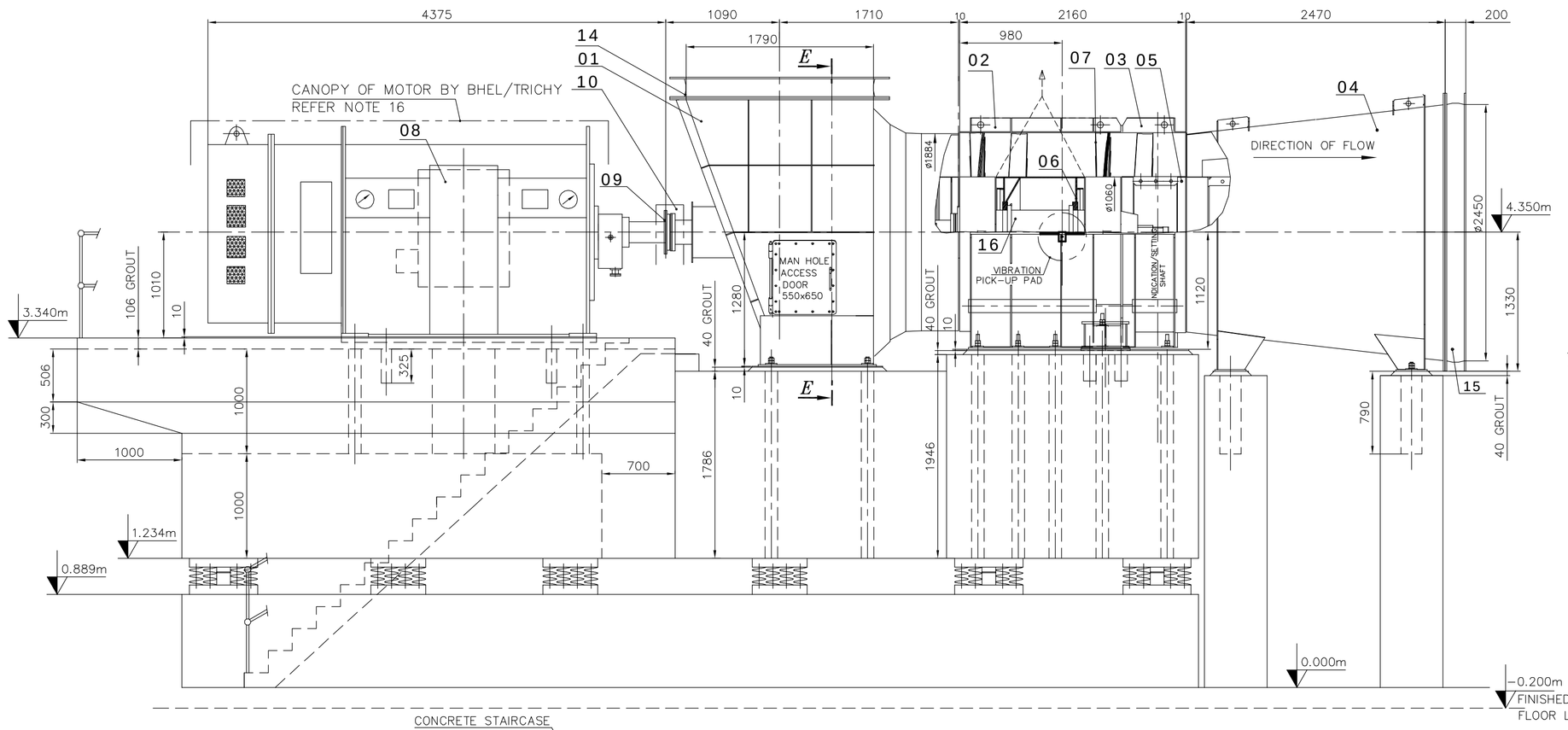
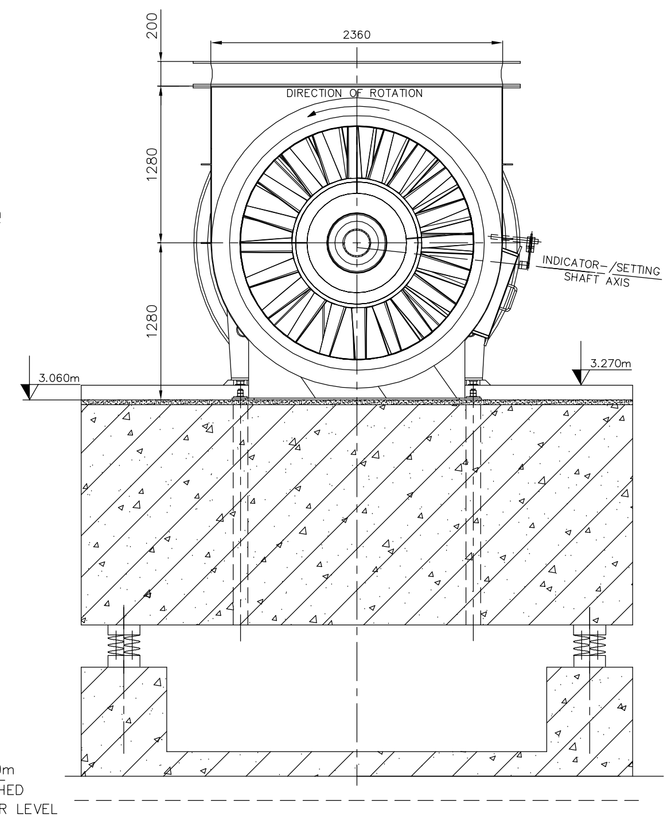
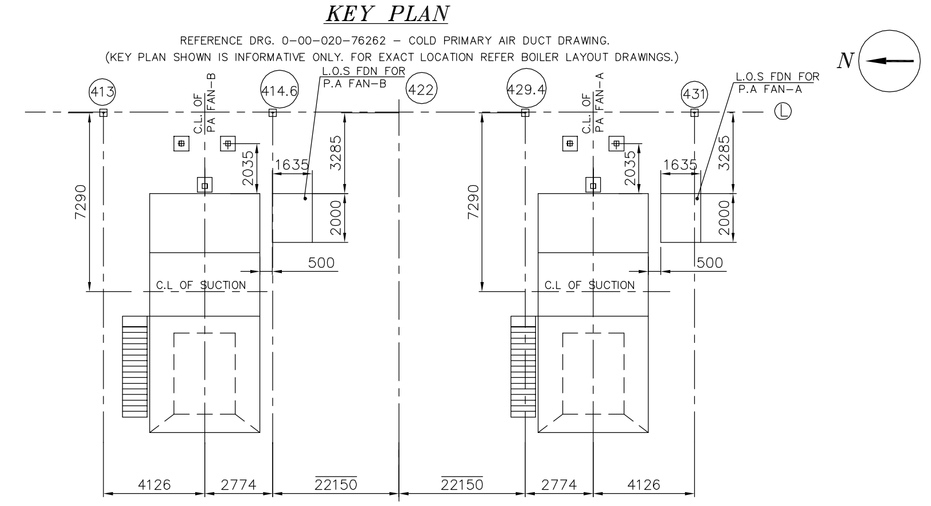


SECTION–EE



KEY PLAN

REFERENCE DRG. 0-00-020-76262 – COLD PRIMARY AIR DUCT DRAWING.
(KEY PLAN SHOWN IS INFORMATIVE ONLY. FOR EXACT LOCATION REFER BOILER LAYOUT DRAWINGS.)



NOTES:–

01. THE LOADS INDICATED ON FOUNDATION ARE WITHOUT ALLOWANCES FOR VIBRATIONS. CIVIL DESIGNERS ARE RESPONSIBLE FOR PROPER DESIGN OF FOUNDATION TAKING INTO ACCOUNT OF THE ALLOWANCES FOR VIBRATION ALSO.
02. THE DIFFERENT NATURAL FREQUENCIES OF THE FOUNDATION HAVE TO BE 20% AWAY FROM THE SPEED FREQUENCY, fnmax = n/60 AND 20% AWAY FROM THE DOUBLE OF THE SPEED FREQUENCY, 2 X fnmax.
THIS MEANS: 0.7xfn TO 1.3xfn and 0.8x(2xfn) TO 1.2x(2xfn).
SPEED FREQUENCY fnmax = 24.83 HZ
(2 * fnmax) = 49.66 HZ
03. THE STIFFNESS OF THE FOUNDATION HAS TO BE AT LEAST CF > 1.0E+06 N/mm IN LONGITUDINAL, TRANSVERSAL AND VERTICAL DIRECTIONS RELATING TO THE FAN AXIS. IT HAS TO BE TAKEN INTO CONSIDERATION THAT ON SETTLING THE FOUNDATION THE TOTAL NATURAL FREQUENCIES OF THE FOUNDATION CAN ARISE DUE TO THE SOIL COMPACTION AND THE RESULTING INCREASES OF THE ELASTIC MODULUS. AN UNEVEN SETTLING OF THE FOUNDATION HAS TO BE EXCLUDED.
04. THE RATIO OF THE FOUNDATION MASS TO THE ROTOR MASS HAS TO BE GREATER THAN 20.
05. ADOPT IS: 2974 / PART–IV FOR THE FOUNDATION DESIGN.
06. THE CONNECTING DUCTS AT INLET AND OUTLET OF FAN MUST BE SELF SUPPORTED AND SHOULD NOT BE WELDED WITH EXPANSION JOINTS.
07. FOUNDATION POCKETS SHOULD BE PERPENDICULAR TO THE FLAT SURFACES OF FOUNDATION.
08. ACCURATE TEMPLATES SHALL BE USED FOR LOCATING CORES FOR POCKET HOLES TO ENSURE THEIR DIMENSIONAL ACCURACY.
09. TOLERANCE BETWEEN ANY TWO POCKET CENTRES IS ±5 mm.
10. TOLERANCE ON CONCRETE LEVELS $^{+0}_{-25}$mm.
11. IN AREAS WHERE SOLE PLATES AND ANCHOR PLATES ARE TO BE INCORPORATED IN FOUNDATION CONCRETE, THE SIZE OF THE COARSE AGGREGATE USED SHALL NOT EXCEED 20 mm AND DOWN GRADED TO FACILITATE CHIPPING AND SCRAPPING AND THEREBY ENSURING MAXIMUM CONTACT ON THE MATING AREAS.
12. NON–SHRINK GROUT IS TO BE USED. REFER GENERAL SPECIFICATIONS ISSUED BY BHEL/RANIPET FOR NON–SHRINK GROUT. THIS ALSO CONTAINS THE PREPARATIONS OF PRIMARY PACKERS & SHIMS.
13. GROUTING SHOULD BE DONE ONLY AFTER FINAL ALIGNMENT OF FAN.
14. ELEVATIONS & POCKET DEPTH SHOWN IN FOUNDATION PLAN ARE INCLUDING GROUTING THICKNESS.
15. GROUTING IS IN THE SCOPE OF ERECTION GROUP ERECTION / CONTRACTOR.
16. HANDRAILS, STEEL PLATFORMS, STEEL STAIRS, LADDERS & CANOPY FOR MOTOR AND THEIR EMBEDMENTS ARE IN THE SCOPE OF BHEL/TRICHY.
17. FAN FOUNDATION SHOULD NOT BE USED AS SUPPORT FOR OTHER STRUCTURES OR EQUIPMENTS.
18. FOUNDATION CONFIGURATION SHOWN IN THIS DRAWING IS ONLY INFORMATIVE/TYPICAL. TYPE AND DETAILS OF FOUNDATION ARE TO BE FINALISED BY CIVIL DESIGNERS.
19. FOR MOTOR ERECTION, REFER MOTOR SUPPLIER'S ERECTION MANUAL.
20. BASE FRAME, SOLE PLATE, FOUNDATION BOLTS & FASTENERS RELATED TO MOTORS WILL BE IN THE SCOPE OF MOTOR SUPPLIER (BHEL BHOPAL UNIT)

SL NO	DESCRIPTION	MATERIAL	QTY
16	BEARINGS	ANGULAR CONTACT BALL BRG. : 7234 CYL.ROLLER BEARING: NU 330	3xANGULAR CONTACT BALL BRG. 2xCYLINDRICAL ROLLER BRG. ASSY IN 1 BRG. HSG.
15	OULET EXPANSION JOINT	IS: 2062 & FABRIC	1
14	INLET EXPANSION JOINT	IS: 2062 & FABRIC	1
13	SHIMS	S.S	AS REQD.
12	PRIMARY PACKER	IS : 2062	8
11	FOUNDATION FASTENERS FOR FAN	ASTM A105	15
10	COUPLING GUARD	IS : 1079	1
09	SPACER COUPLING	STEEL	1
08	MOTOR WITH FNDN. FASTENERS		1
07	BLADES	GALSI9MgWa OR EQUIVALENT (ALUMINIUM ALLOY)	40 (20 PER IMPELLER)
06	IMPELLER HUB	LOAD RING: WstE500 OR EQUIVALENT Welding hub, Support ring, Others: P355NH OR EQUIVALENT	2
05	HOUSING CORE (FAN HOUSING HUB)	IS : 2062 OR EQUIVALENT	1
04	DIFFUSER	IS : 2062 OR EQUIVALENT	1
03	OUTLET GUIDE VANE ASSY.	IS : 2062 OR EQUIVALENT	1
02	IMPELLER HOUSING	IS : 2062 OR EQUIVALENT	1
01	SUCTION CHAMBER	IS : 2062 OR EQUIVALENT	1

BILL OF MATERIAL

FAN DETAILS:

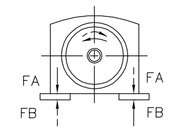
TYPE	: PAF 19/10.6–2
NO. OF FANS PER BOILER	: TWO
WEIGHT OF ROTATING PARTS: MAX.WEIGHT TO BE HANDLED	: 3060 kg
GD^2 OF FAN	: 1680 kg.m^2
SPEED OF FAN	: 1490 RPM
CASING THICKNESS MIN.	: 6mm.

MOTOR DETAILS:

MAKE	: M/s. BHEL/BHOPAL
TYPE	: ILA7924–4
CAPACITY	: 3200 KW
GD^2 OF MOTOR	: 1060 Kg.M^2
WEIGHT OF MOTOR	: 15500 KG
WEIGHT OF ROTATING PARTS:	4000 KG
MOTOR DRAWING NUMBER	:

FOUNDATION LOAD OF MOTOR

MAX. FORCE CALCULATED FROM THE MAX. IMPULSE TORQUE (FM) = 142 KN
FORCE EXERTED BY WEIGHT ON EACH SIDE (FG) = 78 KN
FOUNDATION LOAD ON EACH SIDE COMPRESSION (FA) = FM+FG = 220 KN
TENSILE FORCE (FB) = FM–FG = 64 KN
THE FORCE OCCUR ALTERNATIVELY INDEPENDENT OF THE DIRECTION OF ROTATION.

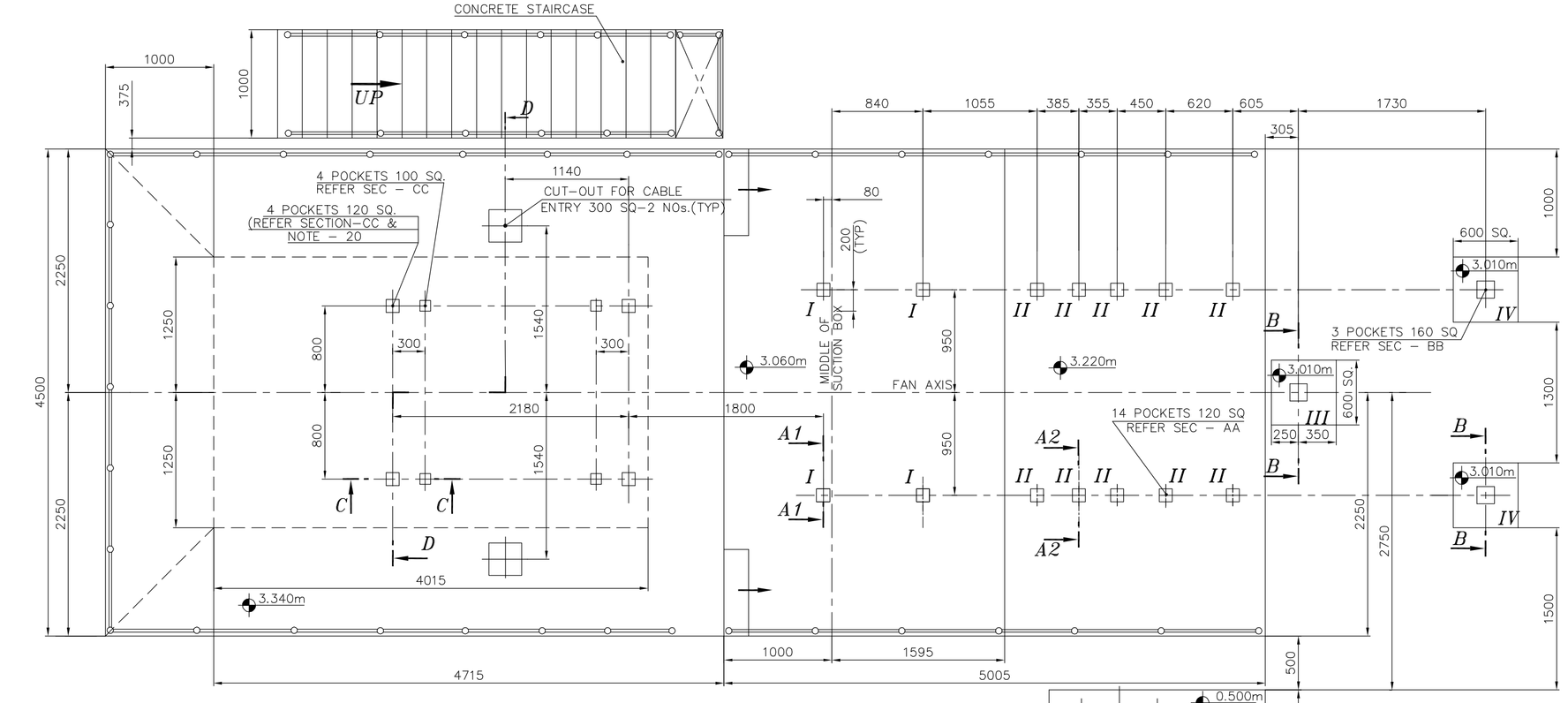


LOAD POINT	+↓ FORCE [N] STATIC VERTICAL	+↓ −↑ FORCE [N] DYNAMIC VERTICAL	↑ FORCE [N] STATIC HORIZONTAL IN AXIS' DIRECTION	+↕ − FORCE [N] STATIC HORIZONTAL ACROSS TO AXIS	+↕ − FORCE [N] DYNAMIC HORIZONTAL ACROSS TO AXIS
I	+14700	±200	±5000	±100	±200
II	+15200	±1800 ±11400	±2700	±9200	±1500 ±9700
III	+10400	±300		±100	±300
IV	+6400	±300		±100	±300

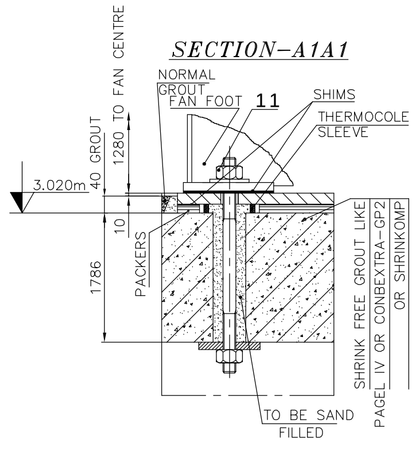
MAX.ALLOWABLE BEARING VIBRATION:

SET POINTS FOR VIBRATION:	
ALARM 4.5mm/s [rms]	TRIP 11mm/s [rms]

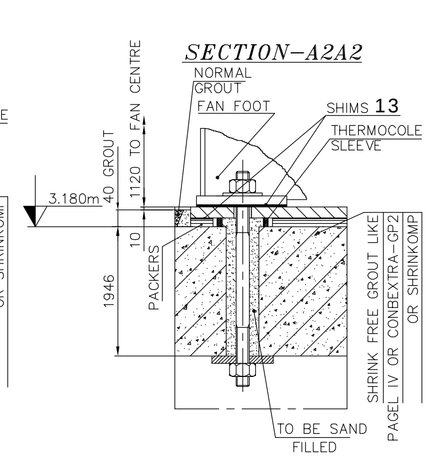
INTERMEDIETE SHAFT WEIGHT: 2300kg.

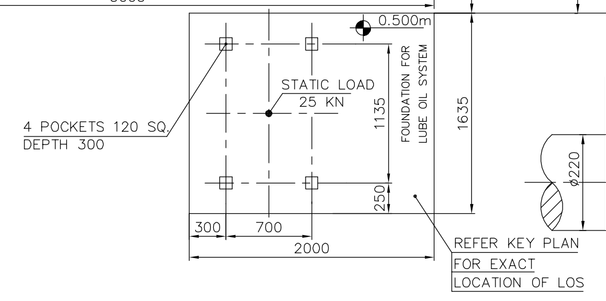


SECTION–A1A1

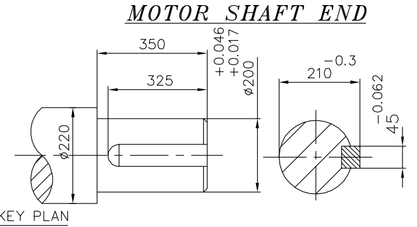


SECTION–A2A2

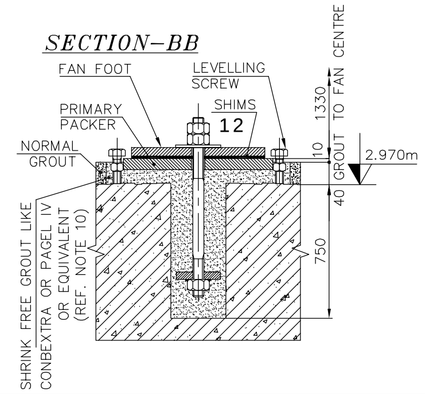




MOTOR SHAFT END

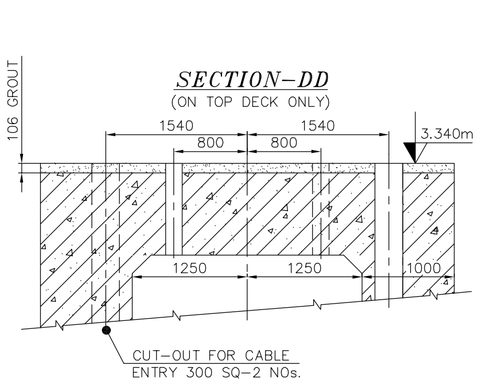


SECTION–BB

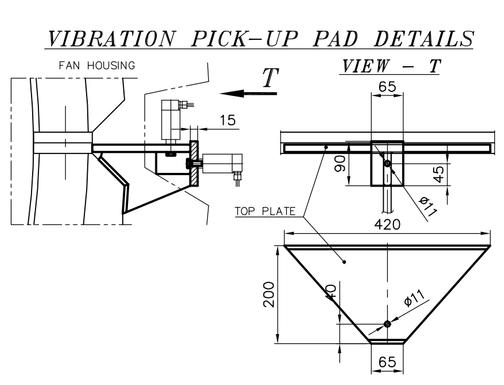


SECTION–DD

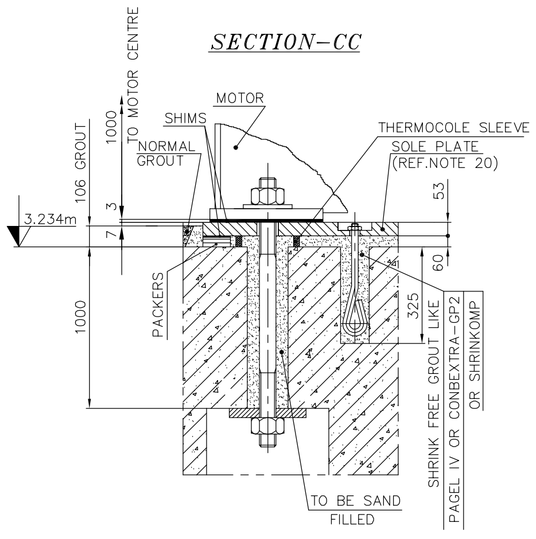
(ON TOP DECK ONLY)



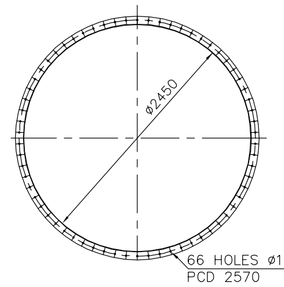
VIBRATION PICK–UP PAD DETAILS



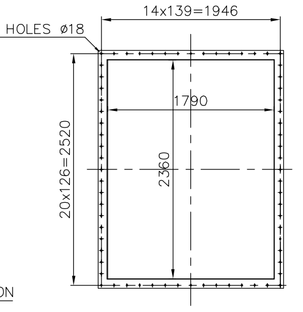
SECTION–CC



DELIVERY FLANGE



SUCTION FLANGE



REV	DESCRIPTION	DATE	DRAWN BY	CHECKED BY	APPR'D BY
00	ISSUED FOR NTPC REVIEW	06.09.2012	P.L.N	R.G	T.S.S

BHEL CUSTOMER NOS. R646&R647

NTPC DRG NO 9575–102–RN–PVM–B–0109

CUSTOMER NTPC — NTPC LIMITED. (A Government of India Enterprise)

PROJECT MOUDA SUPER THERMAL POWER PROJECT
STAGE–II (2 X 660MW)
STEAM GENERATOR PACKAGE

BHARAT HEAVY ELECTRICALS LIMITED.,
BOILER AUXILIARIES PLANT
RANIPET – 632 406

TITLE GA DRAWING FOR PA FAN WITH FOUNDATION PLAN AND LOADING DATA PAF 19/10.6–2

ALL DIMENSIONS IN MILLIMETRE
PROJECTION
SCALE 1:35

BHEL DRG. NO. 1–00–100–28725 REV. 00

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