

**PUMP PARTICULARS**

QTY.	FIGURE	SIZE	STAGE	SPEED
THREE	7000	32H	ONE	988 RPM
CAPACITY OF EACH PUMPS		TOTAL BOWL HEAD	BOWL INPUT (SP.GR.=1.025)	EFFICIENCY
3125 M <sup>3</sup> /HR.		23.17 MTRS.	▷ 232.31 K.W.	▷ BOWL 87%

**MOTOR PARTICULARS**

MAKE	POWER	SPEED	DRG. NO.
B.H.E.L.	300 K.W.	988 RPM	34020046043
PHASE	TYPE	FREQUENCY	
THREE	V.S.S.	50 HZ.	

- NOTE:-
- DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
  - DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
  - PAINTING LIGHT GREY IS-5, 631

**DETAILS OF DISCH.& COMP. FLANGE:-**  
(AS PER IS-1538) (600 NB.)

FLANGE O.D.	780
P.C.D.	725
NO. OF HOLES	20
DIA. OF HOLES	31
THICKNESS	32

**LOAD DATA:-**

Static LOAD Of Pump	7400 Kgs. (Approx.)
Static Weight Of MOTOR	3750 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set)	16700 Kgs. (Approx.)

- MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 4900 KGS. (APPROX.)
- RECOMMENDED CRANE CAPACITY = 5 TON.

▷ AMIT	16.10.12
▷ PRITAM	09.08.12
▷ PRITAM	09.08.12
REV.	DRN DATE

A	600 (N.SIZE)	O	346
B	730	P	1600
C	1175	Q	1000
D	900	R	900
E	500	S	475
F	36	T	2070
G	600 (N.SIZE)	U	1700
H	800	V	1600
J	787	W	13964
L	11867	X	31
M	1097	F1	36
N	1000	W1	13800
		E1	700

**FLOWMORE PUMPS**

**FLOWMORE LIMITED**  
NEW DELHI

**JOB NAME : CW MAKE UP WATER PUMPS**

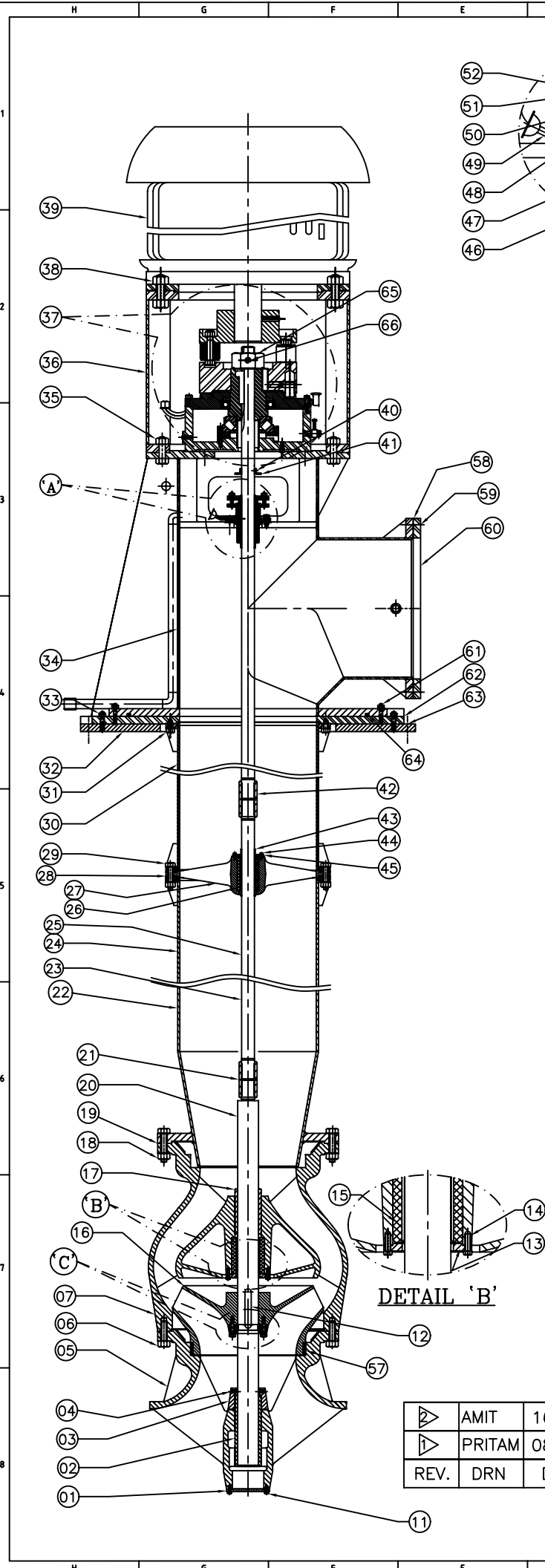
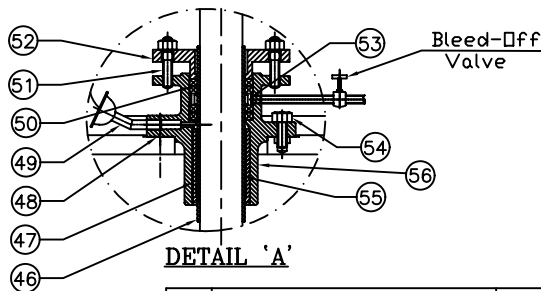
**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

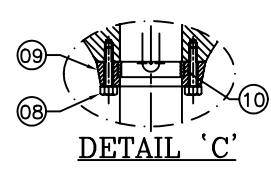
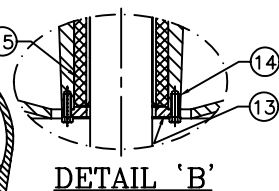
**P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.07.2012**

NAME	SIGN	DATE	TITLE:	SCALE
PRITAM		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.
RAKESH		04.08.2012		SHEET
P.K.S.		04.08.2012		1 OF 1

DRG. No. **GA-SALE112000906-10** SIZE **A4** REV. **03**



66	ALLEN SET SCREW	1	S.S.-316L
65	ADJUSTING NUT	1	MILD STEEL
64	O' RING	1	NITRILE RUBBER
63	L-TYPE FOUNDATION BOLT WITH NUT	8	MILD STEEL
62	BASE PLATE	1	S.S.-316L
61	STUD BOLT WITH NUT	44	S.S.-316L
60	COMPANION FLANGE	1	M.S.(IS-2062)
59	HX. HD. BOLT WITH NUT	20	S.S.-316L
58	GASKET	1	NEOPRENE RUBBER
57	IMPELLER WEARING RING	1	S.S.-316L
56	PACKING BOX	1	Duplex S.S.-ASTM-A995-Gr.CD4M,CuN
55	TOP SHAFT	1	S.S.-316L
54	STUD BOLT WITH NUT	6	S.S.-316L
53	WATER SEAL RING	1	BRONZE (IS-318, LTB-V)
52	PACKING GLAND	1	S.S.-316L
51	STUD BOLT WITH NUT	2	S.S.-316L
50	PACKING PCS.	4	P.T.F.E./GRAFOIL
49	SPRING GREASE CUP FITTED WITH NRV	1	S.S.-316
48	GASKET	1	NEOPRENE RUBBER
47	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
46	TOP SHAFT SLEEVE	1	S.S.-316L
45	COVER PLATE FOR BRG. RETAINER	5	S.S.-316L
44	HX. HD. CAP SCREW	30	S.S.-316L
43	LINE SHAFT SLEEVE	5	S.S.-316L
42	LINE SHAFT COUPLING	5	S.S.-316
41	WATER SLINGER ASSY.	1	Duplex S.S.-ASTM-A995-Gr.CD4M,CuN
40	ALLEN SET SCREW	2	S.S.-316L
39	MOTOR	1	B.H.E.L.-MAKE
38	HX. HD. BOLT WITH NUT	8	S.S.-316L
37	THRUST STAND ASSY.	1	Detail Drg.TSA-SALE12000906-10
36	MOTOR STOOL	1	M.S. (FEB.)(IS-2062)
35	HX. HD. BOLT WITH NUT	8	S.S.-316L
34	SURFACE DISCHARGE HEAD	1	S.S.-316L
33	STUD BOLT WITH NUT	8	S.S.-316L
32	SOLE PLATE	1	M.S.(IS-2062)
31	HX. HD. CAP SCREW	20	S.S.-316L
30	FLGD. TOP COL. PIPE	1	S.S.-316L
29	HX. HD. BOLT WITH NUT	100	S.S.-316L
28	GASKET	10	NEOPRENE RUBBER
27	BRG. RETAINER	5	Duplex S.S.-ASTM-A995-Gr.CD4M,CuN
26	LINE SHAFT BEARING	5	THORDON
25	LINE SHAFT	4	S.S.-316L
24	FLGD. COL. PIPE	4	S.S.-316L 8 MM. THK.
23	LINE SHAFT (BOTTOM)	1	S.S.-316L
22	FLGD. DISCHARGE CONE	1	S.S.-316L 8 MM. THK.
21	PUMP SHAFT COUPLING	1	S.S.-316
20	PUMP SHAFT	1	S.S.-316L
19	GASKET	1	NEOPRENE RUBBER
18	HX. HD. BOLT WITH NUT	18	S.S.-316L
17	BRG. INTER BOWL	1	BRONZE (IS-318, LTB-V)
16	IMPELLER	1	S.S.-ASTM A351,Gr.CF8M
15	BOWL BUSH	1	NEOPRENE RUBBER
14	HX. HD. CAP SCREW	4	S.S.-316L
13	INTER BOWL COVER PLATE	1	S.S.-316L
12	IMPELLER KEY	1	S.S.-316L
11	HX. HD. CAP SCREW	6	S.S.-316L
10	THRUST COLLAR HALF	2 pcs.	S.S.-316L
9	PROTECTING RING For Impeller	1	S.S.-316L
8	HX. HD. CAP SCREW	6	S.S.-316L
7	INTER BOWL	1	Duplex S.S.-ASTM-A995-Gr.CD4M,CuN
6	HX. HD. CAP SCREW	18	S.S.-316L
5	SUCTION BELL	1	Duplex S.S.-ASTM-A995-Gr.CD4M,CuN
4	ALLEN SET SCREW	2	S.S.-316L
3	SAND CAP	1	S.S.-316L
2	BEARING SUCTION	1	BRONZE (IS-318, LTB-V)
1	COVER PLATE	1	S.S.-316L
S.NO.	DESCRIPTION	QTY.	MATERIAL



PUMP PARTICULARS	
FIG.	--- 7000
TYPE	--- V.T. PUMP
NO. OF PUMP	--- THREE
SIZE	--- 32 H
STAGE	--- ONE
LUBRICATION	--- SELF WATER

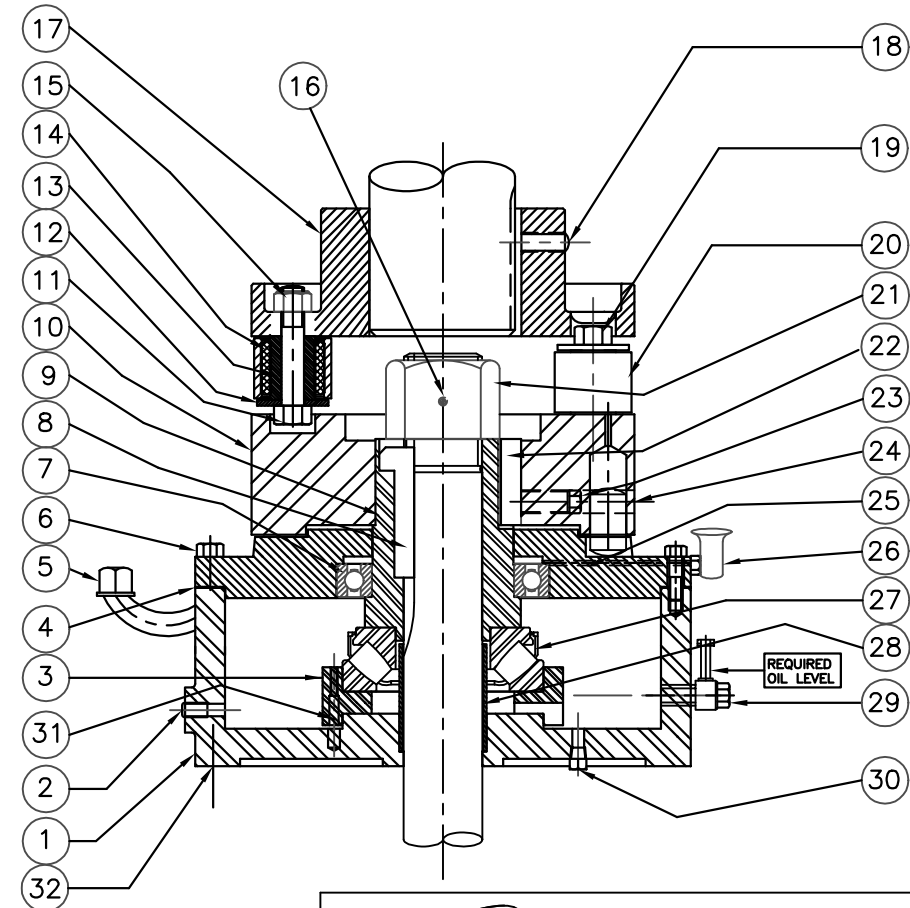
▶	AMIT	16.10.12
▶	PRITAM	08.10.12
REV.	DRN	DATE

**FLOWMORE PUMPS**

**FLOWMORE LIMITED**  
NEW DELHI

JOB NAME : CW MAKE UP PUMP  
CUSTOMER : M/S. B.H.E.L.  
PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4  
P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.07.2012

DRWING	NAME	SRN	DATE	TITLE	SCALE
CHECKED	RAKESH		08.08.2012	CROSS SECTIONAL DRG. & PART LIST VERTICAL TURBINE PUMP	N.T.S.
APPROVED	P.K.S.		08.08.2012		1 OF 1
DRG. No.	CSD-SALE12000906-10				SIZE A3



32	HX. HD. CAP SCREW	04	S.S.-316L
31	DOWEL PIN	02	EN-9
30	PLUG	01	MAL. IRON
29	L.B.T. OIL INDICATOR	01	STEEL & GLASS
28	OIL RETAINER SLEEVE	01	EN-9
27	SPH. ROLLER THRUST BRG.	01	STEEL
26	OIL CUP WITH WICK	01	STEEL
25	MOUNTING COVER	01	CAST STEEL(IS-1030)
24	RATCHET PIN	04	C.S. (CASE HARDENED)
23	ALLEN SET SCREW	01	S.S.-316L
22	STRAIGHT KEY	01	MILD STEEL
21	ADJUSTING NUT	01	MILD STEEL
20	LINK	05	MAL. IRON
19	HX. HD. BOLT	05	EN-8 (Heat Treated)
18	ALLEN SET SCREW	02	S.S.-316L
17	UPPER COUPLING HALF	01	CAST STEEL(IS-1030)
16	ALLEN SET SCREW	01	S.S.-316L
15	NYLOCK NUT	05	MILD STEEL
14	RUBBER BUSH	10	RUBBER
13	PIN BLOCK	10	ALUMINIUM
12	RETAINING WASHER	10	STEEL
11	HX. HD. BOLT	05	EN-8 (Heat Treated)
10	LOWER COUPLING HALF	01	CAST STEEL(IS-1030)
09	THRUST HUB	01	CAST STEEL(IS-1030)
08	GIB KEY	01	M.S.
07	RADIAL BALL BEARING	01	STEEL
06	HEX. HD. CAP SCREW	08	S.S.-316L
05	OIL FILL PORT	01	GAL. IRON
04	GASKET CHAMPION MAKE	01	OIL PROOF PAPER
03	THRUST BEARING SEAT	01	C.I. (IS-210, FG.-260)
02	PLUG	02	MAL. IRON
01	THRUST BEARING HOUSING	01	C.I. (IS-210, FG.-260)
	S. ON. DESCRIPTION	QTY.	MATL.

**NOTE:-**

PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE12000906 10

FLOWMORE PUMPS		<b>FLOWMORE LIMITED</b>		NEW DELHI	
JOB NAME : CW MAKE UP PUMP					
CUSTOMER : M/S. B.H.E.L.					
PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4					
P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.:- 30.07.2012					
NAME	SIGN	DATE	TITLE :		SCALE
DRAWN PRITAM		09.08.2012	THRUST STAND ASSY. DRG. & PART LIST		N.T.S.
CHECKED RAKESH		09.08.2012	VERTICAL TURBINE PUMP		SHEET
APPROVED P.K.S.		09.08.2012			1 OF 1
DRG. No.			TSA-SALE12000906-10		SIZE REV.
					A4 00

PE-V0(B)-281-172-N002

**PUMP PARTICULARS**

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
TWO	7000	9M	EIGHT	1455 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
60 M <sup>3</sup> /hr	56.05 Mtrs.	79%	11.59 K.W.	

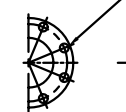
**MOTOR PARTICULARS**

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	18.5 K.W.	1455 RPM	HXF+180MLB4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

DETAILS OF DISCH. & COMP. FLANGE:-  
(AS PER IS-1538) (150 NB)

FLANGE O.D.	285
P.C.D.	240
NO. OF HOLES	8
DIA. OF HOLES	23
THICKNESS	25

SEE DISCHARGE FLANGE DETAIL



4Nos. ~  $\phi$ 'X' DRILL HOLES  
(For foundation bolt)

NOTE:-

1. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
3. PAINTING LIGHT GREY IS-5, 631

LOAD DATA:-

Total Static Weight Of Complete Pump	1600 Kgs. (Approx.)
Static Weight Of MOTOR	175 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	2700 Kgs. (Approx.)

1. MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 1450 KGS. (APPROX.)
2. RECOMMENDED CRANE CAPACITY = 1.5 TON.

PRITAM	09.08.12
REV. DRN	DATE

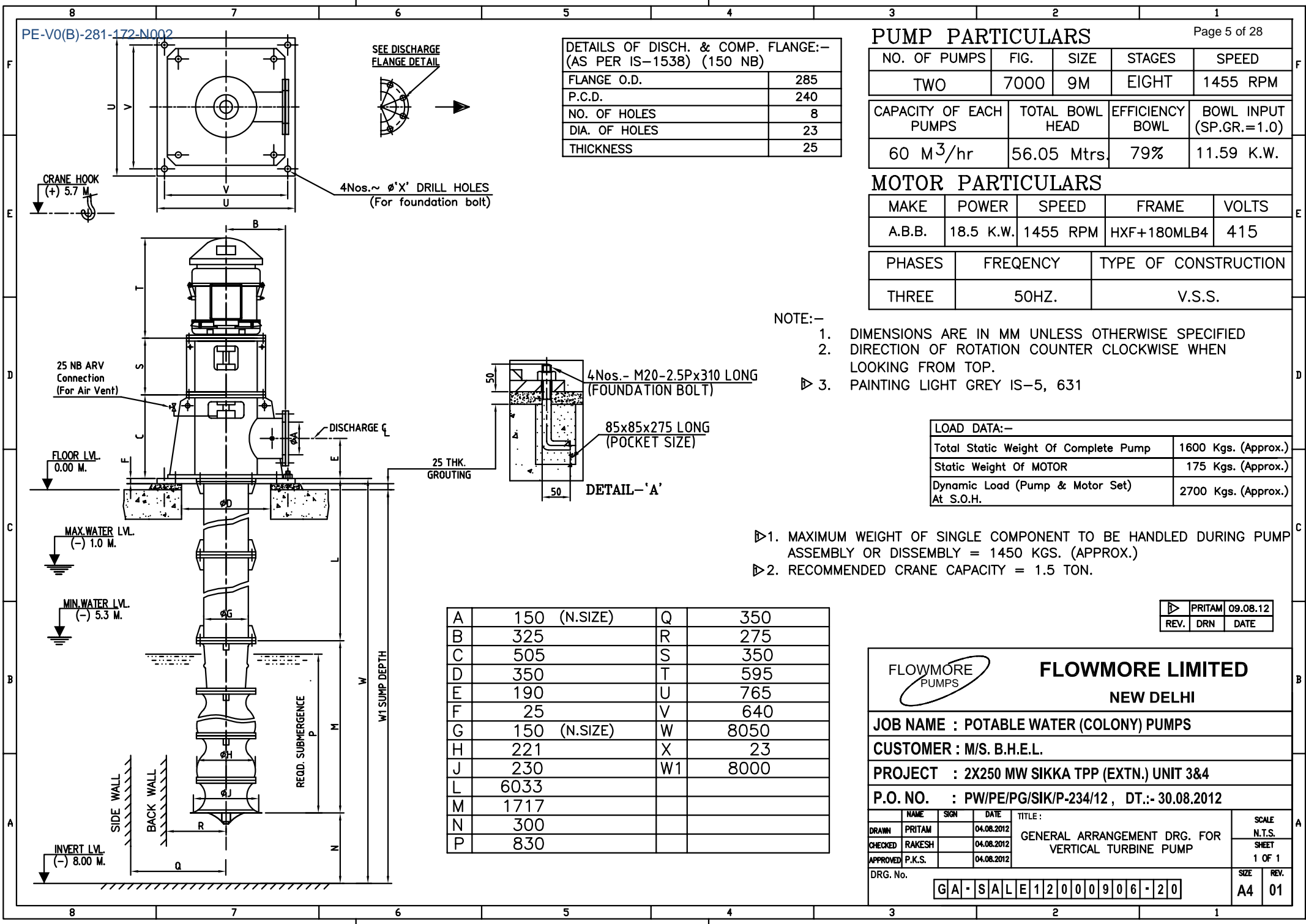


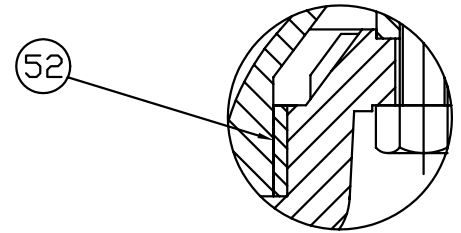
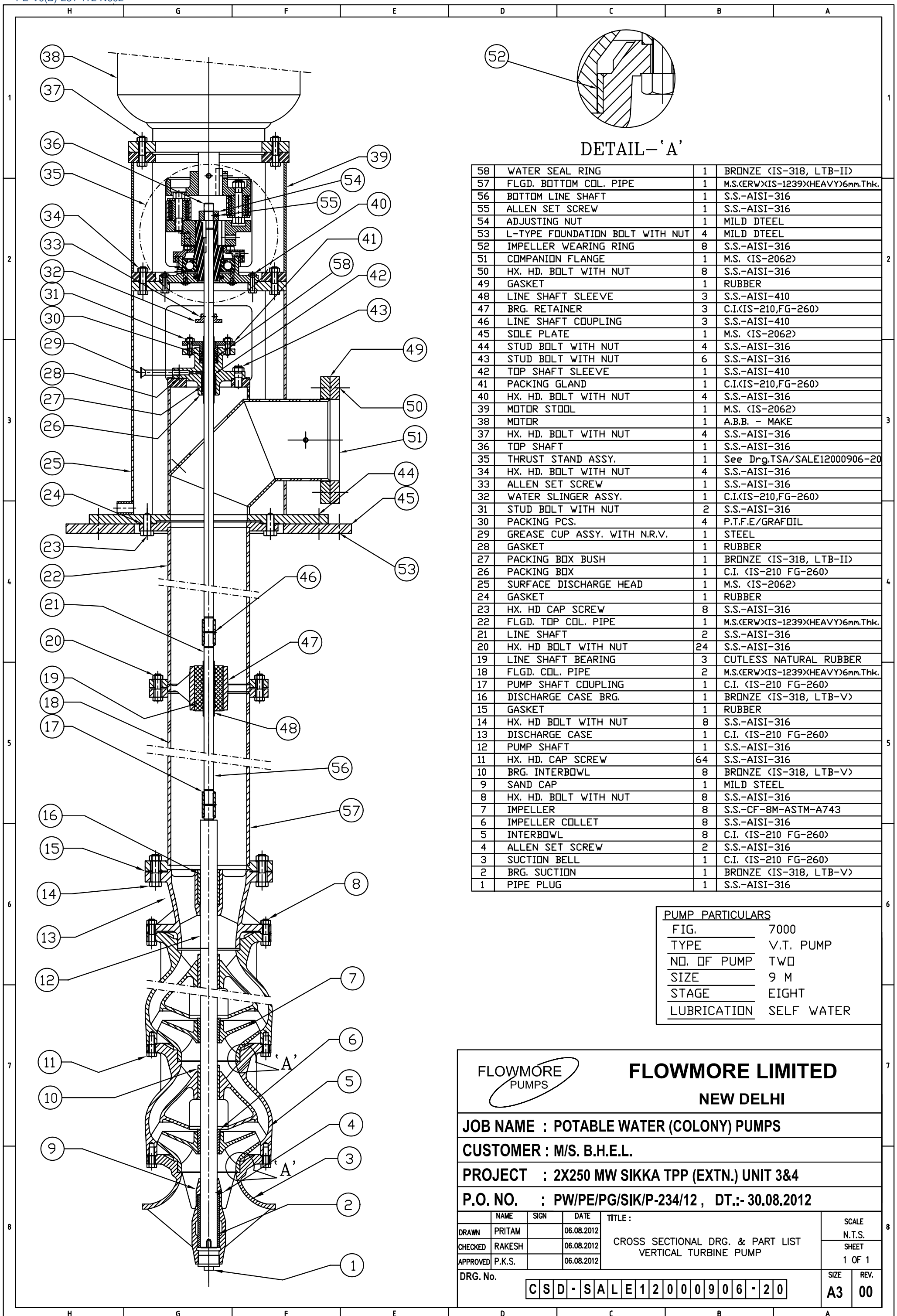
**FLOWMORE LIMITED**  
NEW DELHI

**JOB NAME : POTABLE WATER (COLONY) PUMPS**  
**CUSTOMER : M/S. B.H.E.L.**  
**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**  
**P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.08.2012**

DRWN	NAME	SIGN	DATE	TITLE :	SCALE	
	PRITAM		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.	
CHECKED	RAKESH		04.08.2012		SHEET	
APPROVED	P.K.S.		04.08.2012		1 OF 1	
DRG. No.					SIZE	REV.
GA-SALE12000906-20					A4	01

A	150 (N.SIZE)	Q	350
B	325	R	275
C	505	S	350
D	350	T	595
E	190	U	765
F	25	V	640
G	150 (N.SIZE)	W	8050
H	221	X	23
J	230	W1	8000
L	6033		
M	1717		
N	300		
P	830		





DETAIL - 'A'

58	WATER SEAL RING	1	BRONZE (IS-318, LTB-II)
57	FLGD. BOTDM COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
56	BOTDM LINE SHAFT	1	S.S.-AISI-316
55	ALLEN SET SCREW	1	S.S.-AISI-316
54	ADJUSTING NUT	1	MILD DTEEL
53	L-TYPE FOUNDATION BOLT WITH NUT	4	MILD DTEEL
52	IMPELLER WEARING RING	8	S.S.-AISI-316
51	COMPANION FLANGE	1	M.S. (IS-2062)
50	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
49	GASKET	1	RUBBER
48	LINE SHAFT SLEEVE	3	S.S.-AISI-410
47	BRG. RETAINER	3	C.I.(IS-210,FG-260)
46	LINE SHAFT COUPLING	3	S.S.-AISI-410
45	SOLE PLATE	1	M.S. (IS-2062)
44	STUD BOLT WITH NUT	4	S.S.-AISI-316
43	STUD BOLT WITH NUT	6	S.S.-AISI-316
42	TOP SHAFT SLEEVE	1	S.S.-AISI-410
41	PACKING GLAND	1	C.I.(IS-210,FG-260)
40	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
39	MOTOR STOOL	1	M.S. (IS-2062)
38	MOTOR	1	A.B.B. - MAKE
37	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
36	TOP SHAFT	1	S.S.-AISI-316
35	THRUST STAND ASSY.	1	See Drg.TSA/SALE12000906-20
34	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
33	ALLEN SET SCREW	1	S.S.-AISI-316
32	WATER SLINGER ASSY.	1	C.I.(IS-210,FG-260)
31	STUD BOLT WITH NUT	2	S.S.-AISI-316
30	PACKING PCS.	4	P.T.F.E./GRAFOIL
29	GREASE CUP ASSY. WITH N.R.V.	1	STEEL
28	GASKET	1	RUBBER
27	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
26	PACKING BOX	1	C.I. (IS-210 FG-260)
25	SURFACE DISCHARGE HEAD	1	M.S. (IS-2062)
24	GASKET	1	RUBBER
23	HX. HD CAP SCREW	8	S.S.-AISI-316
22	FLGD. TOP COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
21	LINE SHAFT	2	S.S.-AISI-316
20	HX. HD BOLT WITH NUT	24	S.S.-AISI-316
19	LINE SHAFT BEARING	3	CUTLESS NATURAL RUBBER
18	FLGD. COL. PIPE	2	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
17	PUMP SHAFT COUPLING	1	C.I. (IS-210 FG-260)
16	DISCHARGE CASE BRG.	1	BRONZE (IS-318, LTB-V)
15	GASKET	1	RUBBER
14	HX. HD BOLT WITH NUT	8	S.S.-AISI-316
13	DISCHARGE CASE	1	C.I. (IS-210 FG-260)
12	PUMP SHAFT	1	S.S.-AISI-316
11	HX. HD. CAP SCREW	64	S.S.-AISI-316
10	BRG. INTERBOWL	8	BRONZE (IS-318, LTB-V)
9	SAND CAP	1	MILD STEEL
8	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
7	IMPELLER	8	S.S.-CF-8M-ASTM-A743
6	IMPELLER COLLET	8	S.S.-AISI-316
5	INTERBOWL	8	C.I. (IS-210 FG-260)
4	ALLEN SET SCREW	2	S.S.-AISI-316
3	SUCTION BELL	1	C.I. (IS-210 FG-260)
2	BRG. SUCTION	1	BRONZE (IS-318, LTB-V)
1	PIPE PLUG	1	S.S.-AISI-316

PUMP PARTICULARS	
FIG.	7000
TYPE	V.T. PUMP
NO. OF PUMP	TWO
SIZE	9 M
STAGE	EIGHT
LUBRICATION	SELF WATER

**FLOWMORE PUMPS**

**FLOWMORE LIMITED**

**NEW DELHI**

**JOB NAME : POTABLE WATER (COLONY) PUMPS**

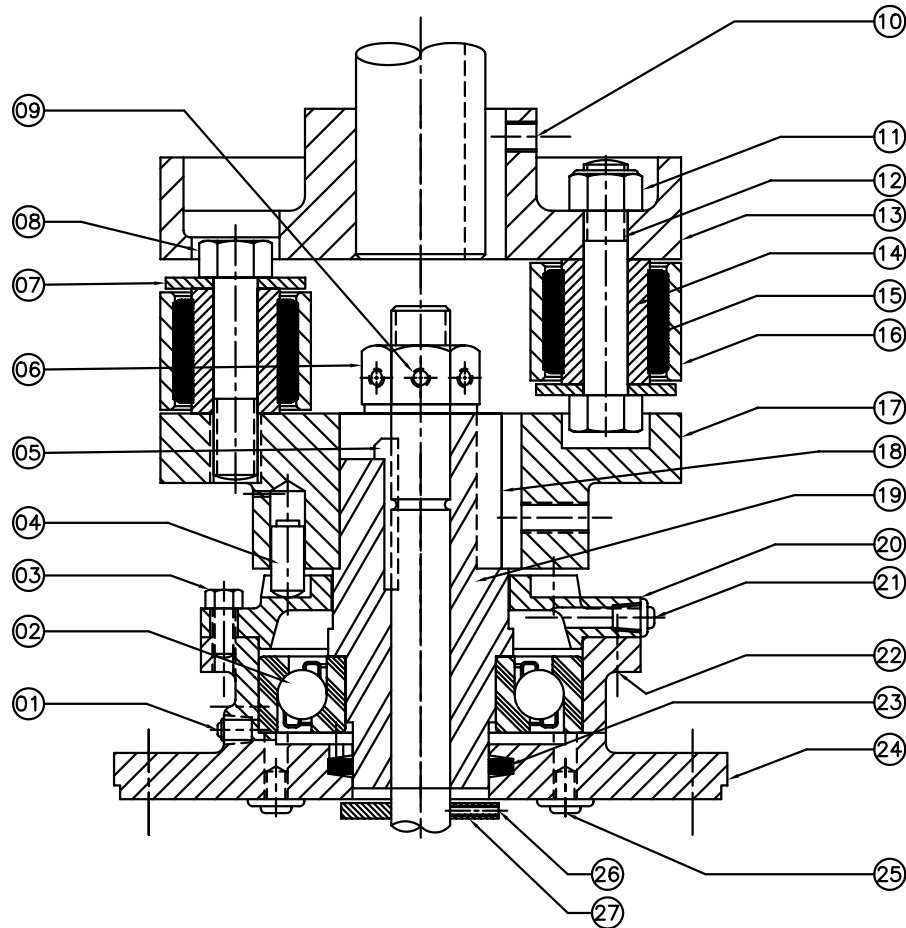
**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

**P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.-: 30.08.2012**

DRAWN	PRITAM	DATE	06.08.2012	TITLE : CROSS SECTIONAL DRG. & PART LIST VERTICAL TURBINE PUMP	SCALE	N.T.S.
CHECKED	RAKESH	DATE	06.08.2012		SHEET	1 OF 1
APPROVED	P.K.S.	DATE	06.08.2012			
DRG. No.				CSD - SALE12000906 - 20	SIZE	REV.
				A3		00


PE-V0(B)-281-172-N002



S. NO.	DESCRIPTION	QTY.	MATERIAL
27	SHAFT COLLAR	1	BRONZE (IS-318, LTB-V)
26	ALLEN SET SCREW	2	S.S.-AISI-316
25	B.S.P. PIPE PLUG	2	MAL. IRON
24	THRUST BEARING HOUSING	1	C.I. (IS-210, FG-260)
23	FELT PADDING	1	COTTON
22	DOWEL PIN	2	STEEL
21	GREASE FITTING	1	STEEL
20	MOUNTING COVER	1	CAST STEEL (IS-1030)
19	THRUST HUB	1	CAST STEEL (IS-1030)
18	STRAIGHT KEY	1	MILD STEEL
17	LOWER COUPLING HALF	1	CAST STEEL (IS-1030)
16	LINK	3	MAL. IRON
15	RUBBER BUSH	6	RUBBER
14	PIN BLOCK	6	ALUMINIUM
13	UPPER COUPLING HALF	1	CAST STEEL (IS-1030)
12	HX. HD. BOLT	3	H.T. STEEL (EN-8)
11	NYLOCK NUT	3	MILD STEEL
10	ALLEN SET SCREW	2	S.S.-AISI-316
09	ALLEN SET SCREW	1	S.S.-AISI-316
08	HX. HD. BOLT	3	H.T. STEEL (EN-8)
07	RETAINING WASHER	6	MILD STEEL
06	ADJUSTING NUT	1	MILD STEEL
05	GIB KEY	1	MILD STEEL
04	RATCHET PIN	4	C.S. (CASE HARDNED)
03	HX. HD. CAP SCREW	8	S.S.-AISI-316
02	ANGULAR CONTACT BALL BEARING	1	BRG, STEEL
01	GREASE RELIEF FITTING	1	STEEL

**NOTE:-**

- PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE12000906 20
- SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.
- SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLER.
- PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.

		<b>FLOWMORE LIMITED</b> NEW DELHI													
<b>JOB NAME : POTABLE WATER (COLONY) PUMPS</b>															
<b>CUSTOMER : M/S. B.H.E.L.</b>															
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>															
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012</b>															
<table border="1"> <tr> <th>NAME</th> <th>SIGN</th> <th>DATE</th> </tr> <tr> <td>DRAWN PRITAM</td> <td></td> <td>08.08.2012</td> </tr> <tr> <td>CHECKED RAKESH</td> <td></td> <td>08.08.2012</td> </tr> <tr> <td>APPROVED P.K.S.</td> <td></td> <td>08.08.2012</td> </tr> </table>	NAME	SIGN	DATE	DRAWN PRITAM		08.08.2012	CHECKED RAKESH		08.08.2012	APPROVED P.K.S.		08.08.2012	TITLE : THRUST STAND ASSY. DRG. & PART LIST FOR VERTICAL TURBINE PUMP		SCALE N.T.S. SHEET 1 OF 1
NAME	SIGN	DATE													
DRAWN PRITAM		08.08.2012													
CHECKED RAKESH		08.08.2012													
APPROVED P.K.S.		08.08.2012													
DRG. No. <b>T S A - S A L E 1 2 0 0 0 9 0 6 - 2 0</b>			SIZE <b>A4</b>	REV. <b>00</b>											

**PUMP PARTICULARS**

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
TWO	7000	7M	17	1455 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
30 M <sup>3</sup> /hr	67.05 Mtrs.	76%	7.20 K.W.	

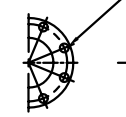
**MOTOR PARTICULARS**

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	11 K.W.	1455 RPM	HXF+160MLD4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

**DETAILS OF DISCH. & COMP. FLANGE:- (AS PER IS-1538) (100 NB)**

FLANGE O.D.	220
P.C.D.	180
NO. OF HOLES	8
DIA. OF HOLES	23
THICKNESS	22

SEE DISCHARGE FLANGE DETAIL



4Nos. ~  $\phi$ 'X' DRILL HOLES (For foundation bolt)

NOTE:-

1. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
3. PAINTING LIGHT GREY IS-5, 631

LOAD DATA:-

Total Static Weight Of Complete Pump	1500 Kgs. (Approx.)
Static Weight Of MOTOR	145 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	1750 Kgs. (Approx.)

1. MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 1350 KGS. (APPROX.)
2. RECOMMENDED CRANE CAPACITY = 1.5 TON.

PRITAM	09.08.12
REV. DRN	DATE

FLOWMORE PUMPS

**FLOWMORE LIMITED**

NEW DELHI

JOB NAME : PORTABLE WATER PUMPS (PLANT)

CUSTOMER : M/S. B.H.E.L.

PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4

P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.08.2012

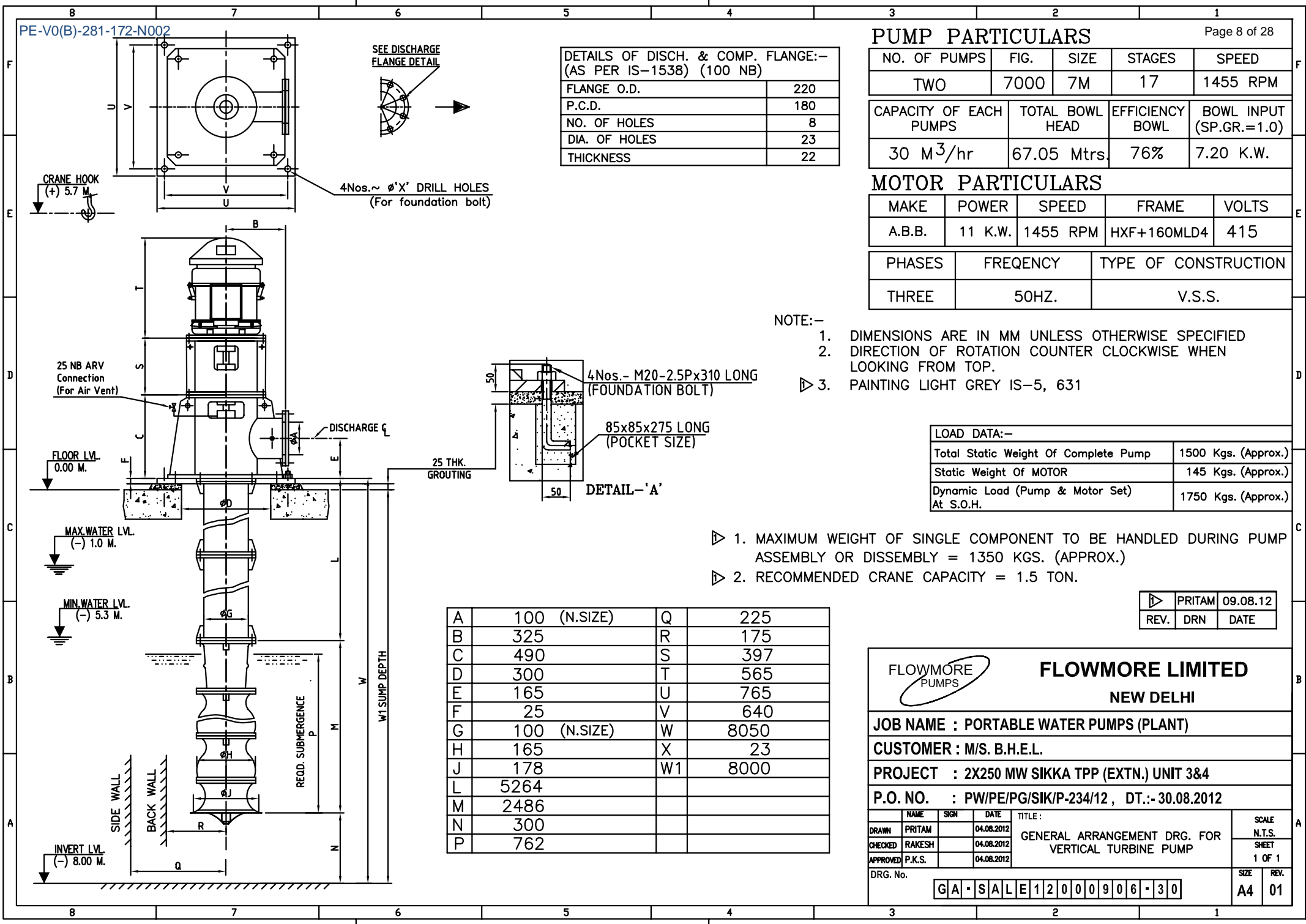
NAME	SIGN	DATE	TITLE :	SCALE
DRAWN PRITAM		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.
CHECKED RAKESH		04.08.2012		SHEET
APPROVED P.K.S.		04.08.2012		1 OF 1

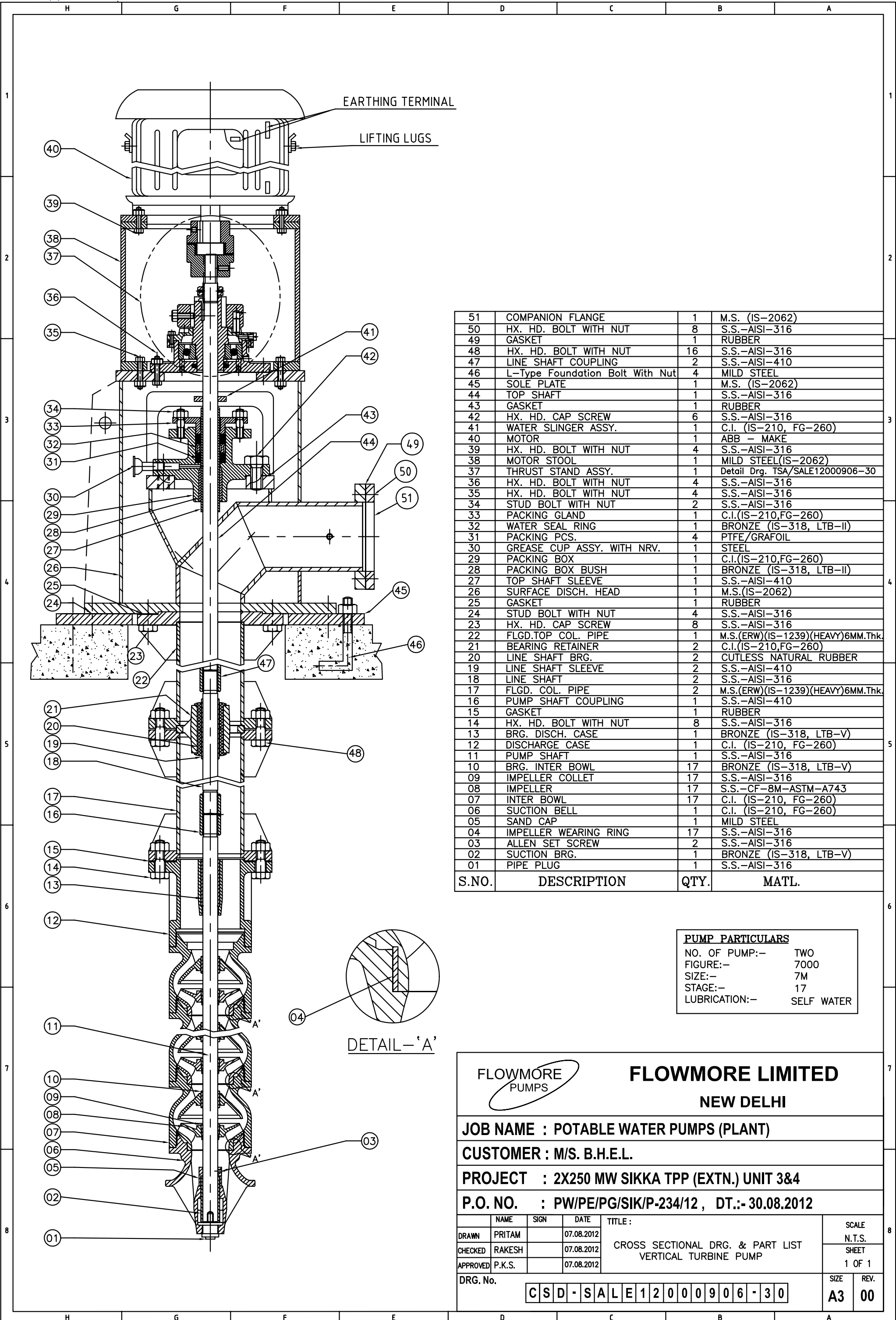
DRG. No.

G A - S A L E 1 2 0 0 0 9 0 6 - 3 0

SIZE A4 REV. 01

A	100 (N.SIZE)	Q	225
B	325	R	175
C	490	S	397
D	300	T	565
E	165	U	765
F	25	V	640
G	100 (N.SIZE)	W	8050
H	165	X	23
J	178	W1	8000
L	5264		
M	2486		
N	300		
P	762		





51	COMPANION FLANGE	1	M.S. (IS-2062)
50	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
49	GASKET	1	RUBBER
48	HX. HD. BOLT WITH NUT	16	S.S.-AISI-316
47	LINE SHAFT COUPLING	2	S.S.-AISI-410
46	L-Type Foundation Bolt With Nut	4	MILD STEEL
45	SOLE PLATE	1	M.S. (IS-2062)
44	TOP SHAFT	1	S.S.-AISI-316
43	GASKET	1	RUBBER
42	HX. HD. CAP SCREW	6	S.S.-AISI-316
41	WATER SLINGER ASSY.	1	C.I. (IS-210, FG-260)
40	MOTOR	1	ABB - MAKE
39	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
38	MOTOR STOOL	1	MILD STEEL (IS-2062)
37	THRUST STAND ASSY.	1	Detail Drg. TSA/SALE12000906-30
36	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
35	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
34	STUD BOLT WITH NUT	2	S.S.-AISI-316
33	PACKING GLAND	1	C.I. (IS-210, FG-260)
32	WATER SEAL RING	1	BRONZE (IS-318, LTB-II)
31	PACKING PCS.	4	PTFE/GRAFOIL
30	GREASE CUP ASSY. WITH NRV.	1	STEEL
29	PACKING BOX	1	C.I. (IS-210, FG-260)
28	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
27	TOP SHAFT SLEEVE	1	S.S.-AISI-410
26	SURFACE DISCH. HEAD	1	M.S. (IS-2062)
25	GASKET	1	RUBBER
24	STUD BOLT WITH NUT	4	S.S.-AISI-316
23	HX. HD. CAP SCREW	8	S.S.-AISI-316
22	FLGD. TOP COL. PIPE	1	M.S. (ERW) (IS-1239) (HEAVY) 6MM.Thk.
21	BEARING RETAINER	2	C.I. (IS-210, FG-260)
20	LINE SHAFT BRG.	2	CUTLESS NATURAL RUBBER
19	LINE SHAFT SLEEVE	2	S.S.-AISI-410
18	LINE SHAFT	2	S.S.-AISI-316
17	FLGD. COL. PIPE	2	M.S. (ERW) (IS-1239) (HEAVY) 6MM.Thk.
16	PUMP SHAFT COUPLING	1	S.S.-AISI-410
15	GASKET	1	RUBBER
14	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
13	BRG. DISCH. CASE	1	BRONZE (IS-318, LTB-V)
12	DISCHARGE CASE	1	C.I. (IS-210, FG-260)
11	PUMP SHAFT	1	S.S.-AISI-316
10	BRG. INTER BOWL	17	BRONZE (IS-318, LTB-V)
09	IMPELLER COLLET	17	S.S.-AISI-316
08	IMPELLER	17	S.S.-CF-8M-ASTM-A743
07	INTER BOWL	17	C.I. (IS-210, FG-260)
06	SUCTION BELL	1	C.I. (IS-210, FG-260)
05	SAND CAP	1	MILD STEEL
04	IMPELLER WEARING RING	17	S.S.-AISI-316
03	ALLEN SET SCREW	2	S.S.-AISI-316
02	SUCTION BRG.	1	BRONZE (IS-318, LTB-V)
01	PIPE PLUG	1	S.S.-AISI-316
S.NO.	DESCRIPTION	QTY.	MATL.

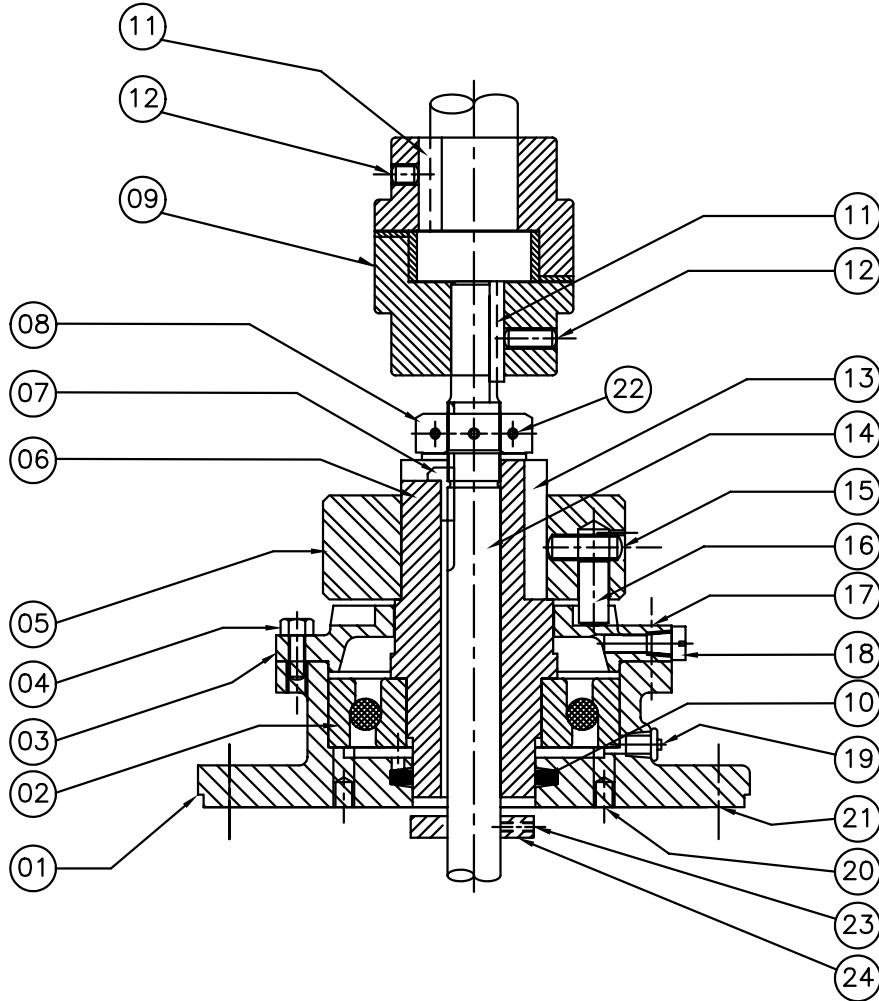
PUMP PARTICULARS	
NO. OF PUMP:-	TWO
FIGURE:-	7000
SIZE:-	7M
STAGE:-	17
LUBRICATION:-	SELF WATER

**FLOWMORE PUMPS**

**FLOWMORE LIMITED**

**NEW DELHI**


<b>JOB NAME : POTABLE WATER PUMPS (PLANT)</b>						
<b>CUSTOMER : M/S. B.H.E.L.</b>						
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>						
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.-: 30.08.2012</b>						
DRAWN	PRITAM	DATE	07.08.2012	TITLE : CROSS SECTIONAL DRG. & PART LIST VERTICAL TURBINE PUMP	SCALE	N.T.S.
CHECKED	RAKESH	DATE	07.08.2012		SHEET	1 OF 1
APPROVED	P.K.S.	DATE	07.08.2012			
DRG. No.				C S D - S A L E 1 2 0 0 0 9 0 6 - 3 0	SIZE	REV.
				A3		00



24	SHAFT COLLAR	01	BRONZE (IS-318,LTB-V)
23	ALLEN SET SCREW	01	S.S.-AISI-316
22	ALLEN SET SCREW	01	S.S.-AISI-316
21	HX. HD. BOLT WITH NUT	04	S.S.-AISI-316
20	ALLEN SET SCREW	02	S.S.-AISI-316
19	GREASE RELIEF FITTING	01	STEEL
18	GREASE FITTING	01	STEEL
17	DOWEL PIN	02	CARBON STEEL
16	RATCHET PIN	03	C.S. (CASE HARDEND)
15	ALLEN SET SCREW	02	S.S.-AISI-316
14	TOP SHAFT	01	S.S.-AISI-410(H)
13	STRAIGHT KEY	01	MILD STEEL
12	ALLEN SET SCREW	04	S.S.-AISI-316
11	STRAIGHT KEY FOR LJ. COUP.	01	MILD STEEL
10	FELT PADDING	01	RUBBER
09	LOVE JOY COUP. ASSY.	01	C.I.(IS-210,FG-260)
08	ADJUSTING NUT	01	MILD STEEL
07	GIB KEY	01	MILD STEEL
06	THRUST HUB	01	CAST STEEL (IS-1030)
05	LOWER COUPLING HALF	01	CAST STEEL (IS-1030)
04	HEX. HD. CAP SCREW	08	S.S.-AISI-316
03	MOUNTING COVER (Ratchet Plate)	01	CAST STEEL (IS-1030)
02	ANGULAR CONTACT BALL BEARING	01	STEEL
01	THRUST BEARING HOUSING	01	C.I.(IS-210,FG-260)
S. ON. DESCRIPTION		QTY.	MATL.

**NOTE:-**

- PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE12000906 30
- SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.
- SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLER.
- PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.

		<b>FLOWMORE LIMITED</b> NEW DELHI	
<b>JOB NAME : POTABLE WATER PUMPS (PLANT)</b>			
<b>CUSTOMER : M/S. B.H.E.L.</b>			
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>			
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012</b>			
	NAME	SIGN	DATE
DRAWN	PRITAM		08.08.2012
CHECKED	RAKESH		08.08.2012
APPROVED	P.K.S.		08.08.2012
TITLE : THRUST STAND ASSY. DRG. & PART LIST FOR VERTICAL TURBINE PUMP			SCALE N.T.S. SHEET 1 OF 1
DRG. No.			SIZE A4
T S A - S A L E 1 2 0 0 0 9 0 6 - 3 0			REV. 00

**PUMP PARTICULARS**

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
TWO	7000	8M	13	1455 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
50 M <sup>3</sup> /hr	66.05 Mtrs.	76%	11.83 K.W.	

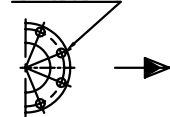
**MOTOR PARTICULARS**

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	18.5 K.W.	1455 RPM	HXF+180MLB4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

DETAILS OF DISCH. & COMP. FLANGE:-  
(AS PER IS-1538) (150 NB)

FLANGE O.D.	285
P.C.D.	240
NO. OF HOLES	8
DIA. OF HOLES	23
THICKNESS	25

SEE DISCHARGE FLANGE DETAIL



4Nos. ~  $\phi$ 'X' DRILL HOLES  
(For foundation bolt)

NOTE:-

1. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
3. PAINTING LIGHT GREY IS-5, 631

- ▷ 1. MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 1650 KGS. (APPROX.)
- ▷ 2. RECOMMENDED CRANE CAPACITY = 2 TON.

LOAD DATA:-

Total Static Weight Of Complete Pump	1800 Kgs. (Approx.)
Static Weight Of MOTOR	175 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	2950 Kgs. (Approx.)

▷	PRITAM	09.08.12
REV.	DRN	DATE

FLOWMORE PUMPS

**FLOWMORE LIMITED**

NEW DELHI

JOB NAME : AHP SEAL WATER PUMPS

CUSTOMER : M/S. B.H.E.L.

PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4

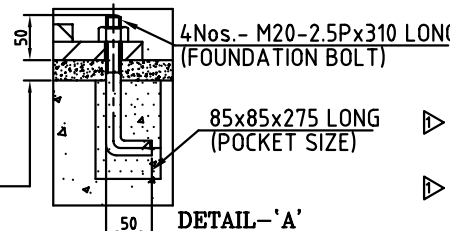
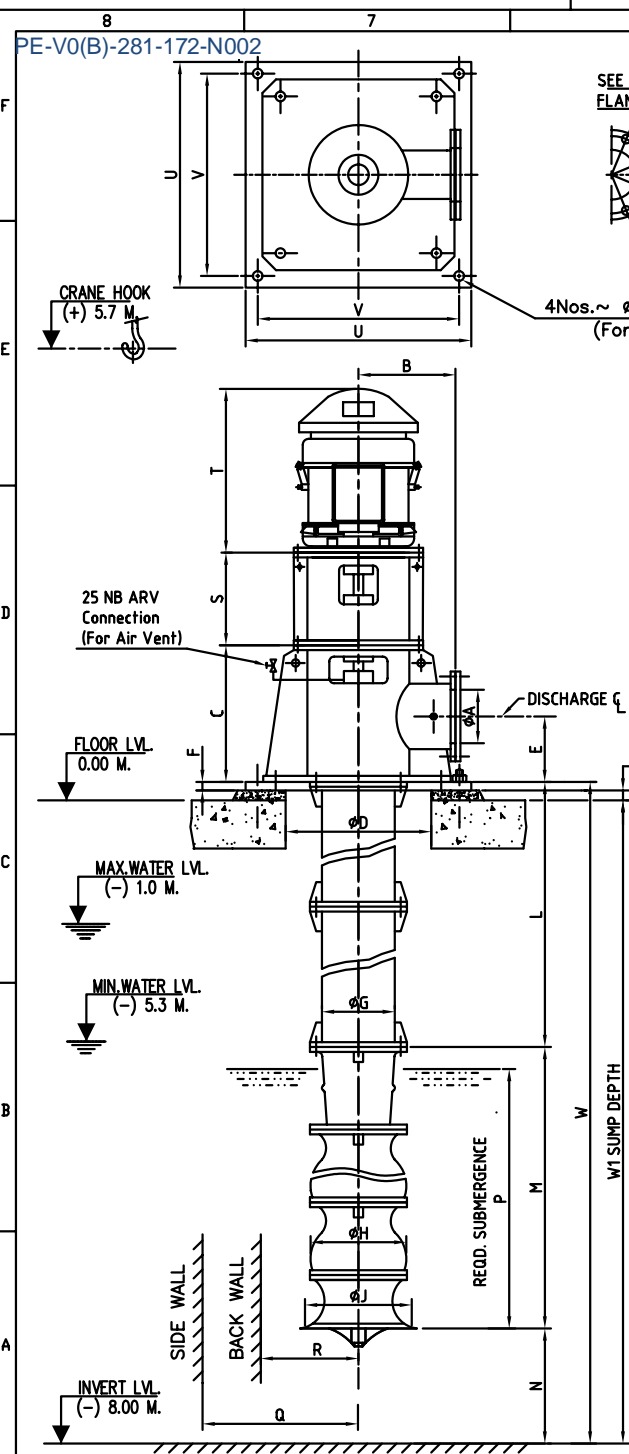
P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.08.2012

NAME	SIGN	DATE	TITLE :	SCALE
DRAWN PRITAM		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.
CHECKED RAKESH		04.08.2012		SHEET
APPROVED P.K.S.		04.08.2012		1 OF 1

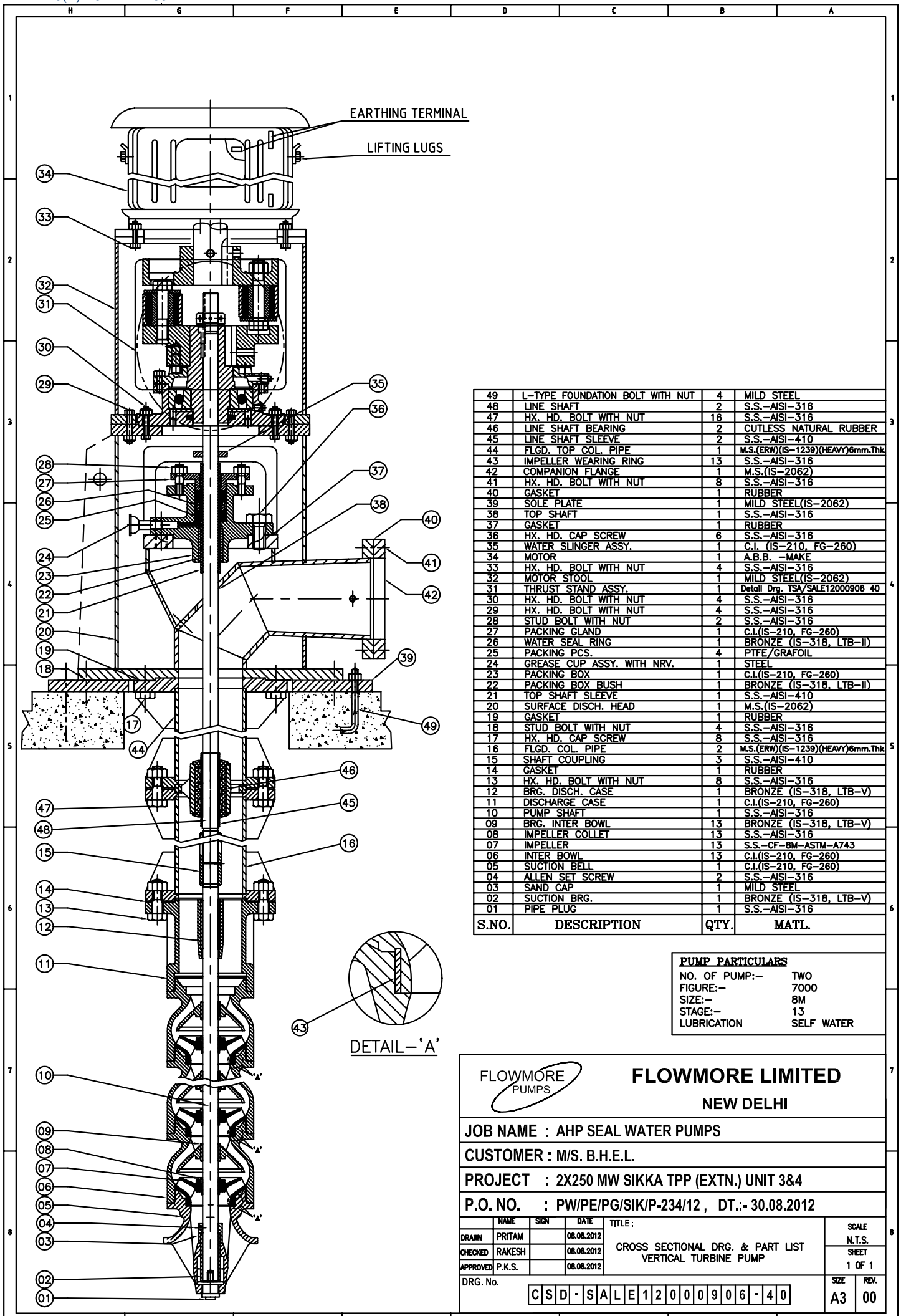
DRG. No.

G A - S A L E 1 2 0 0 0 9 0 6 - 4 0

SIZE A4  
REV. 01



A	150 (N.SIZE)	Q	350
B	325	R	275
C	505	S	350
D	350	T	595
E	190	U	765
F	25	V	640
G	150 (N.SIZE)	W	8050
H	196	X	23
J	203	W1	8000
L	5370		
M	2380		
N	300		
P	813		



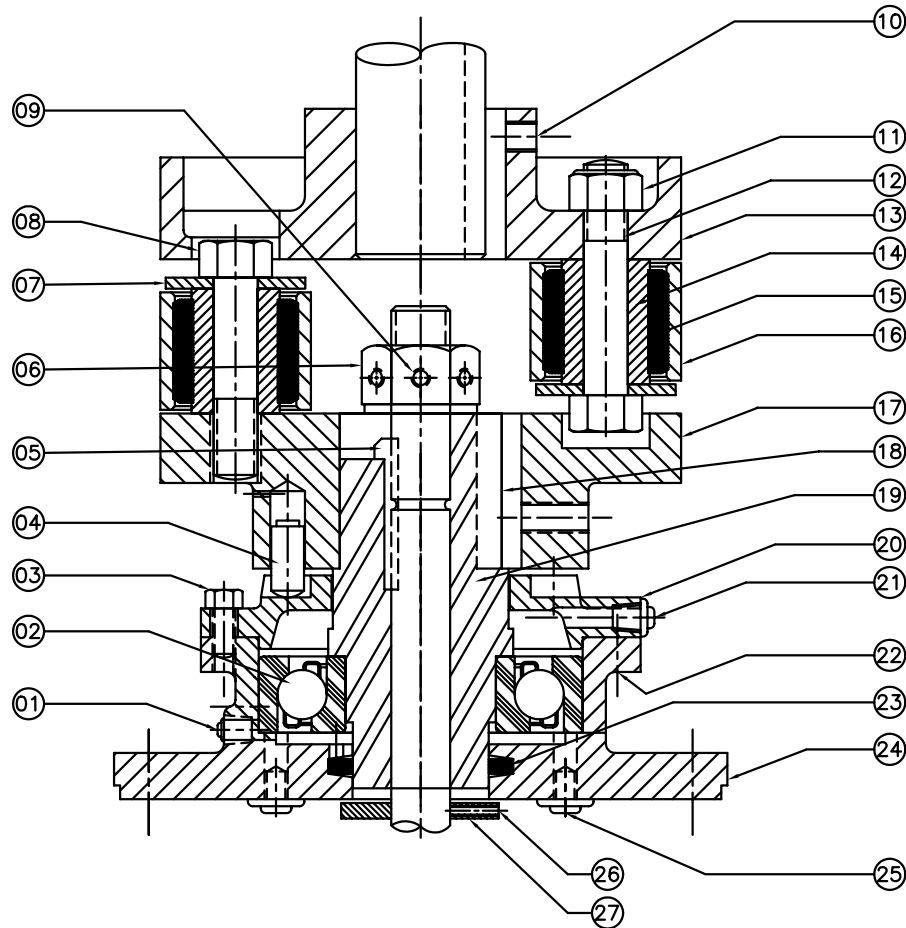
49	L-TYPE FOUNDATION BOLT WITH NUT	4	MILD STEEL
48	LINE SHAFT	2	S.S.-AISI-316
47	HX. HD. BOLT WITH NUT	16	S.S.-AISI-316
46	LINE SHAFT BEARING	2	CUTLESS NATURAL RUBBER
45	LINE SHAFT SLEEVE	2	S.S.-AISI-410
44	FLGD. TOP COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk
43	IMPELLER WEARING RING	13	S.S.-AISI-316
42	COMPANION FLANGE	1	M.S.(IS-2062)
41	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
40	GASKET	1	RUBBER
39	SOLE PLATE	1	MILD STEEL(IS-2062)
38	TOP SHAFT	1	S.S.-AISI-316
37	GASKET	1	RUBBER
36	HX. HD. CAP SCREW	6	S.S.-AISI-316
35	WATER SLINGER ASSY.	1	C.I. (IS-210, FG-260)
34	MOTOR	1	A.B.E. -MAKE
33	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
32	MOTOR STOOL	1	MILD STEEL(IS-2062)
31	THRUST STAND ASSY.	1	Detail Drg. TSA/SALE12000906 40
30	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
29	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
28	STUD BOLT WITH NUT	2	S.S.-AISI-316
27	PACKING GLAND	1	C.I.(IS-210, FG-260)
26	WATER SEAL RING	1	BRONZE (IS-318, LTB-II)
25	PACKING PCS.	4	PTFE/GRAFOIL
24	GREASE CUP ASSY. WITH NRV.	1	STEEL
23	PACKING BOX	1	C.I.(IS-210, FG-260)
22	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
21	TOP SHAFT SLEEVE	1	S.S.-AISI-410
20	SURFACE DISCH. HEAD	2	M.S.(IS-2062)
19	GASKET	1	RUBBER
18	STUD BOLT WITH NUT	4	S.S.-AISI-316
17	HX. HD. CAP SCREW	8	S.S.-AISI-316
16	FLGD. COL. PIPE	2	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk
15	SHAFT COUPLING	3	S.S.-AISI-410
14	GASKET	1	RUBBER
13	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
12	BRG. DISCH. CASE	1	BRONZE (IS-318, LTB-V)
11	DISCHARGE CASE	1	C.I.(IS-210, FG-260)
10	PUMP SHAFT	1	S.S.-AISI-316
09	BRG. INTER BOWL	13	BRONZE (IS-318, LTB-V)
08	IMPELLER COLLET	13	S.S.-AISI-316
07	IMPELLER	13	S.S.-CF-8M-ASTM-A743
06	INTER BOWL	13	C.I.(IS-210, FG-260)
05	SUCTION BELL	1	C.I.(IS-210, FG-260)
04	ALLEN SET SCREW	2	S.S.-AISI-316
03	SAND CAP	1	MILD STEEL
02	SUCTION BRG.	1	BRONZE (IS-318, LTB-V)
01	PIPE PLUG	1	S.S.-AISI-316
S.NO.	DESCRIPTION	QTY.	MATL.

PUMP PARTICULARS	
NO. OF PUMP:-	TWO
FIGURE:-	7000
SIZE:-	8M
STAGE:-	13
LUBRICATION	SELF WATER



**FLOWMORE LIMITED**  
NEW DELHI


<b>JOB NAME : AHP SEAL WATER PUMPS</b>			
<b>CUSTOMER : M/S. B.H.E.L.</b>			
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>			
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012</b>			
NAME	SIGN	DATE	TITLE :
DRAWN PRITAM		08.08.2012	CROSS SECTIONAL DRG. & PART LIST VERTICAL TURBINE PUMP
CHECKED RAKESH		08.08.2012	
APPROVED P.K.S.		08.08.2012	
DRG. No.			SCALE
CSD-SALE12000906-40			N.T.S.
			SHEET
			1 OF 1
			SIZE
			A3
			REV.
			00



27	SHAFT COLLAR	1	BRONZE (IS-318, LTB-V)
26	ALLEN SET SCREW	2	S.S.-AISI-316
25	B.S.P. PIPE PLUG	2	MAL. IRON
24	THRUST BEARING HOUSING	1	C.I. (IS-210, FG-260)
23	FELT PADDING	1	COTTON
22	DOWEL PIN	2	STEEL
21	GREASE FITTING	1	STEEL
20	MOUNTING COVER	1	CAST STEEL (IS-1030)
19	THRUST HUB	1	CAST STEEL (IS-1030)
18	STRAIGHT KEY	1	MILD STEEL
17	LOWER COUPLING HALF	1	CAST STEEL (IS-1030)
16	LINK	3	MAL. IRON
15	RUBBER BUSH	6	RUBBER
14	PIN BLOCK	6	ALUMINIUM
13	UPPER COUPLING HALF	1	CAST STEEL (IS-1030)
12	HX. HD. BOLT	3	H.T. STEEL (EN-8)
11	NYLOCK NUT	3	MILD STEEL
10	ALLEN SET SCREW	2	S.S.-AISI-316
09	ALLEN SET SCREW	1	S.S.-AISI-316
08	HX. HD. BOLT	3	H.T. STEEL (EN-8)
07	RETAINING WASHER	6	MILD STEEL
06	ADJUSTING NUT	1	MILD STEEL
05	GIB KEY	1	MILD STEEL
04	RATCHET PIN	4	C.S. (CASE HARDENED)
03	HX. HD. CAP SCREW	8	S.S.-AISI-316
02	ANGULAR CONTACT BALL BEARING	1	BRG. STEEL
01	GREASE RELIEF FITTING	1	STEEL
S. NO.	DESCRIPTION	QTY.	MATERIAL

**NOTE:-**

- PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE12000906 40
- SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.
- SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLER.
- PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.

		<b>FLOWMORE LIMITED</b> NEW DELHI													
<b>JOB NAME : AHP SEAL WATER PUMPS</b>															
<b>CUSTOMER : M/S. B.H.E.L.</b>															
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>															
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012</b>															
<table border="1"> <thead> <tr> <th>NAME</th> <th>SIGN</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRAWN PRITAM</td> <td></td> <td>08.08.2012</td> </tr> <tr> <td>CHECKED RAKESH</td> <td></td> <td>08.08.2012</td> </tr> <tr> <td>APPROVED P.K.S.</td> <td></td> <td>08.08.2012</td> </tr> </tbody> </table>	NAME	SIGN	DATE	DRAWN PRITAM		08.08.2012	CHECKED RAKESH		08.08.2012	APPROVED P.K.S.		08.08.2012	TITLE : THRUST STAND ASSY. DRG. & PART LIST FOR VERTICAL TURBINE PUMP		SCALE N.T.S. SHEET 1 OF 1
NAME	SIGN	DATE													
DRAWN PRITAM		08.08.2012													
CHECKED RAKESH		08.08.2012													
APPROVED P.K.S.		08.08.2012													
DRG. No.		TSA-SALE12000906-40													
		SIZE A4	REV. 00												

PE-V0(B)-281-172-N002

### PUMP PARTICULARS

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
THREE	7000	8M	13	1455 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
45 M <sup>3</sup> /hr	75.05 Mtrs.	76%	12.10 K.W.	

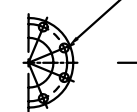
### MOTOR PARTICULARS

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	18.5 K.W.	1455 RPM	HXF+180MLB4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

DETAILS OF DISCH. & COMP. FLANGE:-  
(AS PER IS-1538) (150 NB)

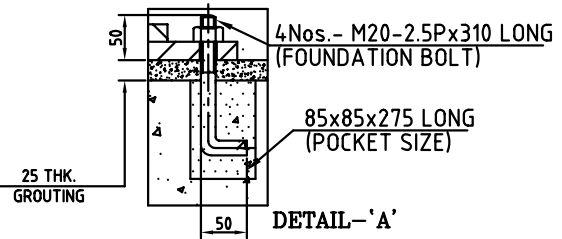
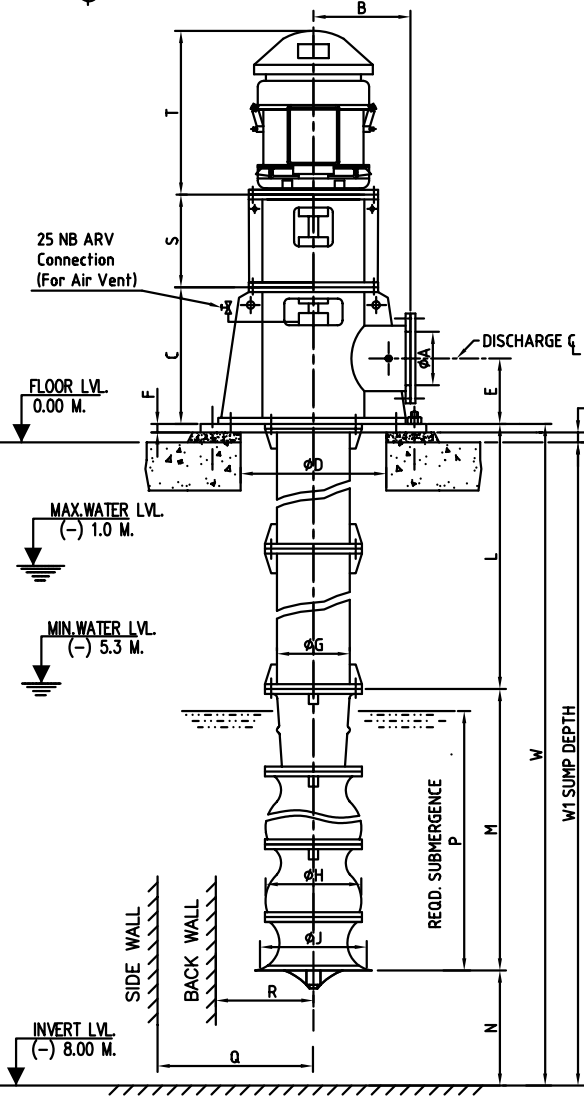
FLANGE O.D.	285
P.C.D.	240
NO. OF HOLES	8
DIA. OF HOLES	23
THICKNESS	25

SEE DISCHARGE FLANGE DETAIL



4Nos. ~  $\phi$ 'X' DRILL HOLES  
(For foundation bolt)

CRANE HOOK  
(+) 5.7 M



NOTE:-

- DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
- DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
- PAINTING LIGHT GREY IS-5, 631

LOAD DATA:-

Total Static Weight Of Complete Pump	1800 Kgs. (Approx.)
Static Weight Of MOTOR	175 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	2950 Kgs. (Approx.)

- MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 1650 KGS. (APPROX.)
- RECOMMENDED CRANE CAPACITY = 2 TON.

PRITAM	09.08.12
REV. DRN	DATE

A	150 (N.SIZE)	Q	350
B	325	R	275
C	505	S	350
D	350	T	595
E	190	U	765
F	25	V	640
G	150 (N.SIZE)	W	8050
H	196	X	23
J	203	W1	8000
L	5370		
M	2380		
N	300		
P	813		



**FLOWMORE LIMITED**  
NEW DELHI

**JOB NAME :** HVAC MAKE UP PUMPS

**CUSTOMER :** M/S. B.H.E.L.

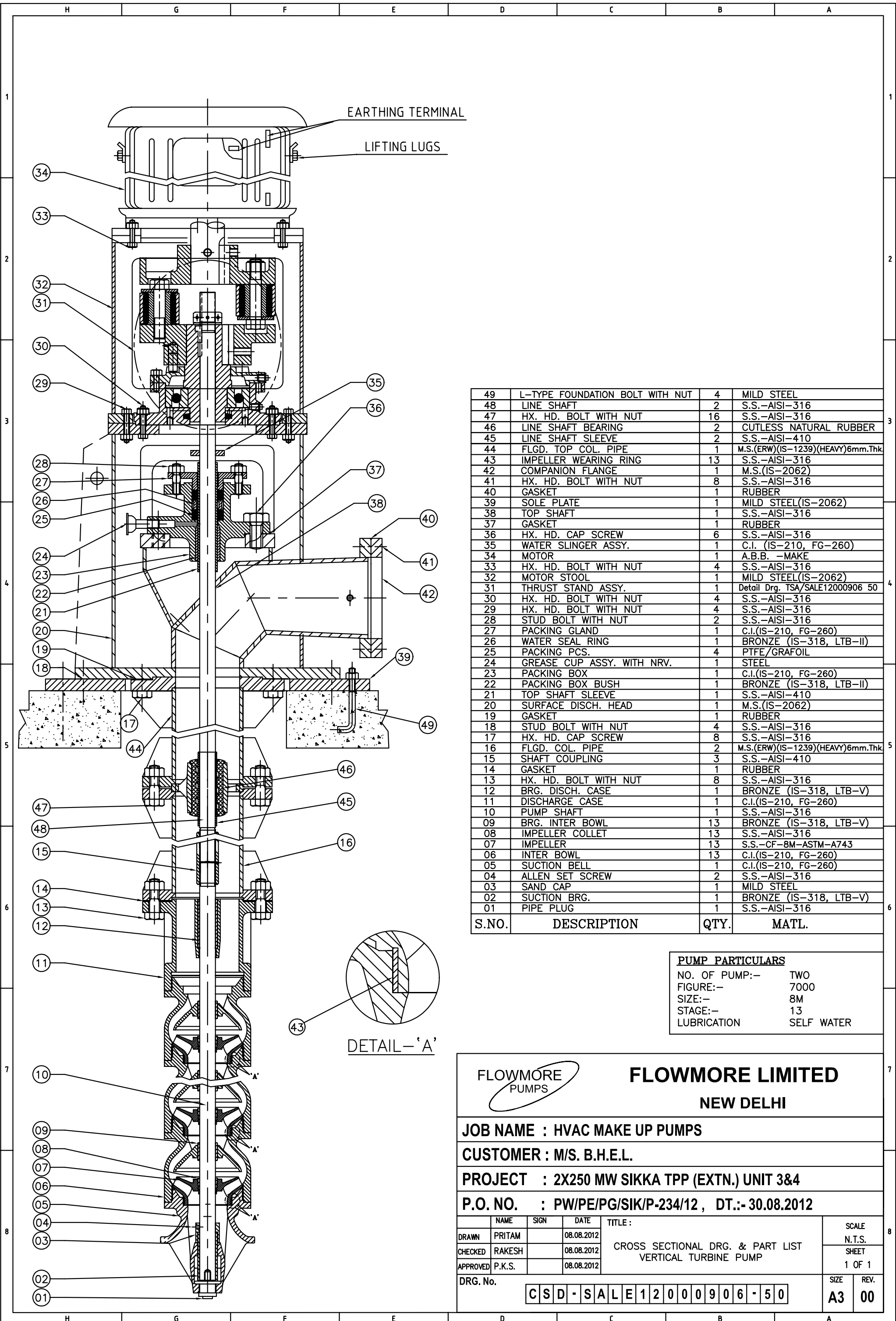
**PROJECT :** 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4

**P.O. NO. :** PW/PE/PG/SIK/P-234/12, DT.-: 30.08.2012

DRWN	NAME	SIGN	DATE	TITLE :	SCALE
PRITAM	PRITAM		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.
CHECKED	RAKESH		04.08.2012		SHEET
APPROVED	P.K.S.		04.08.2012		1 OF 1

DRG. No. **GA-SALE12000906-50**

SIZE	REV.
A4	01



49	L-TYPE FOUNDATION BOLT WITH NUT	4	MILD STEEL
48	LINE SHAFT	2	S.S.-AISI-316
47	HX. HD. BOLT WITH NUT	16	S.S.-AISI-316
46	LINE SHAFT BEARING	2	CUTLESS NATURAL RUBBER
45	LINE SHAFT SLEEVE	2	S.S.-AISI-410
44	FLGD. TOP COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk
43	IMPELLER WEARING RING	13	S.S.-AISI-316
42	COMPANION FLANGE	1	M.S.(IS-2062)
41	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
40	GASKET	1	RUBBER
39	SOLE PLATE	1	MILD STEEL(IS-2062)
38	TOP SHAFT	1	S.S.-AISI-316
37	GASKET	1	RUBBER
36	HX. HD. CAP SCREW	6	S.S.-AISI-316
35	WATER SLINGER ASSY.	1	C.I. (IS-210, FG-260)
34	MOTOR	1	A.B.B. -MAKE
33	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
32	MOTOR STOOL	1	MILD STEEL(IS-2062)
31	THRUST STAND ASSY.	1	Detail Drg. TSA/SALE12000906 50
30	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
29	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
28	STUD BOLT WITH NUT	2	S.S.-AISI-316
27	PACKING GLAND	1	C.I.(IS-210, FG-260)
26	WATER SEAL RING	1	BRONZE (IS-318, LTB-II)
25	PACKING PCS.	4	PTFE/GRAFOIL
24	GREASE CUP ASSY. WITH NRV.	1	STEEL
23	PACKING BOX	1	C.I.(IS-210, FG-260)
22	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
21	TOP SHAFT SLEEVE	1	S.S.-AISI-410
20	SURFACE DISCH. HEAD	1	M.S.(IS-2062)
19	GASKET	1	RUBBER
18	STUD BOLT WITH NUT	4	S.S.-AISI-316
17	HX. HD. CAP SCREW	8	S.S.-AISI-316
16	FLGD. COL. PIPE	2	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk
15	SHAFT COUPLING	3	S.S.-AISI-410
14	GASKET	1	RUBBER
13	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
12	BRG. DISCH. CASE	1	BRONZE (IS-318, LTB-V)
11	DISCHARGE CASE	1	C.I.(IS-210, FG-260)
10	PUMP SHAFT	1	S.S.-AISI-316
09	BRG. INTER BOWL	13	BRONZE (IS-318, LTB-V)
08	IMPELLER COLLET	13	S.S.-AISI-316
07	IMPELLER	13	S.S.-CF-8M-ASTM-A743
06	INTER BOWL	13	C.I.(IS-210, FG-260)
05	SUCTION BELL	1	C.I.(IS-210, FG-260)
04	ALLEN SET SCREW	2	S.S.-AISI-316
03	SAND CAP	1	MILD STEEL
02	SUCTION BRG.	1	BRONZE (IS-318, LTB-V)
01	PIPE PLUG	1	S.S.-AISI-316
S.NO.	DESCRIPTION	QTY.	MATL.

**PUMP PARTICULARS**  
 NO. OF PUMP:- TWO  
 FIGURE:- 7000  
 SIZE:- 8M  
 STAGE:- 13  
 LUBRICATION SELF WATER

**FLOWMORE LIMITED**  
NEW DELHI

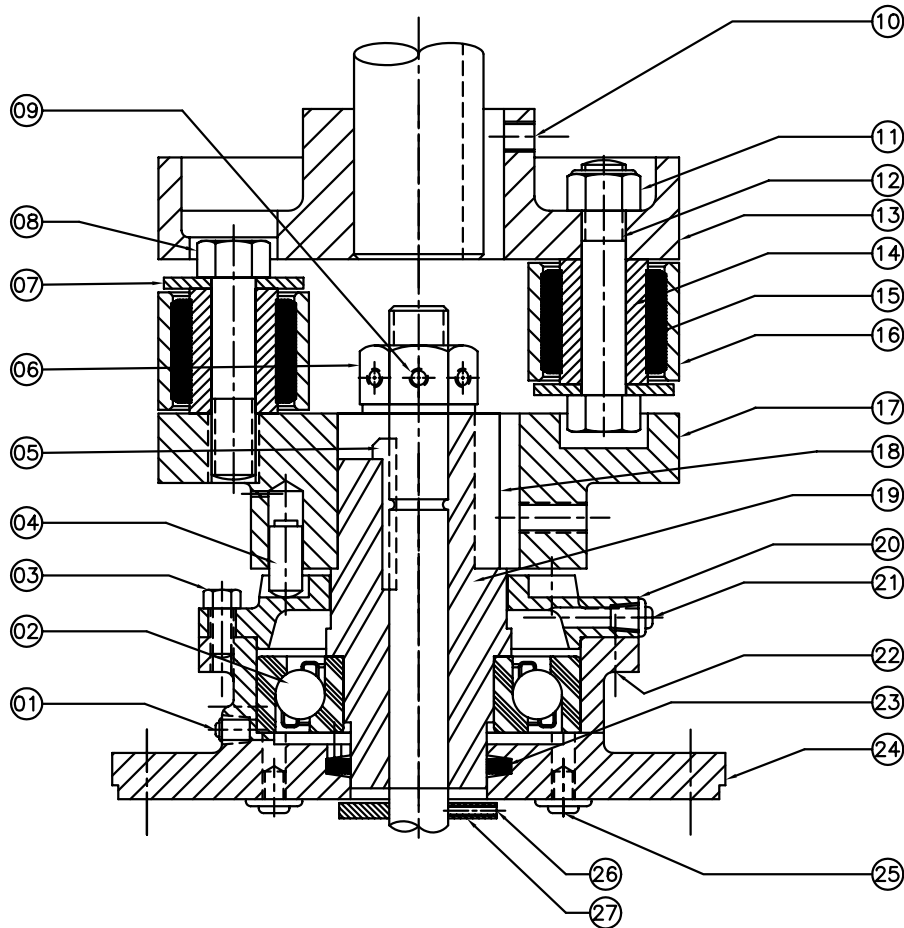
**JOB NAME : HVAC MAKE UP PUMPS**

**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

**P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.-: 30.08.2012**


NAME	SIGN	DATE	TITLE :	SCALE
DRAWN	PRITAM	08.08.2012	CROSS SECTIONAL DRG. & PART LIST VERTICAL TURBINE PUMP	N.T.S.
CHECKED	RAKESH	08.08.2012		SHEET
APPROVED	P.K.S.	08.08.2012		1 OF 1
DRG. No. <b>CSD - SALE 12000906 - 50</b>				SIZE <b>A3</b> REV. <b>00</b>



27	SHAFT COLLAR	1	BRONZE (IS-318, LTB-V)
26	ALLEN SET SCREW	2	S.S.-AISI-316
25	B.S.P. PIPE PLUG	2	MAL. IRON
24	THRUST BEARING HOUSING	1	C.I. (IS-210, FG-260)
23	FELT PADDING	1	COTTON
22	DOWEL PIN	2	STEEL
21	GREASE FITTING	1	STEEL
20	MOUNTING COVER	1	CAST STEEL (IS-1030)
19	THRUST HUB	1	CAST STEEL (IS-1030)
18	STRAIGHT KEY	1	MILD STEEL
17	LOWER COUPLING HALF	1	CAST STEEL (IS-1030)
16	LINK	3	MAL. IRON
15	RUBBER BUSH	6	RUBBER
14	PIN BLOCK	6	ALUMINIUM
13	UPPER COUPLING HALF	1	CAST STEEL (IS-1030)
12	HX. HD. BOLT	3	H.T. STEEL (EN-8)
11	NYLOCK NUT	3	MILD STEEL
10	ALLEN SET SCREW	2	S.S.-AISI-316
09	ALLEN SET SCREW	1	S.S.-AISI-316
08	HX. HD. BOLT	3	H.T. STEEL (EN-8)
07	RETAINING WASHER	6	MILD STEEL
06	ADJUSTING NUT	1	MILD STEEL
05	GIB KEY	1	MILD STEEL
04	RATCHET PIN	4	C.S. (CASE HARDENED)
03	HX. HD. CAP SCREW	8	S.S.-AISI-316
02	ANGULAR CONTACT BALL BEARING	1	BRG, STEEL
01	GREASE RELIEF FITTING	1	STEEL
S. NO.	DESCRIPTION	QTY.	MATERIAL

**NOTE:-**

- PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE12000906 50
- SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.
- SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLER.
- PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.

		<b>FLOWMORE LIMITED</b> NEW DELHI																	
<b>JOB NAME : HVAC MAKE UP PUMPS</b>																			
<b>CUSTOMER : M/S. B.H.E.L.</b>																			
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>																			
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012</b>																			
<table border="1"> <thead> <tr> <th></th> <th>NAME</th> <th>SIGN</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>DRAWN</td> <td>PRITAM</td> <td></td> <td>08.08.2012</td> </tr> <tr> <td>CHECKED</td> <td>RAKESH</td> <td></td> <td>08.08.2012</td> </tr> <tr> <td>APPROVED</td> <td>P.K.S.</td> <td></td> <td>08.08.2012</td> </tr> </tbody> </table>		NAME	SIGN	DATE	DRAWN	PRITAM		08.08.2012	CHECKED	RAKESH		08.08.2012	APPROVED	P.K.S.		08.08.2012	TITLE : THRUST STAND ASSY. DRG. & PART LIST FOR VERTICAL TURBINE PUMP		SCALE N.T.S. SHEET 1 OF 1
	NAME	SIGN	DATE																
DRAWN	PRITAM		08.08.2012																
CHECKED	RAKESH		08.08.2012																
APPROVED	P.K.S.		08.08.2012																
DRG. No.		<b>T S A - S A L E 1 2 0 0 0 9 0 6 - 5 0</b>																	
		SIZE <b>A4</b>	REV. <b>00</b>																

PE-V0(B)-281-172-N002

### PUMP PARTICULARS

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
THREE	7000	9M	SEVEN	1455 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
65 M <sup>3</sup> /hr	55.05 Mtrs.	79%	12.33 K.W.	

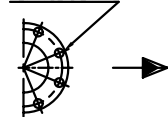
### MOTOR PARTICULARS

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	18.5 K.W.	1455 RPM	HXF+180MLB4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

DETAILS OF DISCH. & COMP. FLANGE:-  
(AS PER IS-1538) (150 NB)

FLANGE O.D.	285
P.C.D.	240
NO. OF HOLES	8
DIA. OF HOLES	23
THICKNESS	25

SEE DISCHARGE FLANGE DETAIL



4Nos. ~  $\phi$ 'X' DRILL HOLES  
(For foundation bolt)

NOTE:-

- DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
- DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
- PAINTING LIGHT GREY IS, 631

LOAD DATA:-

Total Static Weight Of Complete Pump	1550 Kgs. (Approx.)
Static Weight Of MOTOR	175 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	2600 Kgs. (Approx.)

- MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 1400 KGS. (APPROX.)
- RECOMMENDED CRANE CAPACITY = 1.5 TON.

PRITAM	09.08.12
REV. DRN	DATE

FLOWMORE PUMPS

**FLOWMORE LIMITED**

NEW DELHI

JOB NAME : AHP PUMPS

CUSTOMER : M/S. B.H.E.L.

PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4

P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.08.2012

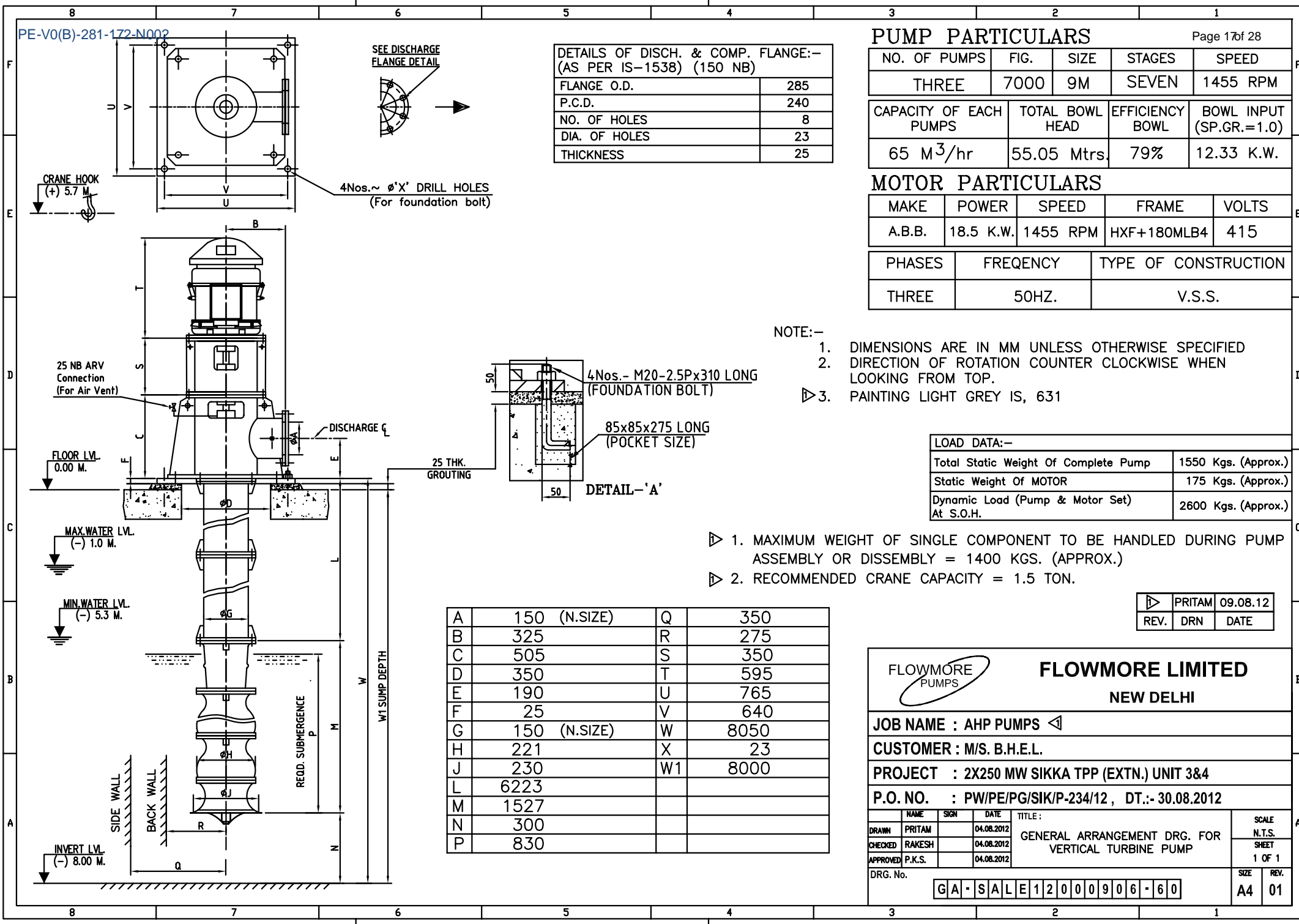
DRWN	NAME	SIGN	DATE	TITLE :	SCALE
PRITAM			04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.
CHECKED	RAKESH		04.08.2012		SHEET
APPROVED	P.K.S.		04.08.2012		1 OF 1

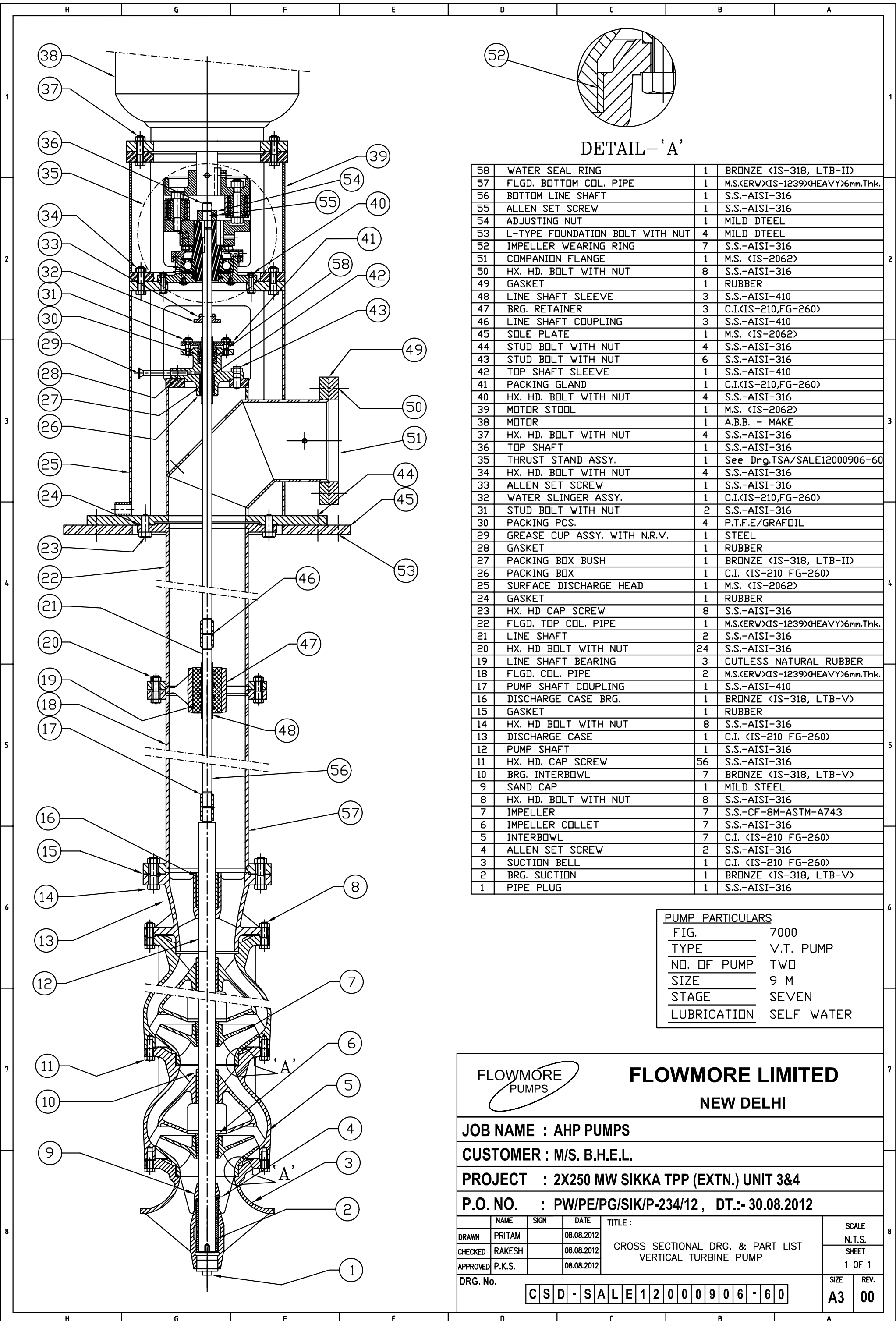
DRG. No.

G A - S A L E 1 2 0 0 0 9 0 6 - 6 0

SIZE A4  
REV. 01

A	150 (N.SIZE)	Q	350
B	325	R	275
C	505	S	350
D	350	T	595
E	190	U	765
F	25	V	640
G	150 (N.SIZE)	W	8050
H	221	X	23
J	230	W1	8000
L	6223		
M	1527		
N	300		
P	830		





NO.	DESCRIPTION	QTY	MATERIAL
58	WATER SEAL RING	1	BRONZE (IS-318, LTB-II)
57	FLGD. BOTTOM COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
56	BOTTOM LINE SHAFT	1	S.S.-AISI-316
55	ALLEN SET SCREW	1	S.S.-AISI-316
54	ADJUSTING NUT	1	MILD DTEEL
53	L-TYPE FOUNDATION BOLT WITH NUT	4	MILD DTEEL
52	IMPELLER WEARING RING	7	S.S.-AISI-316
51	COMPANION FLANGE	1	M.S. (IS-2062)
50	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
49	GASKET	1	RUBBER
48	LINE SHAFT SLEEVE	3	S.S.-AISI-410
47	BRG. RETAINER	3	C.I.(IS-210,FG-260)
46	LINE SHAFT COUPLING	3	S.S.-AISI-410
45	SOLE PLATE	1	M.S. (IS-2062)
44	STUD BOLT WITH NUT	4	S.S.-AISI-316
43	STUD BOLT WITH NUT	6	S.S.-AISI-316
42	TOP SHAFT SLEEVE	1	S.S.-AISI-410
41	PACKING GLAND	1	C.I.(IS-210,FG-260)
40	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
39	MOTOR STOOL	1	M.S. (IS-2062)
38	MOTOR	1	A.B.B. - MAKE
37	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
36	TOP SHAFT	1	S.S.-AISI-316
35	THRUST STAND ASSY.	1	See Drg.TSA/SALE12000906-60
34	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
33	ALLEN SET SCREW	1	S.S.-AISI-316
32	WATER SLINGER ASSY.	1	C.I.(IS-210,FG-260)
31	STUD BOLT WITH NUT	2	S.S.-AISI-316
30	PACKING PCS.	4	P.T.F.E./GRAFOIL
29	GREASE CUP ASSY. WITH N.R.V.	1	STEEL
28	GASKET	1	RUBBER
27	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
26	PACKING BOX	1	C.I. (IS-210 FG-260)
25	SURFACE DISCHARGE HEAD	1	M.S. (IS-2062)
24	GASKET	1	RUBBER
23	HX. HD CAP SCREW	8	S.S.-AISI-316
22	FLGD. TOP COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
21	LINE SHAFT	2	S.S.-AISI-316
20	HX. HD BOLT WITH NUT	24	S.S.-AISI-316
19	LINE SHAFT BEARING	3	CUTLESS NATURAL RUBBER
18	FLGD. COL. PIPE	2	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
17	PUMP SHAFT COUPLING	1	S.S.-AISI-410
16	DISCHARGE CASE BRG.	1	BRONZE (IS-318, LTB-V)
15	GASKET	1	RUBBER
14	HX. HD BOLT WITH NUT	8	S.S.-AISI-316
13	DISCHARGE CASE	1	C.I. (IS-210 FG-260)
12	PUMP SHAFT	1	S.S.-AISI-316
11	HX. HD. CAP SCREW	56	S.S.-AISI-316
10	BRG. INTERBOWL	7	BRONZE (IS-318, LTB-V)
9	SAND CAP	1	MILD STEEL
8	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
7	IMPELLER	7	S.S.-CF-8M-ASTM-A743
6	IMPELLER COLLET	7	S.S.-AISI-316
5	INTERBOWL	7	C.I. (IS-210 FG-260)
4	ALLEN SET SCREW	2	S.S.-AISI-316
3	SUCTION BELL	1	C.I. (IS-210 FG-260)
2	BRG. SUCTION	1	BRONZE (IS-318, LTB-V)
1	PIPE PLUG	1	S.S.-AISI-316

PUMP PARTICULARS	
FIG.	7000
TYPE	V.T. PUMP
NO. OF PUMP	TWO
SIZE	9 M
STAGE	SEVEN
LUBRICATION	SELF WATER

**FLOWMORE PUMPS**

**FLOWMORE LIMITED**  
NEW DELHI

**JOB NAME : AHP PUMPS**

**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

**P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.-: 30.08.2012**

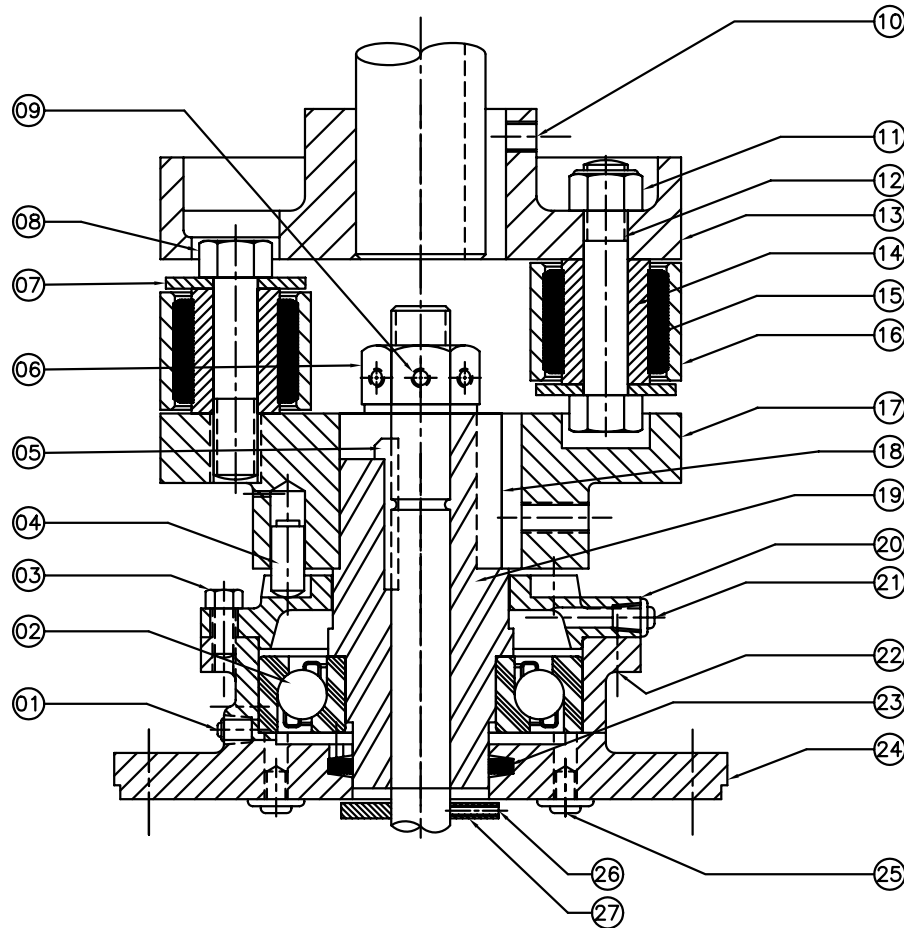
DRAWN	PRITAM	DATE	08.08.2012
CHECKED	RAKESH	DATE	08.08.2012
APPROVED	P.K.S.	DATE	08.08.2012

TITLE : CROSS SECTIONAL DRG. & PART LIST  
VERTICAL TURBINE PUMP

SCALE : N.T.S.  
SHEET : 1 OF 1

DRG. No. **CSD - SALE 12000906 - 60**


SIZE : **A3** REV. : **00**



27	SHAFT COLLAR	1	BRONZE (IS-318, LTB-V)
26	ALLEN SET SCREW	2	S.S.-AISI-316
25	B.S.P. PIPE PLUG	2	MAL. IRON
24	THRUST BEARING HOUSING	1	C.I. (IS-210, FG-260)
23	FELT PADDING	1	COTTON
22	DOWEL PIN	2	STEEL
21	GREASE FITTING	1	STEEL
20	MOUNTING COVER	1	CAST STEEL (IS-1030)
19	THRUST HUB	1	CAST STEEL (IS-1030)
18	STRAIGHT KEY	1	MILD STEEL
17	LOWER COUPLING HALF	1	CAST STEEL (IS-1030)
16	LINK	3	MAL. IRON
15	RUBBER BUSH	6	RUBBER
14	PIN BLOCK	6	ALUMINIUM
13	UPPER COUPLING HALF	1	CAST STEEL (IS-1030)
12	HX. HD. BOLT	3	H.T. STEEL (EN-8)
11	NYLOCK NUT	3	MILD STEEL
10	ALLEN SET SCREW	2	S.S.-AISI-316
09	ALLEN SET SCREW	1	S.S.-AISI-316
08	HX. HD. BOLT	3	H.T. STEEL (EN-8)
07	RETAINING WASHER	6	MILD STEEL
06	ADJUSTING NUT	1	MILD STEEL
05	GIB KEY	1	MILD STEEL
04	RATCHET PIN	4	C.S. (CASE HARDENED)
03	HX. HD. CAP SCREW	8	S.S.-AISI-316
02	ANGULAR CONTACT BALL BEARING	1	BRG, STEEL
01	GREASE RELIEF FITTING	1	STEEL
S. NO.	DESCRIPTION	QTY.	MATERIAL

**NOTE:-**

- PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE12000906 60
- SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.
- SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLER.
- PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.

		<b>FLOWMORE LIMITED</b> NEW DELHI																	
<b>JOB NAME : AHP PUMPS</b>																			
<b>CUSTOMER : M/S. B.H.E.L.</b>																			
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>																			
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012</b>																			
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	NAME	SIGN	DATE																
DRAWN	PRITAM		08.08.2012																
CHECKED	RAKESH		08.08.2012																
APPROVED	P.K.S.		08.08.2012																
DRG. No.		<b>T S A - S A L E 1 2 0 0 0 9 0 6 - 6 0</b>		SIZE <b>A4</b>	REV. <b>00</b>														

PE-V0(B)-281-172-N003

SEE DISCHARGE  
FLANGE DETAIL

DETAILS OF DISCH. & COMP. FLANGE:- (AS PER IS-1538) (200 NB)	
FLANGE O.D.	340
P.C.D.	295
NO. OF HOLES	8
DIA. OF HOLES	23
THICKNESS	25

### PUMP PARTICULARS

Page 2 of 28

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
TWO	7000	13M	THREE	1470 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
230 M <sup>3</sup> /hr	45.05 Mtrs.	83%	33.99 K.W.	

### MOTOR PARTICULARS

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	45 K.W.	1470 RPM	HXF+225SMC4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

NOTE:-

- DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
- DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
- PAINTING LIGHT GREY IS-5, 631

LOAD DATA:-

Total Static Weight Of Complete Pump	2300 Kgs. (Approx.)
Static Weight Of MOTOR	340 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	2900 Kgs. (Approx.)

- MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 2150 KGS. (APPROX.)
- RECOMMENDED CRANE CAPACITY = 2.5 TON.

PRITAM	09.08.12
REV. DRN	DATE

FLOWMORE  
PUMPS

**FLOWMORE LIMITED**

NEW DELHI

JOB NAME : CHP DUST SEPERATION PUMPS

CUSTOMER : M/S. B.H.E.L.

PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4

P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.08.2012

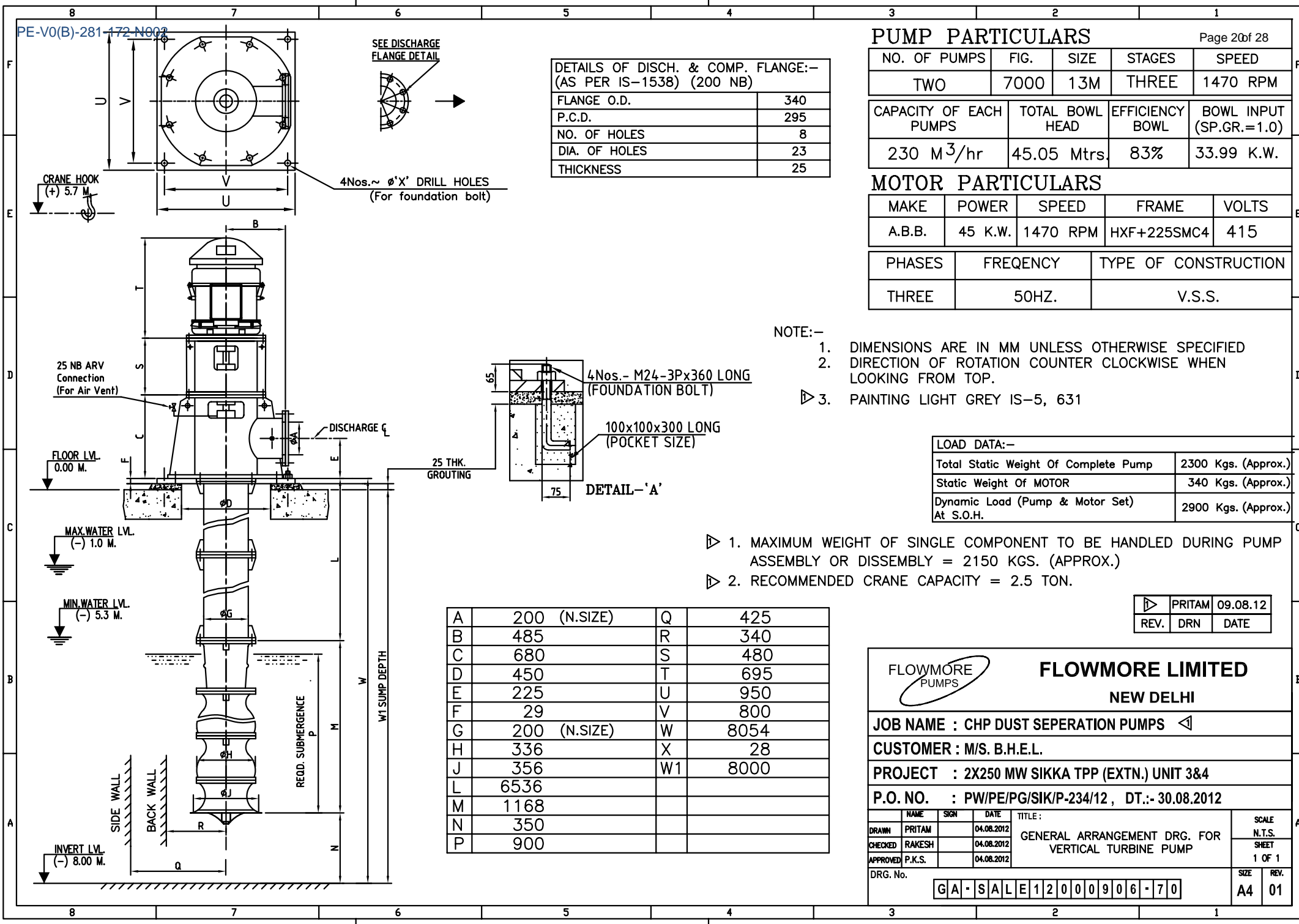
NAME	SIGN	DATE	TITLE :	SCALE
DRAWN PRITAM		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.
CHECKED RAKESH		04.08.2012		SHEET
APPROVED P.K.S.		04.08.2012		1 OF 1

DRG. No.

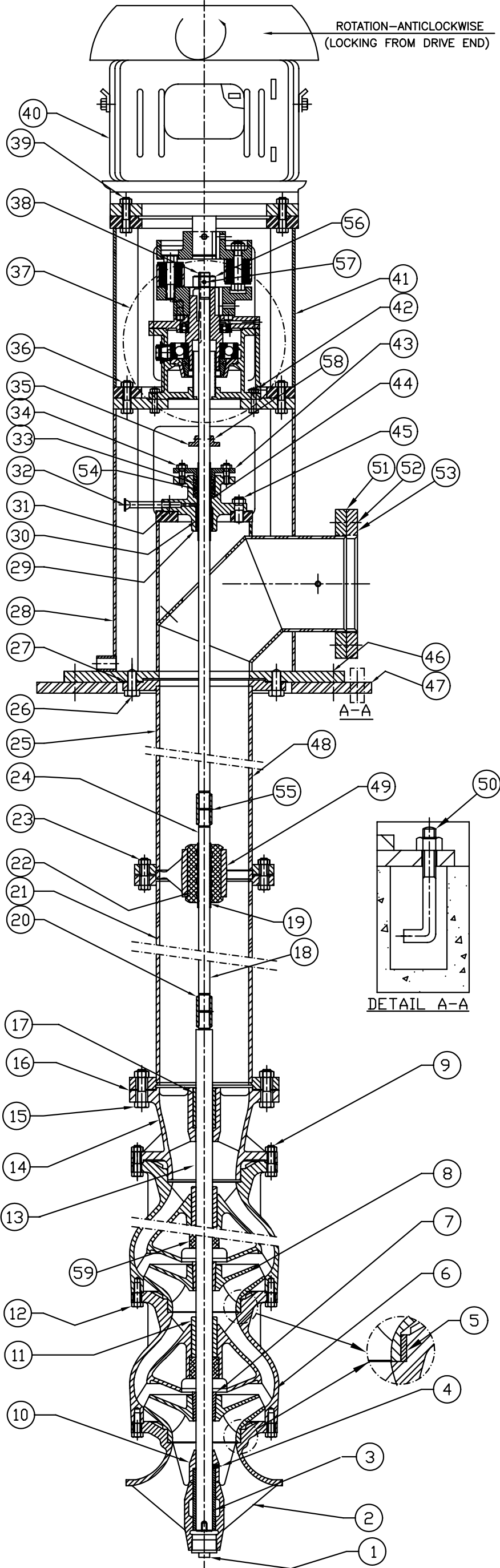
G A - S A L E 1 2 0 0 0 9 0 6 - 7 0

SIZE  
A4

REV.  
01



A	200 (N.SIZE)	Q	425
B	485	R	340
C	680	S	480
D	450	T	695
E	225	U	950
F	29	V	800
G	200 (N.SIZE)	W	8054
H	336	X	28
J	356	W1	8000
L	6536		
M	1168		
N	350		
P	900		



59	BOWL BUSH	3	CUTLESS NATURAL RUBBER
58	ALLEN SET SCREW	1	S.S.-AISI-316
57	ALLEN SET SCREW	1	S.S.-AISI-316
56	ADJUSTING NUT	1	MILD STEEL
55	LINE SHAFT COUPLING	3	S.S.-AISI-410
54	WATER SEAL RING	1	BRONZE (IS-318, LTB-II)
53	COMPANION FLANGE	1	M.S. (IS-2062)
52	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
51	GASKET	1	RUBBER
50	L-TYPE FOUNDATION BOLT WITH NUT	4	MILD STEEL
49	BRG. RETAINER	3	C.I.(IS-210,FG-260)
48	FLGD. COL. PIPE	2	M.S.(ERW)(IS-3589)(HEAVY)6mm.Thk.
47	SOLE PLATE	1	M.S. (IS-2062)
46	STUD BOLT WITH NUT	4	S.S.-AISI-316
45	STUD BOLT WITH NUT	6	S.S.-AISI-316
44	TOP SHAFT SLEEVE	1	S.S.-AISI-410
43	PACKING GLAND	1	C.I. (IS-210 FG-260)
42	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
41	MOTOR STOOL	1	M.S. (IS-2062)
40	MOTOR	1	A.B.B.-MAKE
39	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
38	TOP SHAFT	1	S.S.-AISI-316
37	THRUST STAND ASSY.	1	See Drg.TSA/SALE12000906-70
36	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
35	WATER SLINGER ASSY.	1	C.I.(IS-210,FG-260)
34	STUD BOLT WITH NUT	2	S.S.-AISI-316
33	PACKING PCS.	4	P.T.F.E./GRAFOIL
32	GREASE CUP ASSY. WITH N.R.V.	1	STEEL
31	GASKET	1	RUBBER
30	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
29	PACKING BOX	1	C.I. (IS-210 FG-260)
28	SURFACE DISCHARGE HEAD	1	M.S. (IS-2062)
27	GASKET	1	RUBBER
26	HX. HD CAP SCREW	8	S.S.-AISI-316
25	FLGD. TOP COL. PIPE	1	M.S.(ERW)(IS-3589)(HEAVY)6mm.Thk.
24	LINE SHAFT	2	S.S.-AISI-316
23	HX. HD BOLT WITH NUT	24	S.S.-AISI-316
22	LINE SHAFT BEARING	3	CUTLESS NATURAL RUBBER
21	FLGD. BOTTOM COL. PIPE	1	M.S.(ERW)(IS-3589)(HEAVY)6mm.Thk.
20	PUMP SHAFT COUPLING	1	S.S.-AISI-410
19	LINE SHAFT SLEEVE	3	S.S.-AISI-410
18	BOTTOM LINE SHAFT	1	S.S.-AISI-316
17	DISCHARGE CASE BRG.	1	BRONZE (IS-318, LTB-V)
16	GASKET	1	RUBBER
15	HX. HD BOLT WITH NUT	8	S.S.-AISI-316
14	DISCHARGE CASE	1	C.I. (IS-210 FG-260)
13	PUMP SHAFT	1	S.S.-AISI-316
12	HX. HD. CAP SCREW	36	S.S.-AISI-316
11	BRG. INTERBOWL	3	BRONZE (IS-318, LTB-V)
10	SAND CAP	1	MILD STEEL
9	HX. HD. BOLT WITH NUT	12	S.S.-AISI-316
8	IMPELLER	3	S.S.-CF-8M-ASTM-A743
7	IMPELLER COLLET	3	S.S.-AISI-316
6	INTERBOWL	3	C.I. (IS-210 FG-260)
5	IMPELLER WEARING RING	3	S.S.-AISI-316
4	ALLEN SET SCREW	2	S.S.-AISI-316
3	BRG. SUCTION	1	BRONZE (IS-318, LTB-V)
2	SUCTION BELL	1	C.I. (IS-210 FG-260)
1	PIPE PLUG	1	S.S.-AISI-316
S.NO.	DESCRIPTION	QTY.	MATL.

PUMP PARTICULARS	
NO. OF PUMP	TWO
FIGURE	7000
SIZE	13M
STAGE	THREE
LUBRICATION	SELF WATER

**FLOWMORE PUMPS**

**FLOWMORE LIMITED**

**NEW DELHI**

**JOB NAME : CHP DUST SEPERATION PUMPS**

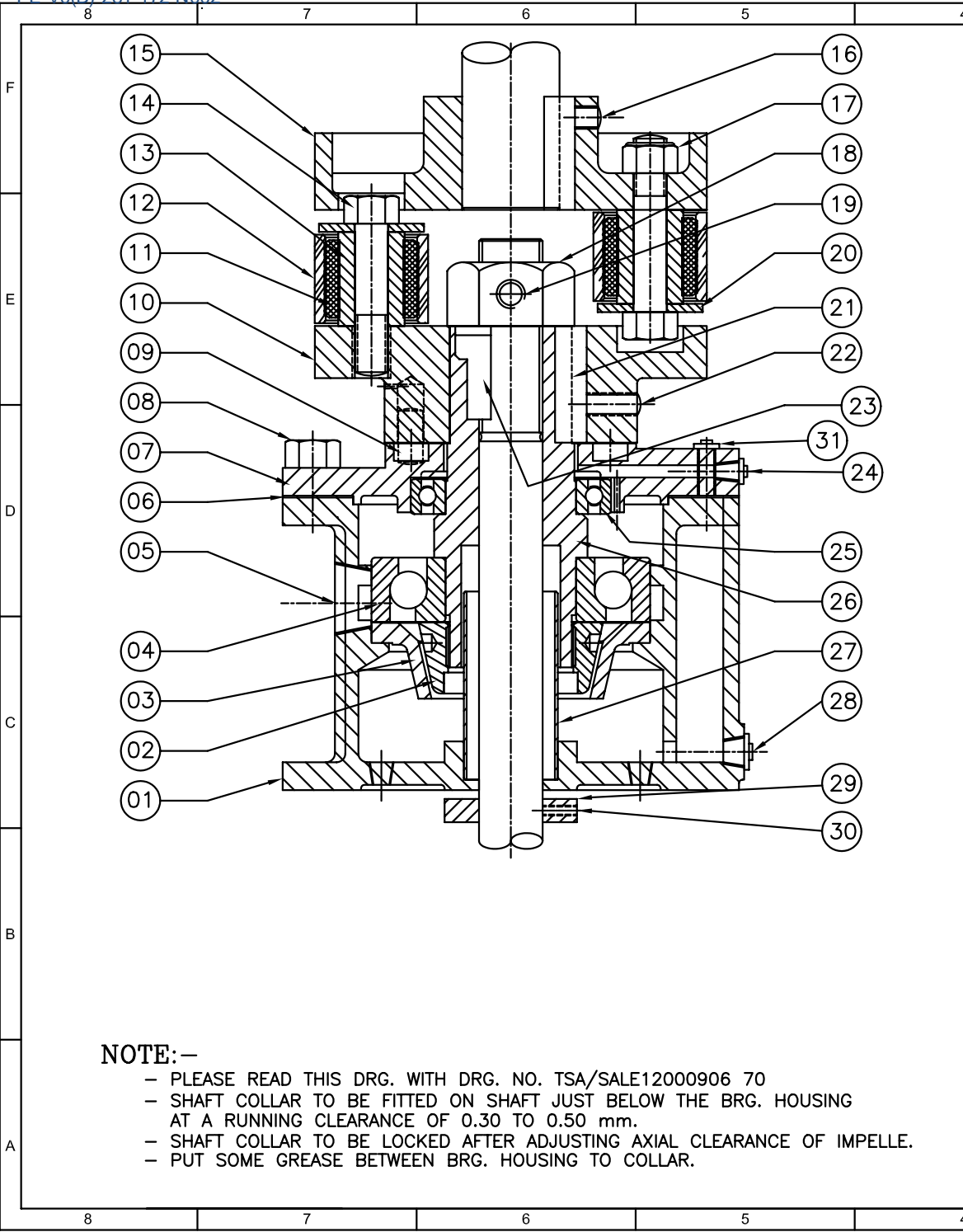
**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

**P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.:- 30.08.2012**

NAME	SIGN	DATE	TITLE :	SCALE
DRAWN PRITAM		08.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S. SHEET 1 OF 1
CHECKED RAKESH		08.08.2012		
APPROVED P.K.S.		08.08.2012		


DRG. No. **CSD-SALE12000906-70** SIZE **A3** REV. **00**



S. No.	DESCRIPTION	QTY.	MATL.
31	OIL FILLING PLUG	1	MAL. IRON
30	ALLEN SET SCREW	1	S.S.-AISI-316
29	SHAFT COLLAR	1	BRONZE(IS-318,LTB-V)
28	DRAIN PLUG	3	MAL. IRON
27	OIL SLEEVE	1	MILD STEEL
26	THRUST HUB	1	CAST STEEL (IS-1030)
25	RADIAL BALL BRG.	1	BRG. STEEL
24	PIPE PLUG	1	MAL. IRON
23	GIB KEY	1	MILD STEEL
22	ALLEN SET SCREW	2	S.S.-AISI-316
21	STRAIGHT KEY	1	MILD STEEL
20	RETAINING WASHER	6	MILD STEEL
19	ALLEN SET SCREW	1	S.S.-AISI-316
18	ADJUSTING NUT	1	MILD STEEL
17	HX. HD. BOLT WITH NUT	3	EN-8(Heat Treated)
16	ALLEN SET SCREW	2	S.S.-AISI-316
15	UPPER COUP. HALF	1	CAST STEEL (IS-1030)
14	HX. HD. BOLT	3	EN-8(Heat Treated)
13	PIN BLOCK	6	ALUMINIUM
12	LINK	3	MAL. IRON
11	RUBBER BUSH	6	RUBBER
10	LOWER COUPLING HALF	1	CAST STEEL (IS-1030)
09	RATCHET PIN	4	C.S. (CASE HARDEND)
08	HX. HD. CAP SCREW	4	S.S.-AISI-316
07	MOUNTING COVER	1	CAST STEEL (IS-1030)
06	GASKET	1	OIL PROOF PAPER
05	OIL LEVEL SIGHT WINDOW	1	STEEL + GLASS
04	ANGULAR CONTACT BALL BRG.	1	BRG. STEEL
03	OIL RETAINING RING	1	C.I. (IS-210, FG-260)
02	OIL THROWER NUT	1	BRONZE
01	THRUST BRG. HOUSING	1	C.I. (IS-210, FG-260)

**NOTE:-**

- PLEASE READ THIS DRG. WITH DRG. NO. TSA/SALE12000906 70
- SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.
- SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLE.
- PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.



**FLOWMORE LIMITED**  
NEW DELHI

**JOB NAME : CHP DUST SEPERATION PUMPS**

**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

**P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012**

NAME	SIGN	DATE	TITLE :	SCALE
DRAWN PRITAM		08.08.2012	THRUST STAND ASSY. DRG. & PART LIST FOR VERTICAL TURBINE PUMP	N.T.S.
CHECKED RAKESH		08.08.2012		SHEET
APPROVED P.K.S.		08.08.2012		1 OF 1

DRG. No. T S A - S A L E 1 2 0 0 0 9 0 6 - 7 0

SIZE **A4** REV. **00**

### PUMP PARTICULARS

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
TWO	7000	14M	FIVE	1485 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
280 M <sup>3</sup> /hr	95.07 Mtrs.	85%	85.28 K.W.	

### MOTOR PARTICULARS

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	110 K.W.	1485 RPM	M2BAF315SMA4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

DETAILS OF DISCH. & COMP. FLANGE:-  
(AS PER IS-1538) (250 NB)

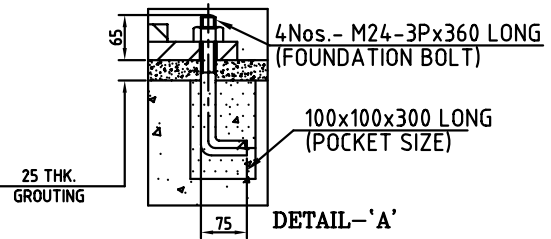
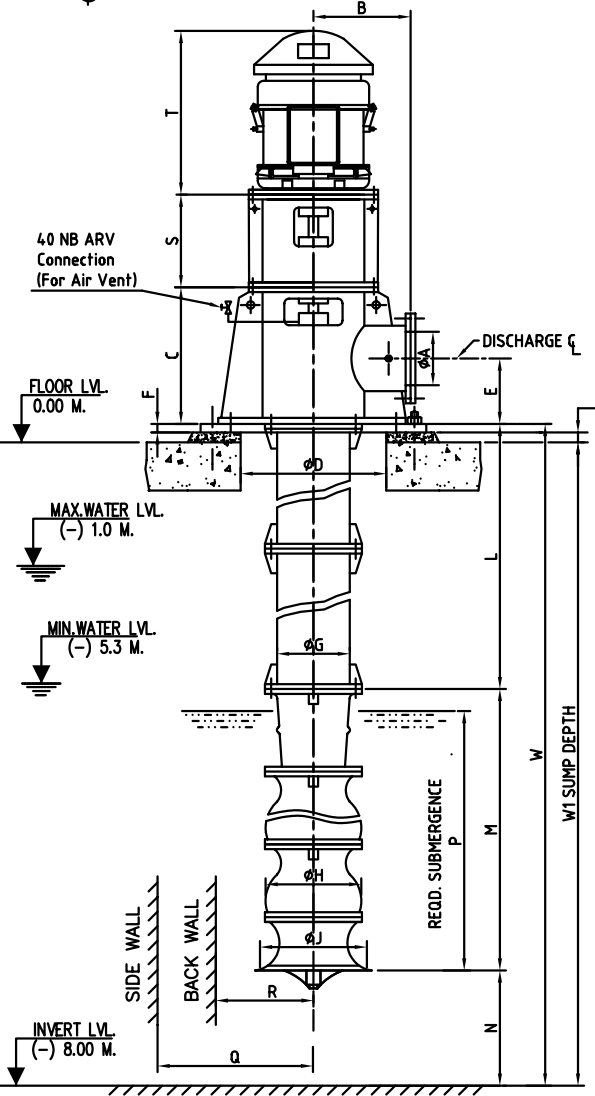
FLANGE O.D.	395
P.C.D.	350
NO. OF HOLES	12
DIA. OF HOLES	23
THICKNESS	32

SEE DISCHARGE FLANGE DETAIL



4Nos. ~  $\phi$ 'X' DRILL HOLES  
(For foundation bolt)

CRANE HOOK  
(+) 5.7 M



NOTE:-

- DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
- DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
- PAINTING LIGHT GREY IS-5, 631

LOAD DATA:-

Total Static Weight Of Complete Pump	2800 Kgs. (Approx.)
Static Weight Of MOTOR	905 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	4200 Kgs. (Approx.)

- MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 2600 KGS. (APPROX.)
- RECOMMENDED CRANE CAPACITY = 3 TON.

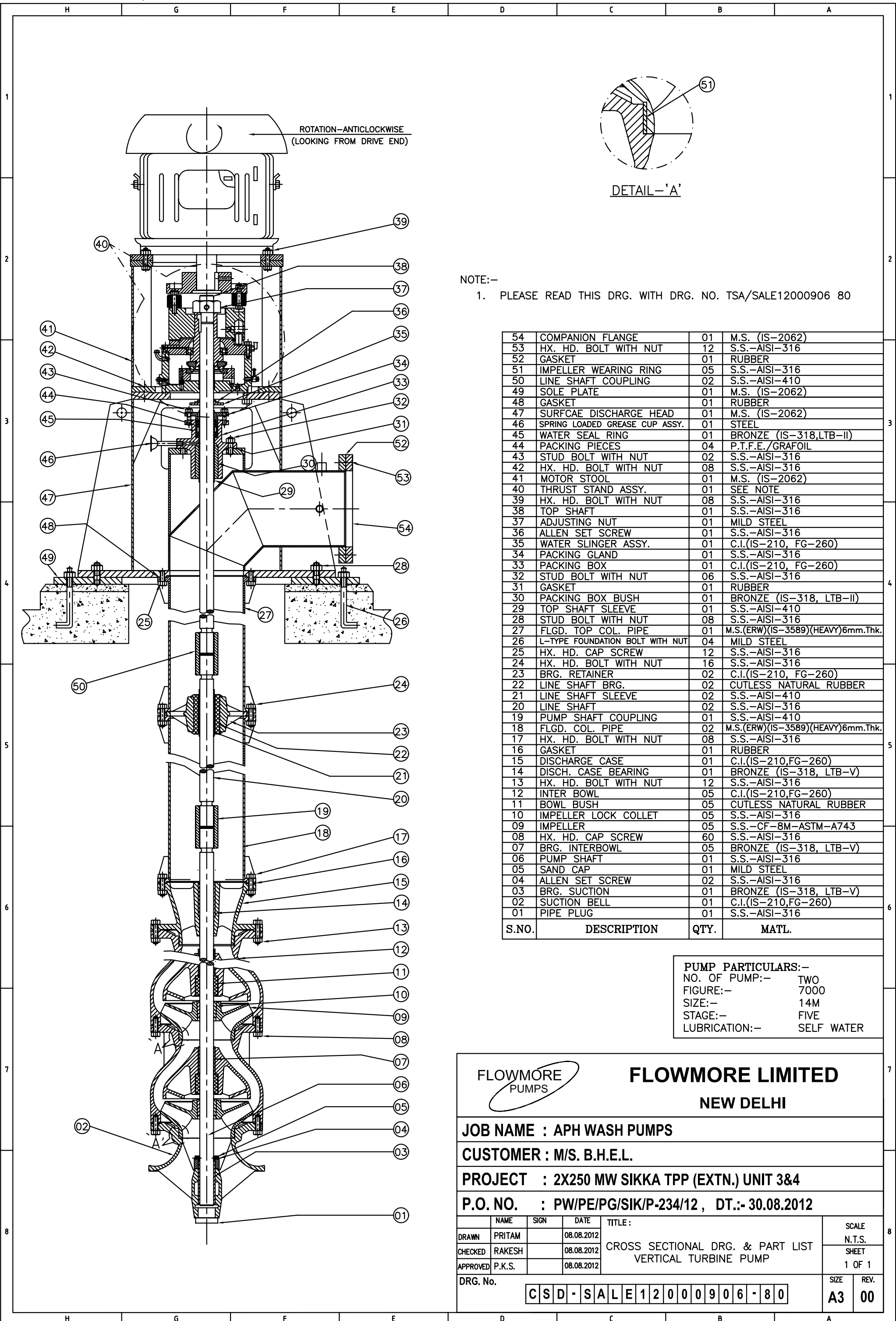
PRITAM	09.08.12
REV.	DRN DATE

A	250 (N.SIZE)	Q	425
B	485	R	340
C	762	S	540
D	450	T	1075
E	280	U	950
F	32	V	800
G	250 (N.SIZE)	W	8057
H	358	X	28
J	375	W1	8000
L	5837		
M	1870		
N	350		
P	915		



**FLOWMORE LIMITED**  
NEW DELHI

<b>JOB NAME : APH WASH PUMPS</b>			
<b>CUSTOMER : M/S. B.H.E.L.</b>			
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>			
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.-: 30.08.2012</b>			
NAME	SIGN	DATE	TITLE :
DRAWN PRITAM		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP
CHECKED RAKESH		04.08.2012	
APPROVED P.K.S.		04.08.2012	
DRG. No.			SCALE N.T.S. SHEET 1 OF 1
GA-SALE12000906-80			SIZE A4 REV. 01



NOTE:-

- PLEASE READ THIS DRG. WITH DRG. NO. TSA/SALE12000906 80

54	COMPANION FLANGE	01	M.S. (IS-2062)
53	HX. HD. BOLT WITH NUT	12	S.S.-AISI-316
52	GASKET	01	RUBBER
51	IMPELLER WEARING RING	05	S.S.-AISI-316
50	LINE SHAFT COUPLING	02	S.S.-AISI-410
49	SOLE PLATE	01	M.S. (IS-2062)
48	GASKET	01	RUBBER
47	SURFCAE DISCHARGE HEAD	01	M.S. (IS-2062)
46	SPRING LOADED GREASE CUP ASSY.	01	STEEL
45	WATER SEAL RING	01	BRONZE (IS-318,LTB-II)
44	PACKING PIECES	04	P.T.F.E./GRAFOIL
43	STUD BOLT WITH NUT	02	S.S.-AISI-316
42	HX. HD. BOLT WITH NUT	08	S.S.-AISI-316
41	MOTOR STOOL	01	M.S. (IS-2062)
40	THRUST STAND ASSY.	01	SEE NOTE
39	HX. HD. BOLT WITH NUT	08	S.S.-AISI-316
38	TOP SHAFT	01	S.S.-AISI-316
37	ADJUSTING NUT	01	MILD STEEL
36	ALLEN SET SCREW	01	S.S.-AISI-316
35	WATER SLINGER ASSY.	01	C.I.(IS-210, FG-260)
34	PACKING GLAND	01	S.S.-AISI-316
33	PACKING BOX	01	C.I.(IS-210, FG-260)
32	STUD BOLT WITH NUT	06	S.S.-AISI-316
31	GASKET	01	RUBBER
30	PACKING BOX BUSH	01	BRONZE (IS-318, LTB-II)
29	TOP SHAFT SLEEVE	01	S.S.-AISI-410
28	STUD BOLT WITH NUT	08	S.S.-AISI-316
27	FLGD. TOP COL. PIPE	01	M.S.(ERW)(IS-3589)(HEAVY)6mm.Thk.
26	L-TYPE FOUNDATION BOLT WITH NUT	04	MILD STEEL
25	HX. HD. CAP SCREW	12	S.S.-AISI-316
24	HX. HD. BOLT WITH NUT	16	S.S.-AISI-316
23	BRG. RETAINER	02	C.I.(IS-210, FG-260)
22	LINE SHAFT BRG.	02	CUTLESS NATURAL RUBBER
21	LINE SHAFT SLEEVE	02	S.S.-AISI-410
20	LINE SHAFT	02	S.S.-AISI-316
19	PUMP SHAFT COUPLING	01	S.S.-AISI-410
18	FLGD. COL. PIPE	02	M.S.(ERW)(IS-3589)(HEAVY)6mm.Thk.
17	HX. HD. BOLT WITH NUT	08	S.S.-AISI-316
16	GASKET	01	RUBBER
15	DISCHARGE CASE	01	C.I.(IS-210,FG-260)
14	DISCH. CASE BEARING	01	BRONZE (IS-318, LTB-V)
13	HX. HD. BOLT WITH NUT	12	S.S.-AISI-316
12	INTER BOWL	05	C.I.(IS-210,FG-260)
11	BOWL BUSH	05	CUTLESS NATURAL RUBBER
10	IMPELLER LOCK COLLET	05	S.S.-AISI-316
09	IMPELLER	05	S.S.-CF-8M-ASTM-A743
08	HX. HD. CAP SCREW	60	S.S.-AISI-316
07	BRG. INTERBOWL	05	BRONZE (IS-318, LTB-V)
06	PUMP SHAFT	01	S.S.-AISI-316
05	SAND CAP	01	MILD STEEL
04	ALLEN SET SCREW	02	S.S.-AISI-316
03	BRG. SUCTION	01	BRONZE (IS-318, LTB-V)
02	SUCTION BELL	01	C.I.(IS-210,FG-260)
01	PIPE PLUG	01	S.S.-AISI-316
S.NO.	DESCRIPTION	QTY.	MATL.

PUMP PARTICULARS:-  
 NO. OF PUMP:- TWO  
 FIGURE:- 7000  
 SIZE:- 14M  
 STAGE:- FIVE  
 LUBRICATION:- SELF WATER

FLOWMORE  
PUMPS

**FLOWMORE LIMITED**  
NEW DELHI

JOB NAME : APH WASH PUMPS

CUSTOMER : M/S. B.H.E.L.

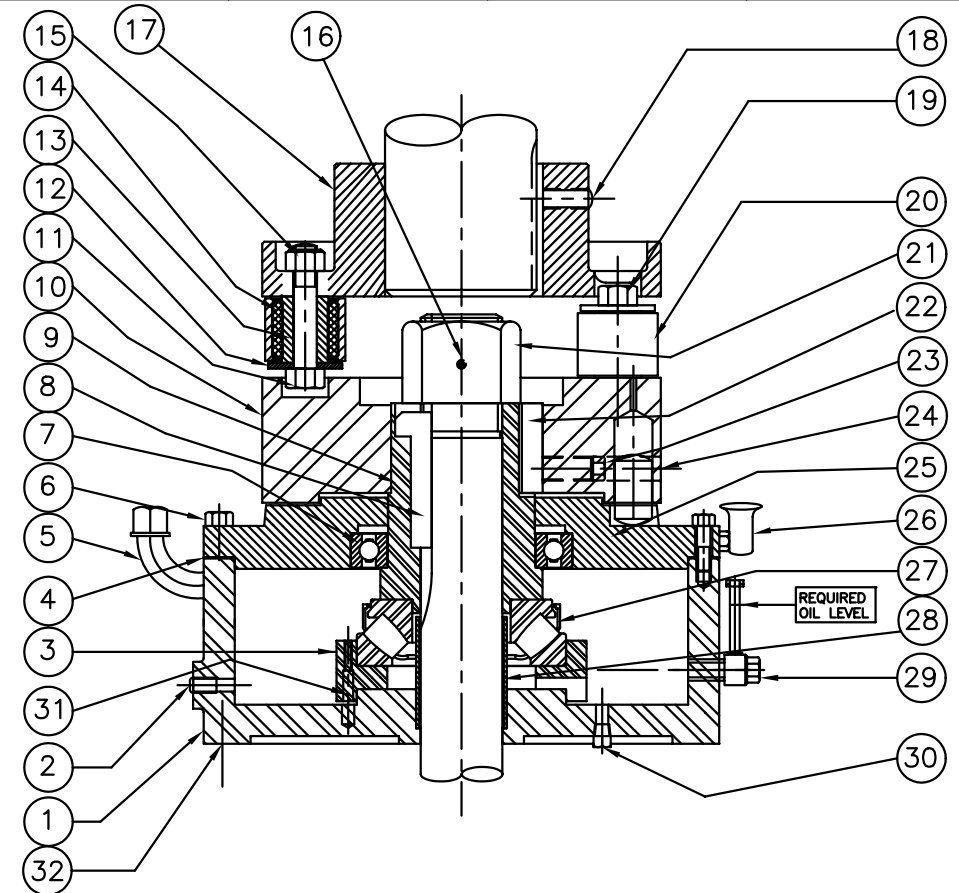
PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4

P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.-: 30.08.2012

NAME	SIGN	DATE	TITLE :	SCALE
DRAWN	PRITAM	08.08.2012	CROSS SECTIONAL DRG. & PART LIST VERTICAL TURBINE PUMP	N.T.S.
CHECKED	RAKESH	08.08.2012		SHEET
APPROVED	P.K.S.	08.08.2012		1 OF 1
DRG. No.	C S D - S A L E 1 2 0 0 0 9 0 6 - 8 0			SIZE A3
				REV. 00

PE-V0(B)-281-172-N002

32	HX. HD. CAP SCREW	04	S.S.-AISI-316
31	DOWEL PIN	02	EN-9
30	PLUG	01	MAL. IRON
29	L.B.T. OIL INDICATOR	01	STEEL & GLASS
28	OIL RETAINER SLEEVE	01	CARBON STEEL
27	SPH. ROLLER THRUST BRG.	01	BRG.STEEL
26	OIL CUP WITH WICK	01	GAL. STEEL
25	MOUNTING COVER (RATCHET PLATE)	01	CAST STEEL(IS-1030)
24	RATCHET PIN	04	C.S. (CASE HARDENED)
23	ALLEN SET SCREW	01	S.S.-AISI-316
22	STRAIGHT KEY	01	MILD STEEL
21	ADJUSTING NUT	01	MILD STEEL
20	LINK	04	MAL. IRON
19	HX. HD. BOLT	04	S.S.-AISI-316
18	ALLEN SET SCREW	02	S.S.-AISI-316
17	UPPER COUPLING HALF	01	CAST STEEL(IS-1030)
16	ALLEN SET SCREW	01	S.S.-AISI-316
15	NYLOCK NUT	04	MILD STEEL
14	RUBBER BUSH	08	RUBBER
13	PIN BLOCK	08	ALUMINIUM
12	RETAINING WASHER	08	MILD STEEL
11	HX. HD. BOLT	04	S.S.-AISI-316
10	LOWER COUPLING HALF	01	CAST STEEL(IS-1030)
09	THRUST HUB	01	CAST STEEL(IS-1030)
08	GIB KEY	01	MILD STEEL
07	RADIAL BALL BEARING	01	STEEL
06	HEX. HD. CAP SCREW	08	S.S.-AISI-316
05	OIL FILL PORT	01	GAL. IRON
04	GASKET	01	OIL PROOF PAPER
03	THRUST BEARING SEAT	01	C.I. (IS-210, FG.-260)
02	PLUG	02	MAL. IRON
01	THRUST BEARING HOUSING	01	C.I. (IS-210, FG.-260)
S. ON.	DESCRIPTION	QTY.	MATL.



**FLOWMORE LIMITED**  
NEW DELHI

**JOB NAME : APH WASH PUMPS**

**CUSTOMER : M/S. B.H.E.L.**

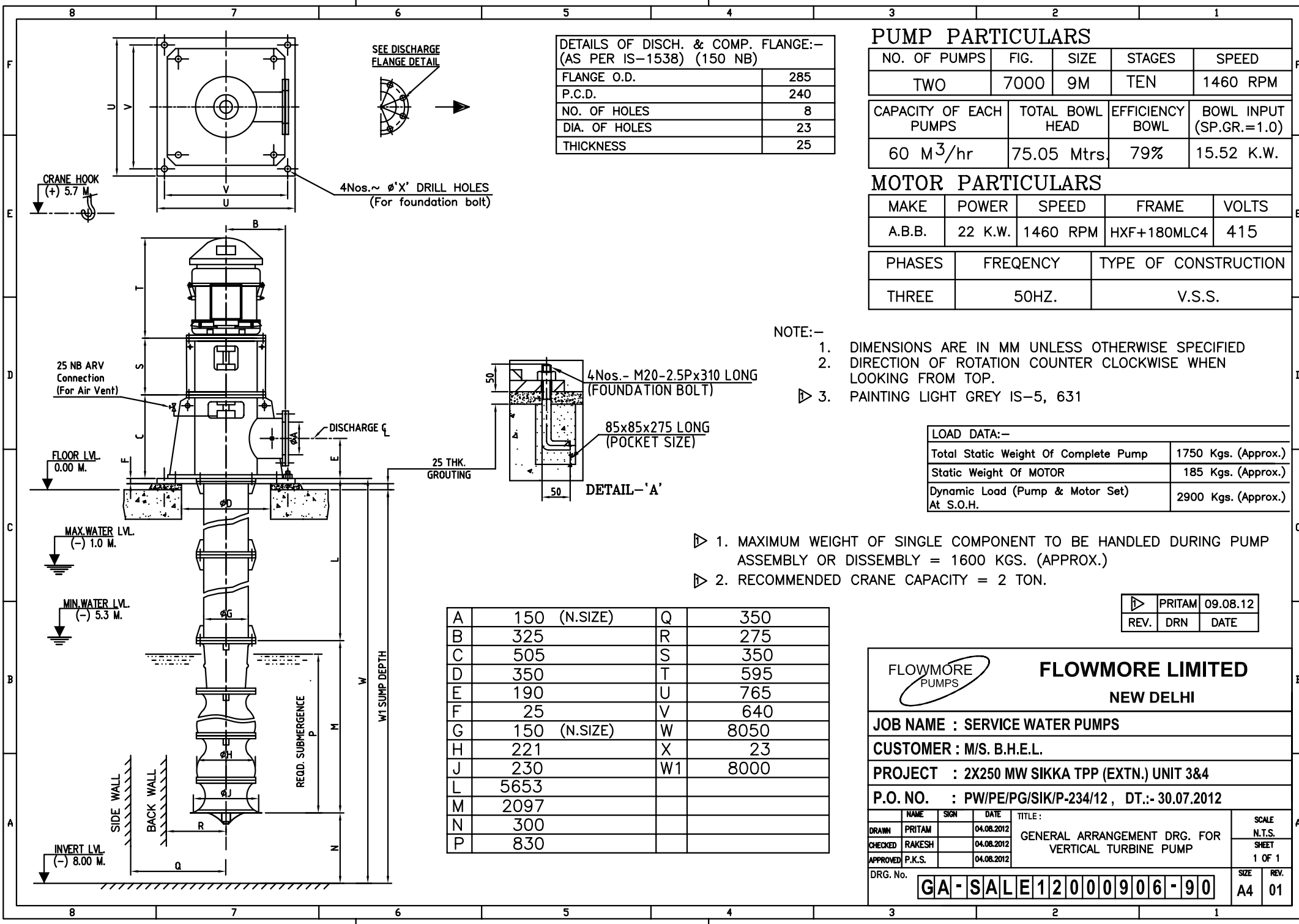
**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

**P.O. NO. : PW/PE/PG/SIK/P-234/12, DT.- 30.08.2012**

	NAME	SIGN	DATE	TITLE :	SCALE
DRAWN	PRITAM		08.08.2012	THRUST STAND ASSY. DRG. & PART LIST FOR VERTICAL TURBINE PUMP	N.T.S.
CHECKED	RAKESH		08.08.2012		SHEET
APPROVED	P.K.S.		08.08.2012		1 OF 1
DRG. No.	T S A - S A L E 1 2 0 0 0 9 0 6 - 8 0				SIZE A4
					REV. 00

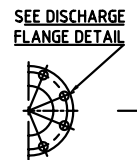
**NOTE:-**

PLEASE READ THIS DRG. WITH DRG. NO. CSD-SALE12000906 80



DETAILS OF DISCH. & COMP. FLANGE:-  
(AS PER IS-1538) (150 NB)

FLANGE O.D.	285
P.C.D.	240
NO. OF HOLES	8
DIA. OF HOLES	23
THICKNESS	25



**PUMP PARTICULARS**

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
TWO	7000	9M	TEN	1460 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL	BOWL INPUT (SP.GR.=1.0)	
60 M <sup>3</sup> /hr	75.05 Mtrs	79%	15.52 K.W.	

**MOTOR PARTICULARS**

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	22 K.W.	1460 RPM	HXF+180MLC4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

NOTE:-

1. DIMENSIONS ARE IN MM UNLESS OTHERWISE SPECIFIED
2. DIRECTION OF ROTATION COUNTER CLOCKWISE WHEN LOOKING FROM TOP.
3. PAINTING LIGHT GREY IS-5, 631

LOAD DATA:-

Total Static Weight Of Complete Pump	1750 Kgs. (Approx.)
Static Weight Of MOTOR	185 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set) At S.O.H.	2900 Kgs. (Approx.)

1. MAXIMUM WEIGHT OF SINGLE COMPONENT TO BE HANDLED DURING PUMP ASSEMBLY OR DISSEMBLY = 1600 KGS. (APPROX.)
2. RECOMMENDED CRANE CAPACITY = 2 TON.

PRITAM	09.08.12
REV.	DRN DATE

A	150 (N.SIZE)	Q	350
B	325	R	275
C	505	S	350
D	350	T	595
E	190	U	765
F	25	V	640
G	150 (N.SIZE)	W	8050
H	221	X	23
J	230	W1	8000
L	5653		
M	2097		
N	300		
P	830		

**FLOWMORE LIMITED**  
NEW DELHI

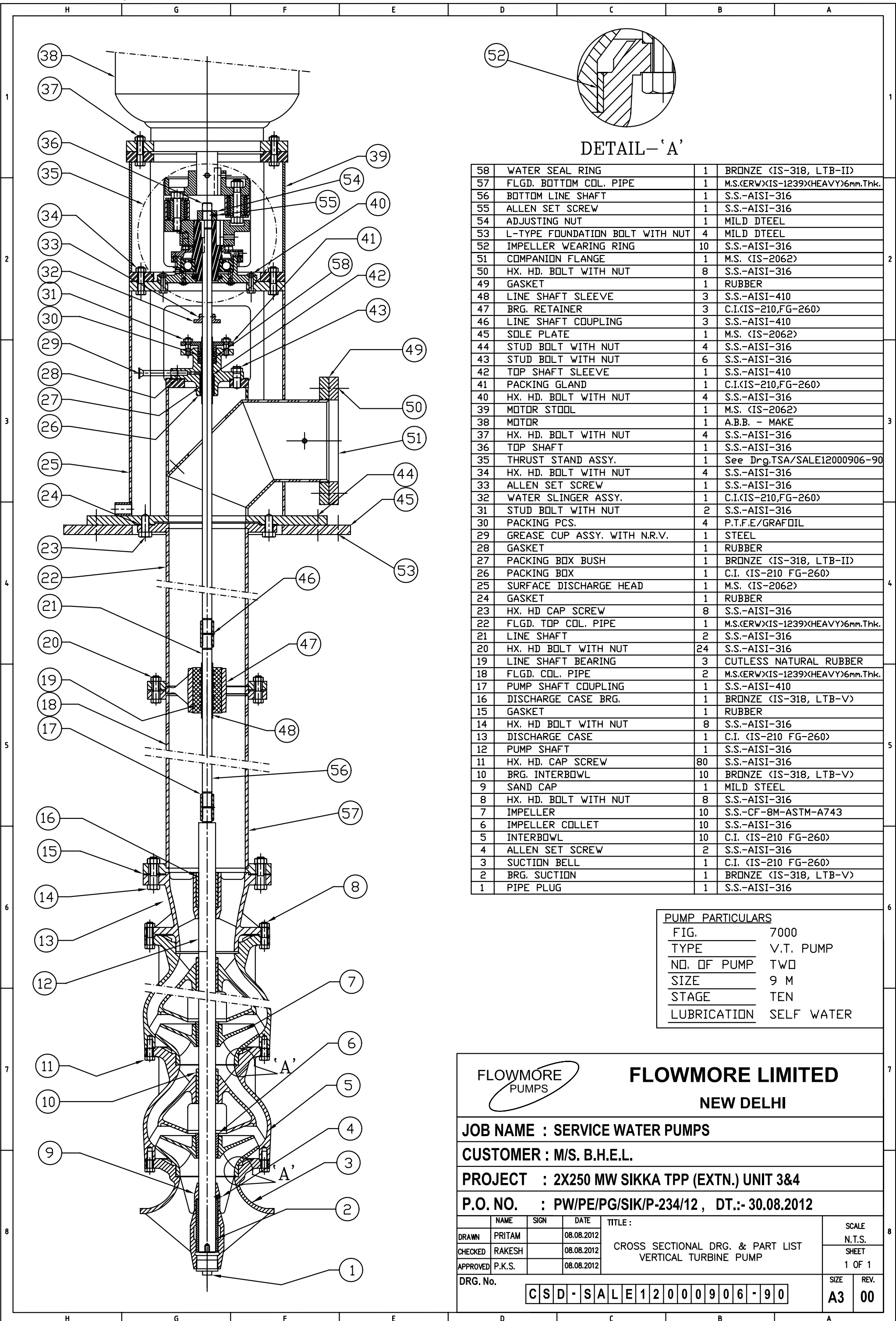
**JOB NAME : SERVICE WATER PUMPS**

**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

**P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.-: 30.07.2012**

DRWN	PRITAM	SIGN	DATE	TITLE :	SCALE
CHECKED	RAKESH		04.08.2012	GENERAL ARRANGEMENT DRG. FOR VERTICAL TURBINE PUMP	N.T.S.
APPROVED	P.K.S.		04.08.2012		SHEET
DRG. No. <b>GA-SALE12000906-90</b>					1 OF 1
					SIZE REV.
					A4 01



DETAIL- 'A'

58	WATER SEAL RING	1	BRONZE (IS-318, LTB-II)
57	FLGD. BOTTOM COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
56	BOTTOM LINE SHAFT	1	S.S.-AISI-316
55	ALLEN SET SCREW	1	S.S.-AISI-316
54	ADJUSTING NUT	1	MILD DTEEL
53	L-TYPE FOUNDATION BOLT WITH NUT	4	MILD DTEEL
52	IMPELLER WEARING RING	10	S.S.-AISI-316
51	COMPANION FLANGE	1	M.S. (IS-2062)
50	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
49	GASKET	1	RUBBER
48	LINE SHAFT SLEEVE	3	S.S.-AISI-410
47	BRG. RETAINER	3	C.I.(IS-210,FG-260)
46	LINE SHAFT COUPLING	3	S.S.-AISI-410
45	SOLE PLATE	1	M.S. (IS-2062)
44	STUD BOLT WITH NUT	4	S.S.-AISI-316
43	STUD BOLT WITH NUT	6	S.S.-AISI-316
42	TOP SHAFT SLEEVE	1	S.S.-AISI-410
41	PACKING GLAND	1	C.I.(IS-210,FG-260)
40	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
39	MOTOR STOOL	1	M.S. (IS-2062)
38	MOTOR	1	A.B.B. - MAKE
37	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
36	TOP SHAFT	1	S.S.-AISI-316
35	THRUST STAND ASSY.	1	See Drg.TSA/SALE12000906-90
34	HX. HD. BOLT WITH NUT	4	S.S.-AISI-316
33	ALLEN SET SCREW	1	S.S.-AISI-316
32	WATER SLINGER ASSY.	1	C.I.(IS-210,FG-260)
31	STUD BOLT WITH NUT	2	S.S.-AISI-316
30	PACKING PCS.	4	P.T.F.E./GRAFOIL
29	GREASE CUP ASSY. WITH N.R.V.	1	STEEL
28	GASKET	1	RUBBER
27	PACKING BOX BUSH	1	BRONZE (IS-318, LTB-II)
26	PACKING BOX	1	C.I. (IS-210 FG-260)
25	SURFACE DISCHARGE HEAD	1	M.S. (IS-2062)
24	GASKET	1	RUBBER
23	HX. HD CAP SCREW	8	S.S.-AISI-316
22	FLGD. TOP COL. PIPE	1	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
21	LINE SHAFT	2	S.S.-AISI-316
20	HX. HD BOLT WITH NUT	24	S.S.-AISI-316
19	LINE SHAFT BEARING	3	CUTLESS NATURAL RUBBER
18	FLGD. COL. PIPE	2	M.S.(ERW)(IS-1239)(HEAVY)6mm.Thk.
17	PUMP SHAFT COUPLING	1	S.S.-AISI-410
16	DISCHARGE CASE BRG.	1	BRONZE (IS-318, LTB-V)
15	GASKET	1	RUBBER
14	HX. HD BOLT WITH NUT	8	S.S.-AISI-316
13	DISCHARGE CASE	1	C.I. (IS-210 FG-260)
12	PUMP SHAFT	1	S.S.-AISI-316
11	HX. HD. CAP SCREW	80	S.S.-AISI-316
10	BRG. INTERBOWL	10	BRONZE (IS-318, LTB-V)
9	SAND CAP	1	MILD STEEL
8	HX. HD. BOLT WITH NUT	8	S.S.-AISI-316
7	IMPELLER	10	S.S.-CF-8M-ASTM-A743
6	IMPELLER COLLET	10	S.S.-AISI-316
5	INTERBOWL	10	C.I. (IS-210 FG-260)
4	ALLEN SET SCREW	2	S.S.-AISI-316
3	SUCTION BELL	1	C.I. (IS-210 FG-260)
2	BRG. SUCTION	1	BRONZE (IS-318, LTB-V)
1	PIPE PLUG	1	S.S.-AISI-316

PUMP PARTICULARS	
FIG.	7000
TYPE	V.T. PUMP
NO. OF PUMP	TWO
SIZE	9 M
STAGE	TEN
LUBRICATION	SELF WATER

**FLOWMORE PUMPS**

**FLOWMORE LIMITED**

**NEW DELHI**

**JOB NAME : SERVICE WATER PUMPS**

**CUSTOMER : M/S. B.H.E.L.**

**PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&4**

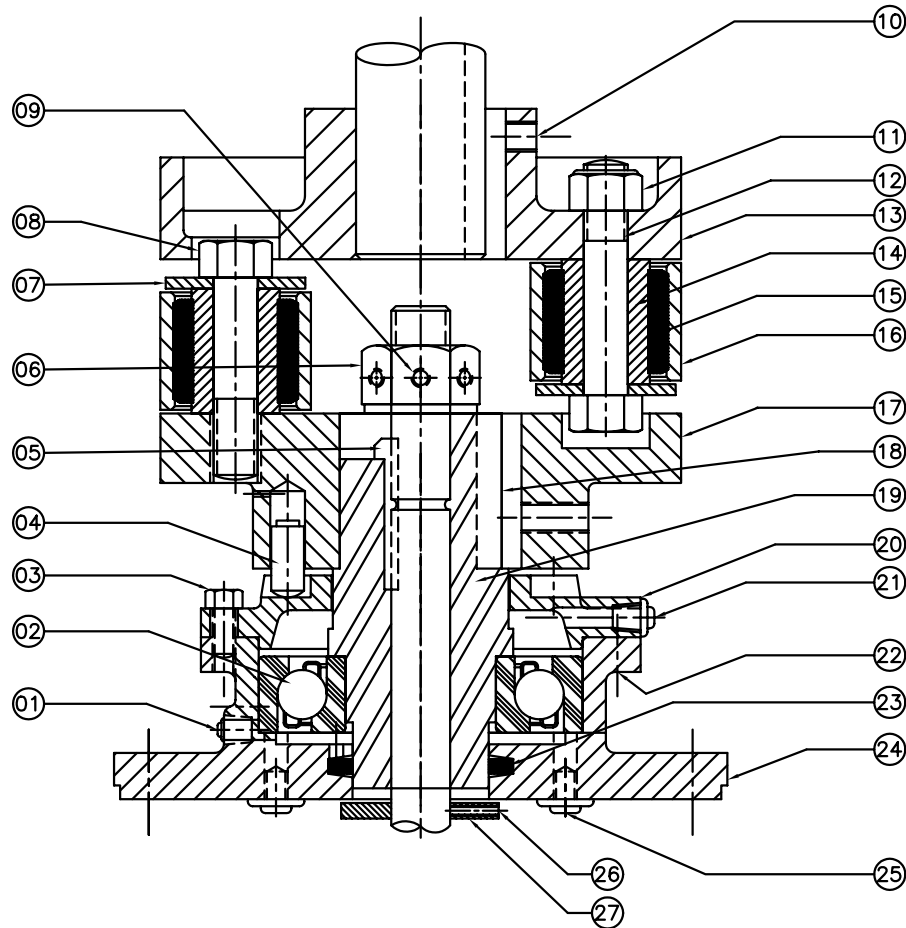
**P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.-: 30.08.2012**

DRAWN	PRITAM	DATE	08.08.2012	TITLE : CROSS SECTIONAL DRG. & PART LIST VERTICAL TURBINE PUMP	SCALE	N.T.S.
CHECKED	RAKESH	DATE	08.08.2012		SHEET	1 OF 1
APPROVED	P.K.S.	DATE	08.08.2012			

DRG. No.

C S D - S A L E 1 2 0 0 0 9 0 6 - 9 0


SIZE	REV.
A3	00



27	SHAFT COLLAR	1	BRONZE (IS-318, LTB-V)
26	ALLEN SET SCREW	2	S.S.-AISI-316
25	B.S.P. PIPE PLUG	2	MAL. IRON
24	THRUST BEARING HOUSING	1	C.I. (IS-210, FG-260)
23	FELT PADDING	1	COTTON
22	DOWEL PIN	2	STEEL
21	GREASE FITTING	1	STEEL
20	MOUNTING COVER	1	CAST STEEL (IS-1030)
19	THRUST HUB	1	CAST STEEL (IS-1030)
18	STRAIGHT KEY	1	MILD STEEL
17	LOWER COUPLING HALF	1	CAST STEEL (IS-1030)
16	LINK	3	MAL. IRON
15	RUBBER BUSH	6	RUBBER
14	PIN BLOCK	6	ALUMINIUM
13	UPPER COUPLING HALF	1	CAST STEEL (IS-1030)
12	HX. HD. BOLT	3	H.T. STEEL (EN-8)
11	NYLOCK NUT	3	MILD STEEL
10	ALLEN SET SCREW	2	S.S.-AISI-316
09	ALLEN SET SCREW	1	S.S.-AISI-316
08	HX. HD. BOLT	3	H.T. STEEL (EN-8)
07	RETAINING WASHER	6	MILD STEEL
06	ADJUSTING NUT	1	MILD STEEL
05	GIB KEY	1	MILD STEEL
04	RATCHET PIN	4	C.S. (CASE HARDENED)
03	HX. HD. CAP SCREW	8	S.S.-AISI-316
02	ANGULAR CONTACT BALL BEARING	1	BRG, STEEL
01	GREASE RELIEF FITTING	1	STEEL
S. NO.	DESCRIPTION	QTY.	MATERIAL

**NOTE:-**

- PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE12000906 90
- SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.
- SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLER.
- PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.

		<b>FLOWMORE LIMITED</b> NEW DELHI	
<b>JOB NAME : SERVICE WATER PUMPS</b>			
<b>CUSTOMER : M/S. B.H.E.L.</b>			
<b>PROJECT : 2X250 MW SIKKA TPP (EXTN.) UNIT 3&amp;4</b>			
<b>P.O. NO. : PW/PE/PG/SIK/P-234/12 , DT.:- 30.08.2012</b>			
NAME	SIGN	DATE	TITLE :
DRAWN PRITAM		08.08.2012	THRUST STAND ASSY. DRG. & PART LIST FOR VERTICAL TURBINE PUMP
CHECKED RAKESH		08.08.2012	
APPROVED P.K.S.		08.08.2012	
DRG. No.			SCALE N.T.S. SHEET 1 OF 1
TSA-SALE12000906-90			SIZE A4 REV. 00

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**INDEX**

**BHEL DOC NO :**

**GA & CROSS SECTIONAL DRAWINGS FOR PUMPS**

1	FOR BLOW DOWN PUMPS	PE-V0A-281-179-N002
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This approval status shall be interpreted as laid down in the contract and it shall not relieve the contractor from his contractual obligations.


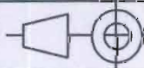
**APPROVAL CATEGORY AWARDED \***

- CAT. I = Approved
- CAT. II = Approved with Comments as Noted
- CAT. III = Not Approved
- CAT. IV = Reference Drawing

BHEL - PEM APPROVED BY

DEPARTMENT :-

NAME	SIGNATURE	DATE
ASHU TOJH KK	<i>Ashu</i>	11/18/2011

JOB NO.					281										<b>2 X 270 MW SIKKA TPS</b>  BHARAT HEAVY ELECTRICALS LTD. POWER SECTOR PROJECT ENGINEERING MANAGEMENT NOIDA									
STATUS					CONTRACT										<b>FLOWMORE LIMITED</b> 443, PHASE - III, UDYOG VIHAR GURGOAN - 122 016 ( HR.)									
DISTRIBUTION															TITLE: GA & CROSS SECTIONAL DRAWINGS FOR PUMPS									
REV	DATE	ALTD	CHKD	APPD						DEPTT	SCALE	NTS	VENDOR DOCUMENT NO :PE-V0A-281-179-N002											
00	18/01/2011	SS	PS	KGV						SIGN														
01	22/02/2011	PS	PS	KGV						DATE			REV - 01											

8 7 6 5 4 3 2 1

### PUMP PARTICULARS

NO. OF PUMPS	FIG.	SIZE	STAGES	SPEED
THREE	7000	16H	SINGLE	1470 RPM
CAPACITY OF EACH PUMPS	TOTAL BOWL HEAD	EFFICIENCY BOWL INPUT		
500 M <sup>3</sup> /Hr.	20.2 Mtrs.	89%	30.62K.W.	

### MOTOR PARTICULARS

MAKE	POWER	SPEED	FRAME	VOLTS
A.B.B.	45 K.W.	1470 RPM	HX+225SMC4	415
PHASES	FREQUENCY	TYPE OF CONSTRUCTION		
THREE	50HZ.	V.S.S.		

This approval is subject to the terms and conditions of the contract and it shall be the responsibility of the contractor to ensure compliance with the same.

**APPROVAL**

CAT. I - 24.11.0060  
 CAT. II - Approved with 15 Noted  
 CAT. III - Not Approved  
 CAT. IV -

REVISIONS:

NO.	DESCRIPTION	DATE

DESIGNED BY: \_\_\_\_\_  
 CHECKED BY: \_\_\_\_\_  
 DRAWN BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

CHANGED AS PER CLIENT COMMENTED DESCRIPTION

REV. MARK: \_\_\_\_\_

**VENDOR**  
 FLOWMORE PUMPS  
 FLOWMORE LIMITED  
 NEW DELHI

**PROJECT**  
 SIKKA THERMAL POWER PROJECT  
 2X250 MW (EXTN. UNIT 3 & 4)

**CLIENT**  
 BHARAT HEAVY ELECTRICALS LIMITED

**TITLE**  
 GENERAL ARRANGEMENT DRG.  
 FOR BLOW DOWN V.T. PUMP

**CLIENT ORDER NO.** PW/PE/PG/SIK/1390/10, DT:-27.12.2010

SCALE	N.T.S.
DRAWN : VJAY	CHECKED : RAKESH
REVIEWED : R.K.	APPROVED : P.K.S.
DATE	03.01.2011

**DWG. NO.** GA-SALE10000234 10

**REV.** 01

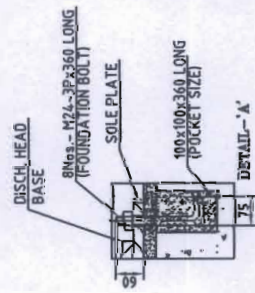
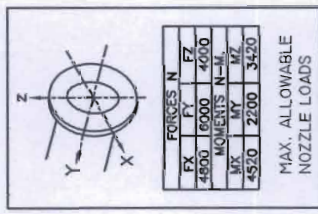
- NOTE:-**
1. DIMENSIONS IN MM UNLESS OTHERWISE SPECIFIED
  2. DIRECTION OF ROTATION - COUNTER CLOCKWISE (LOOKING FROM DRIVING END)
  3. SINGLE HEAVIEST PART=1250KGS. APPROX.

**DETAILS OF DISCH. & COMP. FLANGE:-**  
 (AS PER IS-1538)

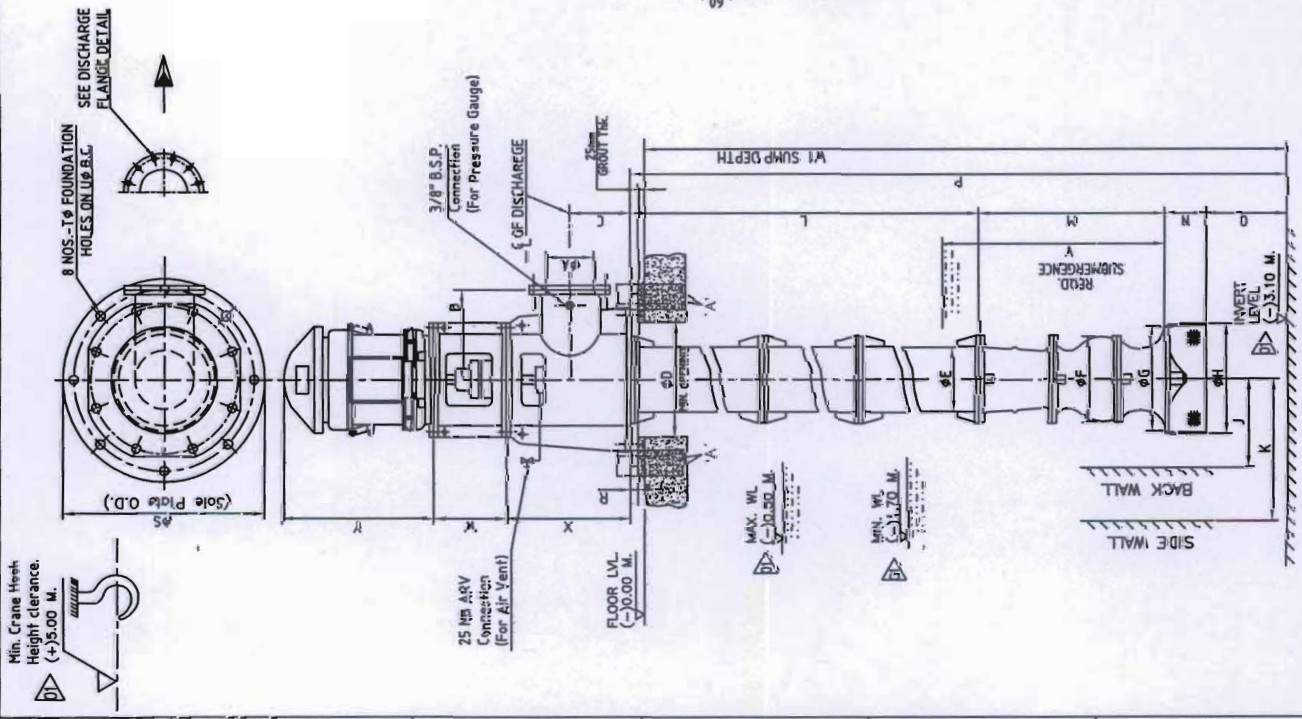
FLANGE O.D.	395
P.C.D.	350
NO. OF HOLES	12
DIA. OF HOLES	23
THICKNESS	28

**LOAD DATA:-**

Total Static Weight of Complete Pump	1600 Kgs. (Approx.)
Static Weight of MOTOR	340 Kgs. (Approx.)
Dynamic Load (Pump & Motor Set)	NOM. 3050 Kgs. (Approx.)
MAX. S.O.H.	MAX. 3200 Kgs. (Approx.)



A	250 (N.SIZE)	P	3154
B	485	R	029
C	280	S	1250
D	500	T	23
E	250 (N.SIZE)	U	1125
F	407	V	900
G	400	W	480
H	424	X	762
J	400	Y	695
K	500	W1	3100
L	1964		
M	755		
N	235		
O	200		



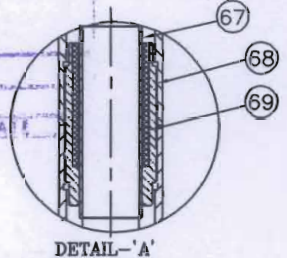
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This approval status shall be interpreted as laid down in the contract and it shall not relieve the contractor from his contractual obligations.

**APPROVAL CATEGORY AWARDED**

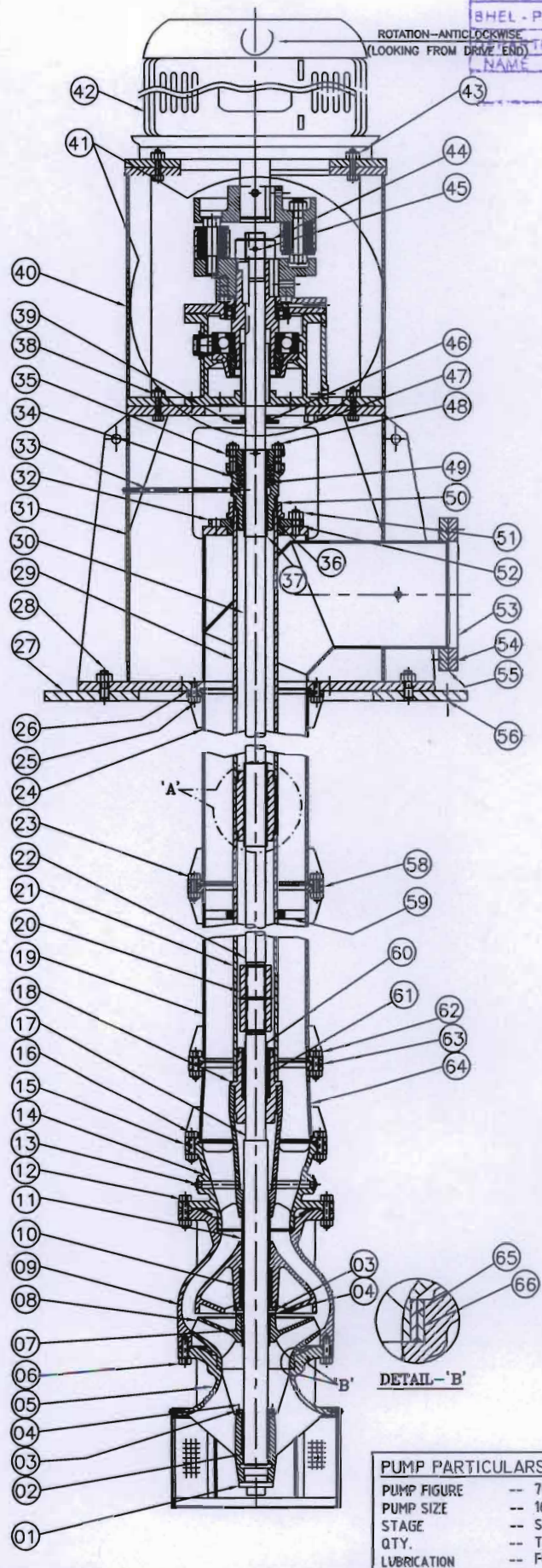
- CAT. I = Approved
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- CAT. III = Not Approved
- CAT. IV = Reference Drawing

BHEL - PEM APPROVED BY  
 NAME SIGNATURE DATE



REV. MARK	VIJAY	23.02.2011
	DRN.	DATE.

S.NO.	PART NAME	S.NO.	MATERIAL
69	LINE SHAFT BEARING	01	THORDON
68	CONNECTOR BRG.	01	S.S.-CF-3M
67	LINE SHAFT SLEEVE	01	S.S.-316L
66	WEARING RING FOR INTERBOWL	01	S.S.-316/S.S.-CF-8M
65	IMPELLER WEARING RING	01	S.S.-CF-8M-ASTM-A351
64	FLGD. REDUCER	01	S.S.-316L
63	GASKET	01	NEOPRENE RUBBER
62	HX. HD. BOLT WITH NUT	08	S.S.-316L
61	BEARING For Step Connector	01	THORDON
60	PUMP SHAFT SLEEVE	01	S.S.-316L
59	SPIDER	01	NEOPRENE RUBBER
58	GASKET	01	NEOPRENE RUBBER
57	DELETED		
56	FOUNDATION BOLT WITH NUT	08	H.T. STEEL
55	GASKET	01	NEOPRENE RUBBER
54	HX. HD. BOLT WITH NUT	12	S.S.-316L
53	COMPANION FLANGE	01	S.S.-316L
52	GASKET	01	NEOPRENE RUBBER
51	STUD BOLT WITH NUT	06	S.S.-316L
50	TUBE TENSION NUT	01	18%NI, D2 ASTM A439
49	PACKING PIECES	04	T.I.B.A.
48	STUD BOLT WITH NUT	02	S.S.-316L
47	HX. HD. BOLT WITH NUT	04	S.S.-316L
46	ALLEN SET SCREW	02	S.S.-316L
45	ALLEN SET SCREW	02	S.S.-316L
44	ADJUSTING NUT	01	S.S.-316L
43	HX. HD. BOLT WITH NUT	08	S.S.-316L
42	MOTOR	01	A.B.B. - MAKE
41	THRUST STAND ASSY.	01	See drg. No.TSA-SALE10000234 10
40	MOTOR STOOL	01	M.S.(IS-2062)(EPOXY COATED)
39	WATER SLINGER ASSY.	01	S.S.-CF-3M
38	HX. HD. BOLT WITH NUT	08	S.S.-316L
37	TOP SHAFT SLEEVE	01	S.S.-316L
36	PACKING PIECES(GLAND PACK)	02	T.I.B.A. (ASBESTO FREE)
35	PACKING GLAND	01	18%NI, D2 ASTM A439
34	ENCL.TUBE BRG.&CAP(GLAND TYPE)	01	BRONZE(IS-318,LTB-V)
33	LUBRICATING PIPE	01	BRASS
32	ENCL TUBE HEAD ADAPTER	01	18%NI, D2 ASTM A439
31	SURFACE DISCHARGE HEAD	01	S.S.-316L
30	TOP SHAFT	01	S.S.-316L
29	TOP ENCL TUBE	01	S.S.-316L
28	STUD BOLT WITH NUT	08	S.S.-316L
27	SOLE PLATE	01	M.S.(IS-2062)(EPOXY COATED)
26	GASKET	01	NEOPRENE RUBBER
25	HX. HD. CAP SCREW	12	S.S.-316L
24	FLGD. TOP COL. PIPE	01	S.S.-316L
23	HX. HD. BOLT WITH NUT	08	S.S.-316L
22	LINE SHAFT	01	S.S.-316L
21	ENCL TUBE	01	S.S.-316L
20	SHAFT COUPLING	02	S.S.-316L
19	FLGD. BOTTOM COL. PIPE	01	S.S.-316L
18	STEP CONNECTOR	01	S.S.-CF-3M
17	PUMP SHAFT	01	S.S.-316L
16	HX. HD. BOLT WITH NUT	08	S.S.-316L
15	GASKET	01	NEOPRENE RUBBER
14	FLGD. DISCHARGE CASE	01	18%NI, D2 ASTM A439
13	PLUG FOR D/CASE	02	S.S.-316L
12	HX. HD. BOLT WITH NUT	12	S.S.-316L
11	BOWL SEALING TUBE	01	S.S.-316L
10	BOWL BUSH	01	THORDON
09	INTERBOWL	01	18%NI, D2 ASTM A439
08	IMPELLER	01	S.S.-CF-8M-ASTM-A351
07	IMPELLER COLLET	01	S.S.-316L
06	HX. HD. CAP SCREW	12	S.S.-316L
05	SUCTION BELL	01	18%NI, D2 ASTM A439
04	HX. HD. CAP SCREW	08	S.S.-316L
03	COVER PLATE FOR BUSH	02	S.S.-316L
02	BRG. SUCTION	01	THORDON
01	PIPE PLUG FOR SUCTION BELL	01	S.S.-316L



**PUMP PARTICULARS**

PUMP FIGURE	--	7000
PUMP SIZE	--	16H
STAGE	--	SINGLE
QTY.	--	THREE
LUBRICATION	--	FORCED WATER

**VENDOR**  
 FLOWMORE PUMPS  
 FLOWMORE LIMITED  
 NEW DELHI

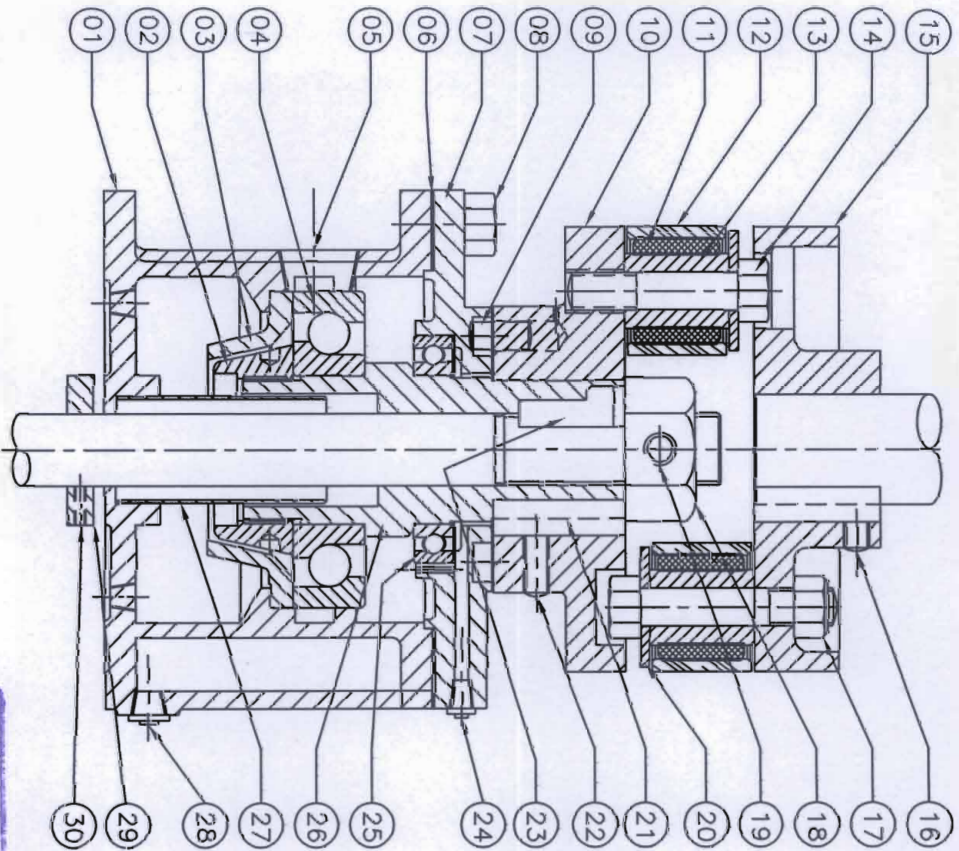
**PROJECT**  
 SIKKA THERMAL POWER PROJECT  
 2X250 MW (EXTN. UNIT 3 & 4)

**CLIENT**  
 BHARAT HEAVY ELECTRICALS LIMITED

**TITLE**  
 X-SECTIONAL & PART LIST DRG.  
 FOR BLOW DOWN V.T. PUMP

CLIENT ORDER NO.	PW/PE/PG/SJK/1390/10, DT:-27.12.2010
DRWN :	VIJAY
CHECKED :	RAKESH
SCALE :	N.T.S.
REVIEWED :	R.K.
APPROVED :	P.K.S.
DATE :	07.01.2011

**DWG. NO.** CSD-SALE10000234 10 **REV.** 01



**NOTE:-**  
 - PLEASE READ THIS DRG. WITH DRG. NO. CSD/SALE10000234-10  
 - SHAFT COLLAR TO BE FITTED ON SHAFT JUST BELOW THE BRG. HOUSING  
 - AT A RUNNING CLEARANCE OF 0.30 TO 0.50 mm.  
 - SHAFT COLLAR TO BE LOCKED AFTER ADJUSTING AXIAL CLEARANCE OF IMPELLER.  
 - PUT SOME GREASE BETWEEN BRG. HOUSING TO COLLAR.

S. No.	DESCRIPTION	QTY.	MATL.
30	ALLEN SET SCREW	1	S.S.-316L
29	SHAFT COLLAR	1	BRONZE(S-318,LTB-V)
28	DRAIN PLUG	3	S.S.-304
27	OIL SLEEVE	1	S.S.-304
26	THRUST HUB	1	CAST STEEL (IS-1030)
25	RADIAL BALL BRG.	1	BRG. STEEL
24	PIPE PLUG	1	S.S.-304
23	GIB KEY	1	EN-8
22	ALLEN SET SCREW	2	S.S.-316L
21	STRAIGHT KEY	1	S.S.-304
20	RETAINING WASHER	6	S.S.-304
19	ALLEN SET SCREW	1	S.S.-316L
18	ADJUSTING NUT	1	S.S.-316L
17	HX. HD. BOLT WITH NUT	3	EN-8(Heat Treated)
16	ALLEN SET SCREW	2	S.S.-316L
15	UPPER COUP. HALF	1	S.S.-CF-8
14	HX. HD. BOLT	3	EN-8(Heat Treated)
13	PIN BLOCK	6	ALUMINIUM
12	LINK	3	S.S.-CF-8
11	RUBBER BUSH	6	RUBBER
10	LOWER COUPLING HALF	1	S.S.-CF-8
09	RATCHET PIN	4	S.S.-316
08	HX. HD. CAP SCREW	4	S.S.-316L
07	MOUNTING COVER	1	S.S.-CF-8
06	GASKET	1	OIL PROOF PAPER
05	OIL LEVEL SIGHT WINDOW	1	STEEL + GLASS
04	ANGULAR CONTACT BALL BRG.	1	BRG. STEEL
03	OIL RETAINING RING	1	S.S.-CF-8
02	OIL THROWER NUT	1	BRONZE(S-318,LTB-V)
01	THRUST BRG. HOUSING	1	S.S.-CF-8

**VENDOR**  
 FLOWMORE  
 Pumps  
 NEW DELHI  
**FLOWMORE LIMITED**

**PROJECT**  
 SIKKA THERMAL POWER PROJECT  
 2x250 MW (EXTN. UNIT 3 & 4)

**CLIENT**  
 BHARAT HEAVY ELECTRICALS LIMITED

**TITLE**  
 THRUST STAND ASSY & PART LIST DRG.  
 FOR BLOW DOWN V.T. PUMP

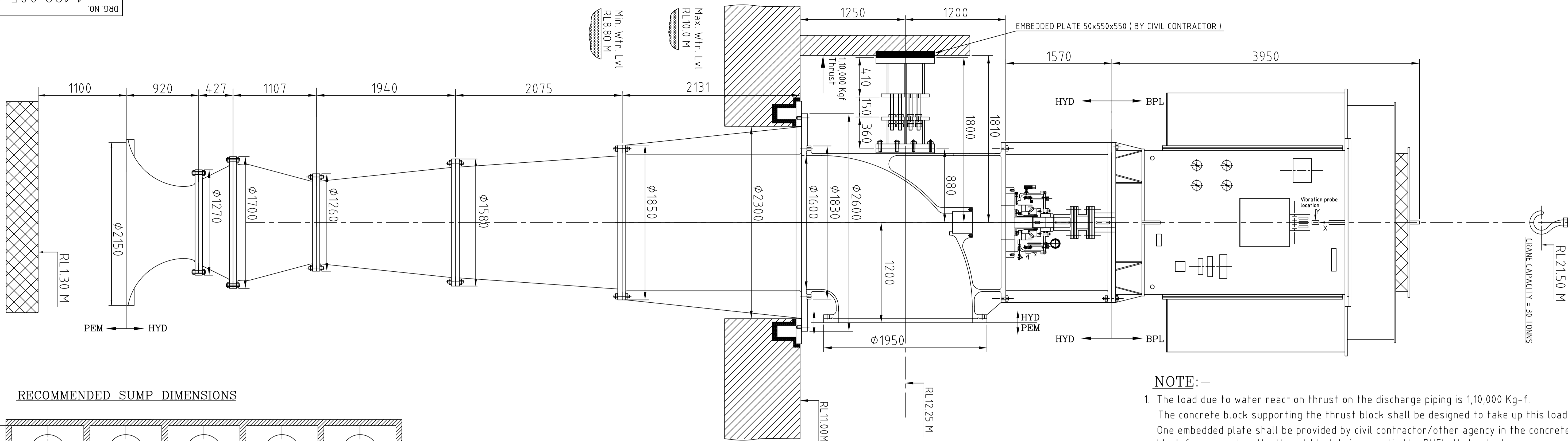
**CLIENT ORDER NO.** PW/PE/Pg/SIK/1390/10, DT:-27.12.2010  
**DRAWN :** VAJY  
**CHECKED :** RAKESH  
**SCALE** N.T.S.  
**DATE** 07.01.2011  
**DWG. NO.** TSA-SALE10000234 10  
**REV.** 01

**APPROVAL CATEGORY AWARDED**

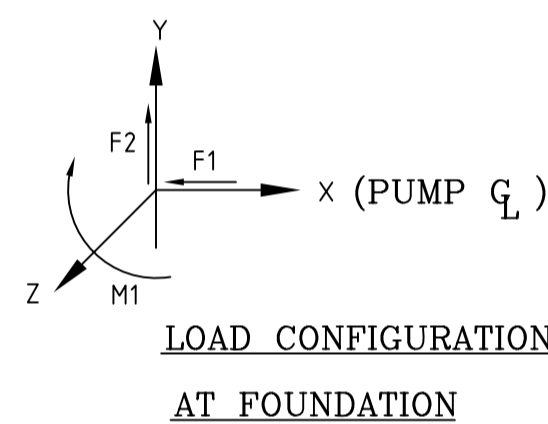
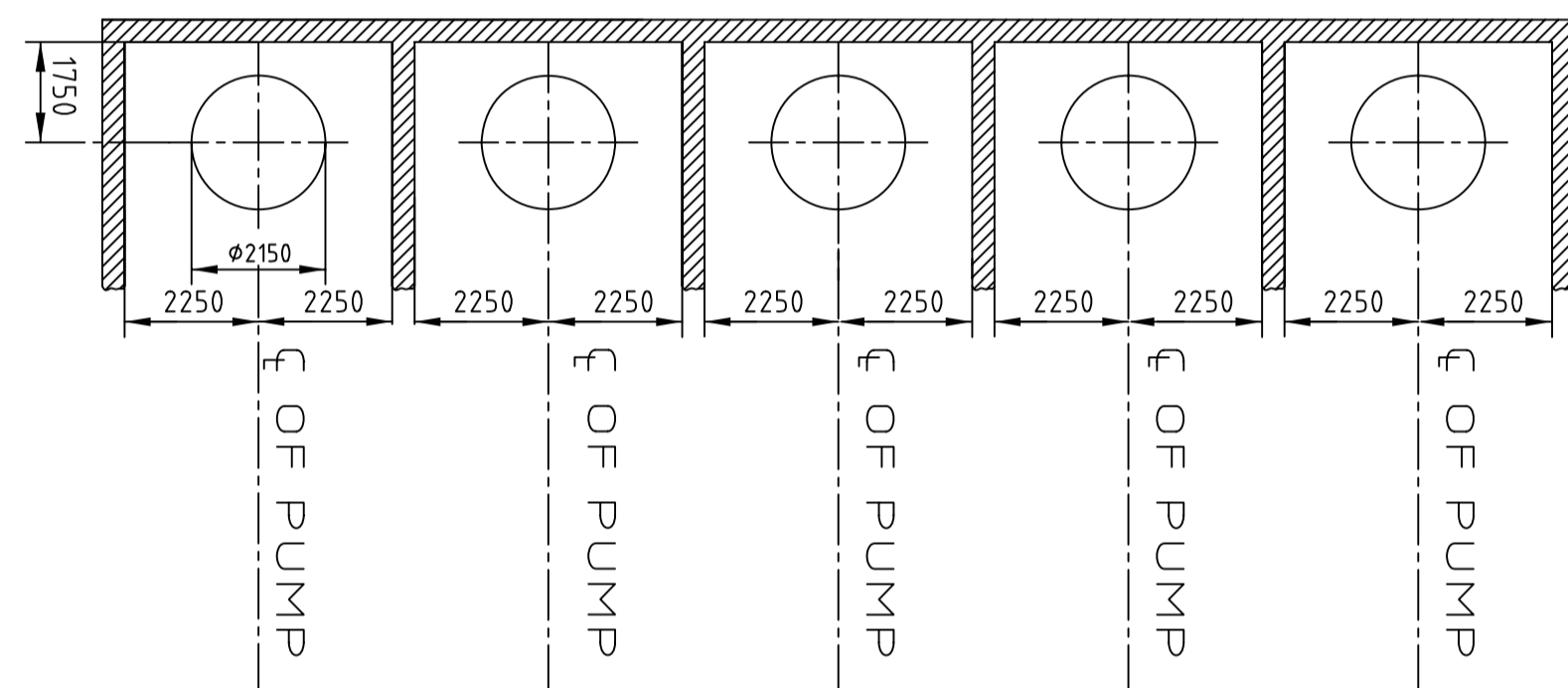
**APPROVAL** : Approved  
**DATE** : 23.02.2011  
**REV. MARK** : 05M, 06M, 07M, 08M, 09M, 10M, 11M, 12M, 13M, 14M, 15M, 16M, 17M, 18M, 19M, 20M, 21M, 22M, 23M, 24M, 25M, 26M, 27M, 28M, 29M, 30M

**REVISIONS**

REV. MARK	DESCRIPTION	DATE
01	AS PER Dwg. No. TSA-SALE10000234-10	07.01.2011



RECOMMENDED SUMP DIMENSIONS

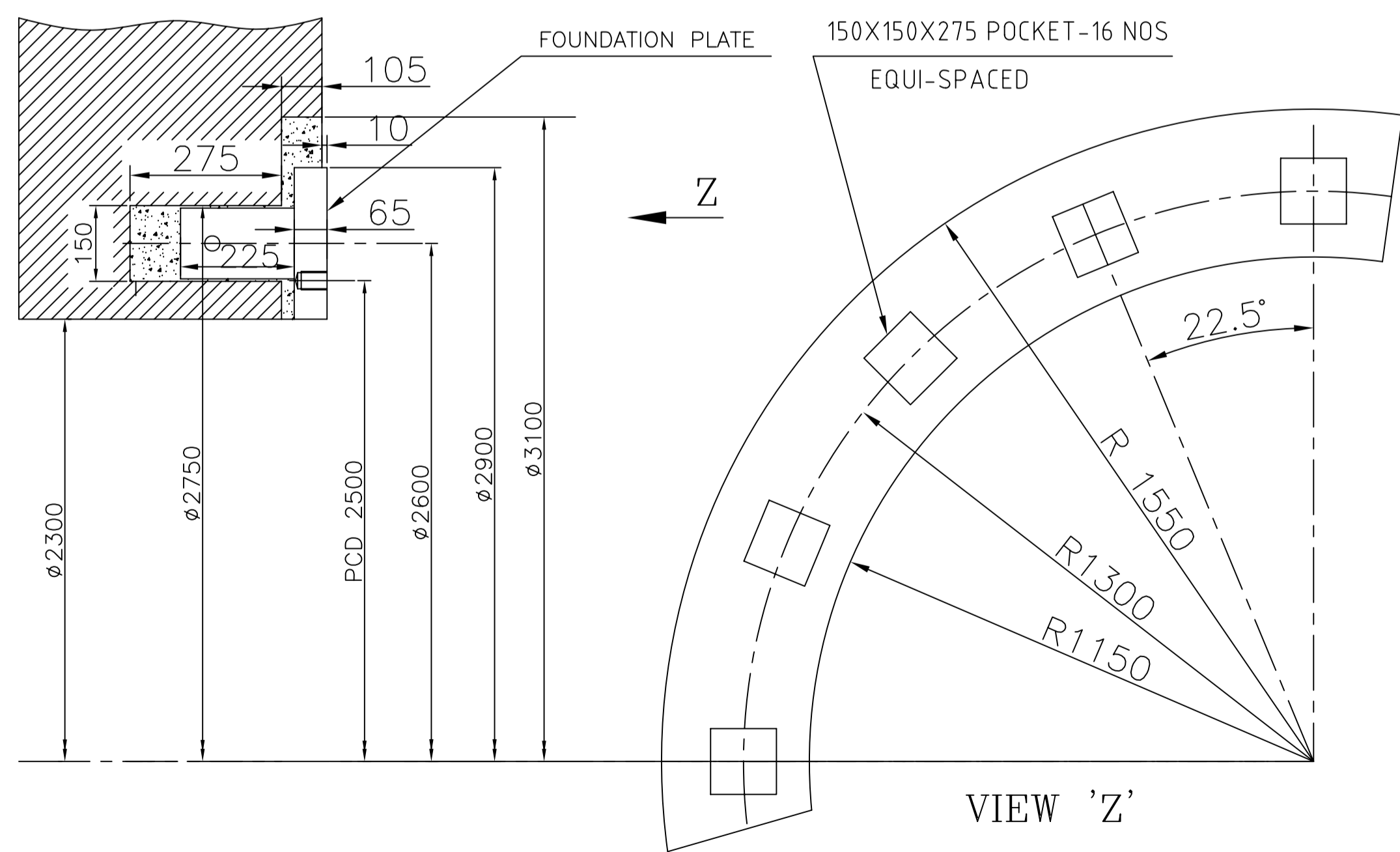


FOUNDATION LOADS AND MOMENTS		
AT FOUNDATION (RL 11.0 M)	PUMP IDLE	PUMP RUNNING
	F1 = 52,500 Kg	F1 = 80,000 kgf
	F2 = 0	F2 = 25,000 kgf
	M1 = 0	M1 = 47,000 kgfm

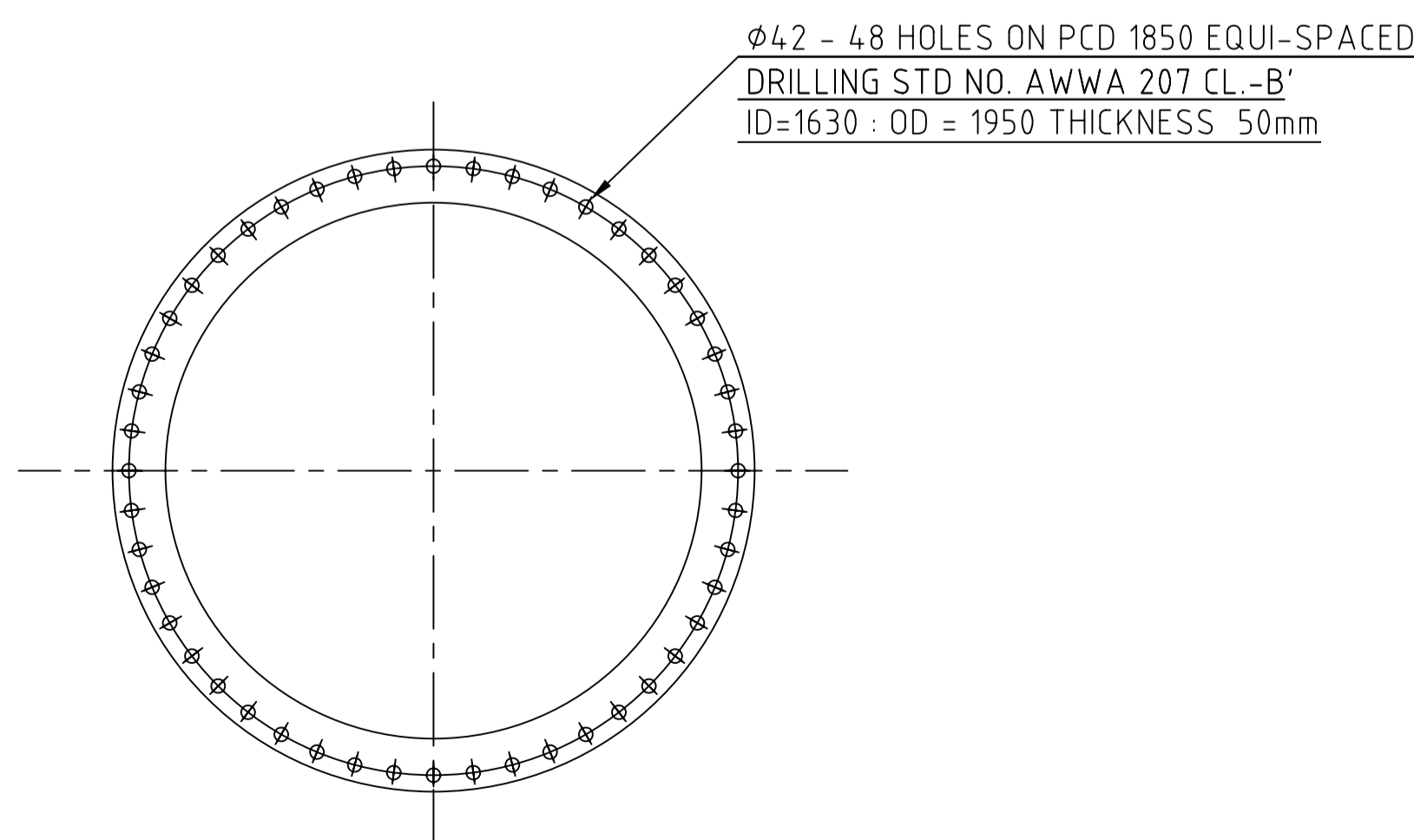
NOTE:-

- The load due to water reaction thrust on the discharge piping is 1,10,000 Kg-f. The concrete block supporting the thrust block shall be designed to take up this load. One embedded plate shall be provided by civil contractor/other agency in the concrete block for connecting the thrust block being supplied by BHEL, Hyderabad.
- Recommended crane capacity = 30 Tonnes.
- Crane hook clearance (from operating floor RL 11.0M) = 10.5 MTS.
- Material for secondary grouting is in erection contractor's scope. It is recommended to use "Conbextra GP2" for secondary grouting.
- Maximum weight of the single component to be handled during pump assembly or disassembly = 24,500Kgs.
- B.H.E.L., HYDERABAD SCOPE.
- Column pipe thickness = 28 mm.
- C.W Pump discharge pipe shall be supported.
- Pump internal losses = 0.5mts.

PUMP		MOTOR	
CAPACITY	: 19900 m <sup>3</sup> /hr	RATING	: 2200 kW
HEAD (BOWL)	: 25.5 mlc	SPEED	: 497 rpm
POWER INPUT (BOWL)	: 1674.5 Kw	VOLTAGE	: 6.6 KV
EFFICIENCY (BOWL)	: 85 %	GD <sup>2</sup>	: 2464 kg-m <sup>2</sup>
GD <sup>2</sup>	: 574 kg-m <sup>2</sup>	MAKE	: BHEL, BHOPAL
SPEED	: 490 rpm	TYPE	: SCIM
WEIGHT	: 27,500 kgs	WEIGHT	: 24100 kgs
DESIGN STANDARD	: HIS	PROTECTION	: IP-55
DIRECTION OF ROTATION OF PUMP (VIEWED FROM MOTOR NDE)	: CLOCKWISE	TYPE OF COOLING	: CACA
		DIRECTION OF ROTATION OF MOTOR (VIEWED FROM MOTOR NDE)	: CLOCKWISE



DISCHARGE COUNTER FLANGE



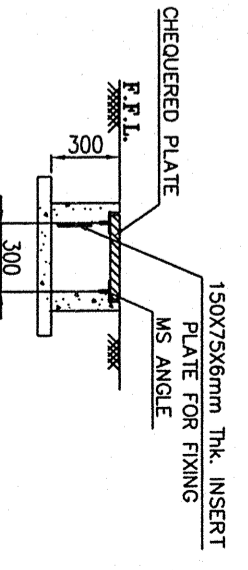
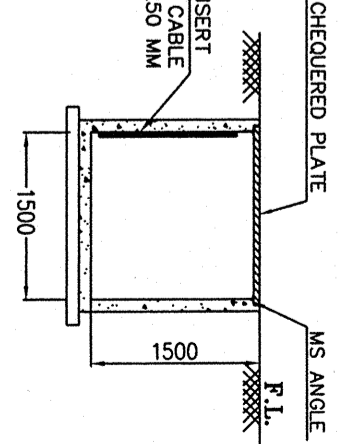
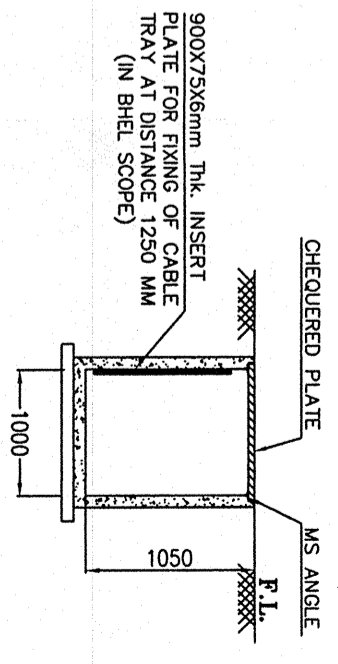
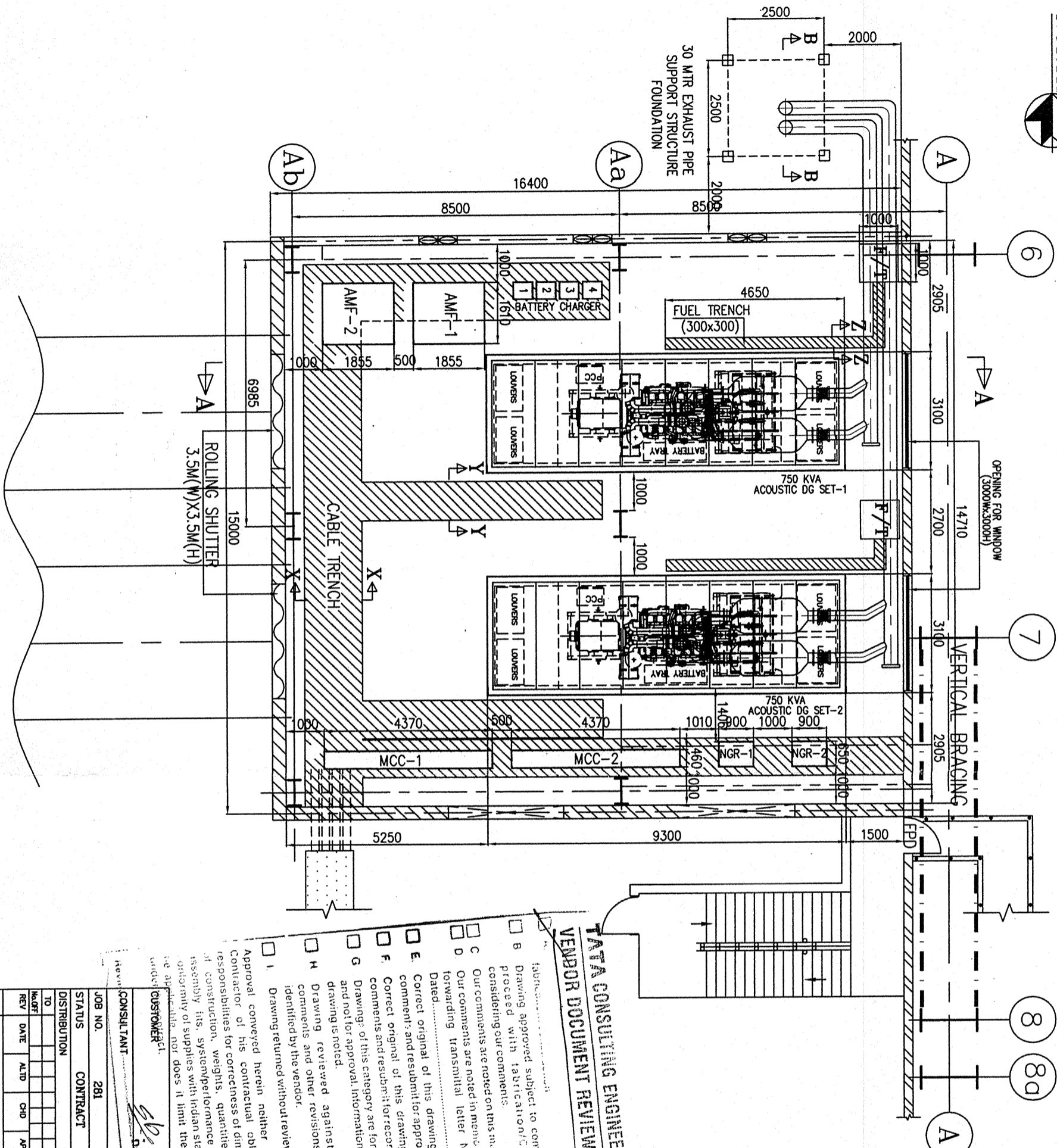
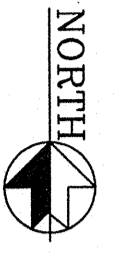
FOUNDATION DETAIL AT RL(+11 M)

CUSTOMER:	GSECL GUJARAT STATE ELECTRICITY CORPORATION LIMITED																	
CUSTOMER'S CONSULTANT	TCE CONSULTING ENGINEERS LIMITED,																	
JOB NO: 281	PROJECT TITLE: SIKKA TPS EXTENSION UNITS 3&4 2 X 250 MW																	
THE FOLLOWING CONDITIONS APPLY EXCEPT OTHERWISE STATED...	TYPE OF PRODUCT CWIQ OR NAME OF CUSTOMER/PROJECT 2X250MW SIKKA																	
1. REF. TO HY0230261 FOR UNSPECIFIED TOLERANCES.	<table border="1"> <tr> <td>DRN.</td> <td>SATISH</td> <td>SIGN</td> <td>DATE</td> <td>NO OF VAR.</td> </tr> <tr> <td>CHD.</td> <td>H.R KRISHNA</td> <td></td> <td>12.11.08</td> <td>NA</td> </tr> <tr> <td>APPD.</td> <td>B.R.KUMAR</td> <td></td> <td>12.11.08</td> <td>NA</td> </tr> </table>			DRN.	SATISH	SIGN	DATE	NO OF VAR.	CHD.	H.R KRISHNA		12.11.08	NA	APPD.	B.R.KUMAR		12.11.08	NA
DRN.	SATISH	SIGN	DATE	NO OF VAR.														
CHD.	H.R KRISHNA		12.11.08	NA														
APPD.	B.R.KUMAR		12.11.08	NA														
2. CHAMFER M/CD SHARP EDGES 12 TO 1.0 AT 45°.	<table border="1"> <tr> <td>DEPT.</td> <td>PUMPS</td> <td>SCALE</td> <td>WEIGHT (KGI)</td> <td>REF. TO ASSY DRG</td> <td>ITEM NO.</td> <td>NO OF ITEMS</td> </tr> <tr> <td>CODE</td> <td>410</td> <td>N.T.S</td> <td>NA</td> <td>NA</td> <td>NA</td> <td>NA</td> </tr> </table>			DEPT.	PUMPS	SCALE	WEIGHT (KGI)	REF. TO ASSY DRG	ITEM NO.	NO OF ITEMS	CODE	410	N.T.S	NA	NA	NA	NA	
DEPT.	PUMPS	SCALE	WEIGHT (KGI)	REF. TO ASSY DRG	ITEM NO.	NO OF ITEMS												
CODE	410	N.T.S	NA	NA	NA	NA												
3. INTERNAL M/CD CORNER RADIII 1 TO 0.7.	DRAWING NO. 1 182 005 6438																	
4. THE SURFACE ROUGHNESS WHEREVER NOT SHOWN SHALL BE TAKEN FROM THE SURFACE ROUGHNESS SHOWN OUT SIDE BACK SLASHES GIVEN AT THE TOP MOST RIGHT CORNER OF THE DRG.	REV. 01																	

BHARAT HEAVY ELECTRICALS LIMITED. THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.

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

REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.	REV.	DATE	ALTERED	APPD.														
1				3				4				5				6				7				8				9			10			11			



**TATA CONSULTING ENGINEERS**  
VENDOR DOCUMENT REVIEW STRAIGHT TRENCH (IN BHEL SCOPE)

- A Drawing approved subject to comment with fabrication/procurement considering our comments.
- B Our comments are noted on this and forwarded in transmittal letter No. ....
- C Correct original of this drawing to reflect our comment and resubmit for approval. Dated: .....
- D Correct original of this drawing to reflect our comment and resubmit for records. Dated: .....
- E Drawing reviewed against our previous comments and other revisions highlighted and identified by the vendor.
- F Drawing returned without review.
- G Approval conveyed herein neither relieves Vendor / Contractor of his contractual obligations and his responsibilities for correctness of dimensions, materials of construction, weights, quantities, design details and assembly of supplies with Indian statutory Laws as may apply or of supplies with Indian statutory Laws as may apply or of supplies with Indian statutory Laws as may apply.
- H Approval conveyed herein neither relieves Vendor / Contractor of his contractual obligations and his responsibilities for correctness of dimensions, materials of construction, weights, quantities, design details and assembly of supplies with Indian statutory Laws as may apply or of supplies with Indian statutory Laws as may apply.
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CONSULTANT	TATA CONSULTING ENGINEERS LTD., BANGALORE
JOB NO.	281
CONTRACT	
PROJECT	2 X 250 MW SIKKA THERMAL POWER PROJECT (EXTENSION UNITS 3 & 4) DIST. JAMNAGAR
DISTRIBUTION	
TO	BHARAT HEAVY ELECTRICALS LTD
REV	INDUSTRIAL SYSTEM GROUP BANGALORE
DATE	
ALTD	
CHD	
APPO	
DATE	21.10.09
	23.01.10

TITLE	(TYP.) LAYOUT PLAN FOR 2x250 KVA ACOUSTIC DG SET
DEPT	PS
DESIGN	PS
CHKD	SPH/VNDG
APPO	
NAME	
SIGN	
DATE	
DRAWING NO.	JEN/PC/731-001
SHEET	1 OF 1
REV	
DATE	

**Jacksons Limited**

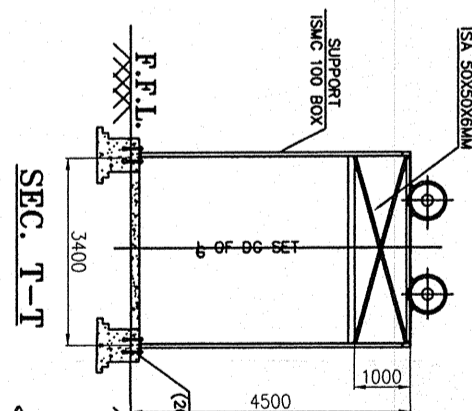
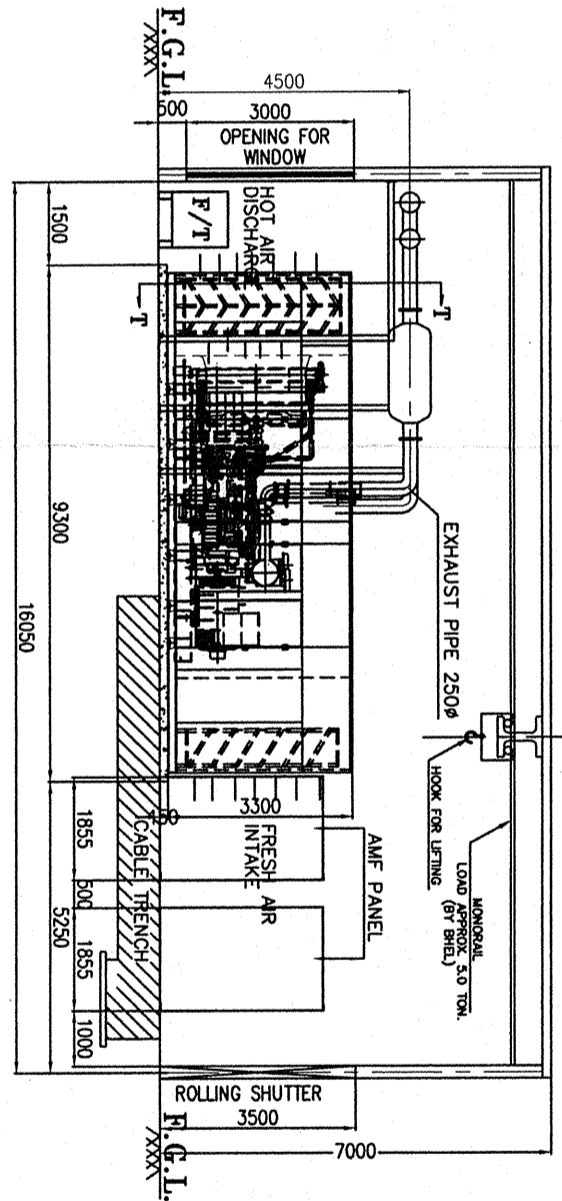
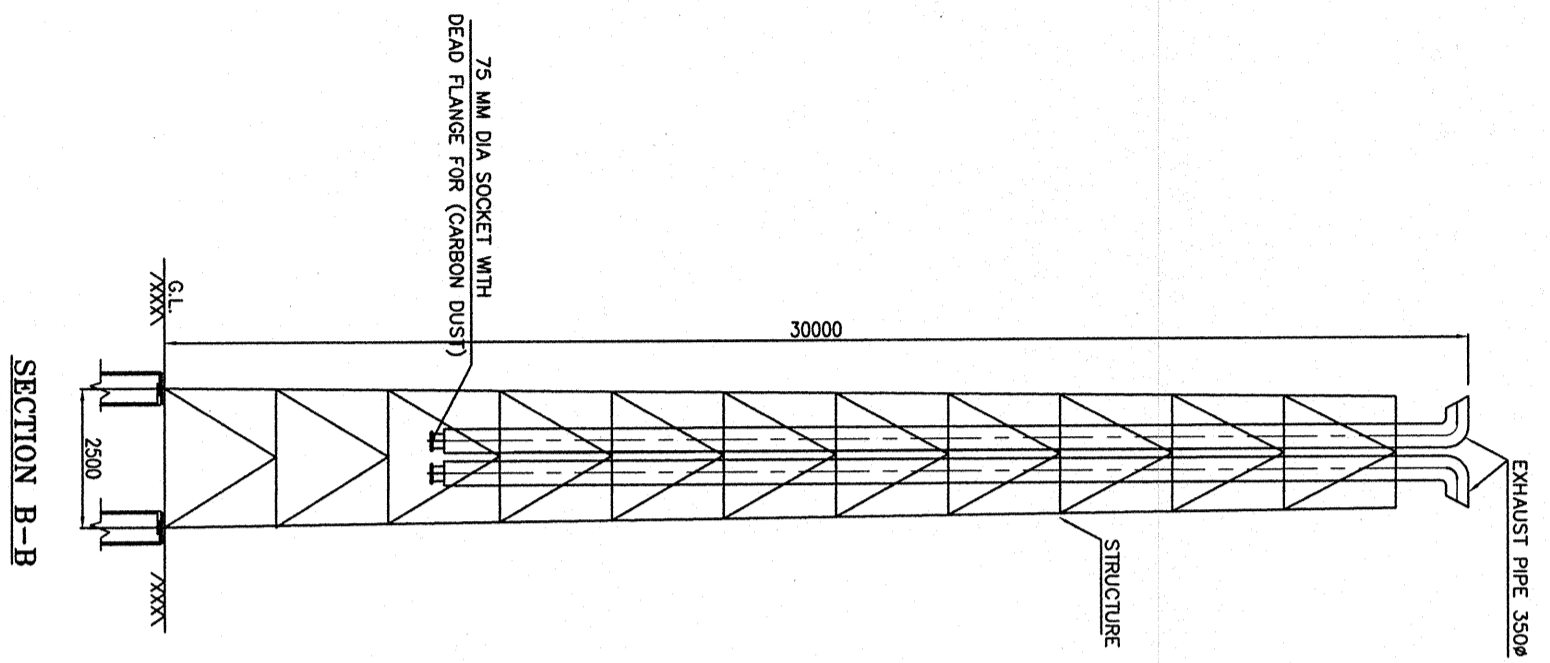
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Fold-1

SIZE-A3

COMPUTER FILE NAME: 253\_100\_0008\_R3  
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 It must not be used directly or indirectly in any way detrimental to the interest of the company.



**VENDOR DOCUMENT REVIEW STATUS**

Reviewed by: *[Signature]* Date: *20/2/10*

Approval conveyed herein neither relieves Vendor / Contractor of his contractual obligations and his responsibilities for correctness of dimensions, materials of construction, weights, quantities, design details, assembly fits, system performance requirements and uniformity of supplies with Indian statutory laws as may be applicable nor does it limit the Purchaser's rights under the contract.

A Drawing reviewed against our previous comments and other revisions highlighted and identified by the vendor.

B Drawing returned without review.

C Correct original of this drawing to reflect our comments and resubmit for approval.

D Correct original of this drawing to reflect our comments and resubmit for records.

E Drawing of this category are for information only and not for approval; information furnished on the drawing is noted.

F Drawing reviewed against our previous comments and other revisions highlighted and identified by the vendor.

G Drawing returned without review.

H Drawing returned without review.

CUSTOMER		GUJARAT STATE ELECTRICITY CORPORATION LTD.	
CONSULTANT		TCE CONSULTING ENGINEERS LTD., BANGALORE	
JOB NO.	281	PROJECT	
STATUS	CONTRACT	2 X 250 MW SIKKA THERMAL POWER PROJECT (EXTENSION UNITS 3 & 4) DIST. JAMNAGAR	
DISTRIBUTION			
TO		DATE	
NO. OF REV	ALTD.	CHD.	APPD.
01	21/10/09		
02	23/01/10		
TITLE		BHARAT HEAVY ELECTRICALS LTD INDUSTRIAL SYSTEM GROUP BANGALORE	
(TYP.) SEC VIEW FOR		JAKSONS LIMITED	
2X750 KVA ACOUSTIC DG SET		DRAWING NO. JEN/PC/731-001	
DEPT.	SCALE	SHEET	REV
		1 OF 1	

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 Fold-4