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

FIRST ANGLE PROJECTION

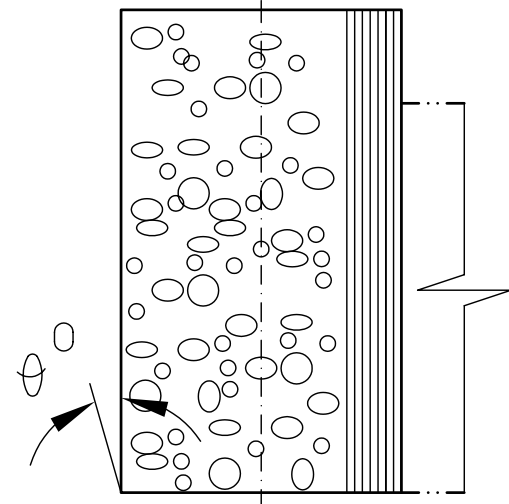
(ALL DIMENSIONS ARE IN mm)

DRG. NO. HY-TC-MPA1032-0111

2 OF 03 SH.

TYPE OF TURBINE :-		NK 63/71-3		
TYPE OF BOILER FEED PUMP :-		MDG 346		
TYPE OF BOOSTER PUMP :-		MLC 400X300H		
WEIGHT OF SINGLE HEAVIEST PIECE FOR				
	ERECTION	in kg.	MAINTENANCE	in kg.
TURBINE	60327		14,000	
BFP	21600		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'

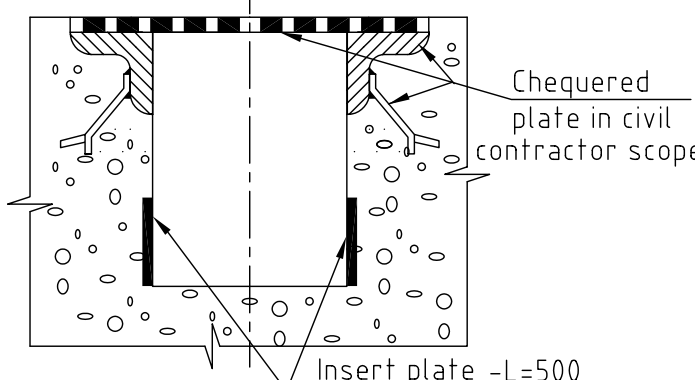


THE THICKNESS OF THE CONCRETE MEMBER MUST BE SUFFICIENT TO ENSURE THAT THE ANGULAR DEFLECTION DOES NOT EXCEED : 0.015 DEG. WITH THE HORIZONTAL FORCES SPECIFIED.

DETAIL 'TRENCH'

REFER NOTE-14

PROPOSED TRENCH COVER



Insert plate -L=500
10thk x 100width @1000Pitch
NOT INCLUDED IN B.H.E.L. SCOPE OF SUPPLY.

SPEEDS (RPM)

EQUIPMENT	OPERATING MARGIN	RATED DESIGN	TRIP SPEED	CRITICAL SPEEDS
TURBINE	5690	-	-	CRITICALLY DAMPED
BFP	-	-	-	1184.7
BP	-	-	-	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	-	-	-	1108	6648
A1	14375	-	1403	-	776	-	-
A2	14375	-	1403	-	-776	-	-
B	-	-	-	-	-	-	-
B1	15955	1555	13318	-	257	590	3540
B2	15955	1555	13318	-	-257	590	3540
C	550	-	-	-	-	-	-
C1	-	110	-	-	-2189	42	252
C2	-	440	-	-	2189	45	270

FOUNDATION LOADING DATA

(LOAD POINT APPLICATION IS AT EACH POCKET)

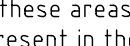
LOAD APPLICATION POINT	EQUIPMENT	WEIGHT		STATIC LOAD ON EACH POINT (kg's)		DYNAMIC LOAD ON EACH POINT (kg's)		
		DRY	WET	VERTICAL		VERTICAL	HORIZONTAL	AXIAL
5A	BOILER FEED PUMP (MDG 346)	21600	21850	1561		1742	1742	1161
3A	BOOSTER PUMP (MLC 400x300 H)	6150	6450	540		475	475	320

- ** 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:

$$\text{BFP : } 215 \text{ N-Sq.m } \left[\text{GD}^2 \right]$$
$$\text{BP : } 466 \text{ N-Sq.m }$$


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/sqm
- 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.
- All embedded plates, angles, sleeves, pipes, ducts and any other structurals are not part of Turbine scope of supply unless otherwise specified.

NTPC DRG. NO.:9575-110-PVM-V-163

TYPE OF PRODUCT NATIONAL THERMAL POWER CORPORATION LTD
OR
NAME OF CUSTOMER/PROJECTMouda, Maharashtra, STG PACKAGE(2x 660MW)

	BHARAT HEAVY ELECTRICALS LTD. HYDERABAD				NO OF VAR.
	DRN.	C.BALAJI	SIGN.	DATE	
	CHD.	G.N.PAWAR	DATE	09.8.2012	
APPD.	G.N.PAWAR	DATE	09.8.2012	-N.A.-	-N.A.-

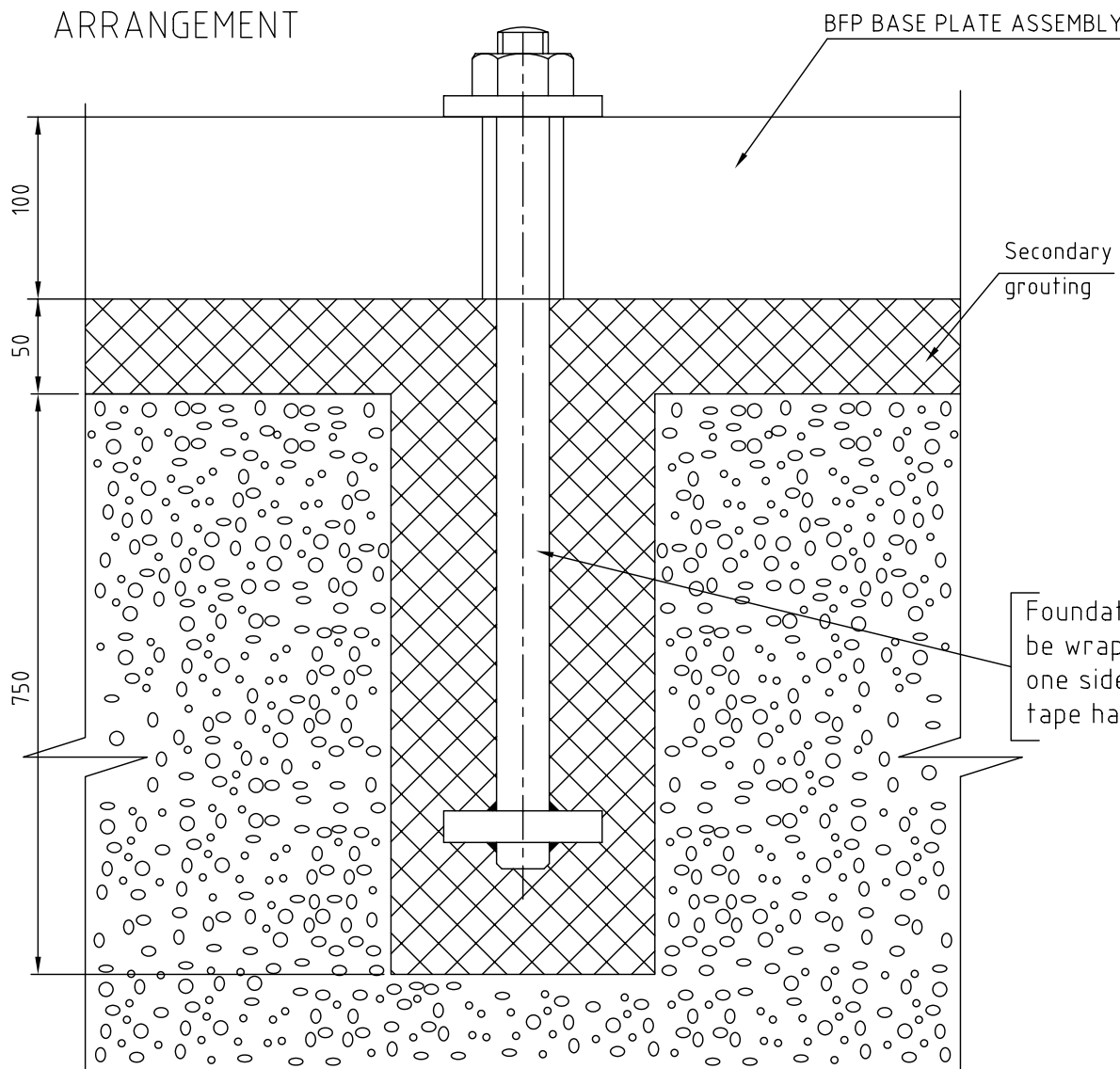
DEPT.	TCEP	UNTOLO DMS. GR. EPMF	SCALE	1:30	WEIGHT (KG)	-N.A.-	REF. TO ASSY. DRG.	-N.A.-	ITEM NO.	-N.A.-	NO OF ITEMS	-N.A.-
CODE	415											

TITLE		CARD CODE	DRAWING NO. (1-313-01-05635)	REV.
FOUNDATION ARRANGEMENT FOR BFP & DRIVE TURBINE		N.A.	HY-TC-MPA1032-0111	00
		SHT. No	03	NO. OF SHT. 03

FOUNDATION BOLT ARRANGEMENT

DETAIL 'M'

REFER NOTE-14

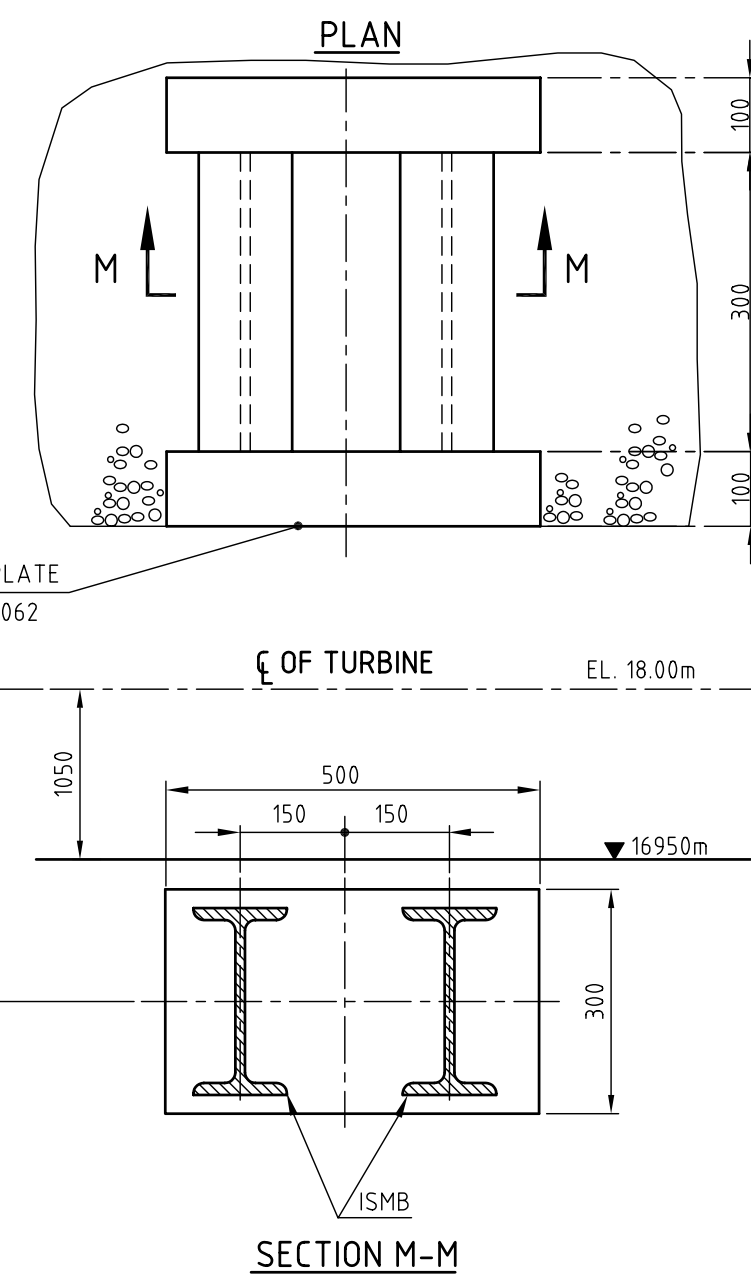


Note:Sealing mortar pouring and bitumen shall be part of ERECTION contract

DETAIL 'GUIDE'

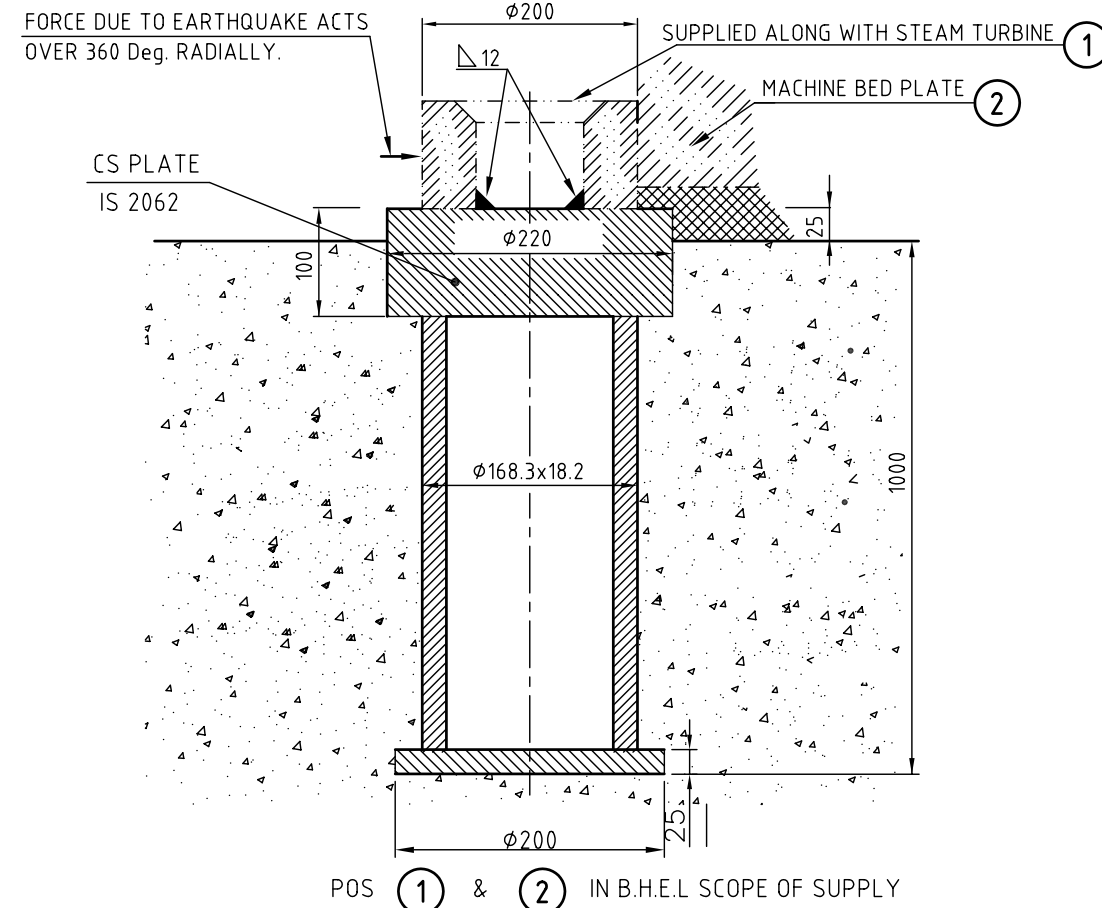
(FOR EXHAUST HOOD GUIDE SUPPORT)

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

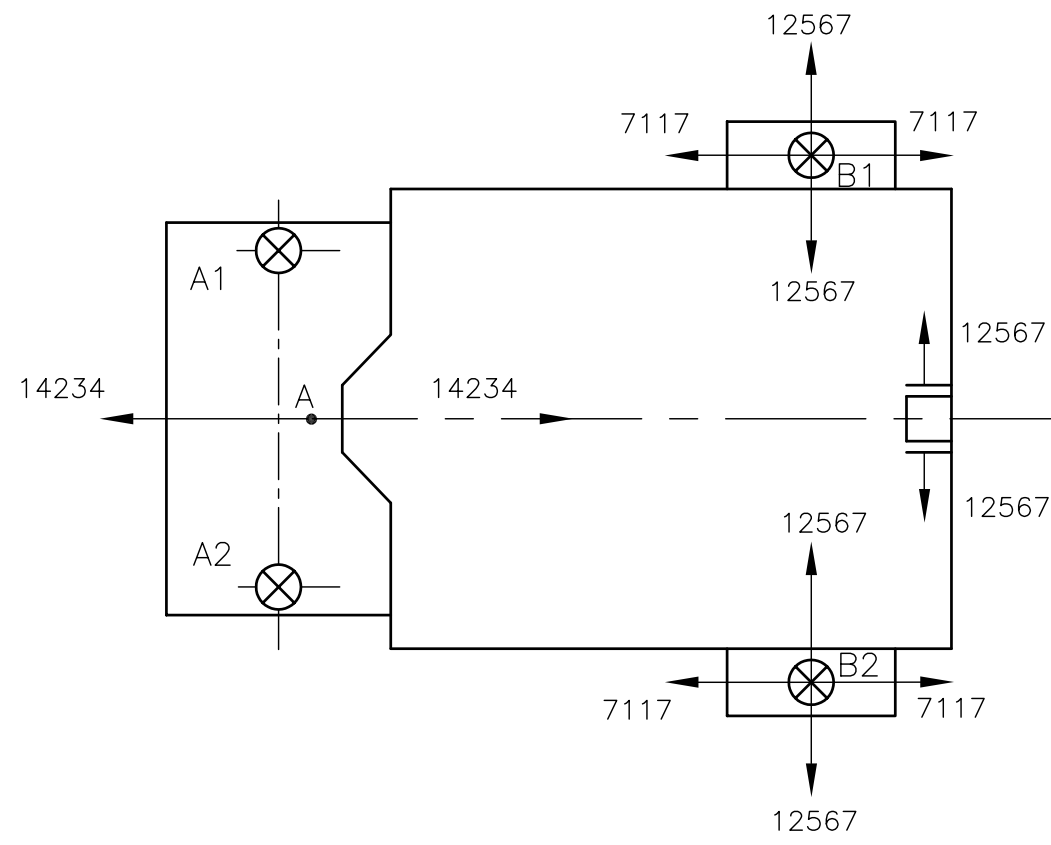


DETAIL 'EQ-TG'

REFER NOTE-14



HORIZONTAL FRICTIONAL FORCES IN kgf



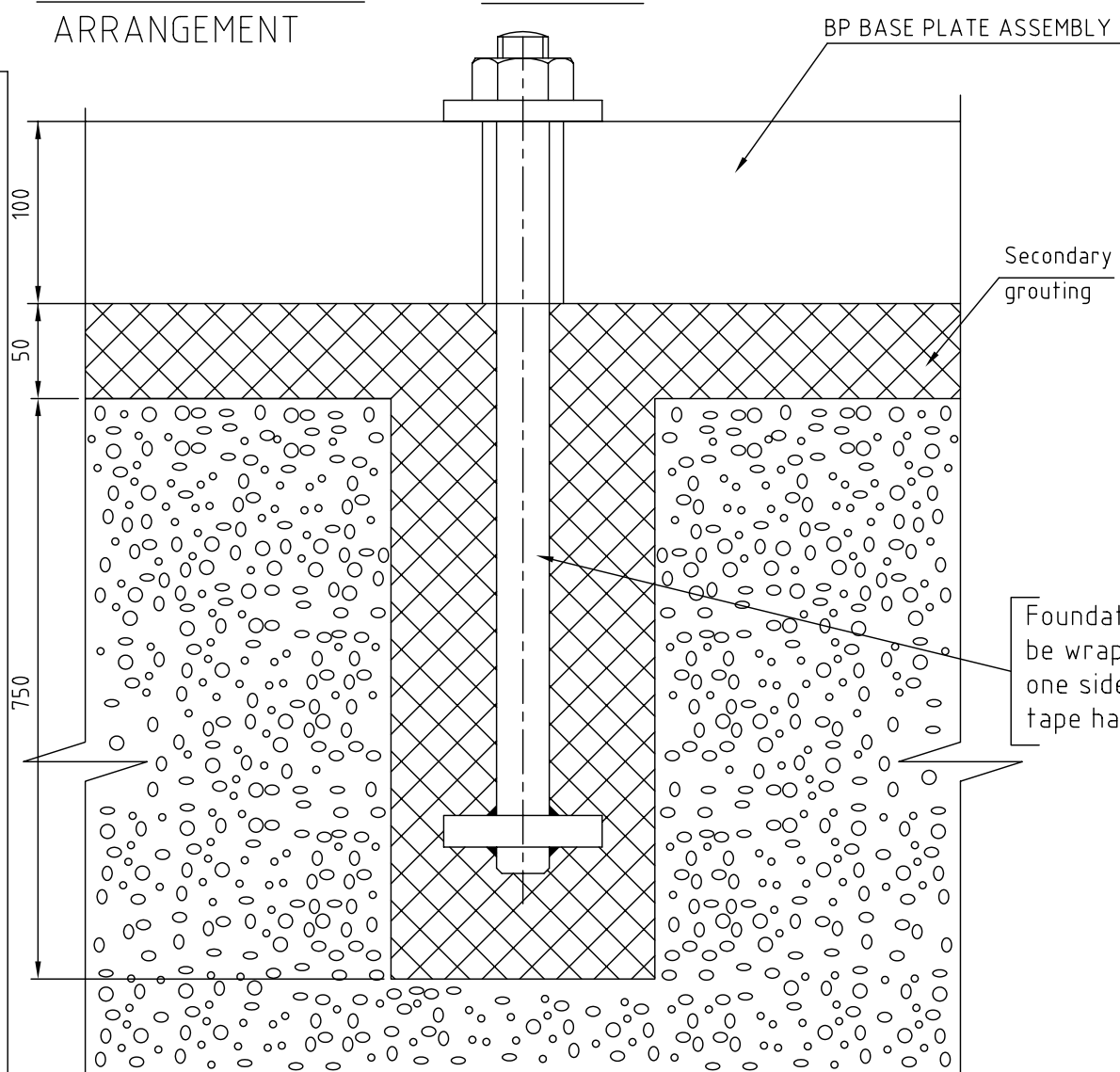
A:WORKING POINT OF FORCE (mm) : 710
B1,B2:WORKING POINT OF FORCE (mm) : 840
(THESE FORCES ALTERNATE IN DIRECTION)

THESE FORCES ALTERNATE IN DIRECTION

FOUNDATION BOLT ARRANGEMENT

DETAIL 'M1'

REFER NOTE-14

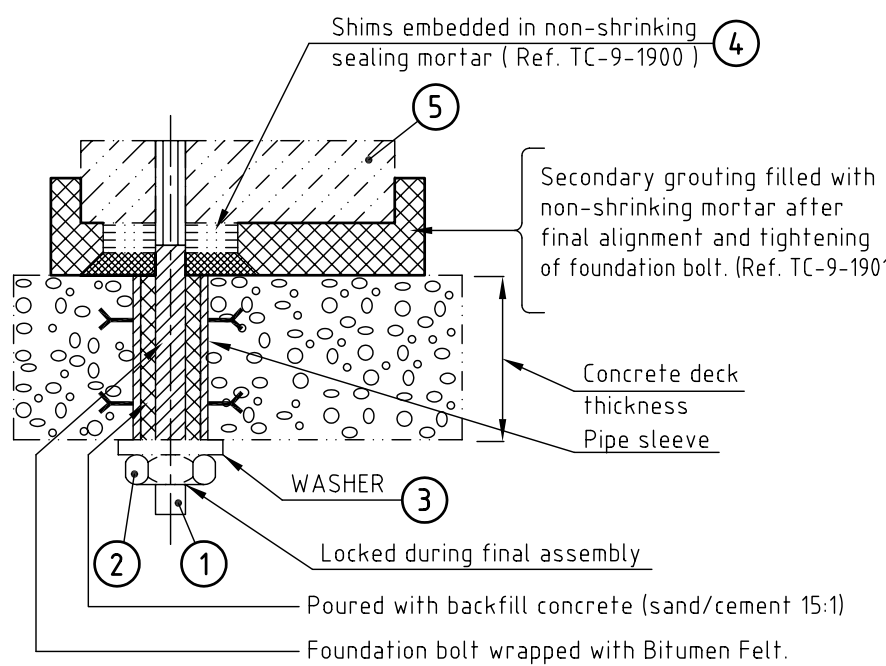


Note:Sealing mortar pouring and bitumen shall be part of ERECTION contract

DETAIL 'SP-WN'

FOUNDATION BOLT ASSEMBLY

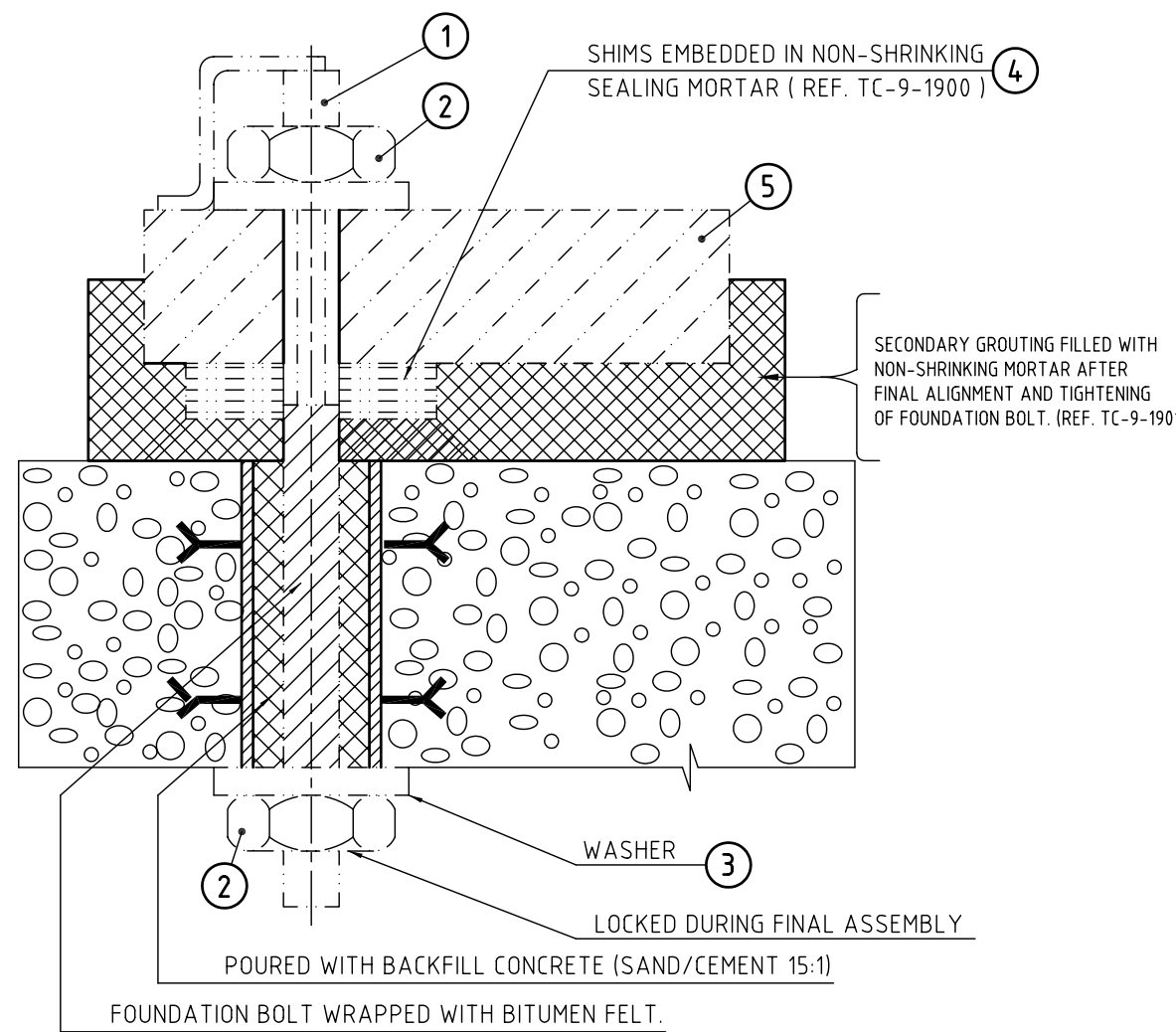
REFER NOTE-14



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

JCS