FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

SH. 03 OF 03 DRG. NO. HY-DG-1-31301-12735

TYPE OF TURBINE :-	NK 63/71-3
TYPE OF BOILER FEED PUMP :-	MDG 405(MHI)
TYPE OF BOOSTER PUMP :-	MLC 400X300H(MHI)

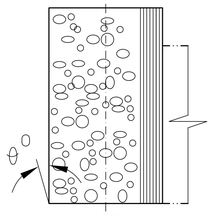
WEIGHT OF SINGLE HEAVIEST PIECE FOR

	ERECTION in kg.	MAINTENANCE in kg.
TURBINE	65,000	24,000
BFP	21.600	3710
BP	6.150	1250

DIRECTION OF ROTATION VIEWED FROM BOOSTER PUMP TO BFP FOR :-

TURBINE - CLOCKWISE
BFP - CLOCKWISE
BP - COUNTER CLOCK WISE

DETAIL 'PED'

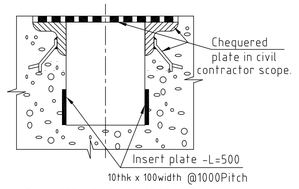


THE THICKNESS OF THE CONCRETE MEMBER MUST BE SUFFICIENT TO ENSURE THAT THE ANGULAR DEFLECTION DOES NOT EXCEED : 0.0115 DEG. WITH THE HORI-ZONTAL FORCES SPECIFIED.

DETAIL 'TRENCH'

REFER NOTE-14

PROPOSED TRENCH COVER



NOT INCLUDED IN B.H.E.L. SCOPE OF SUPPLY.

SPEEDS (RPM)

EQUIPMENT	RATED DESIGN	TRIP SPEED	CRITICAL SPEEDS
TURBINE	5635	6198	Critically Damped
BFP	5635	6198	11847
BP	1495	1645	3000

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	STATIC LOAD WITHOUT ROTATING WEIGHT	ROTATING WEIGHT	OPERATING WEIGHT OF CONDENSER/VACUUM PULL	SHORT CIRCUIT LOAD *	LOAD DUE TO OPERATING TORQUE	OPERATING UNBALANCE DYN. LOAD (ROTATING) **	FAILURE MODE LOAD ** (Turbine - Blade breakage
	1	2	3	4	5	6	7
A	-	2920	-	-	-	1135	6810
A1	14375	-	1403	-	793	-	-
A2	14375	-	1403	-	-793	-	-
B	-	-	-	-	-	-	-
B1	15955	1555	13318	-	263	605	3630
B2	15955	1555	14732	-	-263	605	3630
C	550	-	-	-	-	-	-
C1	-	110	-	-	-2143	43	258
C2	-	440	-	-	2143	45	270

HOLD

FOUNDATION LOADING DATA

(LOAD POINT APPLICATION IS AT EACH POCKET)

LOAD APPLICATION POINT	EQUIPMENT	WEIGHT DRY	WEIGHT WET	STATIC LOAD ON EACH POINT(kg's) VERTICAL	DYNAMIC LOAD ON EACH POINT(kg's) VERTICAL	HORIZONTAL	AXIAL
5A	BOILER FEED PUMP (MDG 405)	21600	21850	1561	1742	1742	1161
3A	BOOSTER PUMP (MLC 400x300 H)	6150	6450	540	475	475	320

** 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

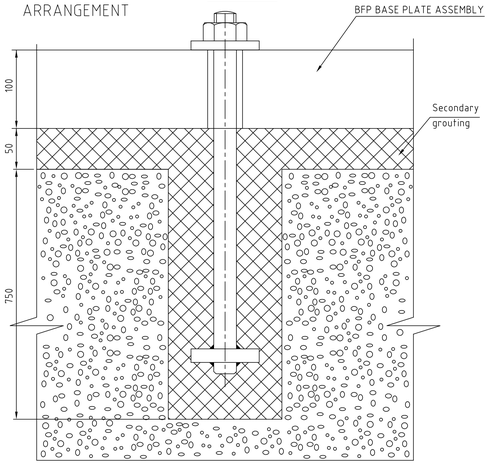
2. GRADE OF BALANCING: BFP, BP:G2.5

3. MASS MOMENT OF INERTIA: BFP : 215 N-Sq.m, BP : 466 N- Sq.m] GD^2

DETAIL 'M'

FOUNDATION BOLT ARRANGEMENT

REFER NOTE-14

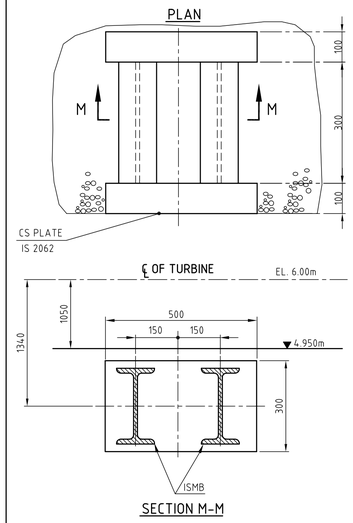


Note:Sealing mortar pouring and bitumen shall be part of ERECTION contract

DETAIL 'GUIDE'

(FOR EXHAUST HOOD GUIDE SUPPORT)

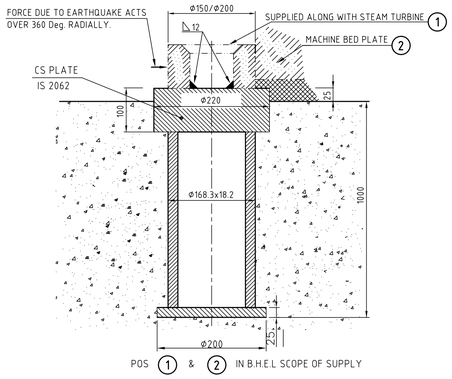
NOT INCLUDED IN B.H.E.L. SCOPE OF SUPPLY.



SECTION M-M

DETAIL 'EQ-TG'

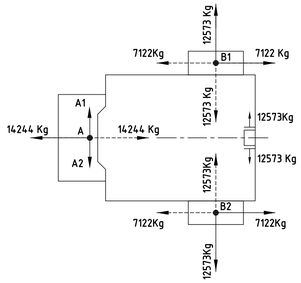
REFER NOTE-14



POS (1) & (2) IN B.H.E.L SCOPE OF SUPPLY

HORIZONTAL FRICTIONAL FORCES IN kgf

A- Working point of forces at front : 710 mm
B1, B2- Working point of forces at rear : 840 mm
} below turbine axis



THESE FORCES ALTERNATE IN DIRECTION

DETAILS FOR FOUNDATION CALCULATIONS

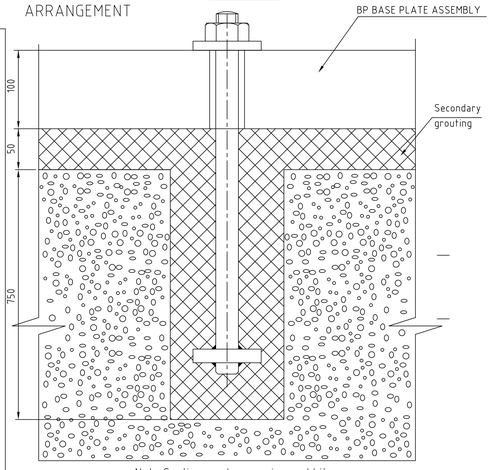
NOTES :-

1. All dimensions are in mm and elevations are in metres.
2. 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.
3. Suitable earth quake coefficient applicable for the project site should be adopted for seismic design of foundation as per IS 1893.
4. 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.
5. Design of the foundation shall consider the allowable limits of vibration behaviour of machines (Group - T) as per VDI 2056.
6. Bearing failure loads are less than failure load condition loads specified in col. 7 of the "Forces on Foundation " table.
8. Dynamic loads in axial direction are negligible.
9. Magnitude of unbalanced forces can be taken in vertical and horizontal directions as equal.
10. Max. live load on top of the deck is : 2000 kg./sq.m
11. Foundation block must not be joined to any other structure to avoid vibration transmission.
12. 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.
13. For grouting instructions ref. TC-9-1901 (5 sheets). And for grouting cement specification ref. TC-9-1900.
14. All embedded plates, angles, sleeves, pipes, ducts and any other structurals are not part of Turbine scope of supply unless otherwise specified.

DETAIL 'M1'

FOUNDATION BOLT ARRANGEMENT

REFER NOTE-14



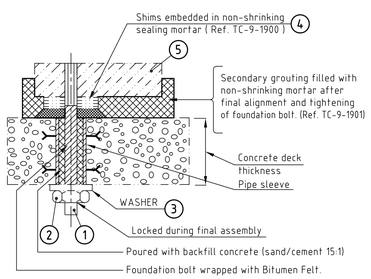
GENERAL DIMENSIONAL LIMITS,FITS & TOLERANCES AS PER HY0230261

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

DETAIL 'SP-WN'

FOUNDATION BOLT ASSEMBLY

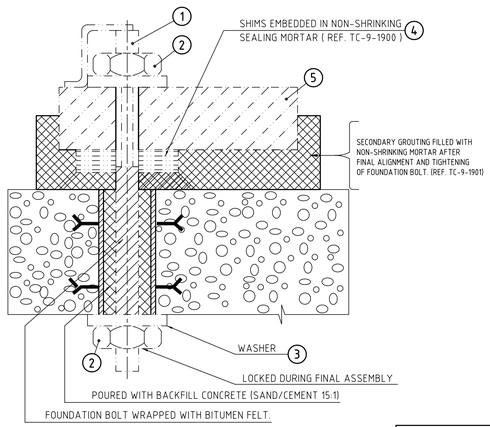
REFER NOTE-14



POS (1) TO (5) IN B.H.E.L SCOPE OF SUPPLY

DETAIL 'SP-N'

REFER NOTE-14



POS (1) TO (5) IN B.H.E.L SCOPE OF SUPPLY

STATUS : PRELIMINARY

PROJECT: 2X660MW, ENNORE SEZ STPP AT ASH DYKE OF NCTPS
BFP DRIVE TURBINE(4 Nos.)

CUSTOMER: TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION LIMITED (TANGEDCO)

CONSULTANT: DESEIN PRIVATE LIMITED, NEW DELHI

BHARAT HEAVY ELECTRICALS LTD. HYDERABAD

	NAME	SIGN.	DATE	NO.OF VAR.
DRN.	C.BALAJI		10.02.2015	
CHD.	S.J.HUSSAIN		10.02.2015	-N.A.-
APPD.	M.A.HASEEB		10.02.2015	

REV.	DATE	ALTERED	CHD/APPD
ZONE			

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

TITLE: FOUNDATION ARRANGEMENT FOR BFP & DRIVE TURBINE

CARD CODE N.A.

DRAWING NO.(1-313-01-12735) REV. HY-DG-1-31301-12735 00

SHT. No 03 NO. OF SHT. 03

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COMPUTER FILE NAME | REF. DRG. NO. | SIGN. AND DATE | INVENTORY NO

Feb Wed 11 09:14 2015

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