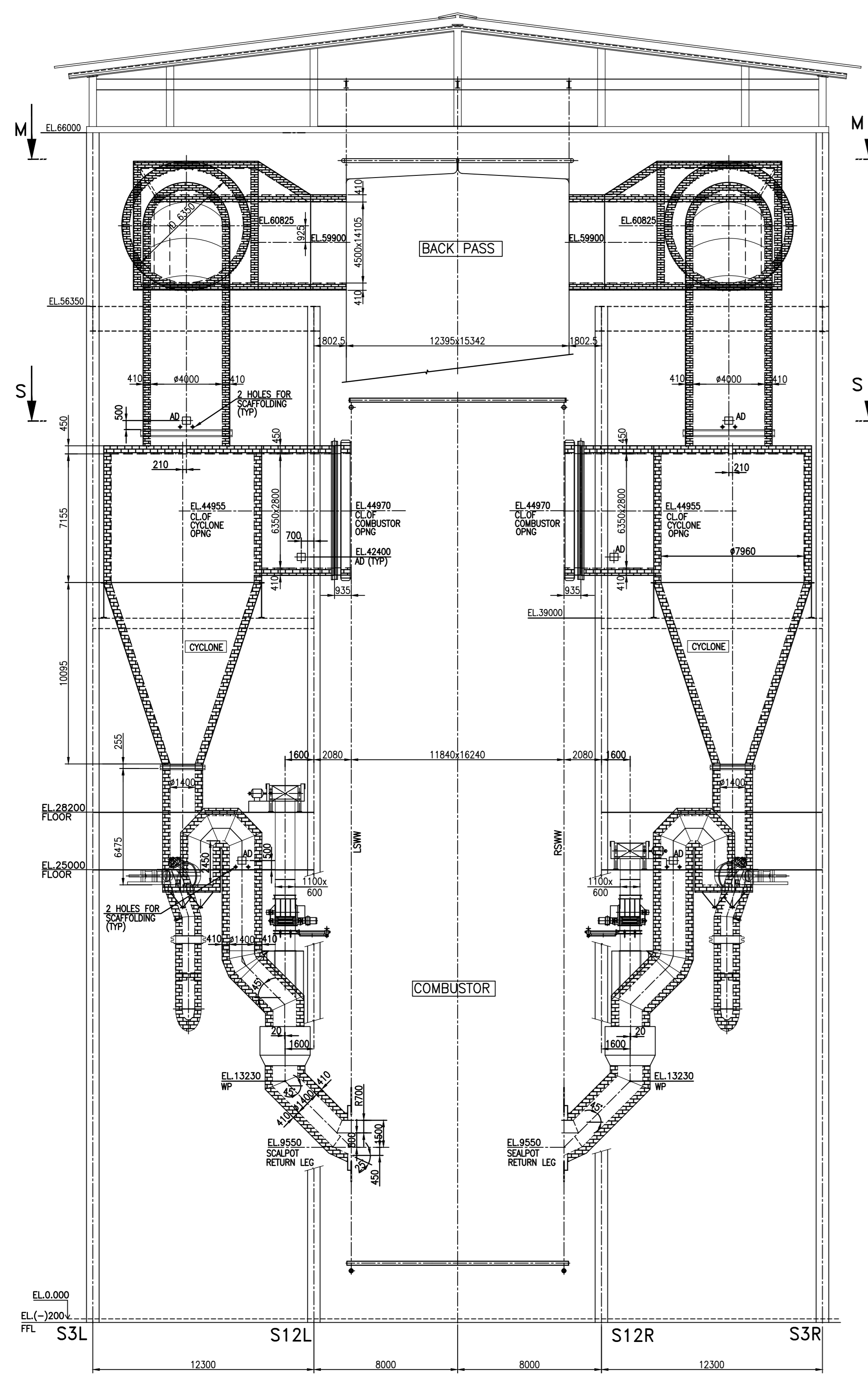


PLAN

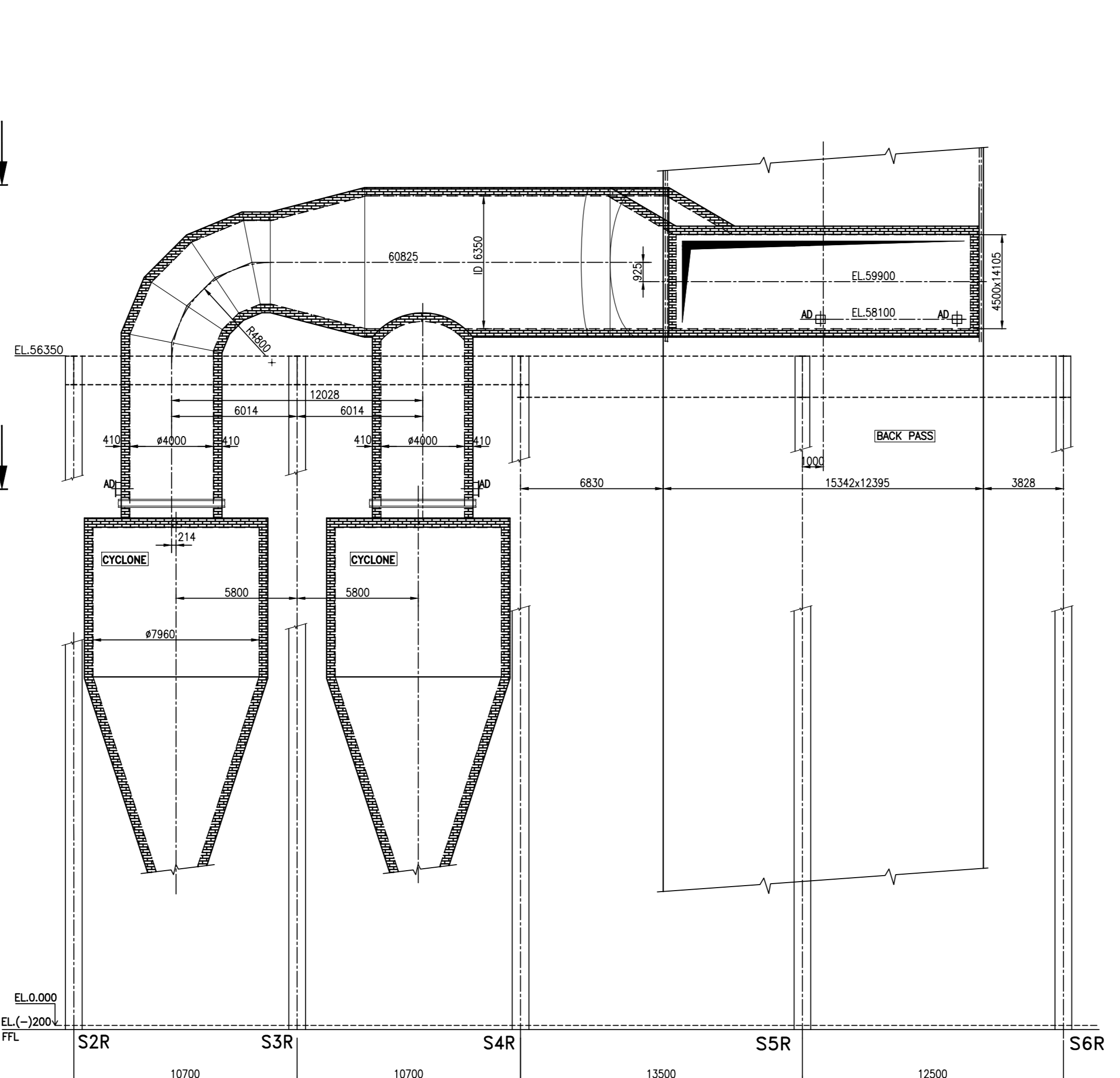


- NOTES:**
- FOR GENERAL ARRANGEMENT OF BOILER - ELEVATION REFER DRAWING No. 0-00-511-93475
 - THE LOCATION OF LIFT IS FOR UNIT-1. FOR UNIT-2, IT IS THE MIRROR IMAGE OF UNIT-1.
 - THE COLUMN DESIGNATION DETAILS ARE AS FOLLOWS.
Sxx REPRESENTS COLUMN ON BOILER AREA.
FHxx REPRESENTS COLUMN ON ID FAN HANDLING AREA.
IDxx REPRESENTS COLUMN FOR ID FAN OUTLET DUCT SUPPORT.
LCx REPRESENTS COLUMN FOR LIFT.
Tx REPRESENTS COLUMN FOR STAIRS.
D&E REPRESENTS THE ROW OF BUNKER BAY.
DSx REPRESENTS COLUMN FOR AH. OUTLET TO ESP INLET DUCT SUPPORT.
AHx REPRESENTS COLUMN FOR REGENERATIVE AIR PRE HEATER SUPPORT.
Ax REPRESENTS COLUMN FOR ASH COOLER SUPPORT.
CPx REPRESENTS COLUMN FOR CRITICAL PIPING SUPPORT.
 - THE BLOWER ROOM & SILENCER SHOWN IN BUNKER BAY IS FOR UNIT-1. FOR UNIT-2, IT IS THE MIRROR IMAGE OF UNIT-1 WITH RESPECT TO BOILER AXIS.
 - THE BLOWER ROOM SHOWN IN REAR SIDE OF THE BOILER IS IDENTICAL FOR BOTH UNITS.
 - FOR SECTION AA&BB REFER DRG No. 0-00-511-93482.

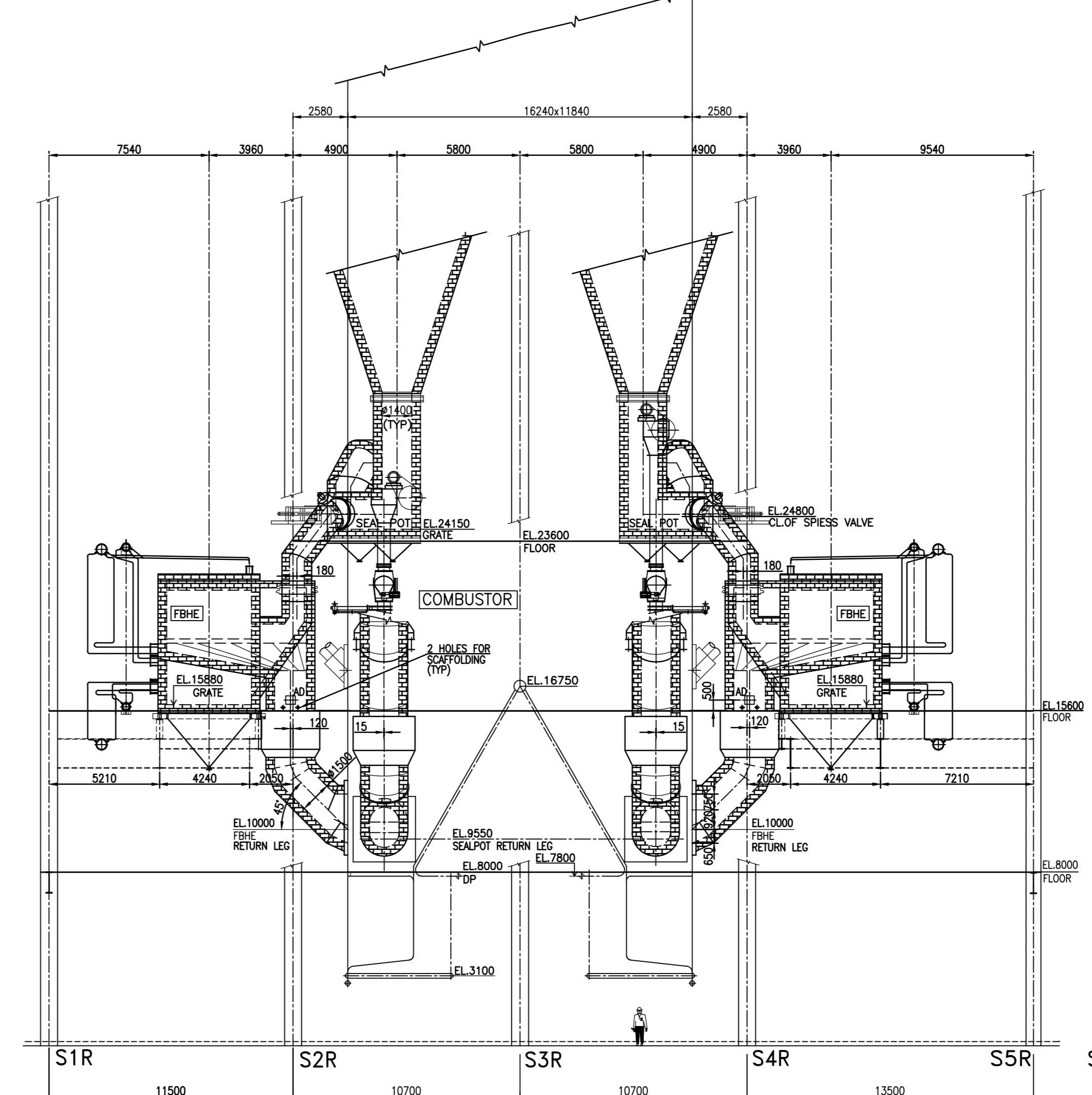
REV	DATE	ALTO	H.MOHAN	CHD	S.GNANARAJ	APPRO	S.GNANARAJ	REV	DATE	ALTO	H.MOHAN	CHD	S.GNANARAJ	APPRO	S.GNANARAJ	REV	DATE	ALTO	H.MOHAN	CHD	S.GNANARAJ	APPRO	S.GNANARAJ
03	04.07.2011	APPRO	S.GNANARAJ	02	26-10-10	APPRO	S.GNANARAJ	01	20-07-10	APPRO	S.GNANARAJ												
1. LOCATION OF LIME STONE BUNKER CHANGED (2Nos AT THE FRONT & 2Nos AT THE REAR SIDE OF THE COMBUSTOR). 2. CRITICAL PIPING SUPPORT COLUMNS ADDED. 3. LIFT LADING SPACE ADDED. 4. CHIMNEY COORDINATES UPDATED. 5. LIGNITE BUNKER SIZE UPDATED AS PER THE CUSTOMER DRG (No.TCE.5403A-207-GA-1180) RECEIVED ON 30.06.2011. 6. DRG UPDATED IN GENERAL.											1. DRAWING UPDATED IN LINE WITH AEL INPUTS. 2. DRAWING REVISED BASED ON THE MOM DATED.13.07.2010 HELD AT TRICHY. 3. THE LIGNITE BUNKER & BED MATERIAL BUNKERS SHIFTED TO INSIDE OF BOILER. 4. KEY PLAN & NOTES ADDED. 5. BID TANK LOCATION SHOWN.												
CUSTOMER DRG.No. TCE.5403A-010-BHEL-TY-0009 BHEL CUSTOMER No. 5316 & 5317 CUSTOMER BECL CONSULTANT Bhavnagar Energy Company Limited TATA 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 H.MOHAN CHECKED S.GNANARAJ APPROVED T.RADHAKRISHNAN DATE 30.06.2010											TITLE GENERAL ARRANGEMENT OF BOILER-PLAN BHEL DRG No. 0-00-511-93476 SCALE 1:175												



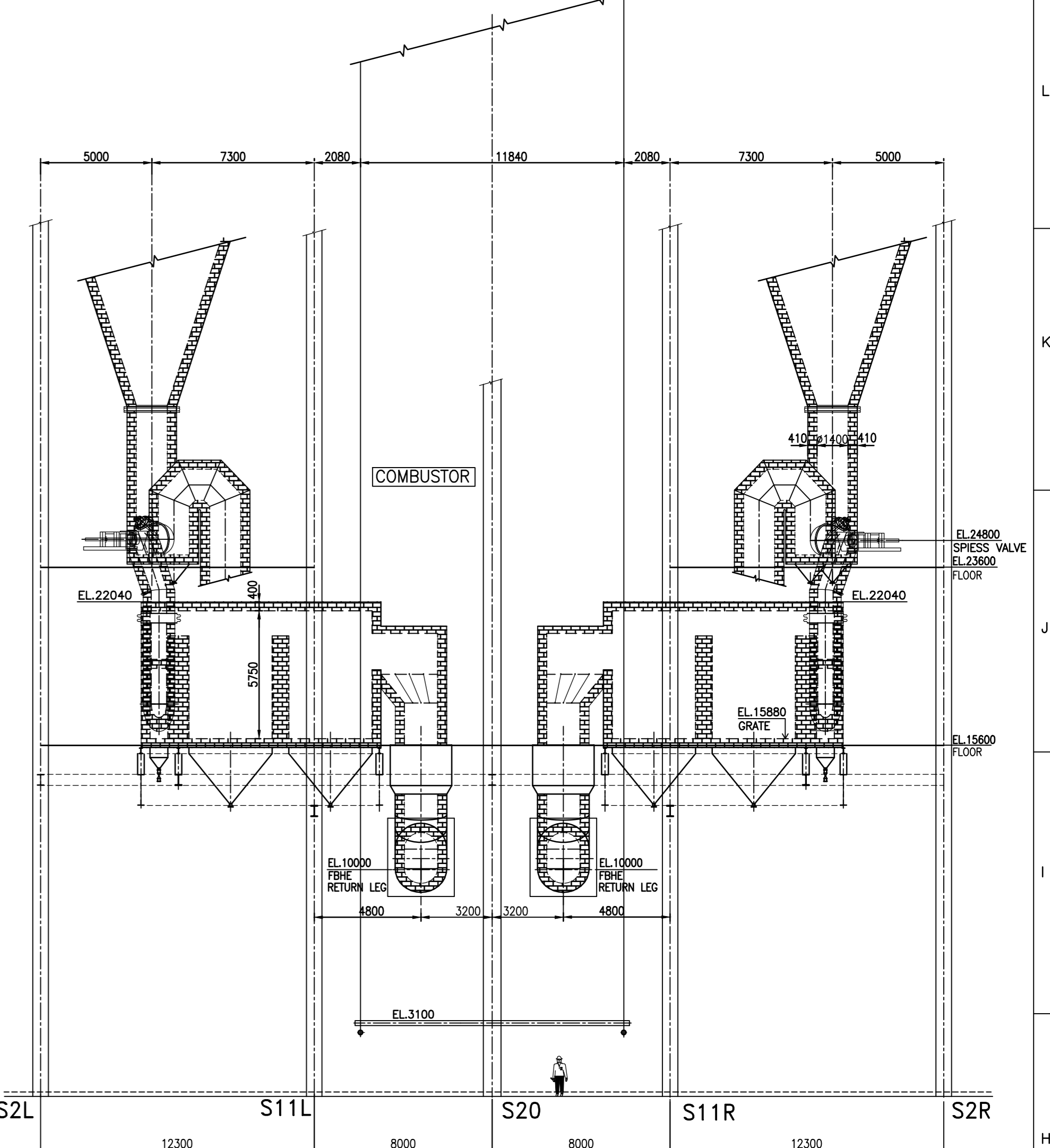
SECTION-BB
(REF.DRG. 0-00-511-93476)



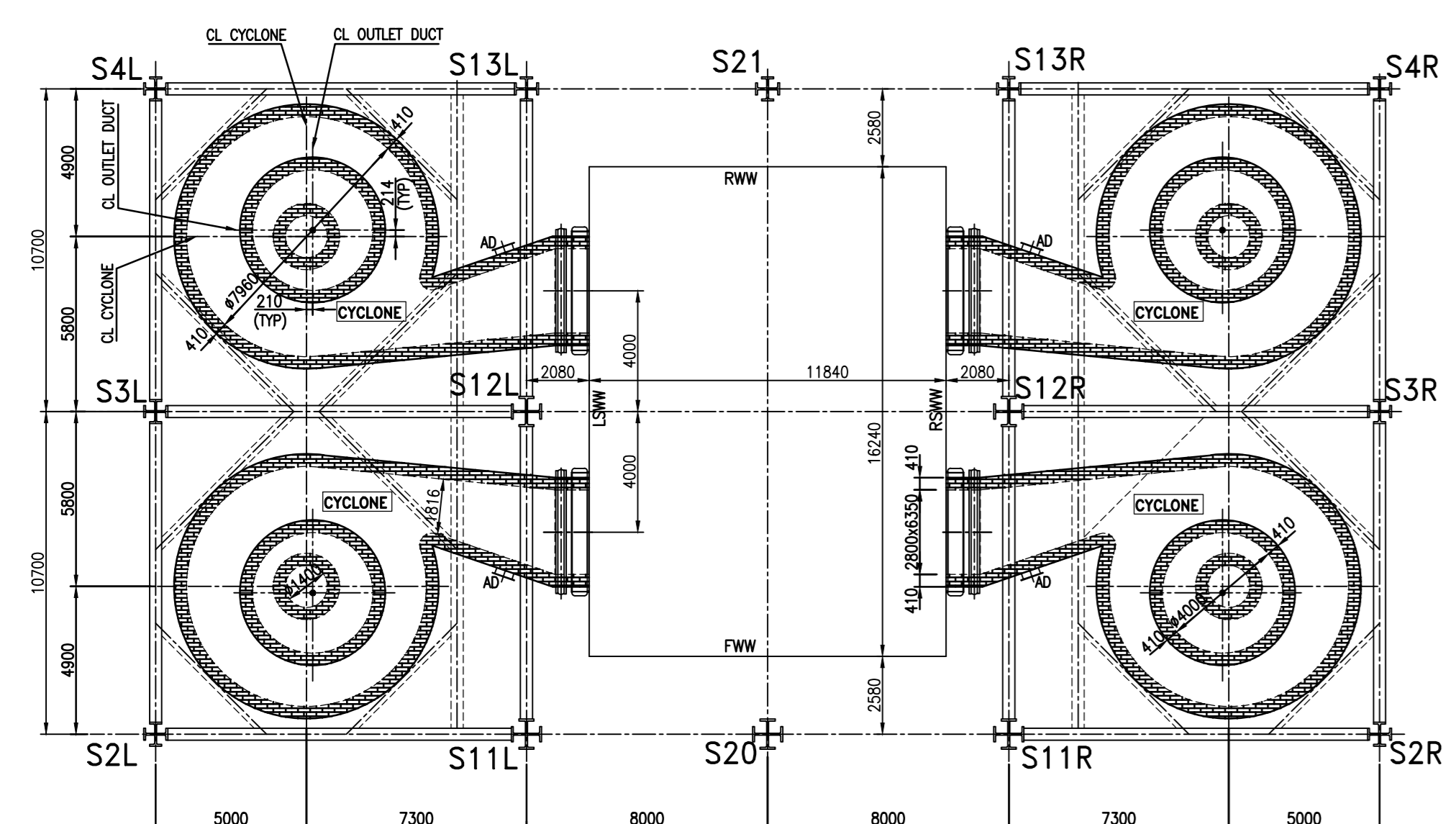
VIEW-R



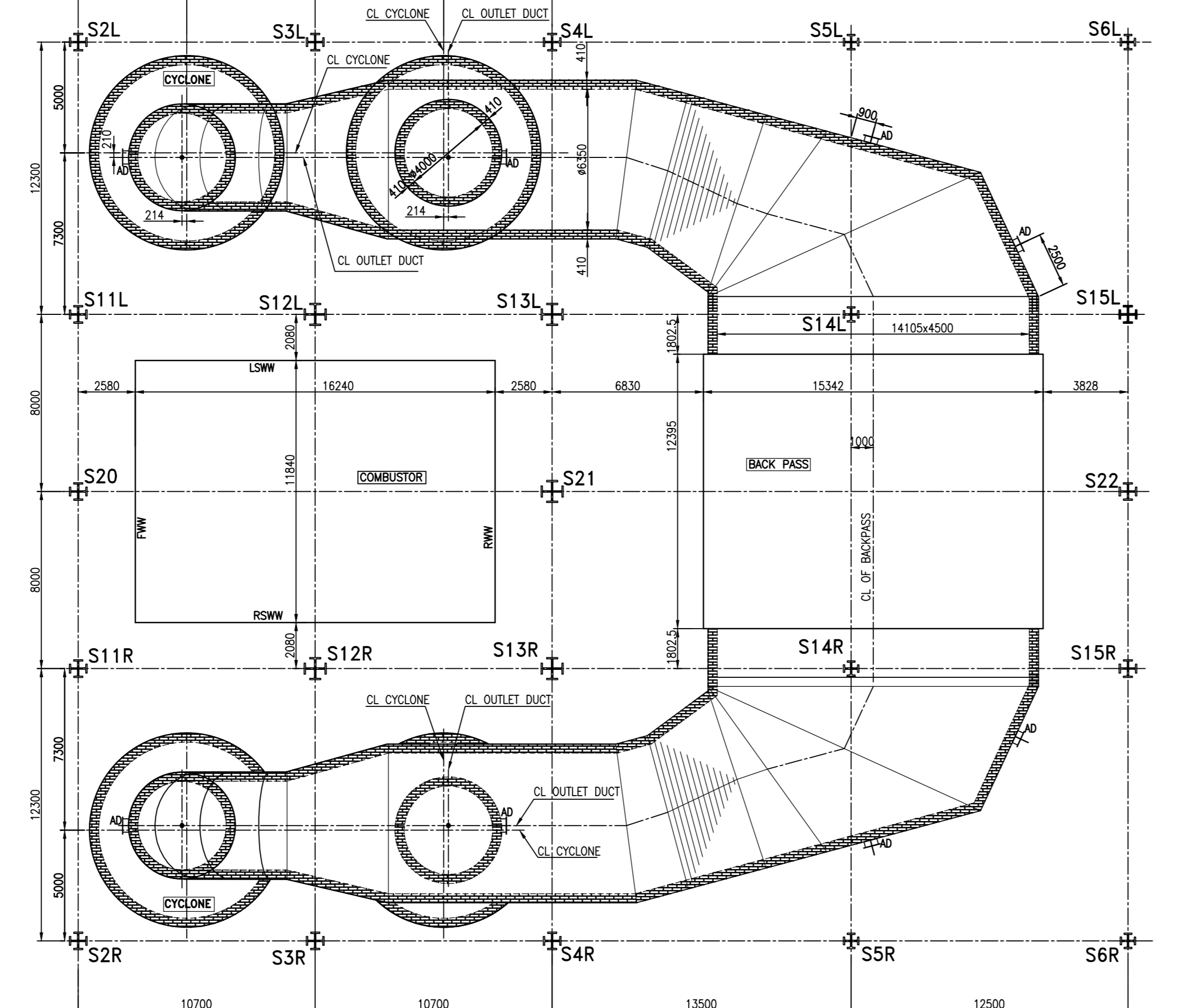
ELEVATION



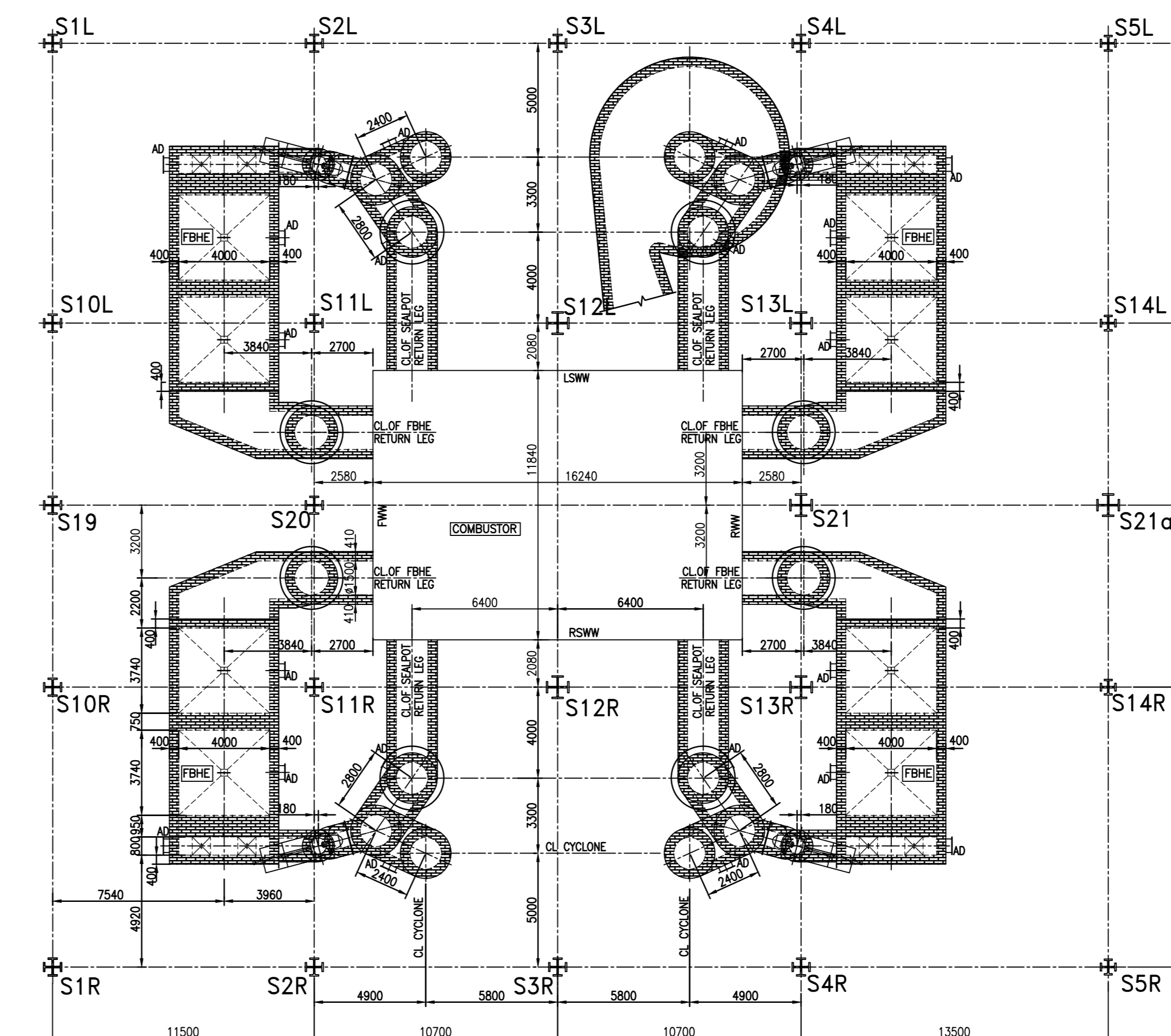
SECTION-AA
(REF.DRG. 0-00-511-93476)



VIEW-SS
(ARRANGEMENT OF CYCLONE)



VIEW-MM

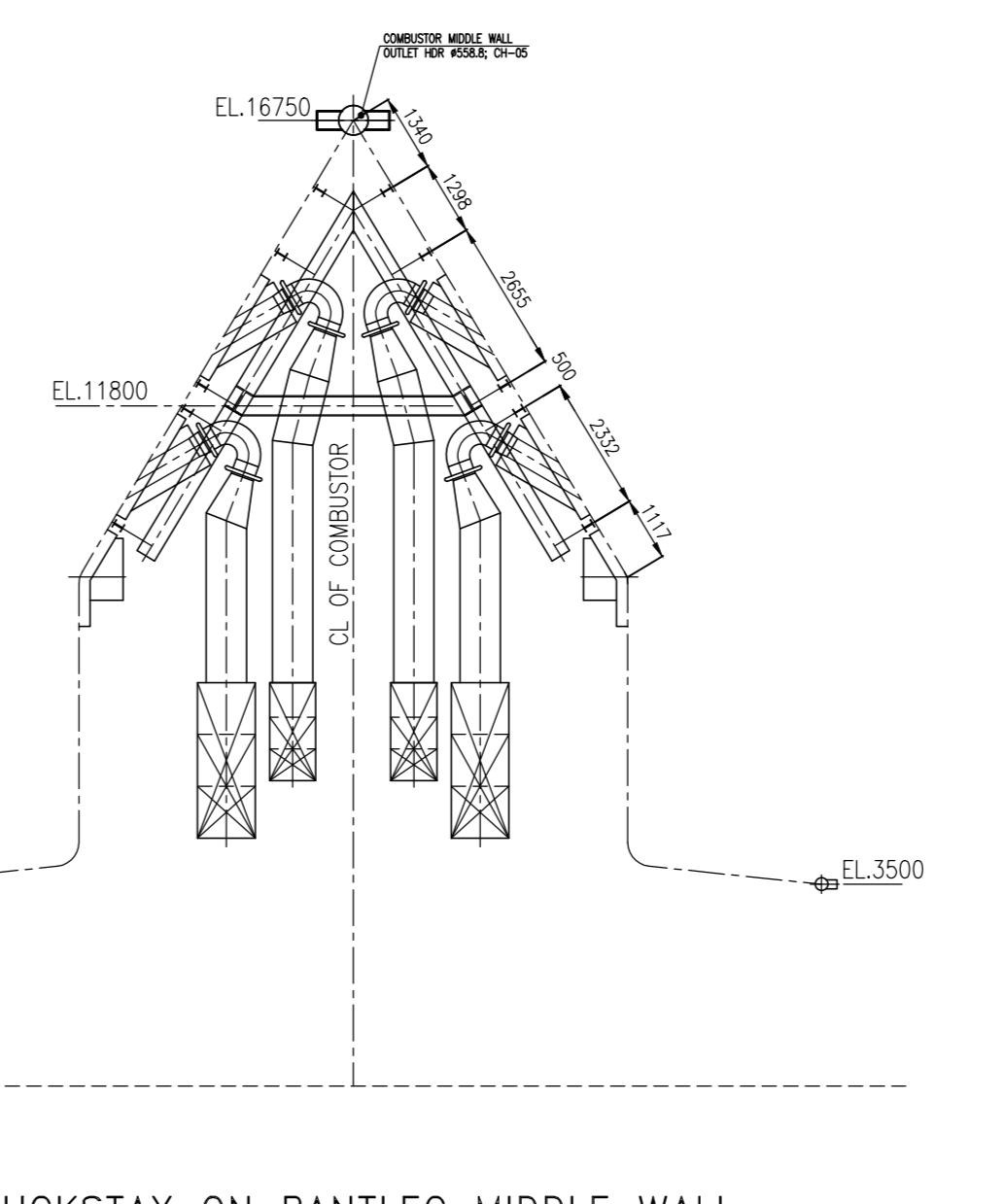
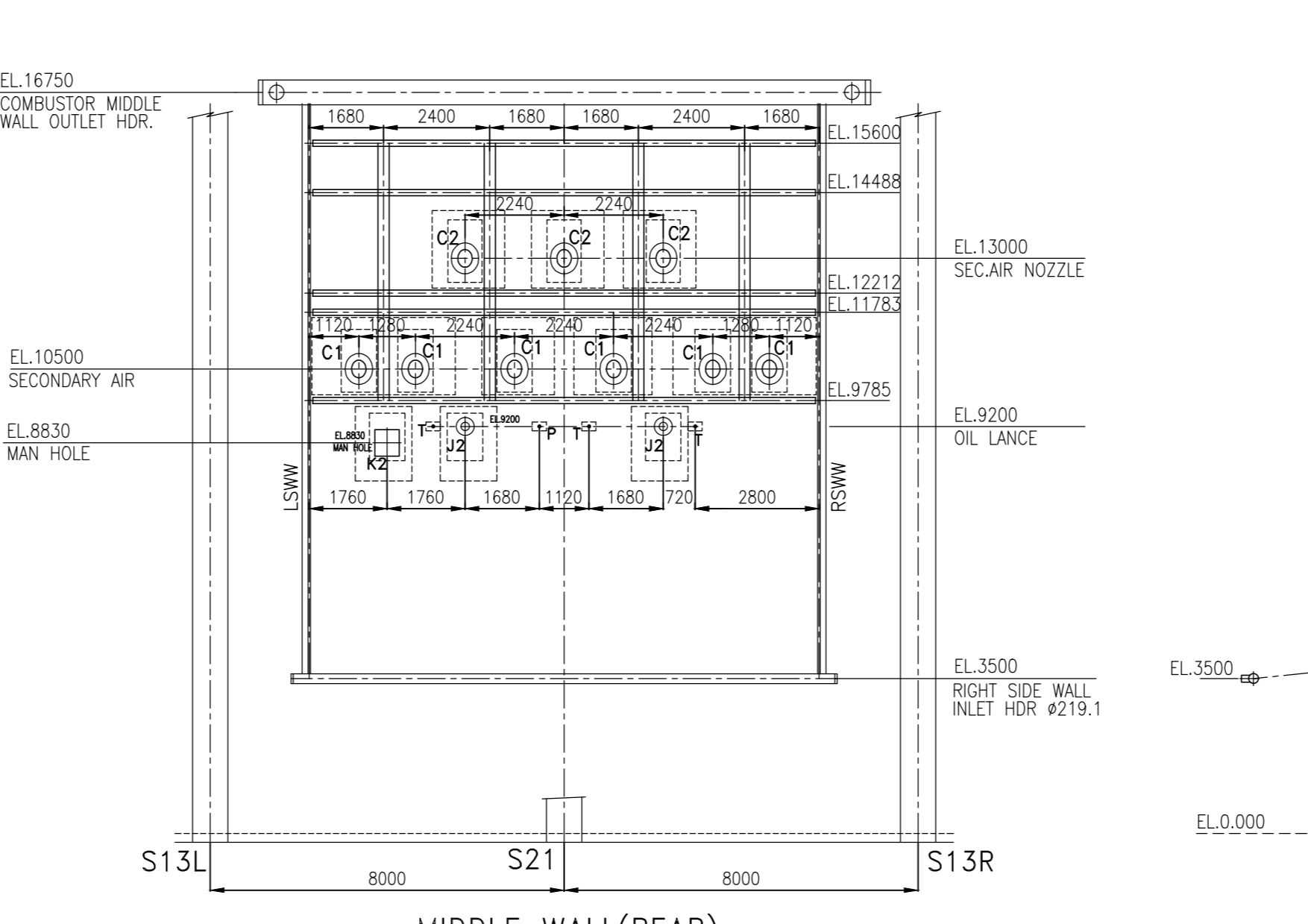
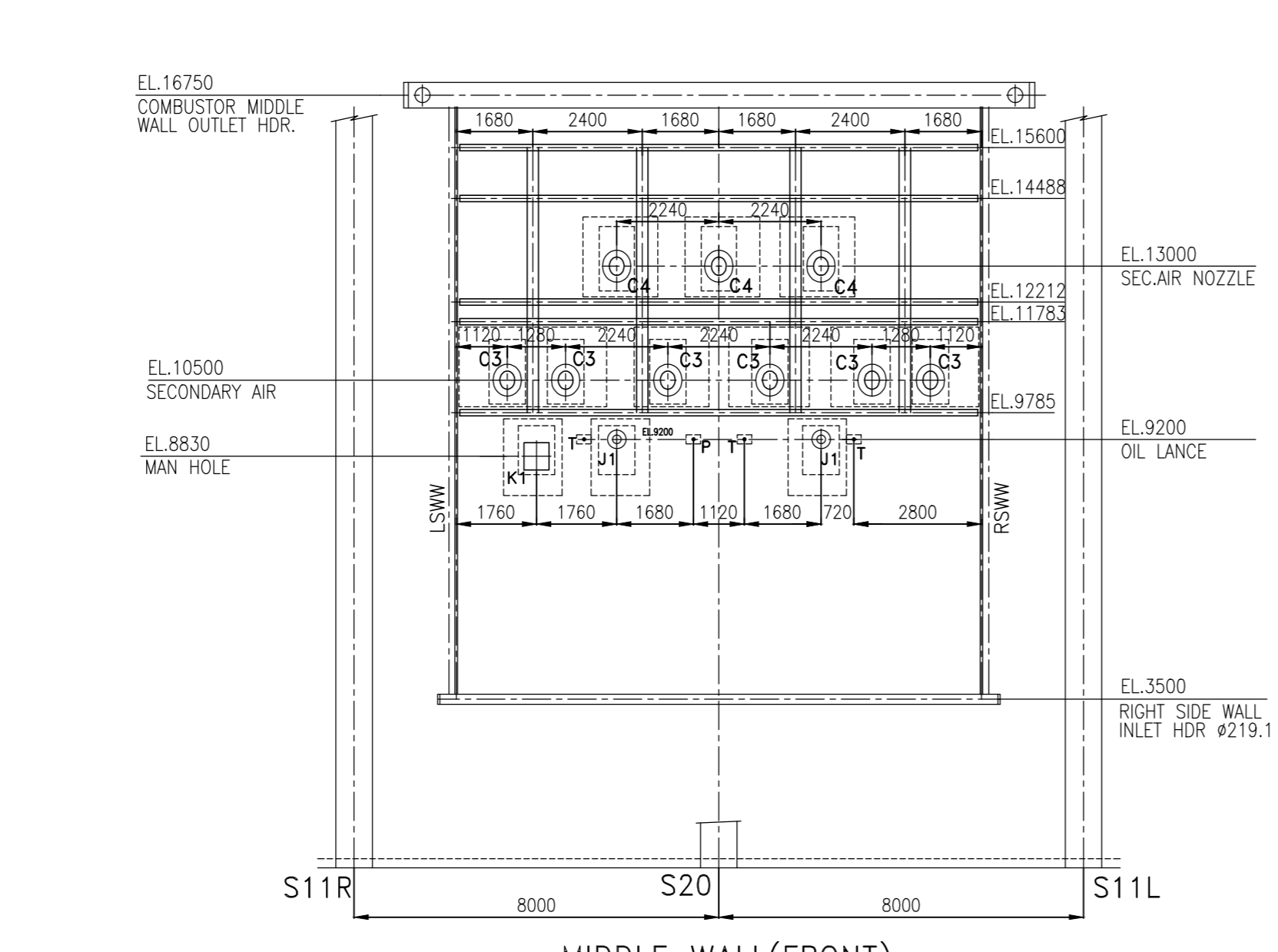
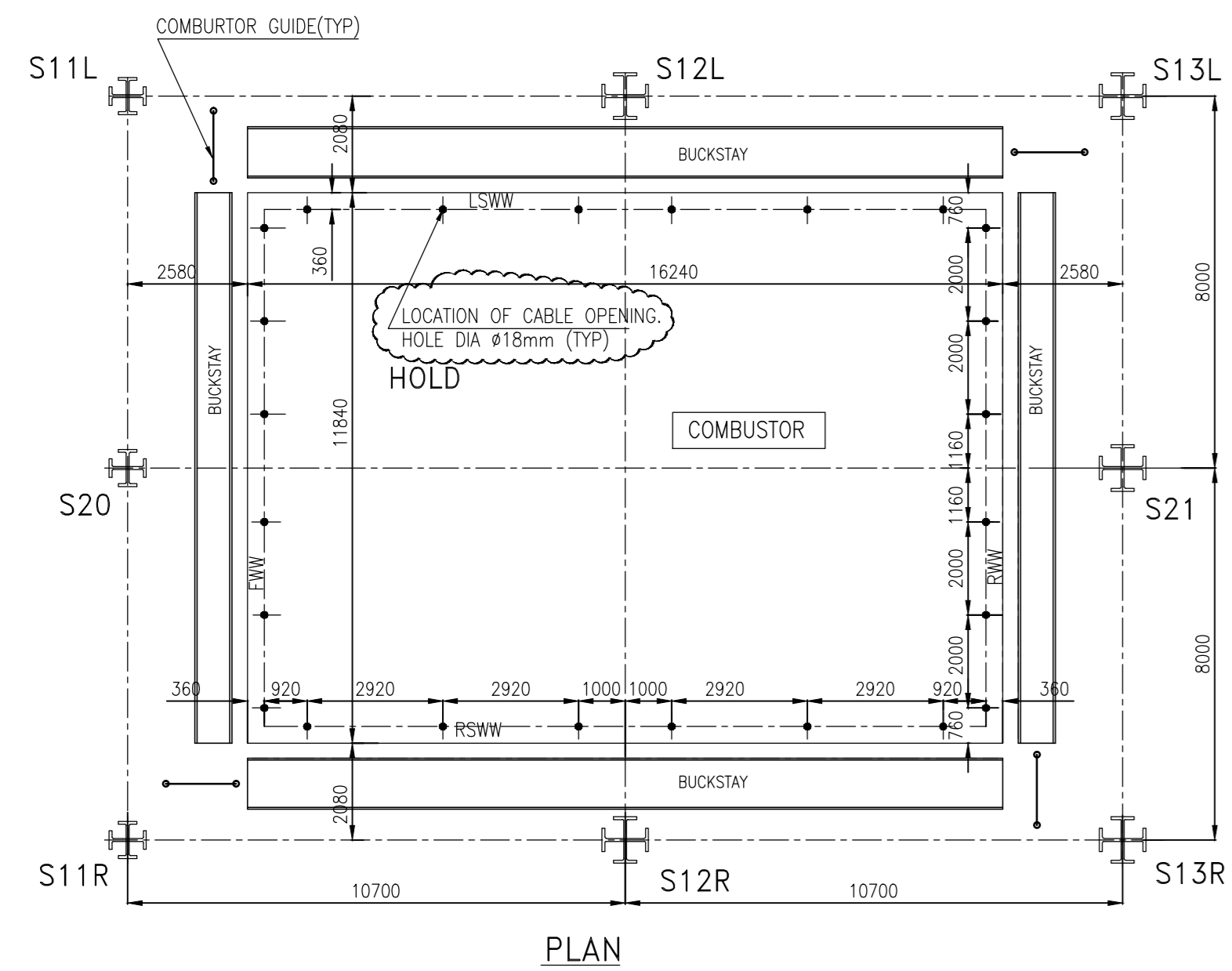
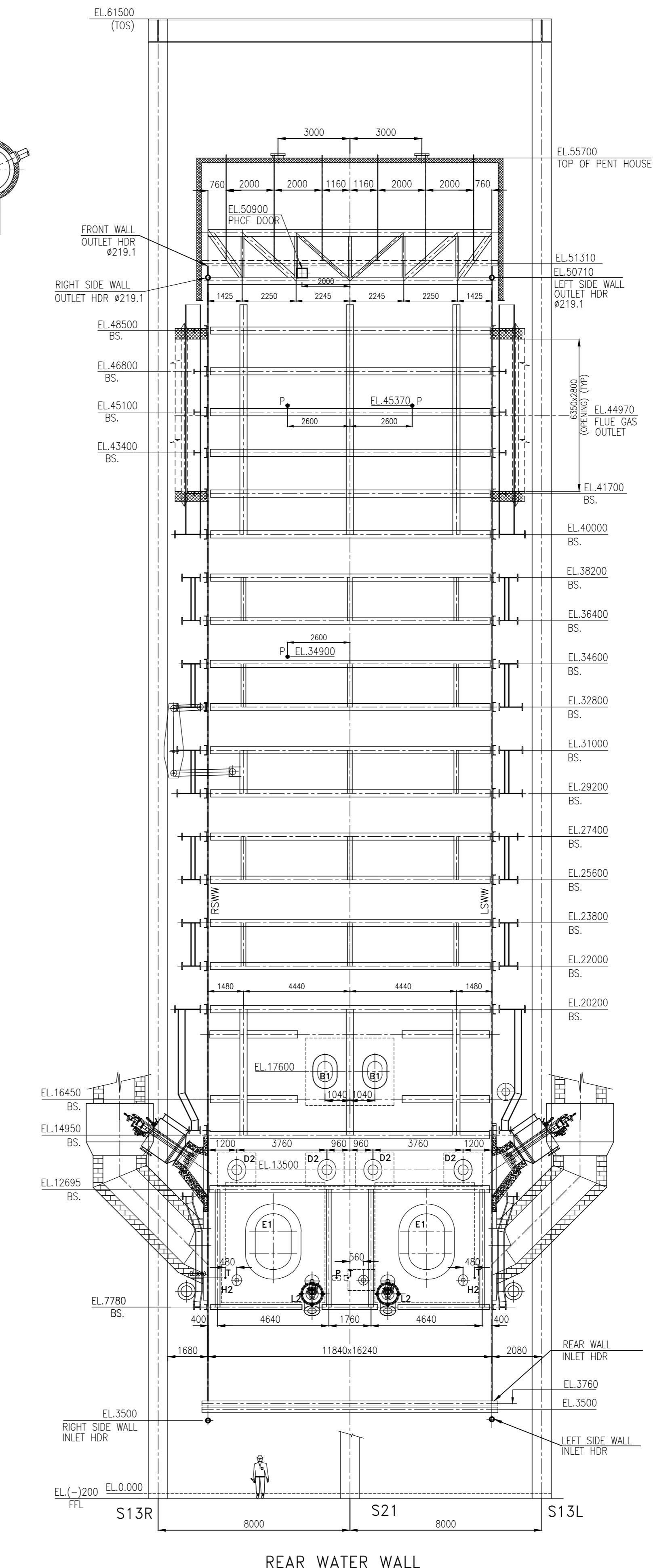
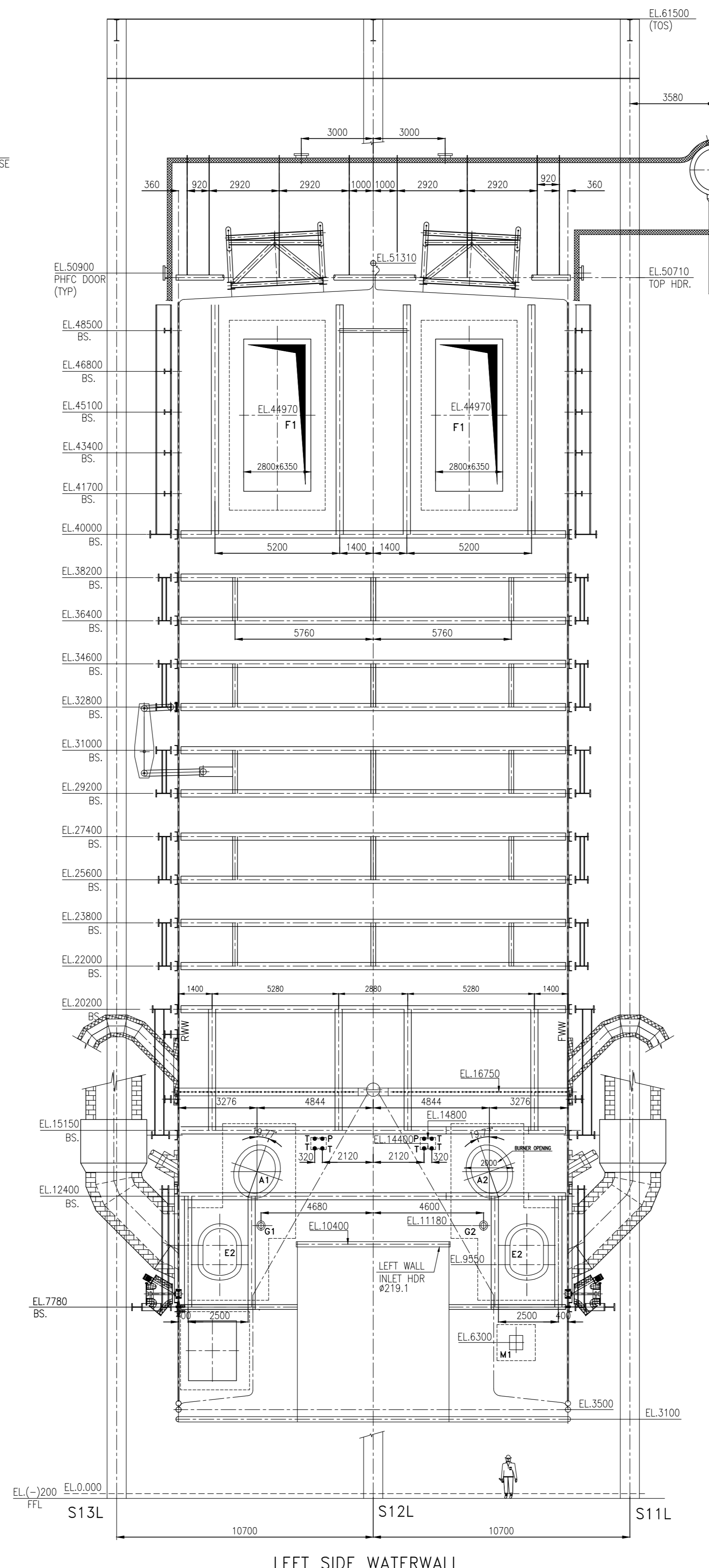
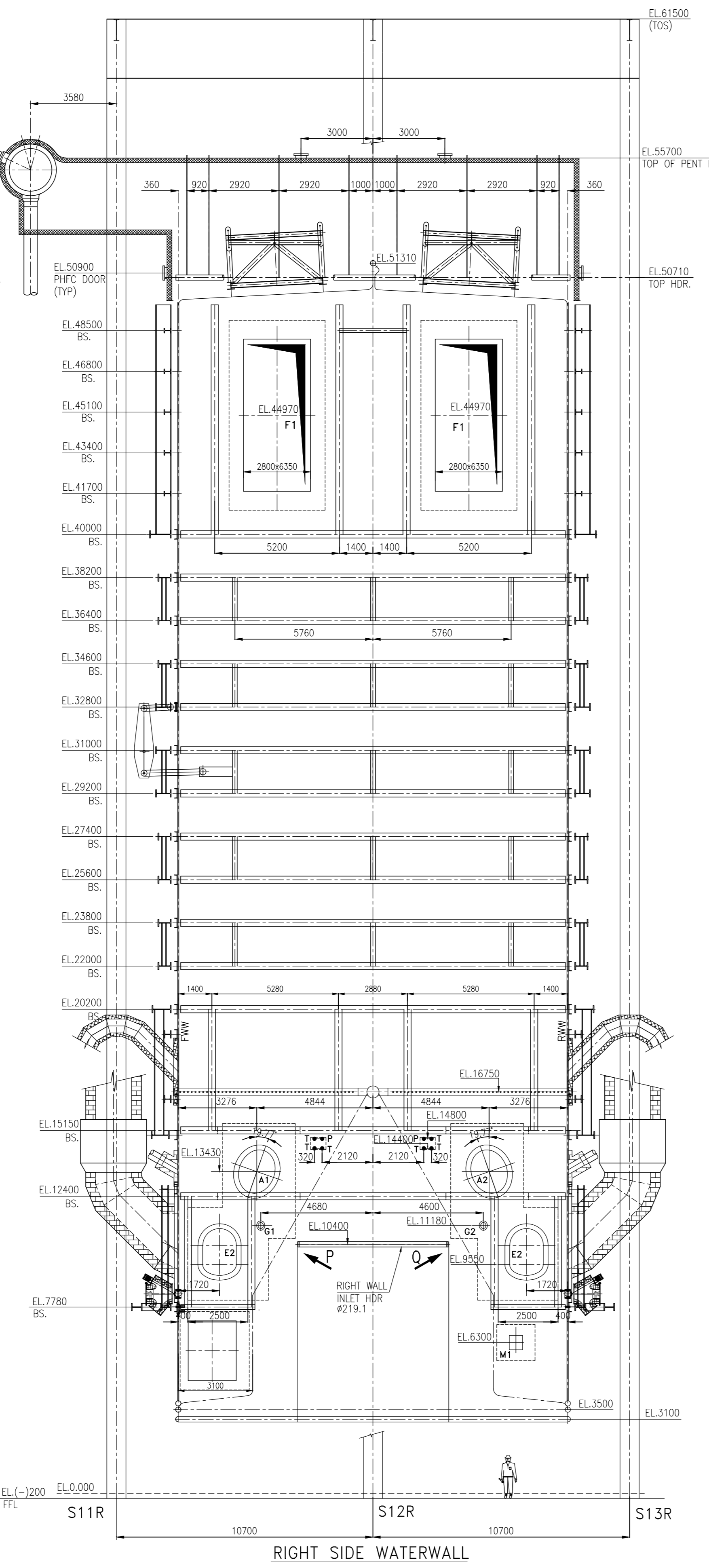
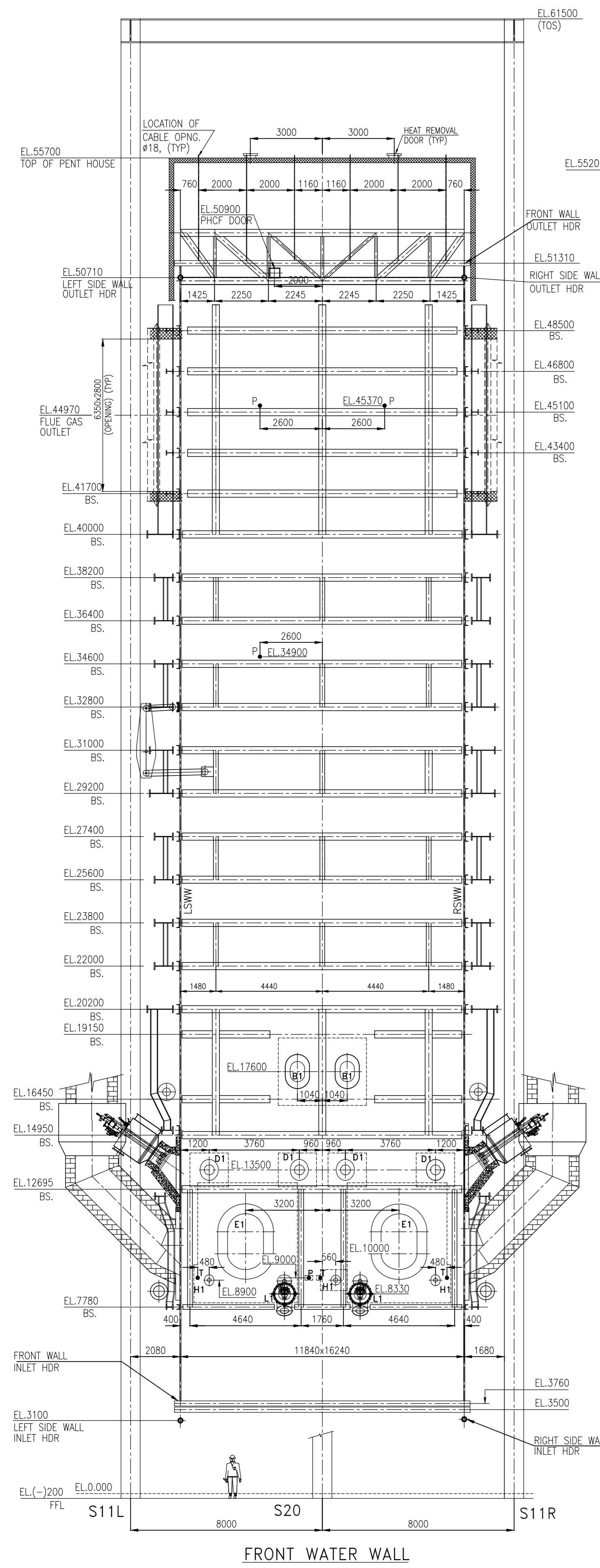


PLAN
(ARRANGEMENT OF FBHE)

NOTES

- FOR NOTES, LEGEND AND REFERENCE DRAWINGS REFER GENERAL ARRGT. OF BOILER-ELEVATION DRG.No.0-00-511-93475
- CYCLONE INLET DUCT'S TOP WALL REFRACTORY IS OF 450mm THICK AND REMAINING WALLS ARE OF 410mm THICKNESS
- DIMENSIONS SHOWN FOR CYCLONE, FBHE, SEAL POT AND THEIR CONNECTING DUCTS ARE TYPICAL.

REV	DATE	AL TO CHD	APPR	CUSTOMER DRG.No.	BHEL CUSTOMER No.	5316 & 5317
20M						
CAUTION: THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MAY BE CONFIDENTIAL TO THE INTEREST OF THE COMPANY.				CUSTOMER BECL Bhavnagar Energy Company Limited		
				CONSULTANT TATA TATA CONSULTING ENGINEERS LIMITED MUMBAI		
PROJECT BHAVNAGAR DISTRICT, GUJARAT. 2x250 MW LIGNITE BASED TPP AT PADVA, CFBC BOILER 2x810 TPH, 175kg/cm ² (g), 540°C/540°C BHARAT HEAVY ELECTRICALS LTD., BOILER PLANT UNIT, TIRUCHIRAPALLI-620 014.				DRAWN H.MOHAN CHECKED S.GANNARAJ APPROVED S.GANNARAJ DATE 24.09.2010		
				TITLE GENERAL ARRANGEMENT OF BOILER SECTION-AA & BB BHEL DRG. No. 0-00-511-93482 SCALE 1:150		
				REV. 00		



COMBUSTOR OPENING DETAILS

SL.No.	OPENING NOMENCLATURE	DESCRIPTION	OPENING SIZE	ELEVATION	LOCATION
1	A1A2	START UP BURNER	ELLIPSE 1707/2246	EL. 13430	COMBUSTOR RIGHT SIDE WALL
2	A3A4	START UP BURNER	ELLIPSE 1707/2246	EL. 13430	COMBUSTOR LEFT SIDE WALL
3	B1,B2	ASH COOLER VENT PIPE	ØIA 600	EL. 17600	COMBUSTOR FRONT WALL
4	B3,B4	ASH COOLER VENT PIPE	ØIA 600	EL. 17600	COMBUSTOR REAR WALL
5	C1	SEC. AIR NOZZLE	ØIA 360	EL. 10000	COMBUSTOR MIDDLE WALL (REAR)
6	C2	SEC. AIR NOZZLE	ØIA 360	EL. 13500	COMBUSTOR MIDDLE WALL (REAR)
7	C3	SEC. AIR NOZZLE	ØIA 360	EL. 10000	COMBUSTOR MIDDLE WALL (FRONT)
8	C4	SEC. AIR NOZZLE	ØIA 360	EL. 13500	COMBUSTOR MIDDLE WALL (FRONT)
9	D1	SEC. AIR NOZZLE	ØIA 400	EL. 13500	COMBUSTOR FRONT WALL
10	D2	SEC. AIR NOZZLE	ØIA 400	EL. 13500	COMBUSTOR REAR WALL
11	E1	FBHE TO COMBUSTOR	ØIA 1500	EL. 10000	COMBUSTOR FRONT WALL
12	E2	FBHE TO COMBUSTOR	ØIA 1500	EL. 10000	COMBUSTOR REAR WALL
13	F1	SCALPOT TO COMBUSTOR	ØIA 1400	EL. 9550	COMBUSTOR LEFT SIDE WALL
14	F2	SCALPOT TO COMBUSTOR	ØIA 1400	EL. 9550	COMBUSTOR RIGHT SIDE WALL
15	F3	GAS OUTLET OPENING	Ø350x2800	EL. 44970	COMBUSTOR RIGHT SIDE WALL
16	F4	GAS OUTLET OPENING	Ø350x2800	EL. 44970	COMBUSTOR LEFT SIDE WALL
17	G1,G2	BED MATERIAL OPENING	ØIA 219.1	EL. 11180	COMBUSTOR RIGHT SIDE WALL
18	G1,G2	BED MATERIAL OPENING	ØIA 219.1	EL. 11180	COMBUSTOR LEFT SIDE WALL
19	H1	OIL LANCE	ØIA 168.3	EL. 8900	COMBUSTOR FRONT WALL
20	H2	OIL LANCE	ØIA 168.3	EL. 8900	COMBUSTOR REAR WALL
21	J1	OIL LANCE	ØIA 168.3	EL. 9200	COMBUSTOR MIDDLE WALL (FRONT)
22	J2	OIL LANCE	ØIA 168.3	EL. 9200	COMBUSTOR MIDDLE WALL (REAR)
23	L1	COMBUSTOR ASH OUTLET	ØIA 550	EL. 8330	COMBUSTOR FRONT WALL
24	L2	COMBUSTOR ASH OUTLET	ØIA 550	EL. 8330	COMBUSTOR REAR WALL
25	K1	MANHOLE	Ø600x600	EL. 8830	COMBUSTOR MIDDLE WALL (FRONT)
26	K2	MANHOLE	Ø600x600	EL. 8830	COMBUSTOR MIDDLE WALL (REAR)
27	PHCF DOOR	PENT HOUSE COOLING FAN DOOR	4500x400	EL.50900	COMBUSTOR FRONT & REAR WALL
28	M1	MANHOLE	Ø600x600	EL. 6300	COMBUSTOR RIGHT SIDE WALL
29	M2	MANHOLE	Ø600x600	EL. 6300	COMBUSTOR LEFT SIDE WALL

LEGEND:

SL.No.	DESCRIPTION	SYMBOL
01	ACCESS DOOR	AD
02	BUCKSTAYS	BS
03	FURNACE GUIDE	FG
04	TEMPERATURE POCKET	T
05	PRESSURE POCKET	P
06	HEAT REMOVAL DOOR (600x600) MAN HOLE DOOR (600x600)	AD
07	FRONT WATER WALL	FWW
08	REAR WATER WALL	RWW
09	LEFT SIDE WATER WALL	LSWW
10	RIGHT SIDE WATER WALL	RSWW

REFERENCE DRAWINGS:

- 01. GENERAL ARRANGEMENT OF BOILER ELEVATION - - - 0-00-511-93475
- 02. GENERAL ARRANGEMENT OF BOILER PLAN - - - 0-00-511-93476
- 03. PPA ARRANGEMENT OF COMBUSTOR AND FBHE - - - 0-00-521-98300

NOTES:

- 01. FOR NOTES, LEGEND & REFERENCE DRAWINGS REFER GENERAL ARRGT. OF BOILER - ELEVATION DRAWING No. 0-00-511-93475
- 02. THIS DRAWING TO BE READ ALONG WITH DWG. No. 0-00-515-93511 LOCATION OF FURNACE OPENINGS & BUCKSTAYS. (BACKPASS)

REV	DATE	ALT TO	CUSTOMER DRG.No.	BHEL CUSTOMER No.
01		CHD		5316 & 5317
		APPD		
BECL				
Bhavnagar Energy Company Limited				
CONSULTANT TATA 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	M.DHARMALINGAM	TITLE	LOCATION OF FURNACE OPENING AND BUCKSTAYS (COMBUSTOR)	
CHECKED	KASHOK KUMAR			
APPROVED	S.NANARAJ			
DATE	16.05.2011			
ALL DIMENSIONS ARE IN MILLIMETRES			BHEL DRG. No.	REV.
SCALE 1:125			0-00-515-93510	00

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