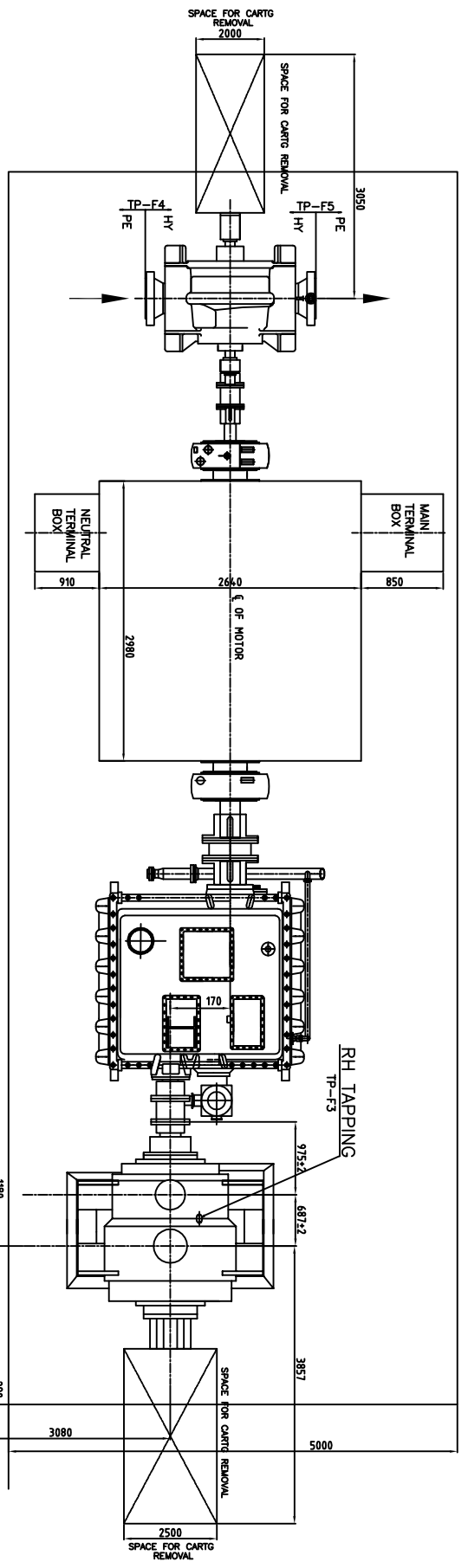


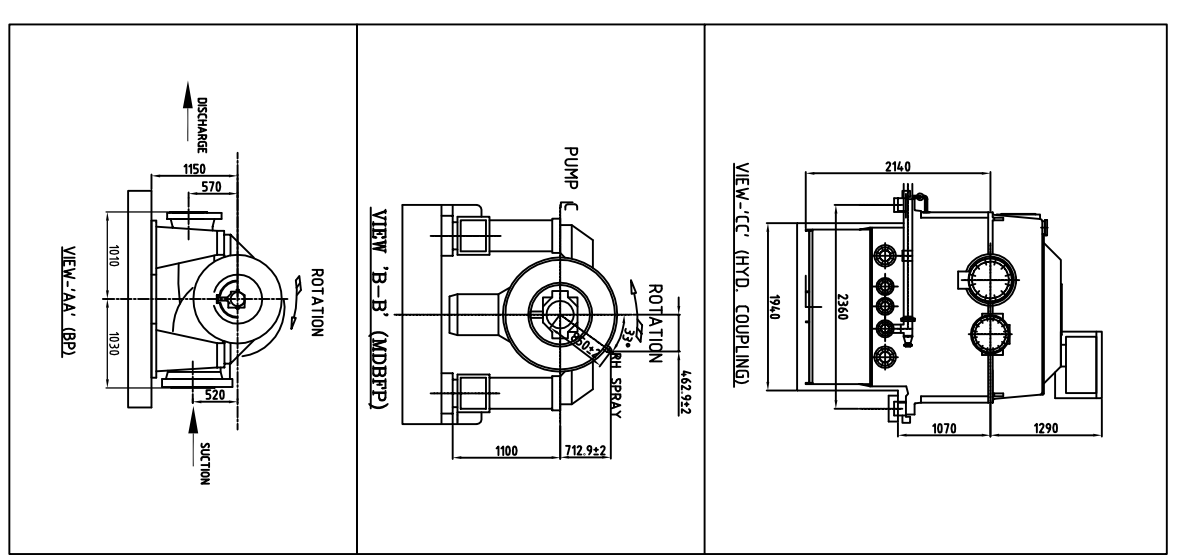
ELEVATION



PLAN

TERMINAL POINT	DESCRIPTION	SIZE (INCH)	TERMINATED WITH	QTY.
TP-F1	SUCTION OF FEED PUMP	16	400A (3.W.)	1
TP-F2	DISCHARGE OF FEED PUMP	18	450A (3.W.)	1
TP-F3	R.H. SPRAY	3	ASME 1500 LB-100A R.L.	1
TP-F4	SUCTION OF BOOSTER PUMP	18	ASME 600LB-450A	1
TP-F5	DISCHARGE OF BOOSTER PUMP	14	ASME 600LB-350A	1

TECHNICAL DATA OF BOILER FEED PUMP & BOOSTER PUMP	
PIPE TYPE	BOILER FEED PUMP
MODEL	H06 455 (PH)
TYPE	MULTI STAGE AXIALLY SPLIT INNER CASING & BARREL TYPE OUTER CASING
DIRECTION OF ROTATION (VIEWED FROM PUMP DRIVE END)	CLOCKWISE
DESIGN CAPACITY/PUMP (M ³ /HR)	1600
DESIGN HEAD (M.M.)	3130
TEMPERATURE (DEG C)	188.5
MPH REQUIRED (M.M.)	188.5
GRADE OF BALANCING	G 2.5
MOTOR RATING OF BFP SET (KW)	20,500



SCOPE OF SUPPLY
 HY BHEL HYDERABAD SCOPE
 PE BHEL PEM SCOPE

- NOTE :
1. TERMINAL POINTS SHOWN IN THE HYD./MHI SCOPE INCLUDES COUNTER FLANGES ALONG WITH FASTENERS & GASKETS.
 2. FOR LOADING POINTS & LOADS, REFER MDBFP FOUND. DRG.NO.: HY-DG-1-180000-57695

REV.	DATE	BY	CHKD.	DESCRIPTION
1	18/05/2018
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

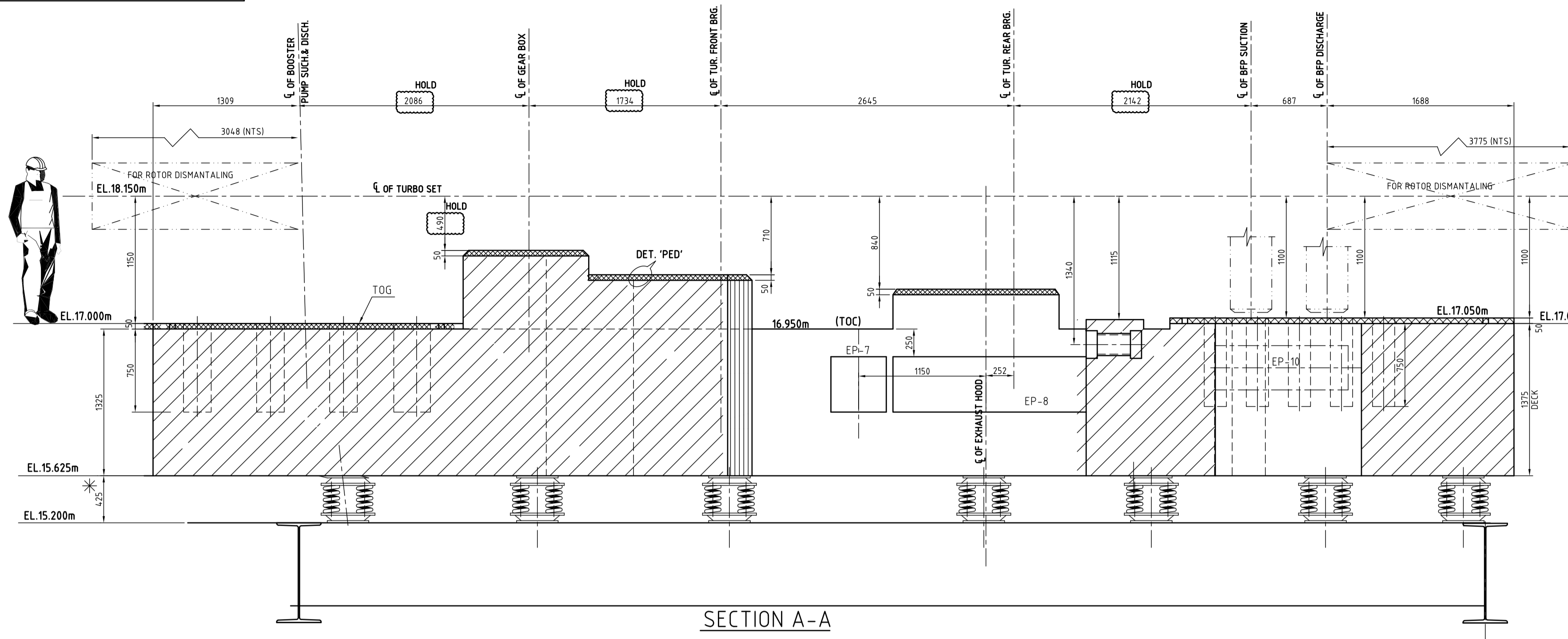
1. JOB NO.: 438
 2. STATUS: CONTRACT
 3. DRG./REF. NO. (INTERNAL): 1 180 005 7697
 4. DISTRIBUTION:
 5. NO. OF:
 6. No. of:

TITLES: GENERAL ARRANGEMENT OF MDBFP SET

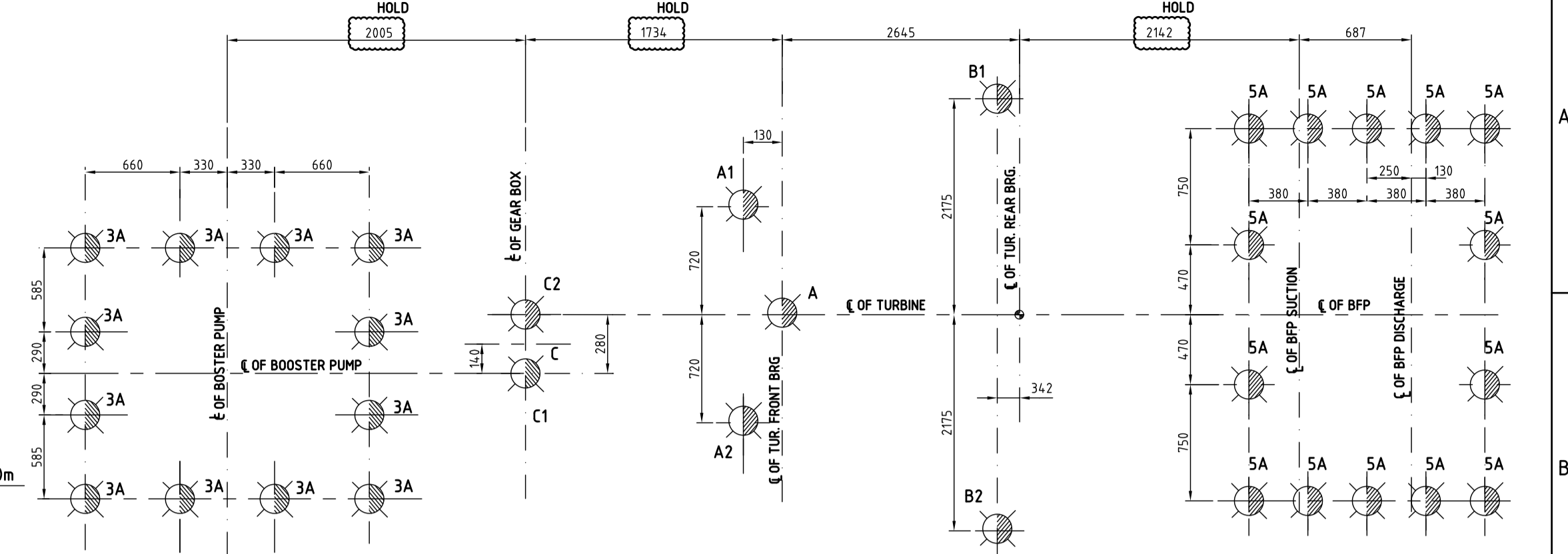
CUSTOMER: TELANGANA STATE POWER GENERATION CORPORATION LTD
 15800 MW KOTHAGUDA 755 STAGE-III UNIT/2A2, PALNCHHA
 DEVELOPMENT CONSULTANTS PVT. LTD.
 CONSULTING ENGINEERS
 KOLLA MOHBI CHENNAI NEW DELHI
 BHARAT HEAVY ELECTRICALS LTD
 PROJECT ENGINEERING MANAGEMENT
 NODIA

DATE: 18/05/2018
 DRAWING NO.: HY-DG-1-18000-57697
 SHEET: 1 OF 10
 SCALE: AS SHOWN

DRG. NO. HY-DG-K28-139-0111



SECTION A-A

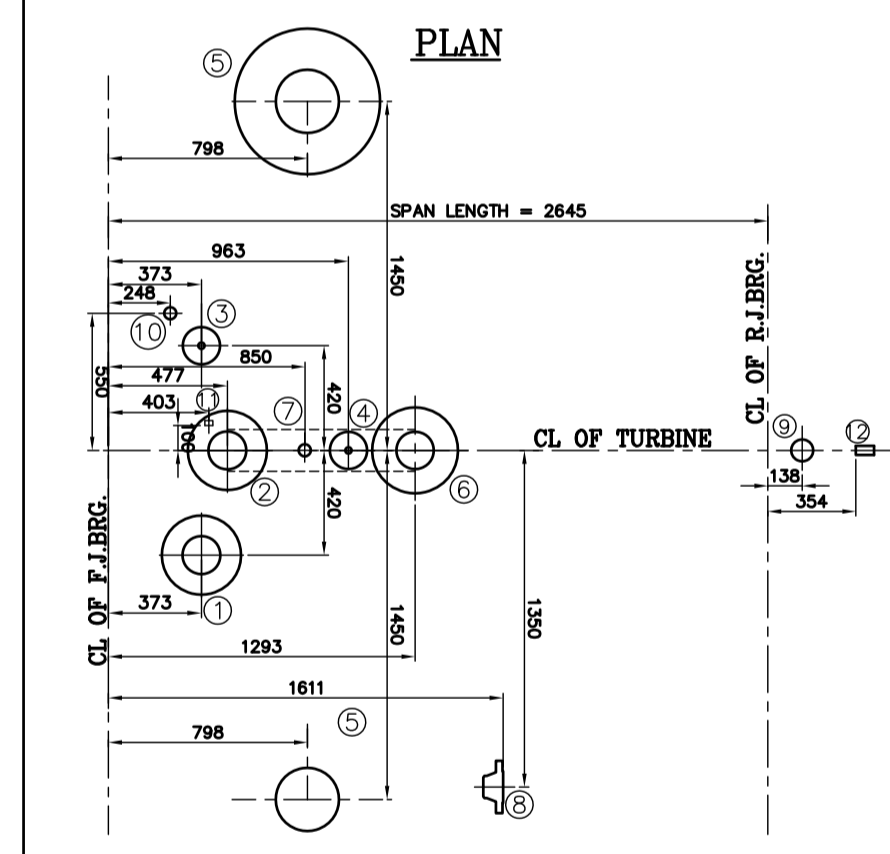
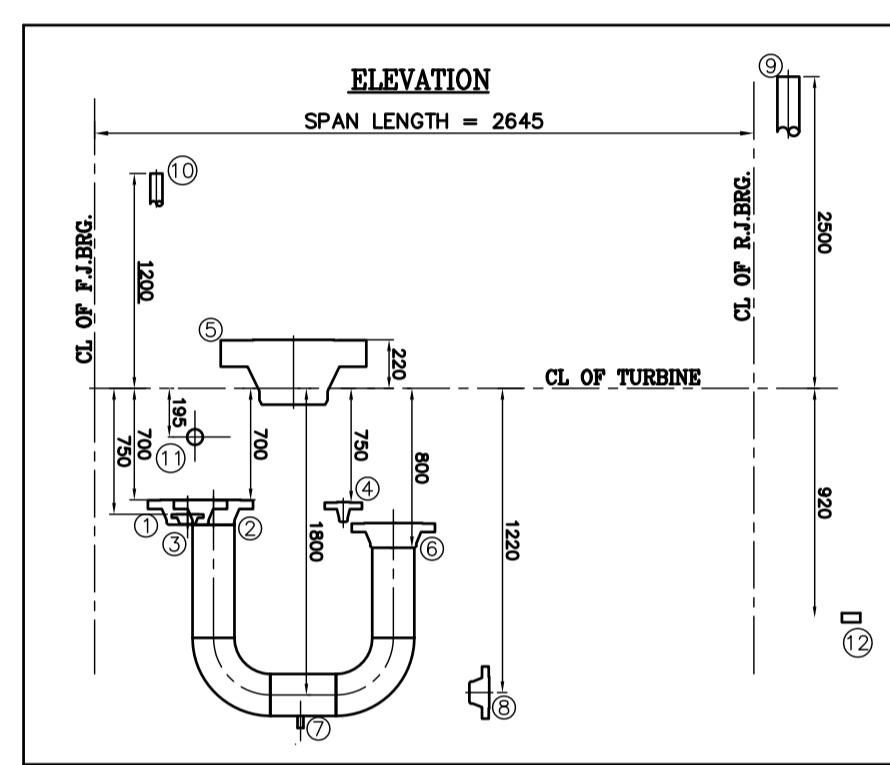


LOCATION OF LOAD POINTS ON FOUNDATION TOP DECK (FOR PUMP-A & B)

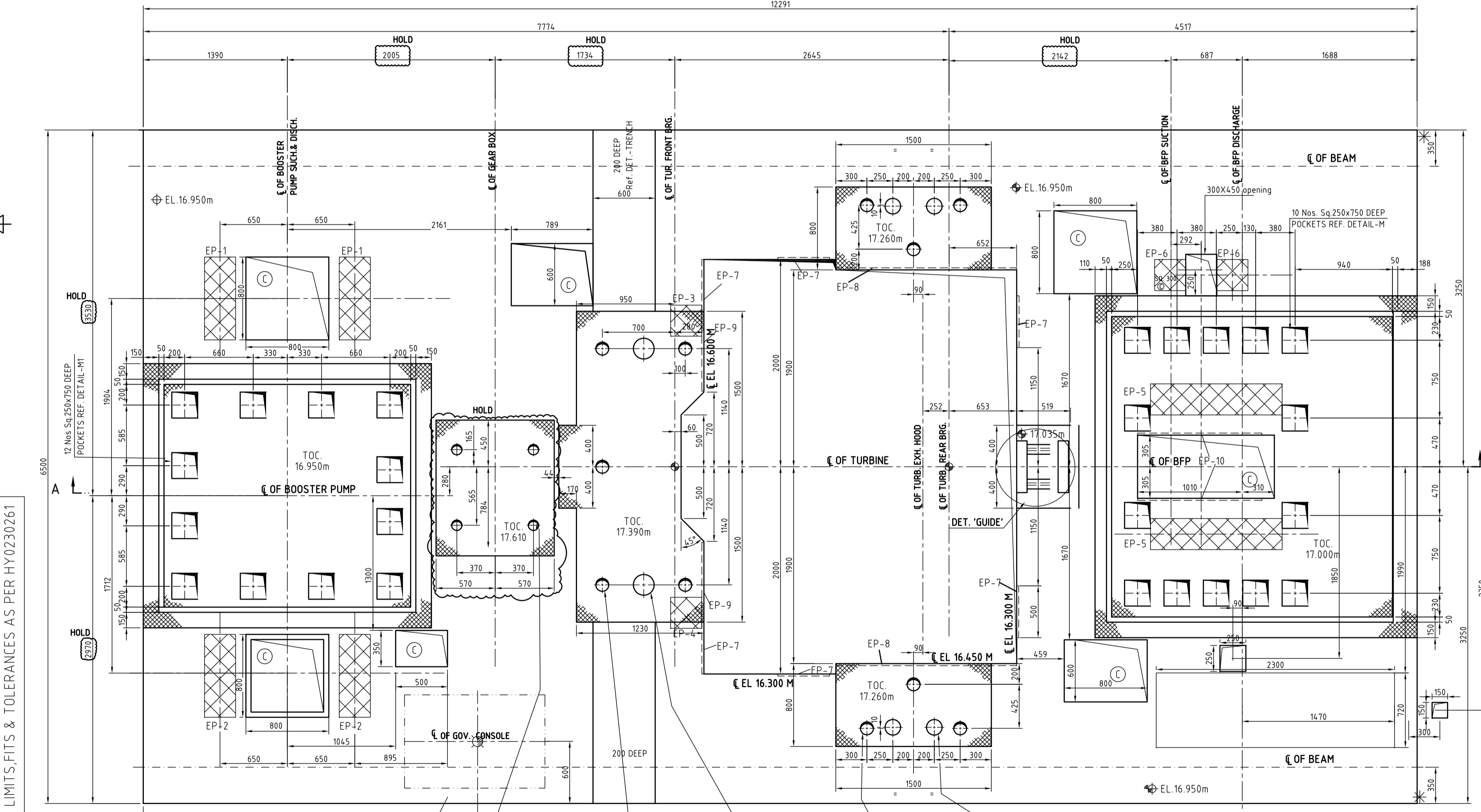
DESIG.	PLATE SIZE	LOADS	QTY No's	LOCATION
EP-1	800X300	3 T	2	BP SUCTION & ON BOTTOM OF THE DECK
EP-2	800X300	3 T	2	BP DISCHARGE & ON BOTTOM OF THE DECK
EP-3	300X300	15 T	1	STEAM TO BFPT & ON BOTTOM OF THE DECK
EP-4	300X300	15 T	1	STEAM TO BFPT & ON BOTTOM OF THE DECK
EP-5	1270X300	10 T	2	TDBFP SUCTION /DISCHARGE ON BOTTOM OF THE DECK
EP-6	300X300	1 T	2	RH SPRAY ON TOP
EP-7	500 X 500	4.5 T	6	VERTICAL SIDE OF DECK (CL EL. 16.300 M)
EP-8	1750 X 500	5.5 T	2	VERTICAL SIDE OF DECK (CL EL. 16.450M)
EP-9	500 X 770	5 T	2	OPENING SIDES (CL EL. 16.60 M)
EP-10	400 X 1200	6.5 T	2	OPENING SIDES (CL EL. 16.60 M)

- NOTES:-**
- ALL ELEVATIONS MARKED ARE W.R.T TG HALL FINISHED FLOOR ELEVATION OF 0.00M WHICH CORRESPONDS TO EL. 362.0M
 - ALL DIMENSIONS ARE IN MM & LEVELS ARE IN METERS.
 - THIS DRG IS VALUED FOR BOTH TDBFP'S (A & B)
 - ALL SUPPORT PLATES SHALL BE IN THE SCOPE OF CIVIL DESIGNER
 - SPRINGS HEIGHT AND LOCATIONS ARE TO BE DECIDED BY CIVIL DESIGNER
 - * INDICATED DIMENSIONS ARE TO BE DECIDED CIVIL DESIGNER
 - FOR POINT LOAD DATA PLEASE REFER BHEL-PEM DRAWING

- LEGEND:-**
- INDICATES LOAD POINTS.
 - ALL EP MARKED ON PLAN ARE REQUIRED AT BOTTOM OF DECK AND EP MARKED ON SIDE (SECTION A-A & VIEW A) ARE REQUIRED AT BOTH SIDES OF DECK.
 - ADDITIONAL EP OF 500 SQ ARE REQUIRED AT OPPOSITE SIDES OF OPENING FOR TURBINE EXHAUST AT 400MM BELOW EP-5 ALONG CENTRE LINE OF EXHAUST HOOD
 - ALL EP MARKED ON PLAN ARE REQUIRED AT TOP OF DECK.
 - INSULATION FOR FOUNDATION PROTECTION FOR TURBINE CUTOUT.
 - POCKETS.
 - TOC TOP OF CONCRETE
 - TOG TOP OF GROUT
 - CUT OUT IN TG DECK (Thorough Opening)



S/L NO.	DESCRIPTION	QTY	TYPE OF FLANGE	STEAM PARAMETERS
1.	FRONT GLAND INLET	1	6" #300 WNRF, SCH=40, C.S.	1.10ts/330°C
2.	BALANCE PISTON GLAND	1	6" #300 WNRF, SCH=40, C.S.	2.10ts/331°C
3.	CASING DRAIN FLANGE-1	1	1" #600 WNRF, SCH=80, C.S.	1.10ts/293°C
4.	CASING DRAIN FLANGE-2	1	1" #600 WNRF, SCH=40, C.S.	15.50ts/397°C
5.	MAIN STEAM INLET	2	10" #1500 WNRF, SCH=60, C.S.	15.50ts/397°C
6.	B.P. GLAND INTO CASING	1	6" #150 WNRF, SCH=40, C.S.	2.10ts/331°C
7.	BP PIPING DRAIN	1	1" SOCKET C.S.	2.10ts/331°C
8.	REAR GLAND INLET	1	4" #300 WNRF, SCH=40, C.S.	0.98ts/330°C
9.	REAR STEAM VENT	1	PIPE DIA 88.9x5.49, C.S.	0.98ts/330°C
10.	FRONT STEAM VENT	1	PIPE DIA 48.3x5.08, C.S.	0.98ts/330°C
11.	FRONT STEAM GLAND DRAIN	1	PIPE 10.2x2, SA312, TP321	0.98ts/330°C
12.	REAR STEAM GLAND DRAIN	1	DILO G 1/2" S.S.	0.98ts/330°C



PLAN AT 17.00m (FOR PUMP-A)
(FOR PUMP-B ROTATE TOP DECK BY 180°)

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY02020261

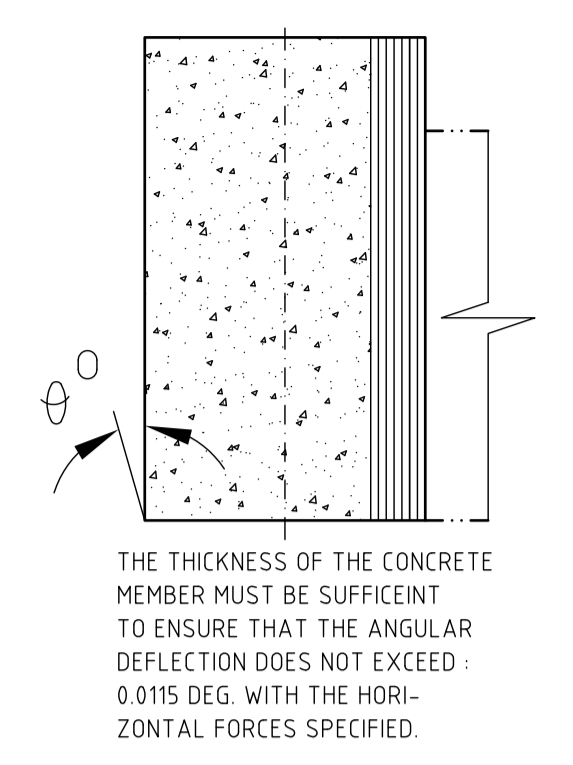
REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD
JCS																	

STATUS OF DRAWING: PRELIMINARY

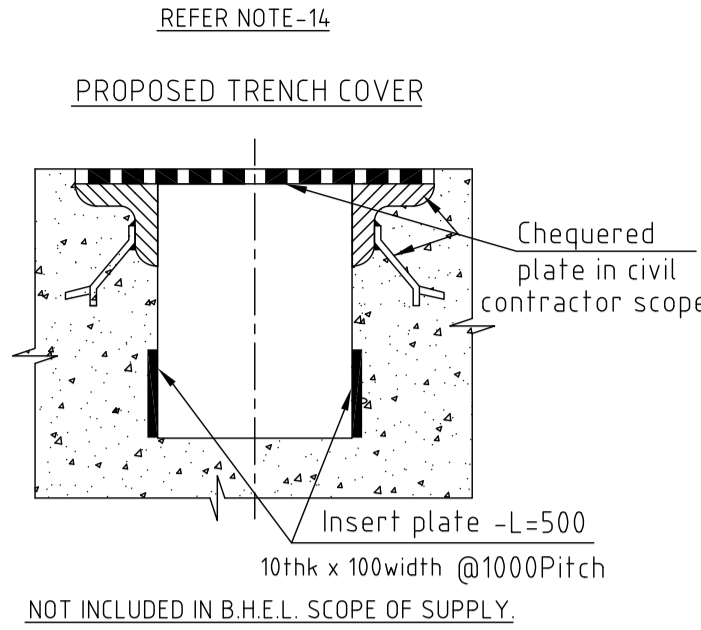
OWNER	TELANGANA STATE GENERATION CORPORATION LIMITED HYDERABAD, INDIA		
PROJECT	KOTHAGUDEM THERMAL POWER STATION STAGE VII UNIT # 12 (1 X 800MW)		
DEPT.	NAME	SIGNED	DATE
	UNTOLD DIMS. GR. C/M/F		
	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.
TITLE	FOUNDATION ARRANGEMENT FOR BFP & DRIVE TURBINE		NO OF ITEMS
CARD CODE	DRAWING NO. (1-313-01-13135)		REV.
	HY-DG-K28-139-0111		00
	SHT. No	01	NO OF SHT.
			03

TYPE OF TURBINE :-		NK 63/71-3	
TYPE OF BOILER FEED PUMP :-		MDG 455	
TYPE OF BOOSTER PUMP :-		MLC 450x350H	
WEIGHT OF SINGLE HEAVIEST PIECE FOR			
	ERECTION	in kg.	MAINTENANCE
TURBINE	65000		24,000
BFP	25,700		6,900
BP	8,500		3,100
DIRECTION OF ROTATION VIEWED FROM BOOSTER PUMP TO BFP FOR :-			
TURBINE	-	CLOCKWISE	
BFP	-	CLOCKWISE	
BP	-	COUNTER CLOCK WISE	

DETAIL 'PED'



DETAIL 'TRENCH'



Speeds in rpm

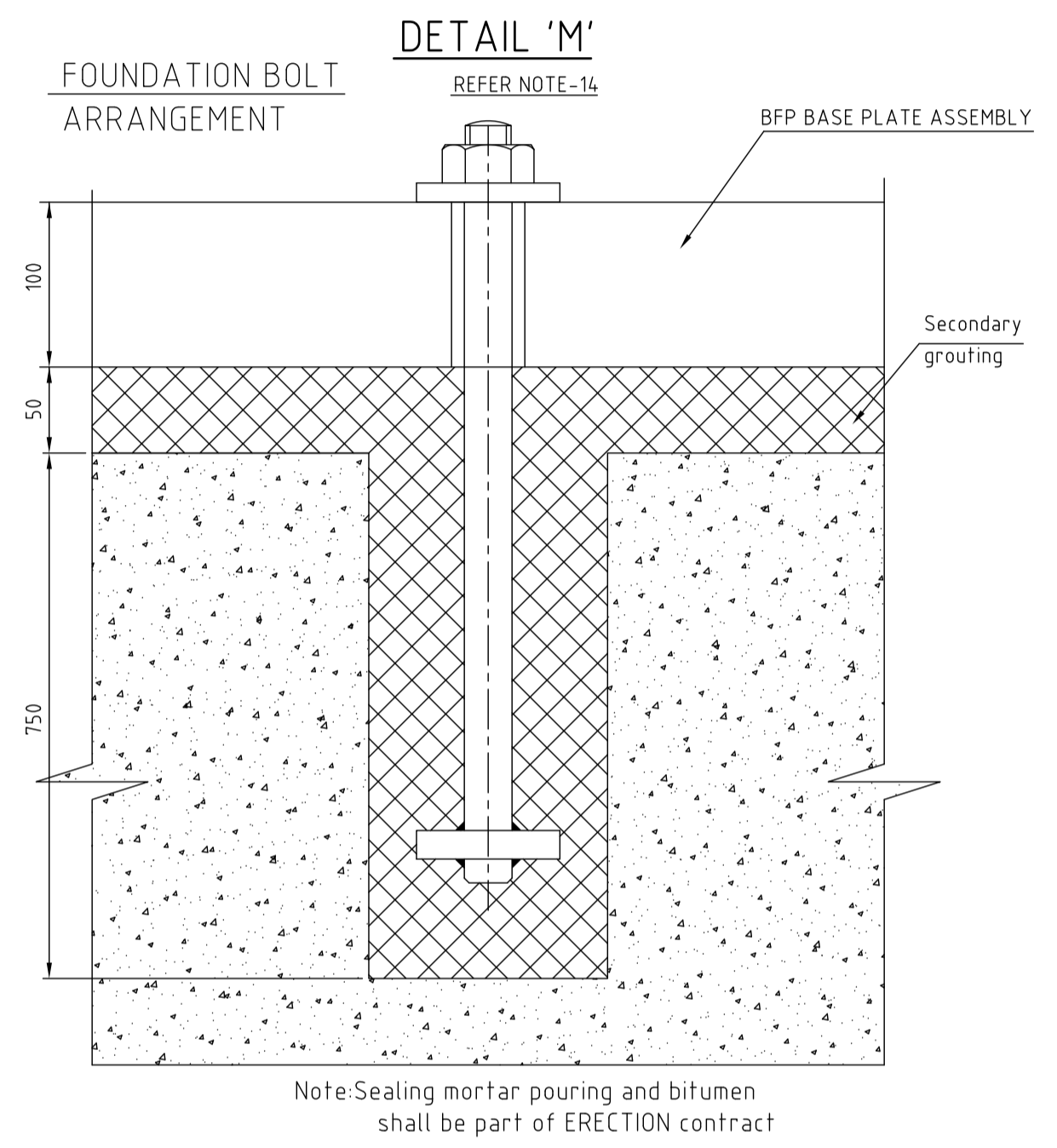
EQUIPMENT	RATED SPEED	CRITICAL SPEEDS	
		FIRST	SECOND
TURBINE	5080	Critically Damped	Critically Damped
BFP	5080	6435	-
BP	1495	1943	-

NOTE :- The installation details shown here are only informative. For final installation, ref. the Assembly drawings furnished alongwith the respective equipment.

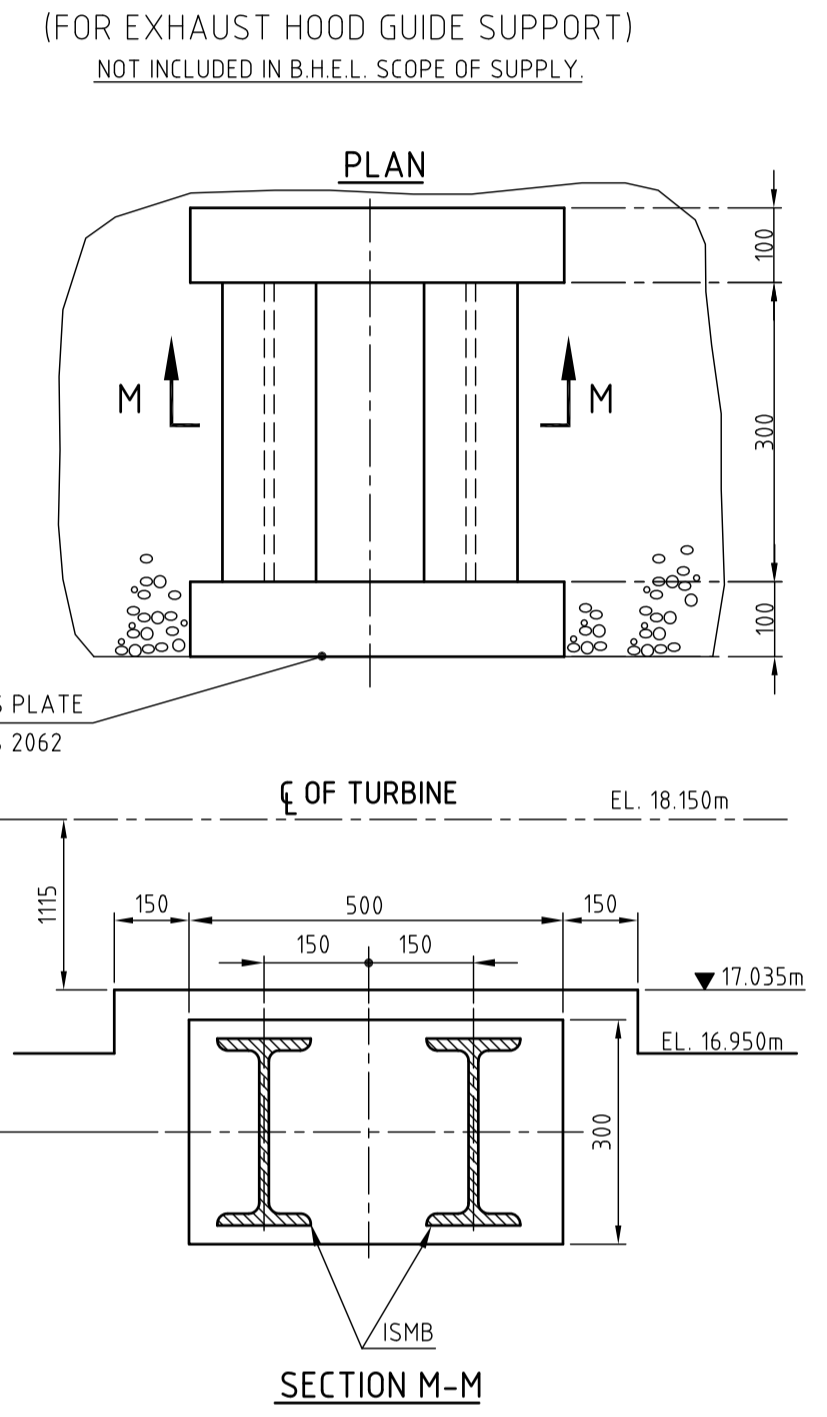
FORCES ON FOUNDATION IN kgf

LOAD POINT	LOAD CONDITION	FORCES ON FOUNDATION IN kgf					
		STATIC LOAD WITHOUT ROTATING WEIGHT	ROTATING WEIGHT	OPERATING WEIGHT OF CONDENSER/VACUUM PULL	SHORT CIRCUIT LOAD*	LOAD DUE TO OPERATING TORQUE	OPERATING UNBALANCE**
A	-	2920	-	-	-	1058	6348
A1	14375	-	1403	-	-	1025	-
A2	14375	-	1403	-	-	-1025	-
B	-	-	-	-	-	-	-
B1	15955	1555	13318	-	-339	564	3384
B2	15955	1555	13318	-	339	564	3384
C	660	-	-	-	-	-	-
C1	-	220	-	-	-	3633	75
C2	-	550	-	-	-	-3633	57

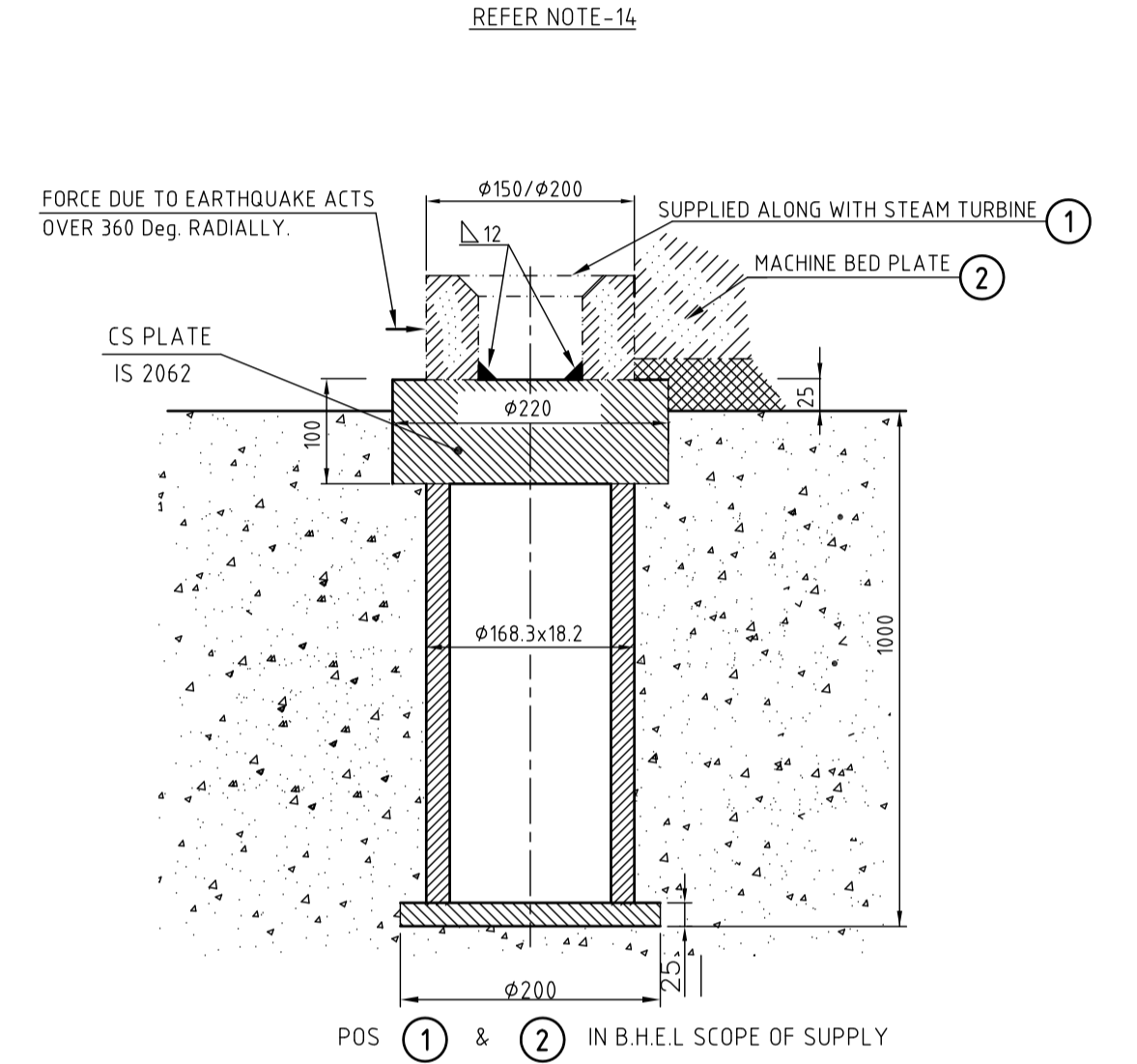
FOUNDATION BOLT ARRANGEMENT



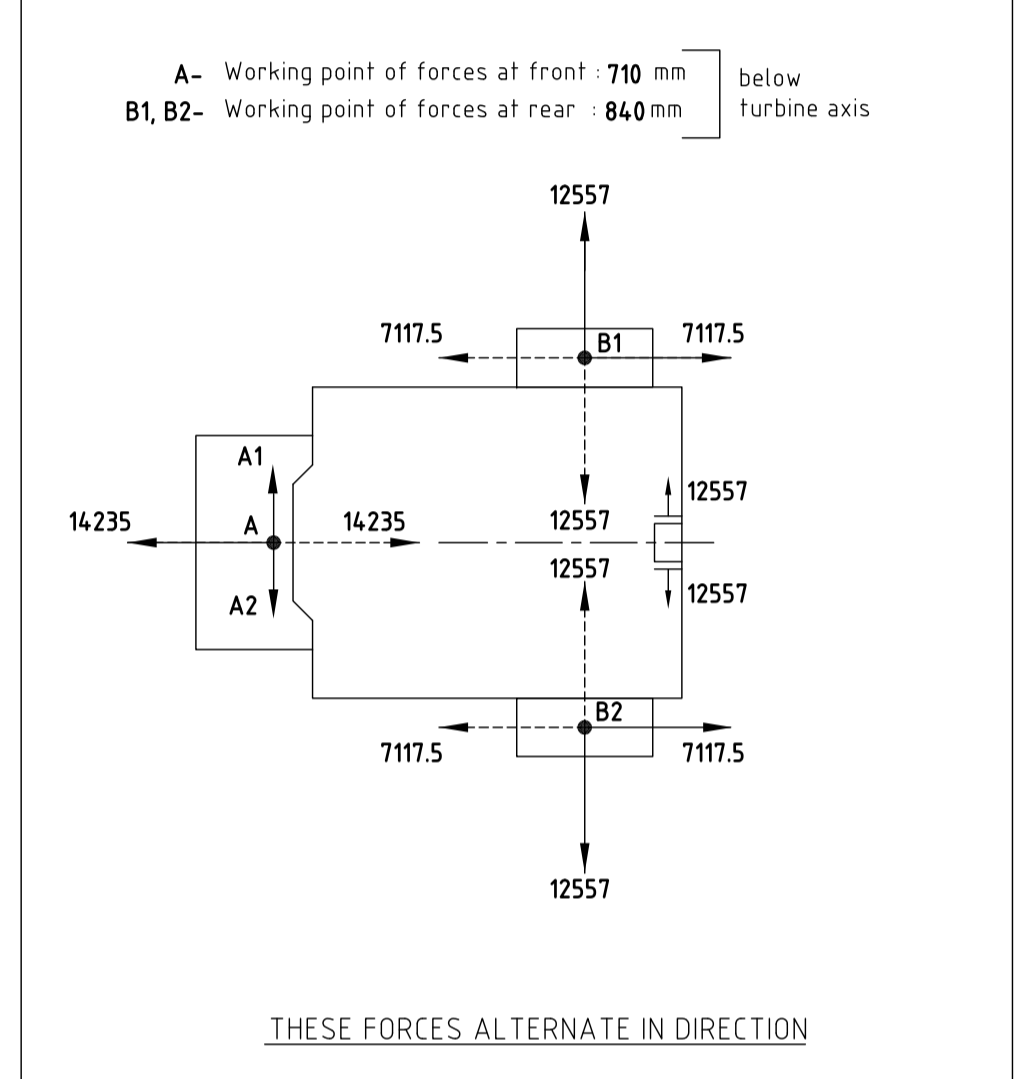
DETAIL 'GUIDE'



DETAIL 'EQ-TG'



HORIZONTAL FRICTIONAL FORCES IN kgf



FOUNDATION LOADING DATA

LOAD APPLICATION POINT	EQUIPMENT	WEIGHT		STATIC LOAD ON EACH POINT (kg's)		DYNAMIC LOAD ON EACH POINT (kg's)	
		DRY	WET	VERTICAL	VERTICAL	HORIZONTAL	AXIAL
5A	BOILER FEED PUMP (MDG 455)	25700	26000	1857	2047	2047	1365
3A	BOOSTER PUMP (MLC 450x350 H)	8500	9000	750	738	738	492

** At each supporting point acting in radial direction over 360 deg.
 * Loads on either side of TG axis act in opposite directions and the direction changes at 50 cycles/sec.
 NOTE :-1. DOWNWARD FORCES ARE POSITIVE
 2. GRADE OF BALANCING: BFP, BP:G.5
 3. MASS MOMENT OF INERTIA:
 BFP : 215 N-Sq.m] GD²
 BP : 466 N-Sq.m] GD²

DETAILS FOR FOUNDATION CALCULATIONS

- NOTES :-
- All dimensions are in mm and elevations are in metres.
 - This foundation drawing is only intended as basis for preparing the layout for foundation by the BHEL. All civil structural dimensions are tentative and same shall be decided by the civil engineer concerned. The foundation design calculations shall consider all the static and dynamic loads acting simultaneously.
 - Suitable earth quake coefficient applicable for the project site should be adopted for seismic design of foundation as per IS 1893.
 - The foundation block should be designed so that natural frequencies of foundation are sufficiently away from the frequencies of machines. The design shall be as per DIN 4024 standard and IS 2974 part III.
 - Design of the foundation shall consider the allowable limits of vibration behaviour of machines (Group - T) as per VDI 2056.
 - Bearing failure loads are less than failure load condition loads specified in col. 7 of the 'Forces on Foundation' table.
 - Dynamic loads in axial direction are negligible.
 - Magnitude of unbalanced forces can be taken in vertical and horizontal directions as equal.
 - Max. live load on top of the deck is : 2000 kg./sq.m
 - Foundation block must not be joined to any other structure to avoid vibration transmission.
 - Portions shown thus [hatched] in top deck are filled with secondary grouting. The concrete surface in these areas is to be ensured free from dust, grease and oil. Any wooden plugs present in these areas are to be removed. The packing plates below the machine sole plates shall be embedded into a 20 mm thick layer of special grout (local to plates) and are to be levelled horizontally. later, total secondary grouting may be completed.
 - For grouting instructions ref. TC-9-1901 (5 sheets). And for grouting cement specification ref. TC-9-1900.
 - All embedded plates, angles, sleeves, pipes, ducts and any other structural are not part of Turbine scope of supply unless otherwise specified.

PRELIMINARY

OWNER: TELANGANA STATE GENERATION CORPORATION LIMITED
 HYDERABAD, INDIA

PROJECT: KOTHAGUDEM THERMAL POWER STATION
 STAGE VI UNIT # 12 (1 X 800MW)

BHEL	DRN	C BALAJI	SIGN	DATE	NO OF VAR.
	CHD	S J HUSSAIN	SIGN	DATE	-NA-
	APPD	M.A.HASEEB	SIGN	DATE	-NA-

DEPT: UNTOL. DIMS. GR. C/M/F
 SCALE: N.T.S.
 WEIGHT (KG): -NA-
 REF. TO ASSY. DRG.: -NA-
 ITEM NO.: -NA-
 NO OF ITEMS: -NA-

TITLE: FOUNDATION ARRANGEMENT FOR BFP & DRIVE TURBINE
 CARD CODE: N.A.
 DRAWING NO. (1-313-01-13135)
 HY-DG-K28-139-0111
 REV. 00

THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY

GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261
 COMPUTER FILE NAME
 SIGN AND DATE
 REF. DRG. NO.
 INVENTORY NO.

REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED															
1			2			3			4			5			6			7			8			9			10			11			12		