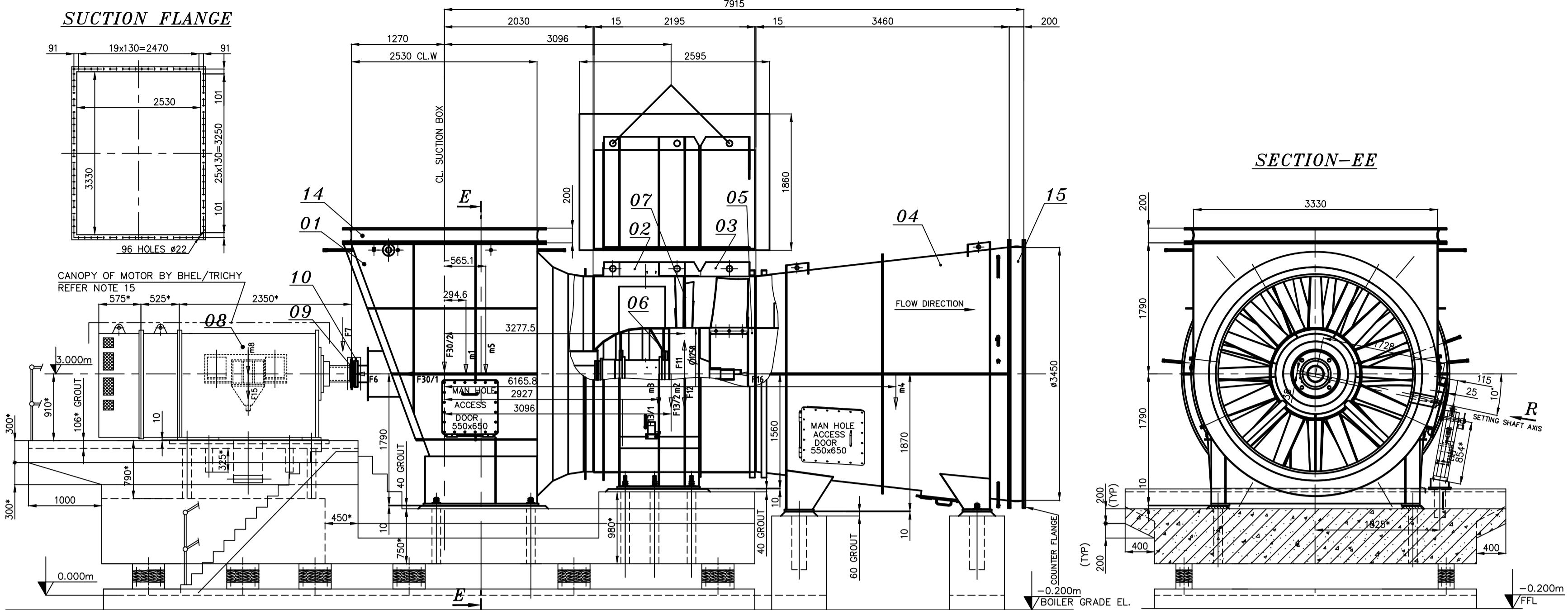
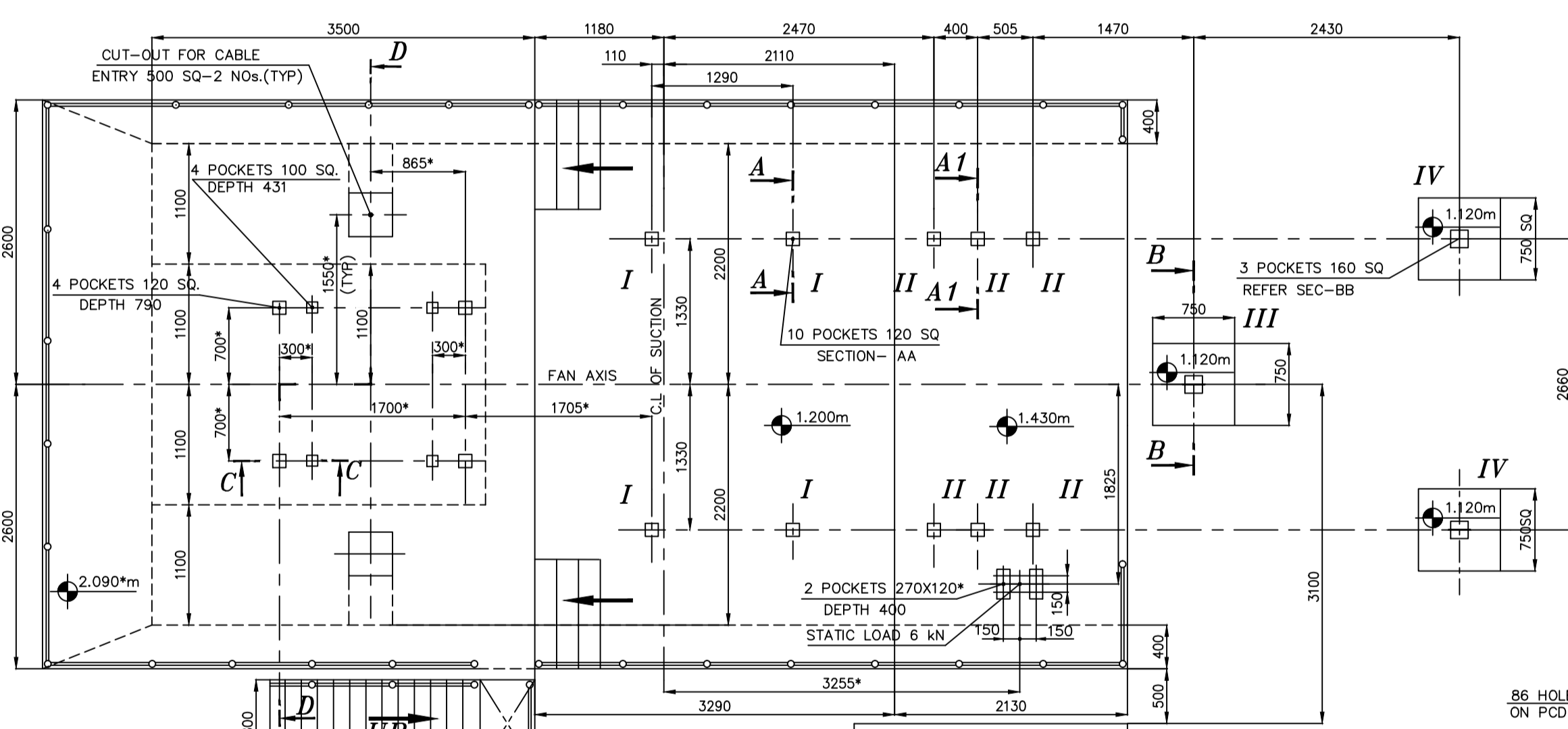


KEY PLAN



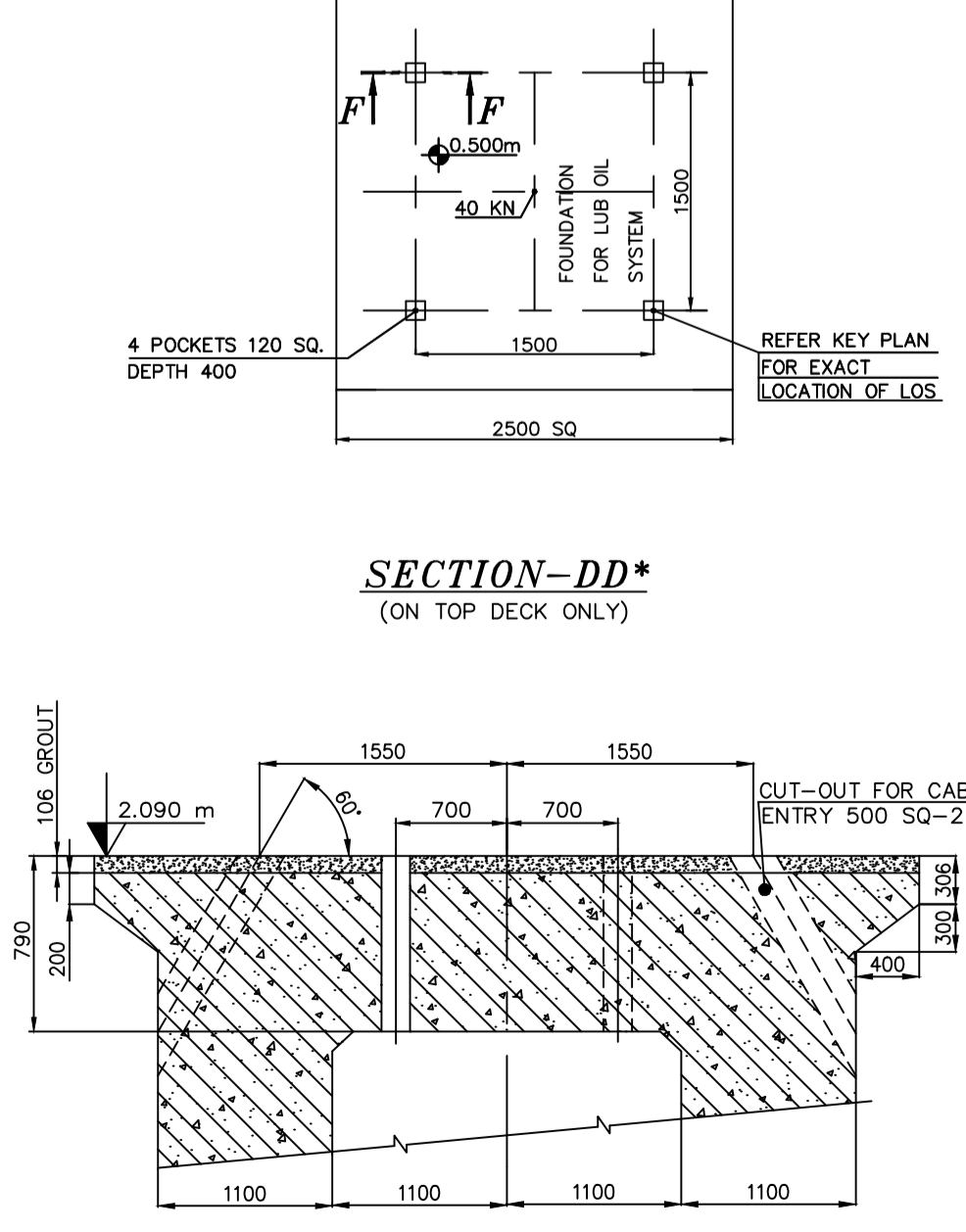
FOUNDATION PLAN



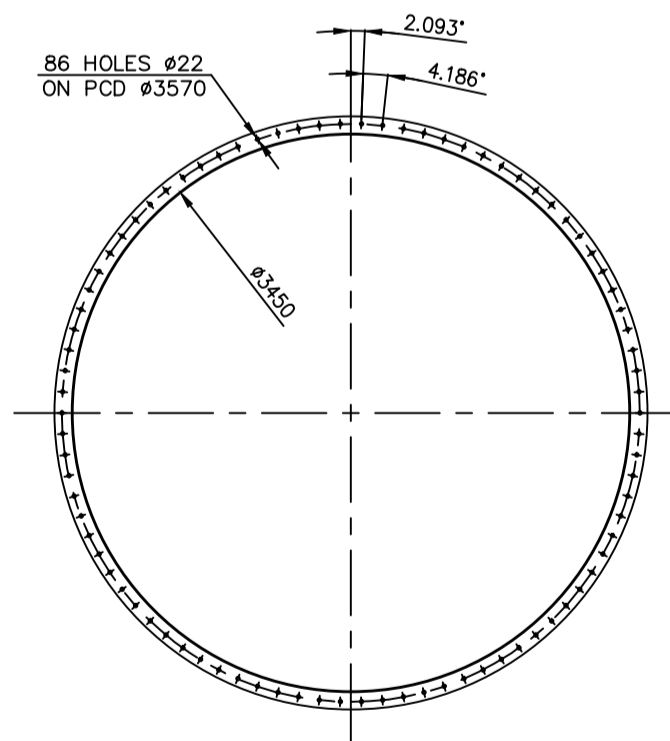
DELIVERY FLANGE

SL NO	DESCRIPTION	MATERIAL	QTY
15	OULET EXPANSION JOINT	IS:2062 & RUBBER	1
14	INLET EXPANSION JOINT	IS:2062 & RUBBER	1
13	SHIMS	S.S	AS RECD.
12	PRIMARY PACKER	IS : 2062	8
11	FOUNDATION FASTENERS FOR FAN	ASTM A105	15
10	COUPLING GUARD	IS : 2062	1
09	SPACER COUPLING	STEEL	1
08	MOTOR WITH FNDN. FASTENERS	1725 KW / 990 RPM	1
07	BLADES	ENAC-AIS19MgT6	14
06	IMPELLER HUB	S355J2G3	1
05	HOUSING CORE	IS : 2062	1
04	DIFFUSER	IS : 2062	1
03	OUTLET GUIDE VANE ASSY.	IS : 2062	1
02	IMPELLER HOUSING	IS : 2062	1
01	SUCTION CHAMBER	IS : 2062	1

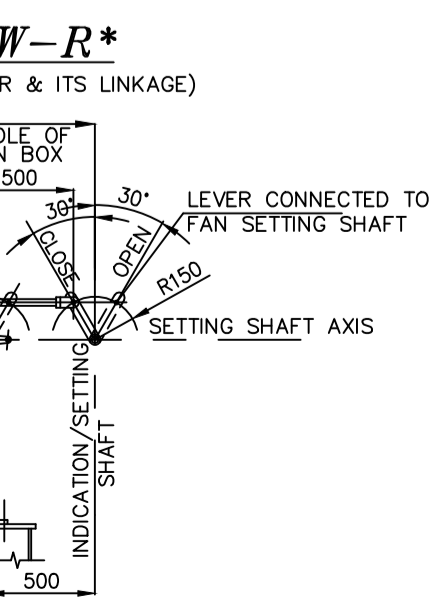
BILL OF MATERIAL



SECTION-DD*
(ON TOP DECK ONLY)



VIEW-R*
(ON ACTUATOR & ITS LINKAGE)

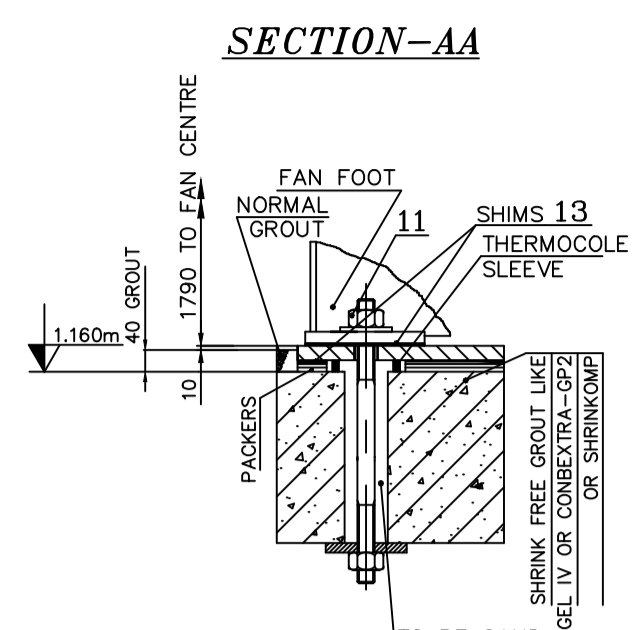


MOTOR SHAFT END*

LOAD POINT	STATIC VERTICAL FORCE [N]	DYNAMIC VERTICAL FORCE [N]	STATIC HORIZONTAL IN AXIAL DIRECTION FORCE [N]	STATIC HORIZONTAL ACROSS TO AXIS FORCE [N]	DYN. HORIZONTAL ACROSS TO AXIS FORCE [N]
I	+32700	±400	±13300	±100	±400
II	+32400	±1400	±3300	±15300	±1200
III	+21300	±500	±3300	±100	±500
IV	+13100	±500	±100	±100	±500

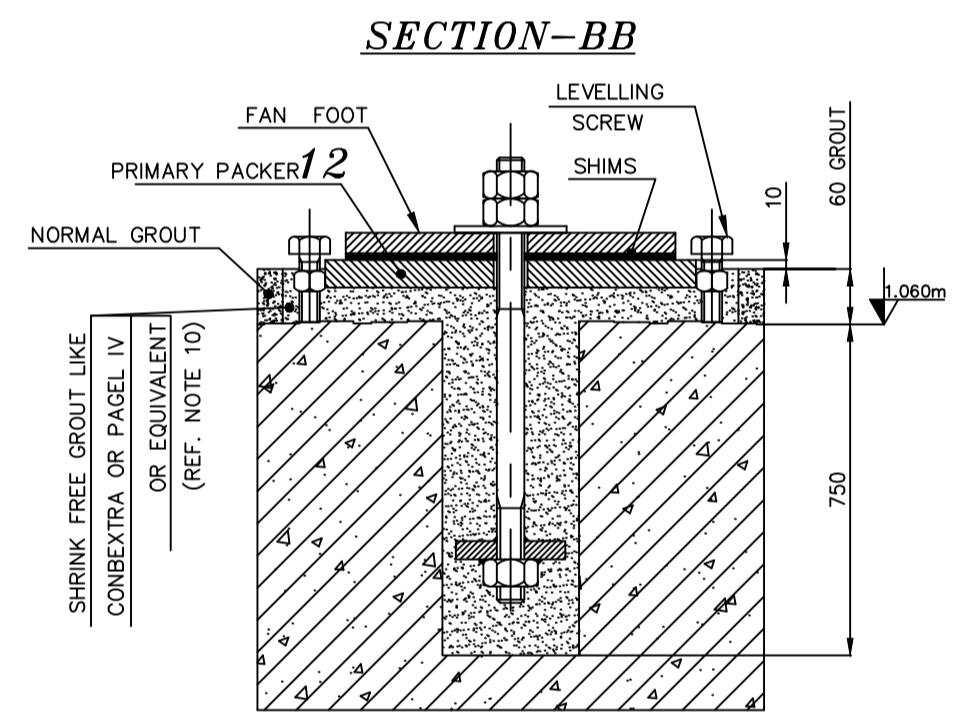
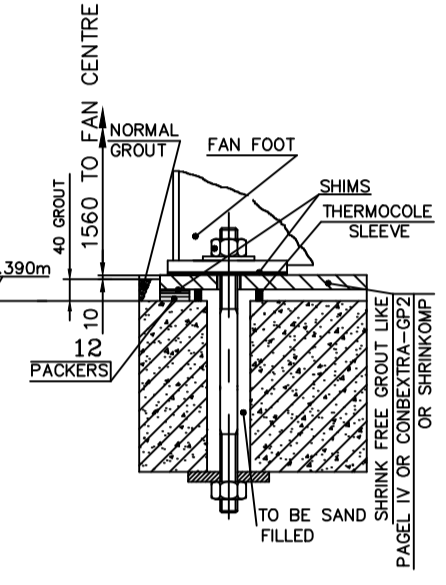
FOUNDATION LOAD DATA

30/2	12401	Stat. and dyn. forces caused by air stream of suction box in vert. direction
30/1	52856	Stat. and dyn. forces caused by air stream of suction box in horiz. direction
16	19535	Axial thrust of the fan (due to pressure increase)
15	139260	Load during starting sequence by short-circuit torque of the motor
14	-	Foundation
13/2	31520	Max. load when lifting the fan housings upper part
13/1	19570	Max. load when lifting the rotor assembly
12	99480	Unbalance in case of damage
11	7044	Max. rotating load due to unbalance of the fan rotor
10	-	Oil supply unit with oil filling
9	-	Frame of the motor
8	-	Drive motor
7	3685	Radial load on motor shaft
6	1635	Axial thrust on motor shaft for motor with fixed bearing
5	670	Intermediate shaft with coupling
4	4810	Diffuser with tail fairing
3	1994	Complete rotor assembly
2	7140	Fan housing with straightener vane section and nose fairing
1	4500	Suction box with inlet nozzle and intermediate shaft cover

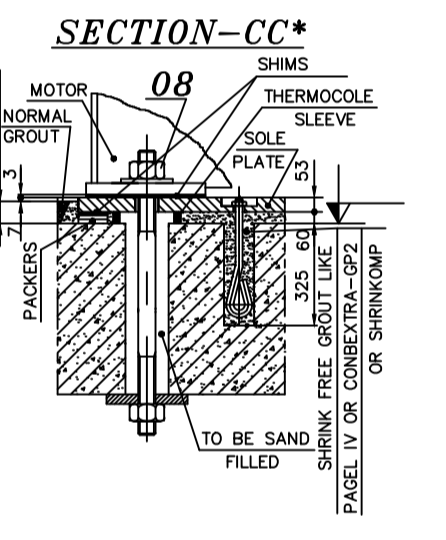


SECTION-AA

SECTION-A1A1



SECTION-BB



SECTION-CC*

NOTES:-

- 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.
- THE DIFFERENT NATURAL FREQUENCIES OF THE FOUNDATION HAVE TO BE 20% AWAY FROM THE SPEED FREQUENCY. $f_{nmax} = n/60$ AND 15% AWAY FROM THE DOUBLE OF THE SPEED FREQUENCY. $2 \times f_{nmax}$. THIS MEANS: $0.8 \times f_n$ TO $1.2 \times f_n$ AND $0.85 \times (2 \times f_n)$ TO $1.15 \times (2 \times f_n)$. SPEED FREQUENCY $f_{nmax} = 16.5$ HZ ($2 \times f_{nmax} = 33.0$ HZ)
- THE STIFFNESS OF THE FOUNDATION HAS TO BE AT LEAST $C_F > 1.0E+06$ 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.
- THE RATIO OF THE FOUNDATION MASS TO THE ROTOR MASS HAS TO BE GREATER THAN 25.
- ADOPT IS: 2974 / PART-IV FOR THE FOUNDATION DESIGN.
- THE CONNECTING DUCTS AT INLET AND OUTLET OF FAN MUST BE SELF SUPPORTED AND SHOULD NOT BE WELDED WITH EXPANSION JOINTS.
- FOUNDATION POCKETS SHOULD BE PERPENDICULAR TO THE FLAT SURFACES OF FOUNDATION.
- ACCURATE TEMPLATES SHALL BE USED FOR LOCATING CORES FOR POCKET HOLES TO ENSURE THEIR DIMENSIONAL ACCURACY.
- TOLERANCE BETWEEN ANY TWO POCKET CENTRES IS ± 5 mm.
- TOLERANCE ON CONCRETE LEVELS ± 0 mm.
- 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 THEREBY ENSURING MAXIMUM CONTACT ON THE MATING AREAS.
- 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.
- GROUTING SHOULD BE DONE ONLY AFTER FINAL ALIGNMENT OF FAN.
- ELEVATIONS & POCKET DEPTH SHOWN IN FOUNDATION PLAN ARE INCLUDING GROUTING THICKNESS.
- HANDRAILS, STEEL PLATFORMS & CANOPY FOR MOTOR AND THEIR EMBEDMENTS ARE IN THE SCOPE OF BHEL/TRICHY.
- FAN FOUNDATION SHOULD NOT BE USED AS SUPPORT FOR OTHER STRUCTURES OR EQUIPMENTS.
- FOUNDATION CONFIGURATION SHOWN IN THIS DRAWING IS ONLY INFORMATIVE/TYPICAL TYPE AND DETAILS OF FOUNDATION ARE TO BE FINALISED BY CIVIL DESIGNERS.
- FOR MOTOR ERECTION, REFER MOTOR SUPPLIER'S ERECTION MANUAL.
- BASE FRAME, SOLE PLATE, FOUNDATION BOLTS, FDN. SLEEVE & FASTENERS RELATED TO MOTORS WILL BE IN THE SCOPE OF MOTOR SUPPLIER (BHEL BHOPAL UNIT)
- THE RATIO OF FOUNDATION MASS TO THE MACHINE MASS TO BE GREATER THAN 2.5.

FAN DETAILS:

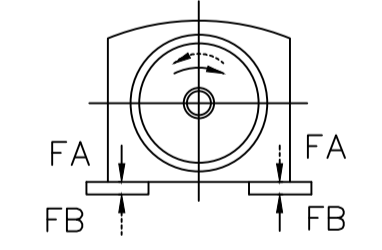
TYPE	: FAF 26.6/12.5-1
NO. OF FANS PER BOILER	: TWO (IDENTICAL)
WEIGHT OF ROTATING PARTS	: 2000 kg
GD ² OF FAN	: 1400 kg.m ²
SPEED OF FAN	: 990 RPM

MOTOR DETAILS:*

RATING	: 1725 kw/996 RPM
TYPE	: 1LA7902-6
MAKE	: M/s. BHEL/BHOPAL
WEIGHT OF MOTOR	: 11500 KG
WEIGHT OF ROTATING PARTS	: 2800 KG
GD ² OF MOTOR	: 576 KGM ²
MOTOR DRG. NO.	: 1 402 00 41035
BEARINGS	D.E : NU238M+6238M C3 N.D.E : NU232M (INSULATED)
LUBRICATION	: GREASE (SERVOGEM-3 OR EQUIVALENT)

FOUNDATION LOAD OF MOTOR*

MAX. FORCE CALCULATED FROM THE MAX. IMPULSE TORQUE - FM = 160 KN
 FORCE EXERTED BY WEIGHT ON EACH SIDE - FG = 58 KN
 FOUNDATION LOAD ON EACH SIDE COMPRESSION - FA = FM+FG = 218 KN
 TENSILE FORCE - FB = FM-FG = 102 KN
 THE FORCE OCCUR ALTERNATIVELY INDEPENDENT OF THE DIRECTION OF ROTATION.



CUSTOMER NO: R667 & R668

PROJECT: 2 X 660MW ENNORE SEZ SUPERCritical TPP AT ASH DYKE OF NCTPS, CHENNAI

OWNER: TAMILNADU GENERATION & DISTRIBUTION CORPORATION LTD.

OWNERS CONSULTANT: DESEIN PRIVATE LIMITED, DESEIN HOUSE, NEW DELHI

EPC CONTRACTOR: BHARAT HEAVY ELECTRICALS LIMITED, NEW DELHI

UNIT : BOILER AUXILIARIES PLANT; RANIPET- 632406

TITLE: GENERAL ARRANGEMENT OF FORCED DRAFT FAN FAF 26.6/12.5-1

SCALE: NTS

DATE: 10.01.2015

REV: 00