

DRG. NO. HY-DG-402-139-0111

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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

INVENTORY NO

SIGN. AND DATE

COMPUTER FILE NAME

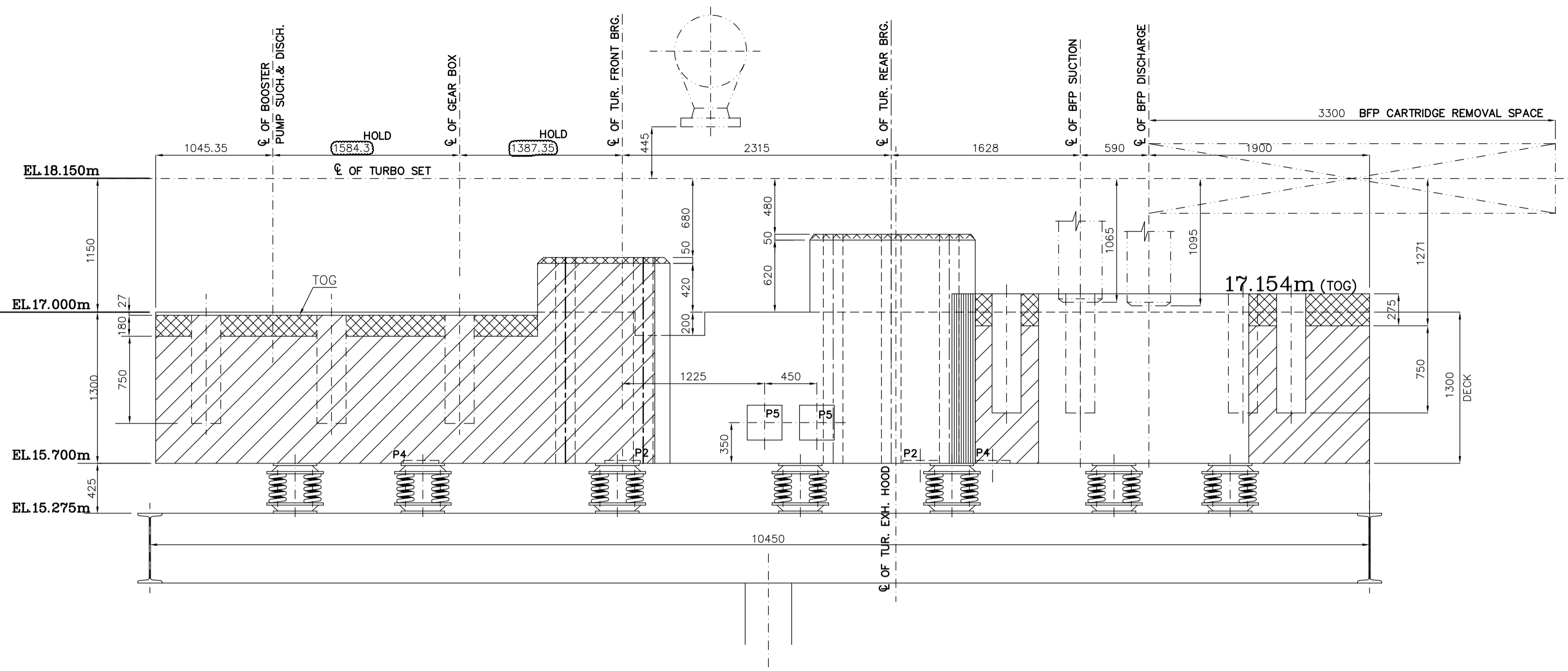
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D

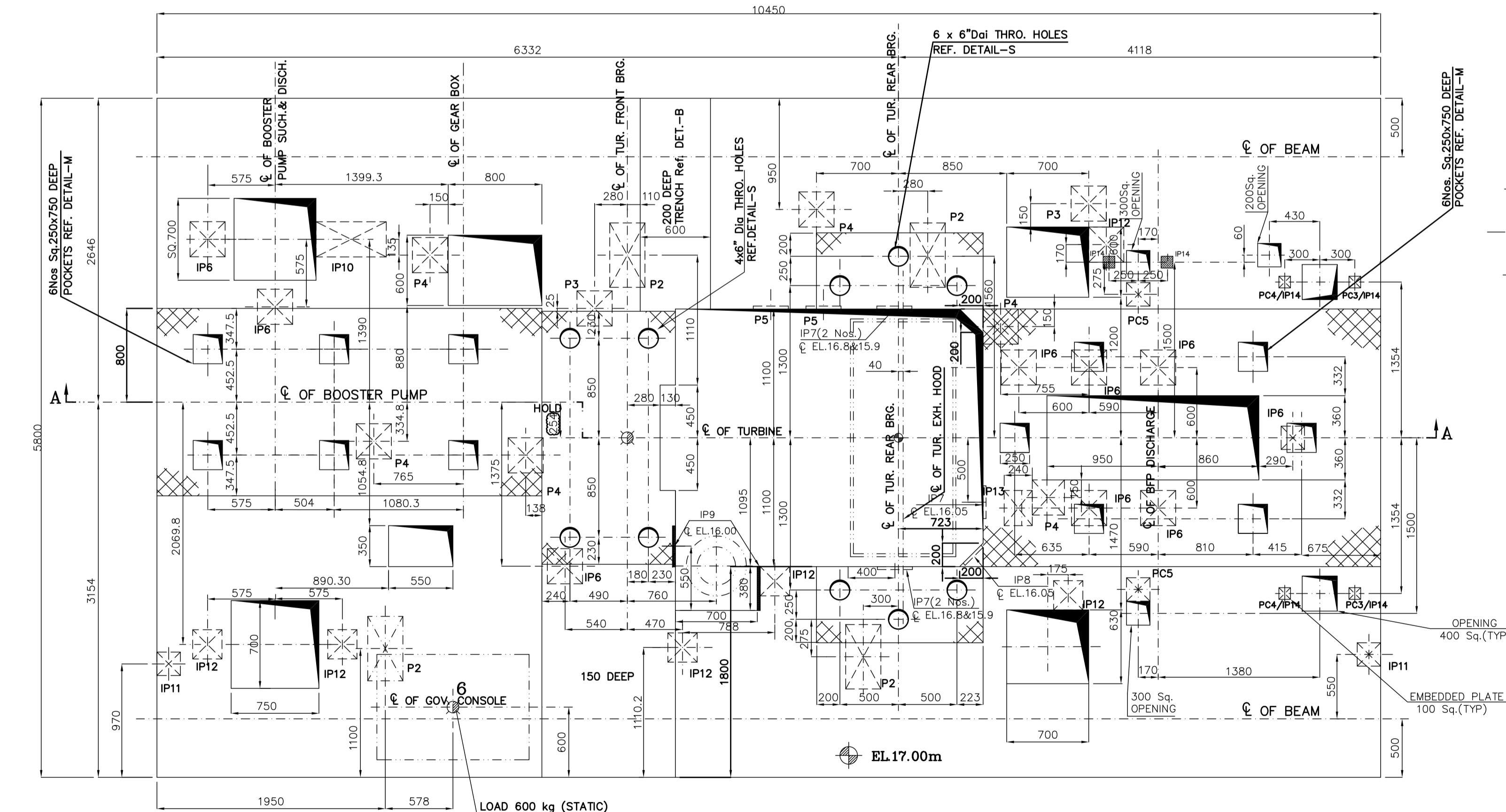
C

B

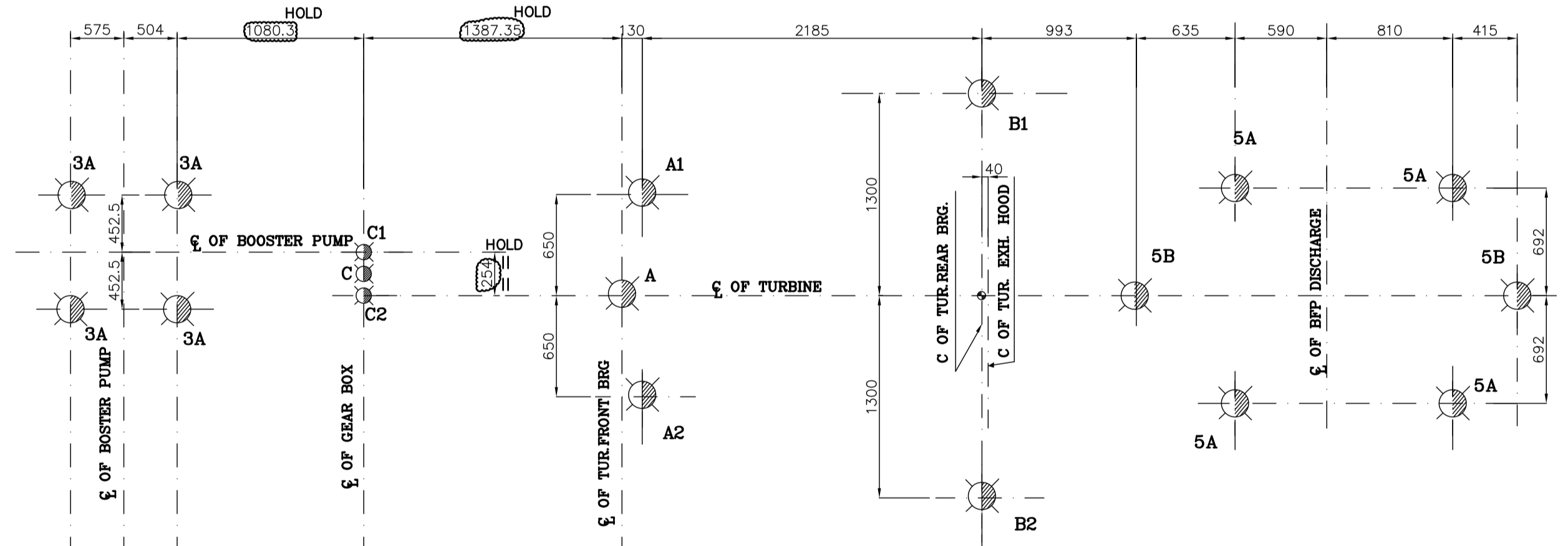
A



SECTION A-A



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



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

DESIG.	PLATE SIZE	FLUSHED / ϕ ELEVATION	LOAD Kgs.	QTY NO'S
-	-	-	-	-
P2	550x300x12	15.700	1000	4
P3	300x300x12	15.700	800	2
P4	300x300x12	15.700	800	6
P5	300x300x12	16.050	500	2
PC3	100x100x12	15.700	800	2
PC4	100x100x12	15.700	800	2
PC5	200x200x12	15.700	800	2
-	-	-	-	-
IP-6	300x300x12	-	4000	9
IP-7	400x400x12	-	800	5
IP-8	280x400x12	16.05	800	1
IP-9	350x350x12	16.00	500	2
IP-10	300x600x12	-	800	1
IP-11	200x200x12	-	800	2
IP-12	250x250x12	-	800	6
IP-13	240x300x12	-	800	1
IP-14	100x100x12	17.00	1000	6

NOTES:-
 1. THIS DRG. IS VALID FOR BOTH TDBFP'S (A & B)
 2. ALL SUPPORT PLATES SHALL BE IN THE SCOPE OF CIVIL DESIGNER.
 3. SPRINGS HEIGHT AND LOCATIONS ARE TO BE DECIDED BY CIVIL DESIGNER.

LEGEND:-
 1. INDICATES LOAD POINTS.
 2. SUPPORT PLATE AT BOTTOM OF SLAB.
 3. INSULATION FOR FOUNDATION PROTECTION.
 4. CUTOUTS AND POCKETS.

CUSTOMER		नेवेली लिग्नाइट कॉर्पोरेशन लिमिटेड (एनएलसी लिमिटेड) NEYVELI LIGNITE CORPORATION LIMITED (NLC LTD)
CONSULTANT		लहमेयर इंटरनेशनल इंडिया प्राइवेट लिमिटेड M/s LAHMEYER INTERNATIONAL (INDIA) PVT LTD

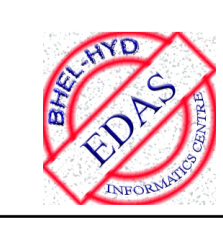
PACKAGE: STEAM GENERATOR AND AUXILIARIES (NAT1)

NEYVELI NEW THERMAL POWER PROJECT (NNTPP)
2X500 MW LIGNITE FIRED UNITS AT NEYVELI

DEPT.	TCEP	UNTO. DIMS.	GR.	SCALE	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO.	NO. OF
CODE	415		G/M/F	1:30	-N.A-	-N.A-	-N.A-	VAR.

TITLE	FOUNDATION ARRANGEMENT FOR BFP & DRIVE TURBINE	CARD CODE	N.A.	REV.	00
SH. NO	01	NO. OF SH. T.	03		

Job No.: **400**
 STATUS: **PRELIMINARY**

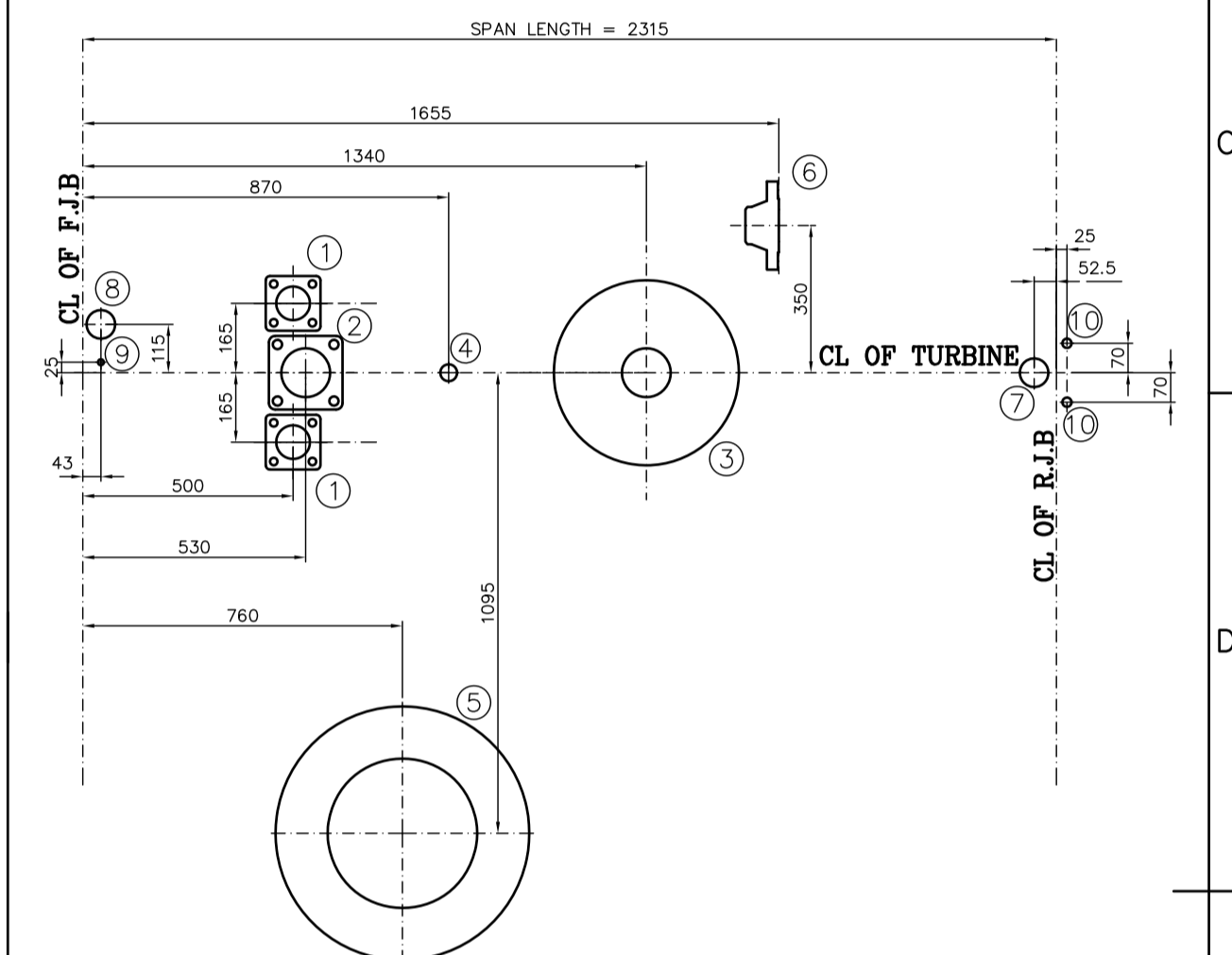
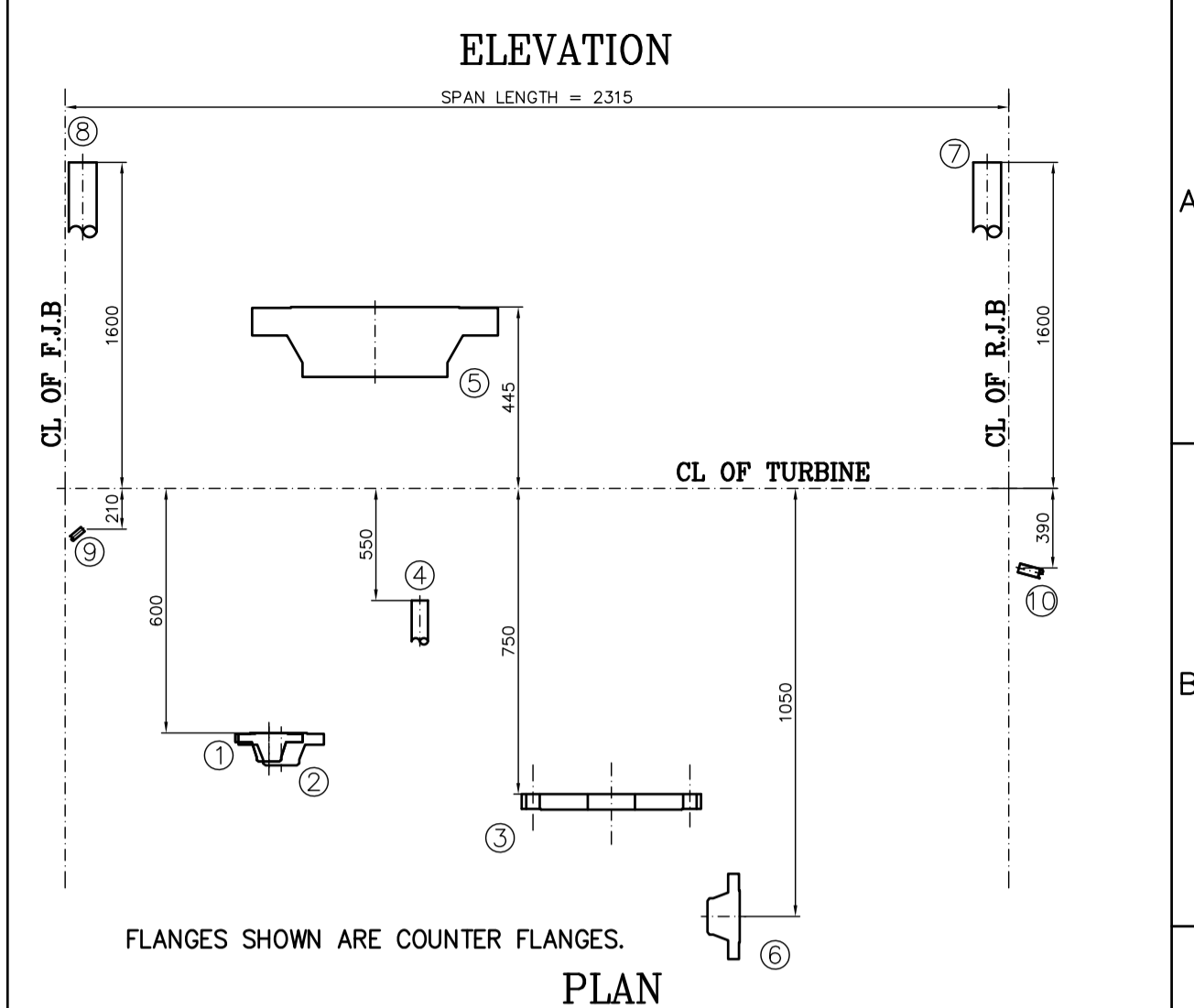
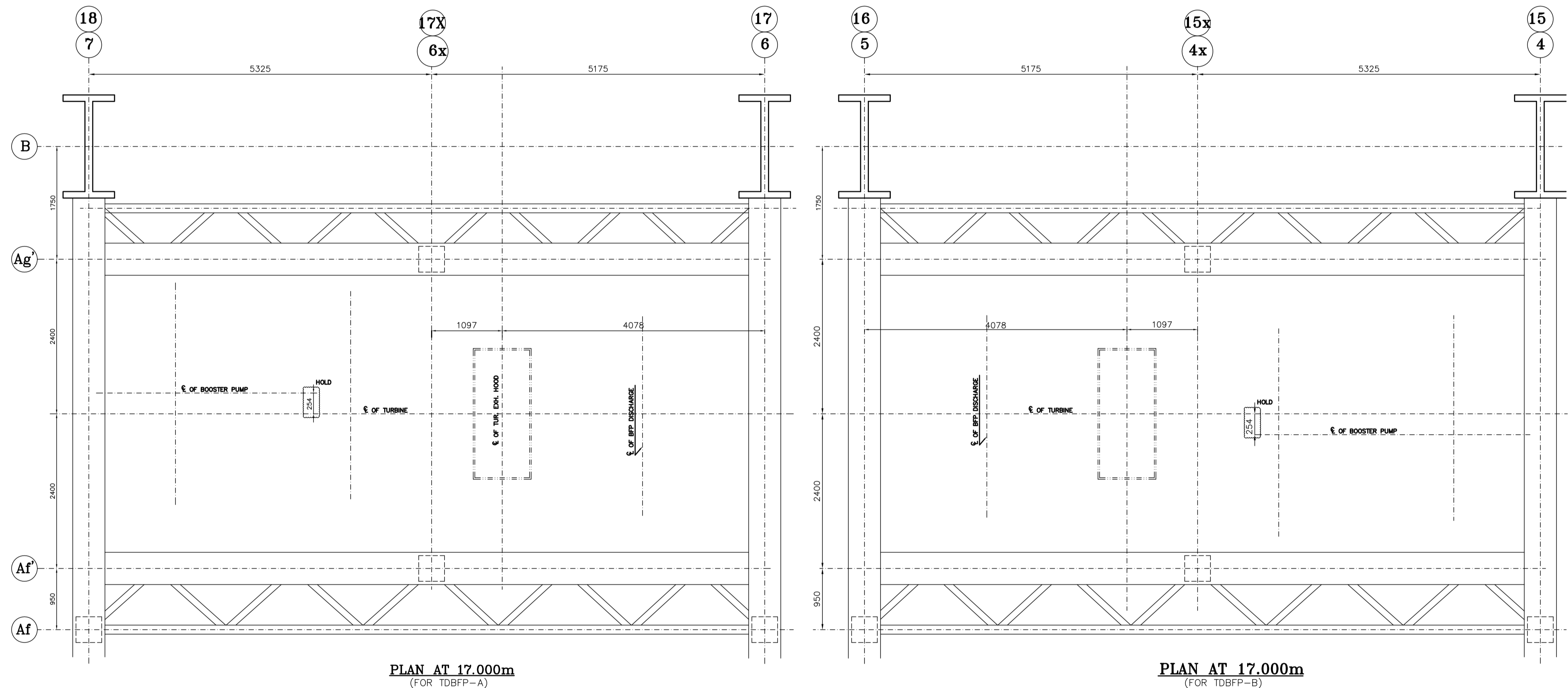
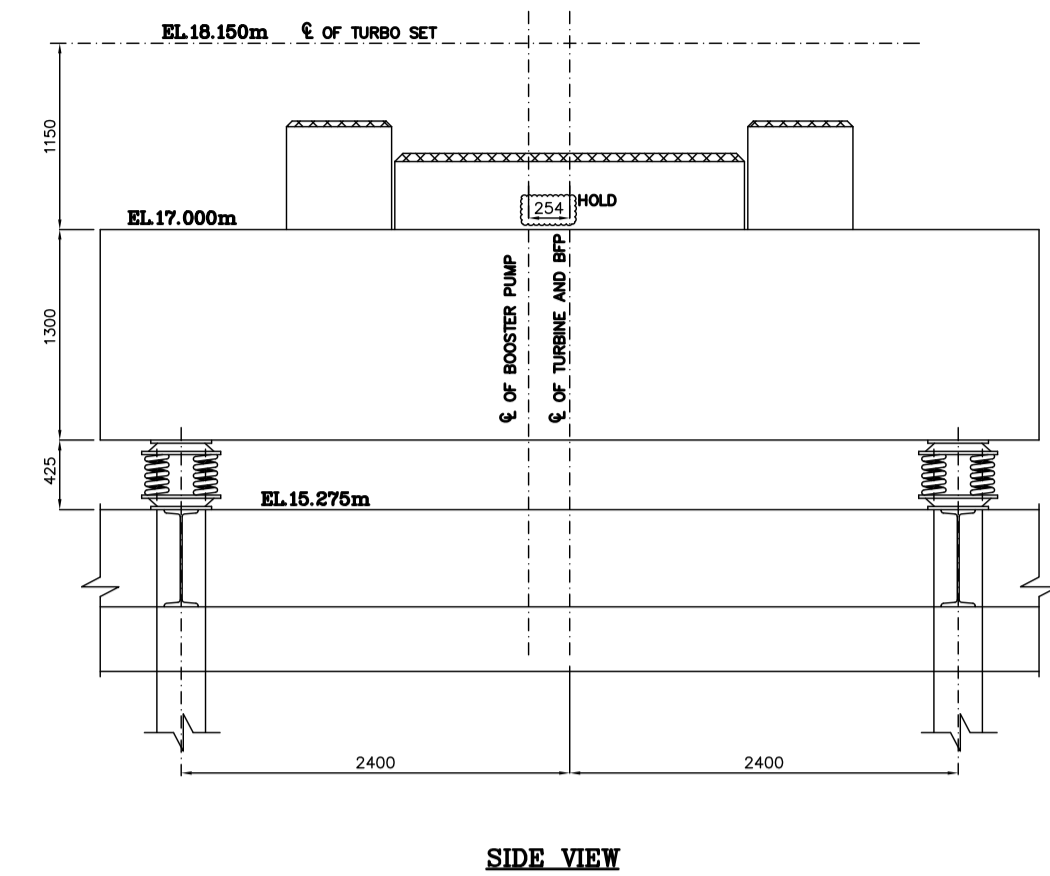


REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED																		
ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD																		
1			2			3			4			5			6			7			8			9			10			11			12		

DRG. NO. HY-DG-402-139-0111

SH. OF 03

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 GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261
 INVENTORY NO. 13130097035-S02-R00.DWG
 SIGN. AND DATE REF. DRG. NO.



SL. NO.	DESCRIPTION	QTY.	TYPE OF FLANGE
1.	FRONT GLAND INLET	2	DN 80 SQ. FLANGE SUITABLE TO PIPE SIZE Ø88.9x5.49
2.	B.P. LINE FROM CASING	1	SQ. FLANGE NØ100
3.	B.P. LINE INTO CASING	1	ABNORMAL FLANGE CONNECTION FOR PIPE Ø114.3x4.5
4.	CASING DRAIN	1	Ø100 PARALLEL MALE STUD CPLG. G1" JTB20G
5.	MAIN STEAM INLET FLANGE	1	14" #600 WNRJ, SCH=30
6.	REAR GLAND INLET	1	SQ. FLANGE SUITABLE TO PIPE Ø114.3x6.02
7.	STEAM VENT REAR	1	PIPE Ø60.3x3.91
8.	STEAM VENT FRONT	1	PIPE Ø60.3x3.91
9.	FRONT GLAND DRAIN	1	G1/4" HOLE (ANGLE AT 50° FROM VERTICAL)
10.	REAR GLAND DRAIN	2	G 1/2" HOLE

CUSTOMER		नेवेली लिग्नाइट कॉर्पोरेशन लिमिटेड (एनएलसी लिमिटेड) NEYVELI LIGNITE CORPORATION LIMITED (NLC LTD)
CONSULTANT		लहमेयर इंटरनेशनल इंडिया प्राइवेट लिमिटेड M/s LAHMEYER INTERNATIONAL (INDIA) PVT LTD

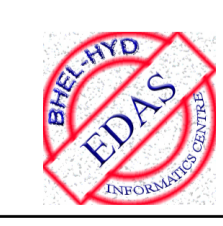
PACKAGE: STEAM GENERATOR AND AUXILIARIES (NAT1)

NEYVELI NEW THERMAL POWER PROJECT (NNTPP)
2X500 MW LIGNITE FIRED UNITS AT NEYVELI

DEPT.	TCEP	UNTO.	DIMS.	GR.	G/M/F	SCALE	WEIGHT (KG)	REF. TO ASSY. ORG.	ITEM NO.	NO. OF ITEMS
CODE	415					1:30	-N.A.-	-N.A.-	-N.A.-	-N.A.-

TITLE	FOUNDATION ARRANGEMENT FOR BFP & DRIVE TURBINE	CARD CODE	N.A.	DRAWING NO.	(1-313-01-09935)	REV.	00
HY-DG-402-139-0111							

Job No.: 400
STATUS: PRELIMINARY




REV.	DATE	ALTERED	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	ZONE		CHD/APPD	
JCS																					

DRG. NO. HY-DG-402-139-011

TYPE OF TURBINE :- K 1401-2		
TYPE OF BOILER FEED PUMP :- FK 4E 36		
TYPE OF BOOSTER PUMP :- FA 1B 75		
WEIGHT OF SINGLE HEAVIEST PIECE FOR		
	ERECTION in kg.	MAINTENANCE in kg.
TURBINE	23000	6500
BFP	11500	4000
BP	3500	300
DIRECTION OF ROTATION VIEWED FROM BOOSTER PUMP TO BFP FOR :-		
TURBINE	- COUNTER CLOCKWISE	
BFP	- COUNTER CLOCKWISE	
BP	- CLOCK WISE	

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

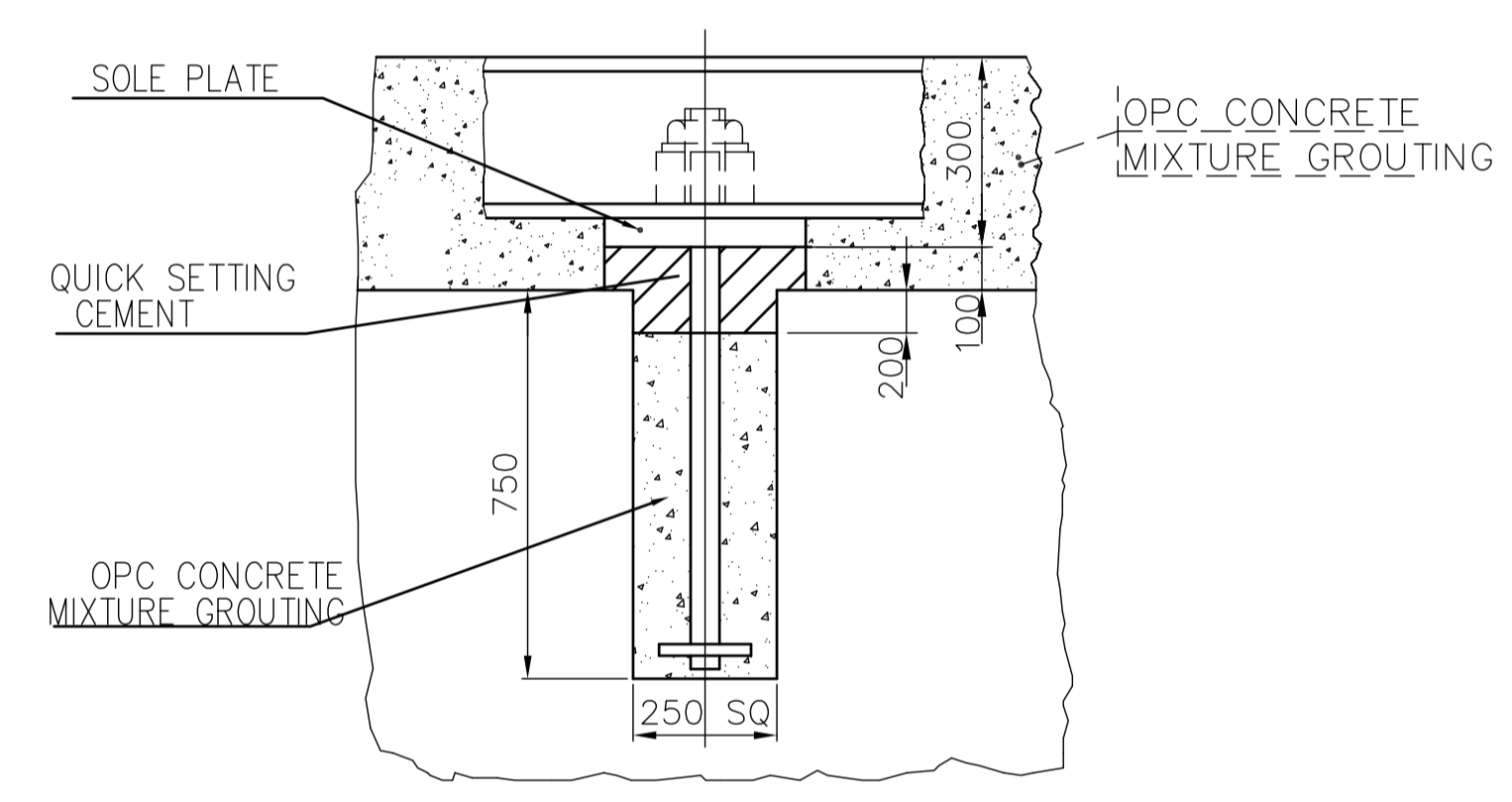
DETAILS FOR FOUNDATION CALCULATIONS

- 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  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.

LOAD POINT	FORCES ON FOUNDATION IN kgf							
	LOAD CONDITION	1	2	3	4	5	6	7
A	STATIC LOAD WITHOUT ROTATING WEIGHT	-	1621	-	-	-	655	3930
A1	ROTATING WEIGHT	4665	-	-	-	-1000	-	-
A2	OPERATING WEIGHT OF CONDENSER/VACUUM PULL	4665	-	-	-	+1000	-	-
B	SHORT CIRCUIT LOAD	-	-	-	-	-	-	-
B1	LOAD DUE TO OPERATING TORQUE	6845	980	6930	-	-500	395	2370
B2	OPERATING UNBALANCE DYN. LOAD (ROTATING)	6845	980	6930	-	+500	395	2370
3A	FAILURE MODE LOAD (Turbine : Blade breakage)	1000 EACH	315	-	-	± 785 EACH	32	-
C		-	-	-	-	-	-	-
C1		1000	215	-	-	+11070	90	940
C2		1000	30	-	-	-11070	15	180
5A		2500 EACH	600	-	-	± 750 EACH	60	-
5B		2500 EACH	600	-	-	-	60	-

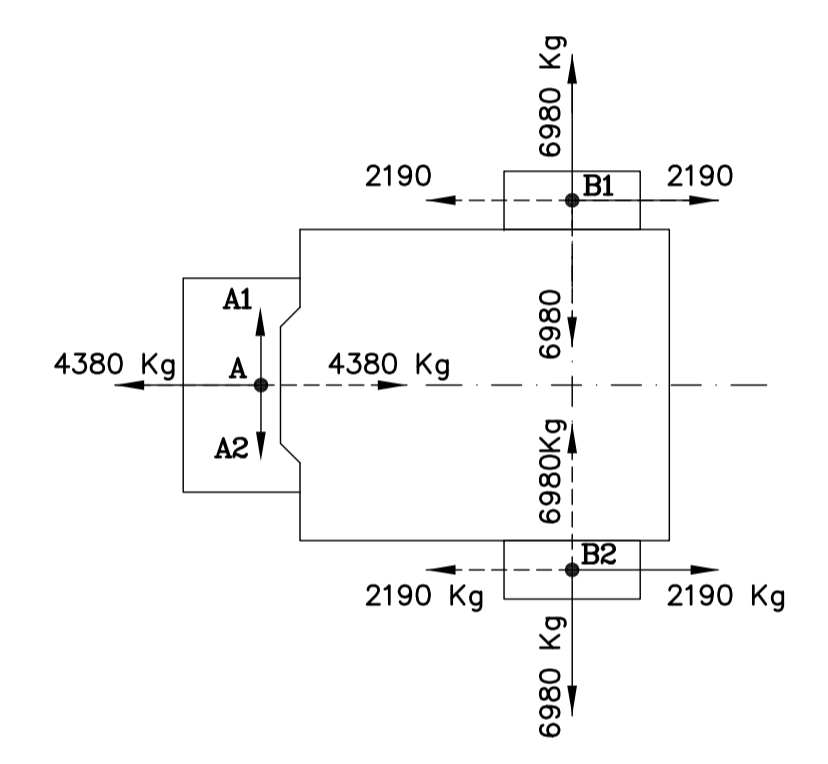
DETAIL - M

TYPICAL FOUNDATION BOLT ARRANGEMENT FOR COMMON FOUNDATION FRAME



HORIZONTAL FRICTIONAL FORCES IN kgf

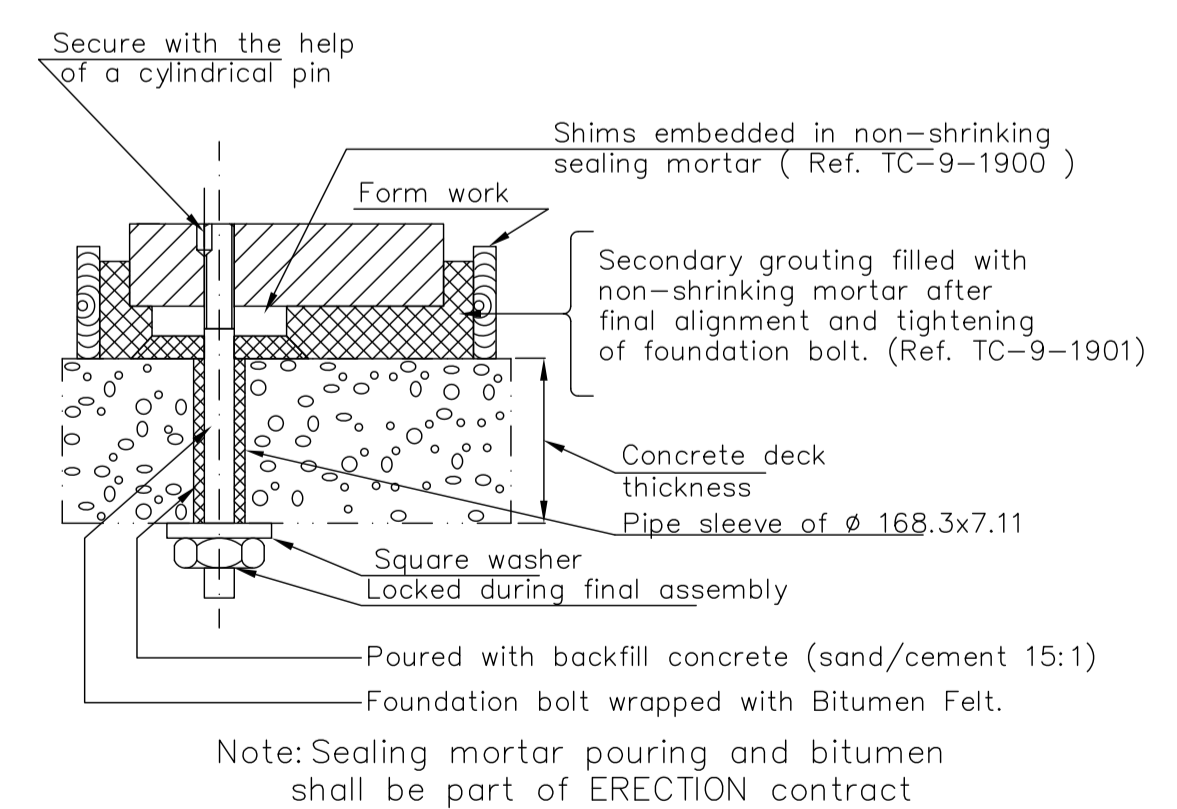
A- Working point of forces at front : 680 mm
 B1,B2- Working point of forces at rear : 480 mm
 C1,C2- Working point of forces at gear rear : 1067 mm



THESE FORCES ALTERNATE IN DIRECTION

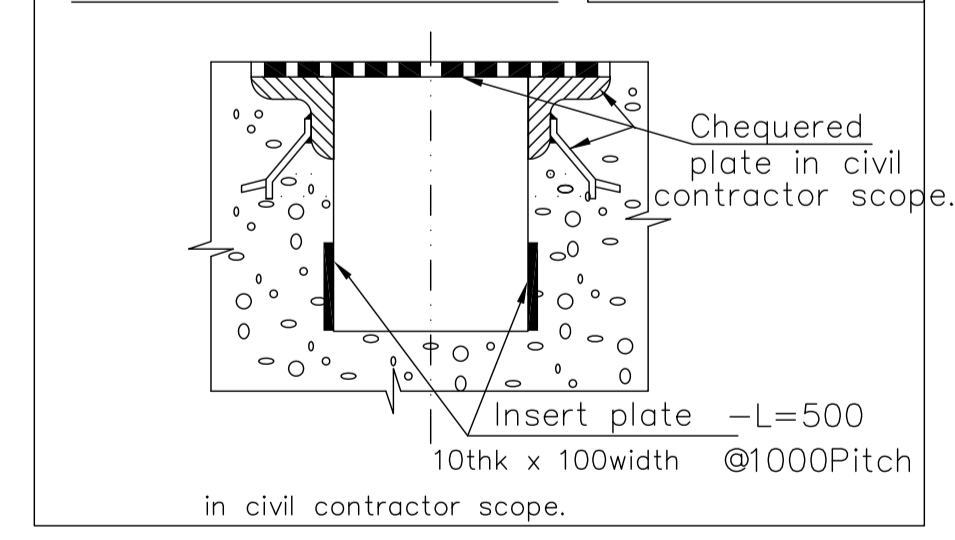
DETAIL - S

FOUNDATION BOLT ASSEMBLY

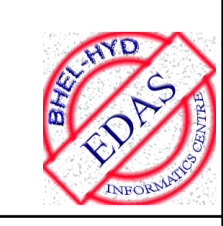




Note: Sealing mortar pouring and bitumen shall be part of ERECTION contract

PROPOSED TRENCH COVER



Job No.: 400
 STATUS : PRELIMINARY

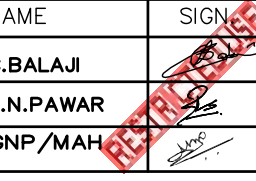
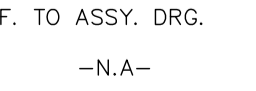


CUSTOMER		नेवेली लिग्नाइट कॉर्पोरेशन लिमिटेड (एनएलसी लिमिटेड) NEYVELI LIGNITE CORPORATION LIMITED (NLC LTD)
CONSULTANT		लहमेयर इंटरनेशनल इंडिया प्राइवेट लिमिटेड M/s LAHMEYER INTERNATIONAL (INDIA) PVT LTD

PACKAGE: STEAM GENERATOR AND AUXILIARIES (NAT1)

NEYVELI NEW THERMAL POWER PROJECT (NNTPP)
 2X500 MW LIGNITE FIRED UNITS AT NEYVELI

DEPT.	UNTOL.	DIMS.	SCALE	WEIGHT (KG)	REF. TO ASSY. ORG.	ITEM NO.	NO. OF ITEMS
TCEP	GR.	G/M/F	1:30	-N.A-	-N.A-	-N.A-	-N.A-
CODE	415						

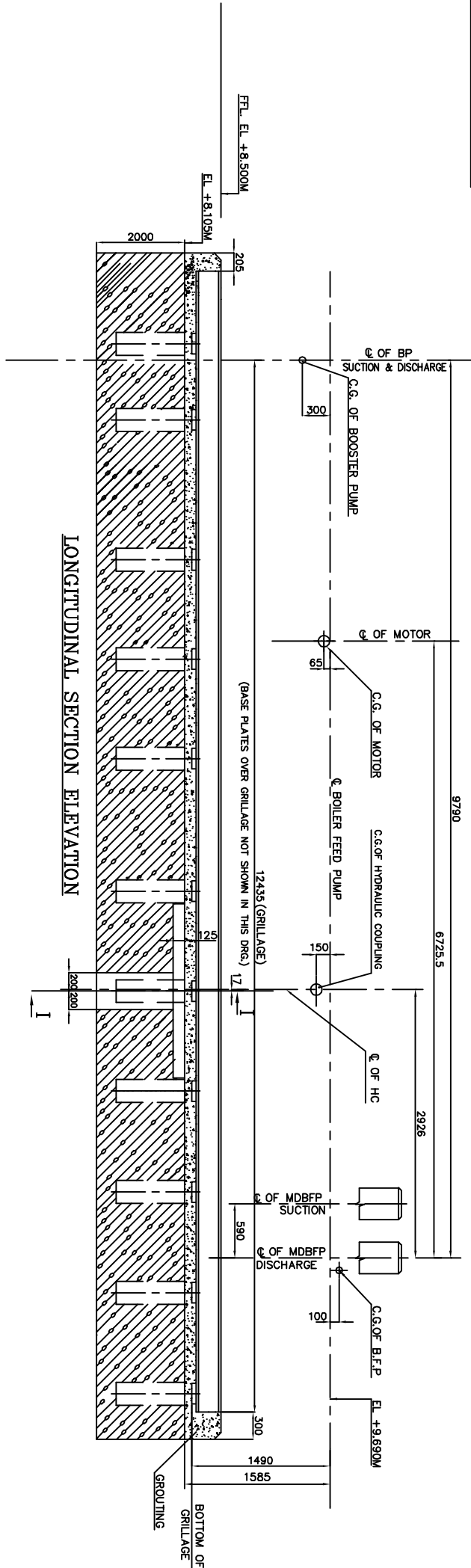
BHARAT HEAVY ELECTRICALS LTD. HYDERABAD	NAME	SIGN.	DATE	NO. OF VAR.
	C.BALAJI		21.03.14	
	G.N.PAWAR		21.03.14	-N.A-
	GNP/MAH		21.03.14	-N.A-
TITLE	CARD CODE	NO. OF SHT.	NO. OF SHT.	NO. OF SHT.
FOUNDATION ARRANGEMENT FOR BFP & DRIVE TURBINE	N.A.	03	03	03

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GENERAL DIMENSIONAL LIMITS, FITS & TOLERANCES AS PER HY0230261

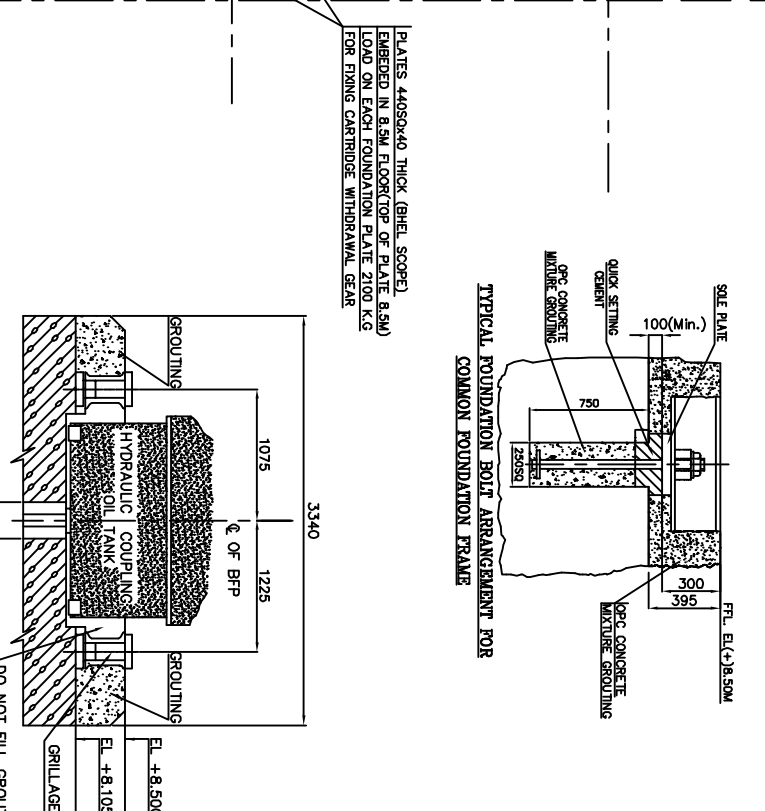
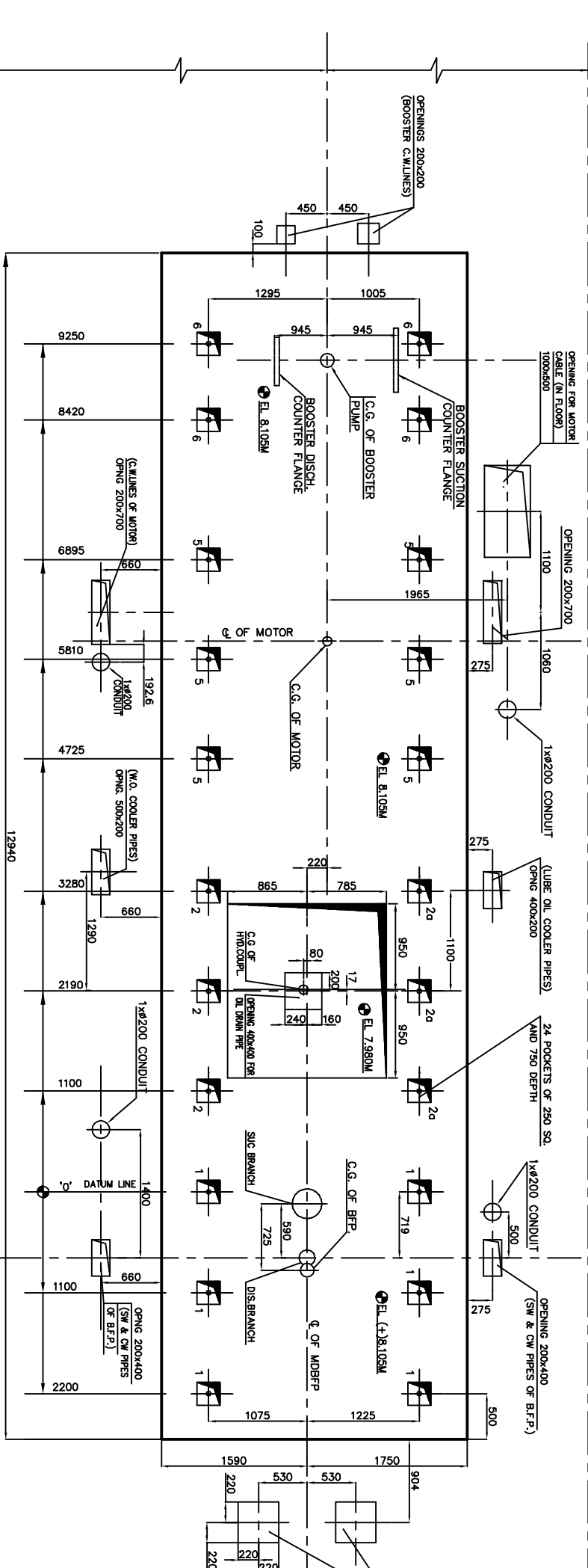
REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
		CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD
JCS																				

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FOUNDATION LOADING

EQUIPMENT	WEIGHT (Kgs)	STATIC LOADING ON EACH POINT (Kgs.)	ROTOR WEIGHT (Kgs)	DYNAMIC LOADING ON EACH POINT (Kgs)
1. BOILER FEED PUMP incl. BASE PLATE	11500	1917	551	500
2. HYDRAULIC COUPLING (WITH OIL)	3930 (WITH OIL) 11800 (WITH OIL)	3933	1870 (PRIMARY ROTOR = 505) 920 (SECONDARY ROTOR = 305)	Pt 2 1030 Pt 2a 920
5. MOTOR	23000	3850	6100	REFER NOTE-A
6. BOOSTER PUMP incl. BASE PLATE	4600	1150	280	394
1,2,2a, 5 & 6 COMMON FOUNDATION FRAME	11800	540	---	---



NOTE-A

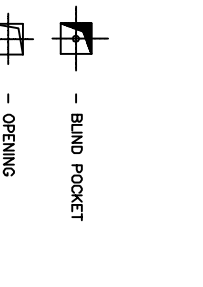
LOADING ON FOUNDATION

REACTION DUE TO WT. ON EACH SIDE (G)	= 135 KN
MAX. SHORT CIRCUIT FORCE (MS)	= 517.0 KN
REACTION DOWNSIDE MS + G	= 852 KN
REACTION UPWARD MS - G	= 382 KN

NOTE

LOADING ON FOUNDATION

1. BOILER FEED PUMP	: 14.4 KG-M ²
2. BOOSTER PUMP	: 8.4 KG-M ²
3. HYDRAULIC COUPLING	: 1508 KG-M ²
INPUT SHAFT	: 41.2 KG-M ²
OUTPUT SHAFT	: 2040 KG-M ²



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

1. JOB NO. :	373
2. STATUS :	CONTRACT
3. DRG./REF. NO. (INTERNAL)	
4. DISTRIBUTION	
5. TO	
6. NO. OF	

NEVEEL NEW THERMAL POWER PROJECT (NNTPP)
25500 MW LIGHTNING FIRED UNITS AT NEVEEL

CONSULTANT
NEVEEL LIGHTNING CORPORATION LIMITED (NLCL LTD)

CLIENT
M/s LAHMEYER INTERNATIONAL (INDIA) PVT. LTD

PACKAGE: STEAM GENERATOR AND AUXILIARIES (SAG)

DEPT.: PUMPS ENGRG. HYDERABAD

SCALE: NTS

TITLE: FOUNDATION ARRANGEMENT OF MOTOR DRIVEN BFP UNIT

DRAWING NO.: HY-DG-11800057671

SHEET NO. 01 NO OF SHEETS: 01

NAME	SIGN.	DATE	NO. OF
RAKESH	-sd-	26.05.10	VAR.
BABURAO	-sd-	26.05.10	NA
M.M.RAO	-sd-	26.05.10	NA