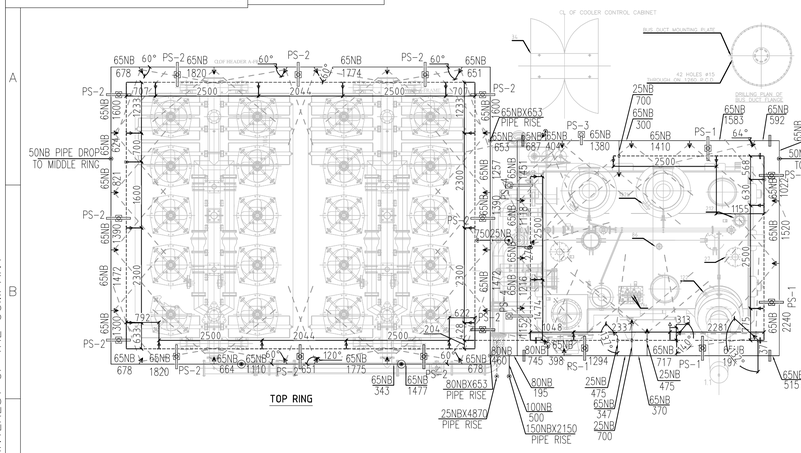
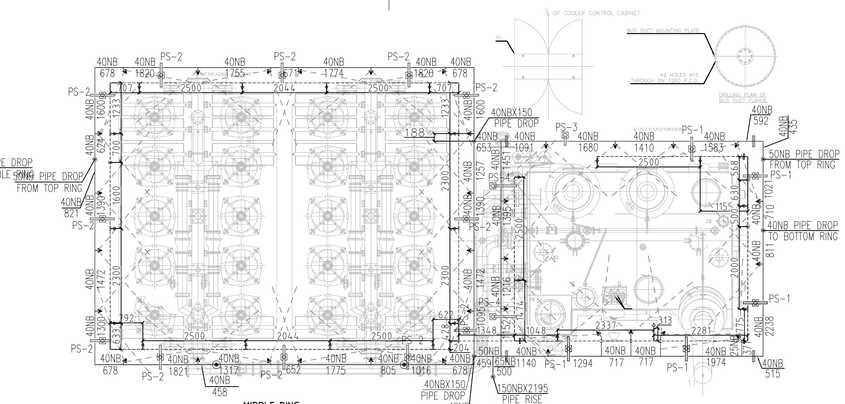
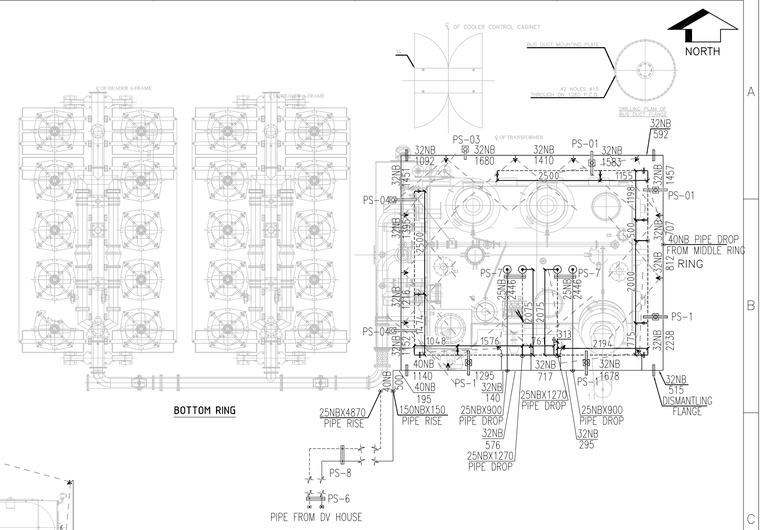
FIRST ANGLE PROJECTION

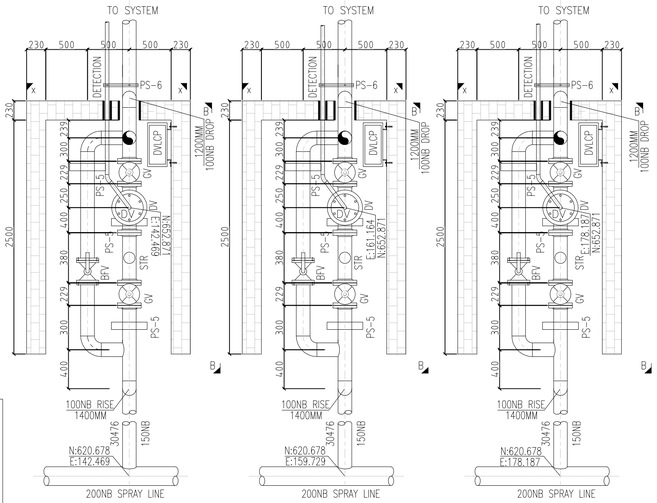
(ALL DIMENSIONS ARE IN mm)

SH. 01 OF 04 DRG. NO.





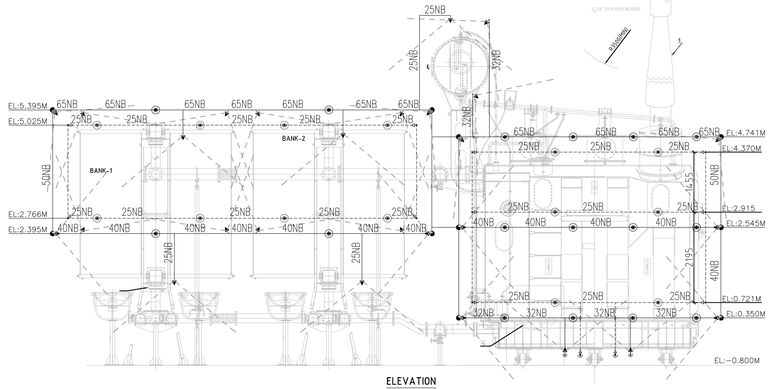




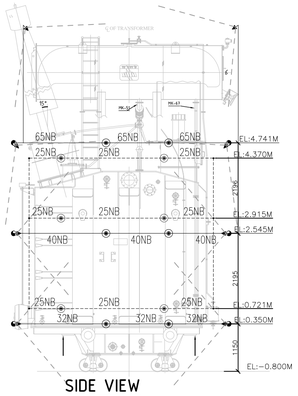
DELUGE VALVE ARRANGEMENT PLAN VIEW GT-1A

DELUGE VALVE ARRANGEMENT PLAN VIEW GT-1B

DELUGE VALVE ARRANGEMENT PLAN VIEW GT-1C



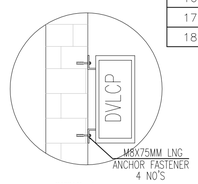
ELEVATION



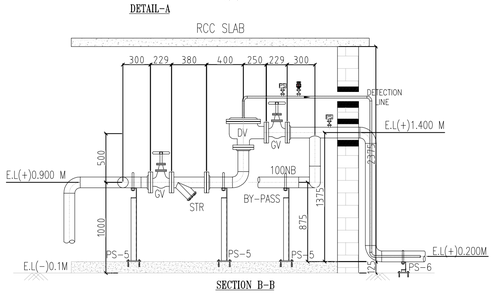
SIDE VIEW

DESIGN PARAMETER :-

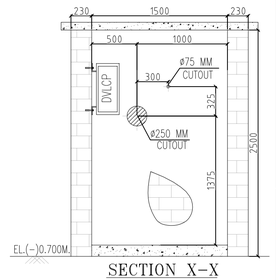
1	RISK	GENERATOR TRANSFORMER
2	DESIGN CODE	AS PER TAC
3	TRANSFORMER BODY (L X B X H)	5.203x3.944x4.455 M
4	RADIATOR TANK (L X B X H) (3)	(5.936x3.589x3.728 M) X 2NOS.
6	CONSERVATOR TANK (ø x L)	ø1.310 x 4.490 M
7	OIL PIPE (ø x L) (2)	ø0.219 x 6.776 M
8	TOTAL AREA	380.25 M^2
9	WATER APPLICATION RATE	10.2 LPM (3.2.3.6.1)
10	THEORETICAL WATER REQD.	3878.55 LPM.
11	ACTUAL WATER PROVIDED	GT-1A = 4833 LPM
		GT-1B = 4824 LPM
		GT-1C = 4854 LPM
12	NO. OF H.V. PROJECTOR PROVIDED	94 NOS
13	'K' FACTOR OF NOZZLE @ SPRAY ANGLE	26 @ 100°
14	NO. OF Q.B. DETECTOR PROVIDED (79°C)	54 NOS.
15	SIZE OF DELUGE VALVE	100NB
16	MINIMUM PRESSURE AT REMOTEST NOZZLE	3.5 BAR (3.2.3.6.2.7)
17	MAXIMUM PRESSURE IN ANY NOZZLE	5.0 BAR (3.2.3.6.2.7)
18	VELOCITY IN FEED PIPE	10M/SEC. (3.2.3.6.2.7)



DETAIL-A

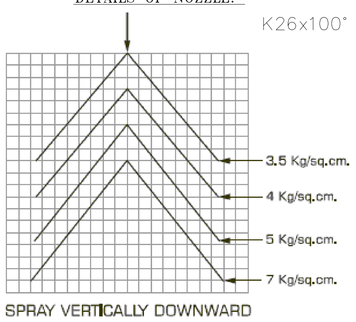


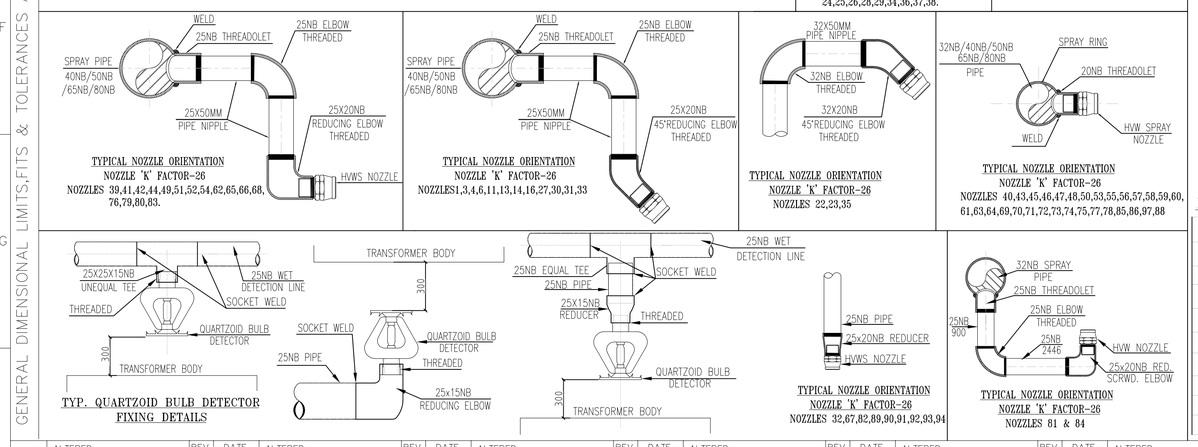
SECTION B-B



SECTION X-X

SPRAY PATTERN & DETAILS OF NOZZLE:-





LEGEND:

SL.NO.	ITEM	DESCRIPTION
1.0		H.V.W. SPRAY PIPE LINE
2.0		H.V. PROJECTOR
3.0	DV	DELUGE VALVE
4.0		'Y' STRAINER
5.0		BUTTERFLY VALVE
6.0		GATE VALVE
7.0		Q.B. DETECTOR
8.0		DETECTION LINE
9.0		DISMANTLING FLANGE

REF DWG. NO.

DRAWING NAME	DRAWING NO.
OUT LINE GENERAL ARRANGEMENT GENERATOR TRANSFORMER	3 452 00 00946 (Sh-1to3)
FOUNDATION PLAN	3 452 00 00948
HYDRAULIC CALCULATION OF HWS SYSTEM FOR GENERATOR TRANSFORMER	AFP/364/012017/060

	NAME	SIGN.	DATE	NO.OF VAR.
DRN.				-N.A.-
CHD.				
APPD.				

ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD
	ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE		

JCS

DEPT. I.T.D. CODE. 415 | UNTOL. DIMS. GR. ~~C/M/F~~ | SCALE 1:75 | WEIGHT (KG) | REF. TO ASSY. DRG. -N.A.- | ITEM NO. -N.A.- | NO.OF ITEMS -N.A.-

TITLE HVW SPRAY SYSTEM FOR GT-1A. TYPICAL FOR GT-1B, GT-1C.

CARD CODE N.A. | REV. 02 | SHT. No 01 | NO. OF SHT. 04

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

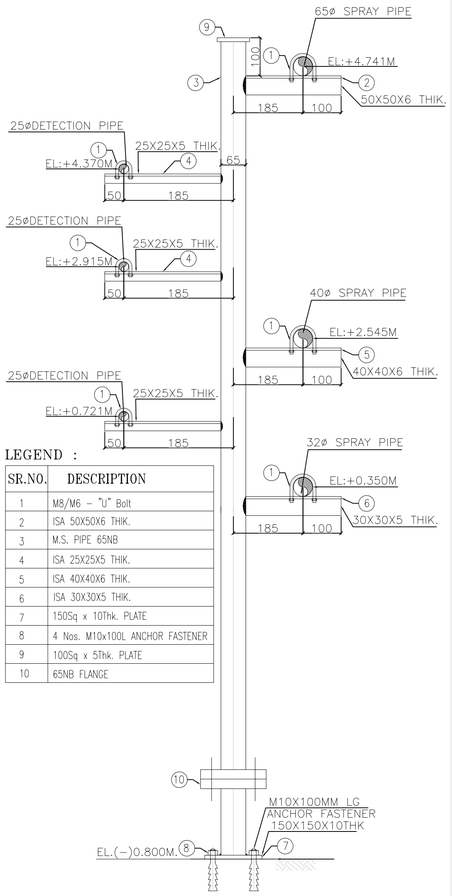
GENERAL DIMENSIONAL LIMITS,FITS & TOLERANCES AS PER HY0230261

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

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

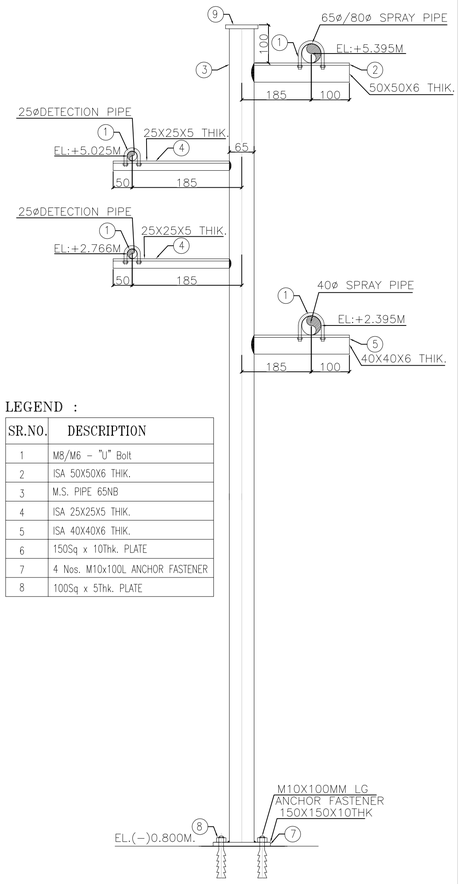
NORTH



LEGEND :

SR.NO.	DESCRIPTION
1	M8/M6 – "U" Bolt
2	ISA 50X50X6 THIK.
3	M.S. PIPE 65NB
4	ISA 25X25X5 THIK.
5	ISA 40X40X6 THIK.
6	ISA 30X30X5 THIK.
7	150Sq x 10Thk. PLATE
8	4 Nos. M10x100L ANCHOR FASTENER
9	100Sq x 5Thk. PLATE
10	65NB FLANGE

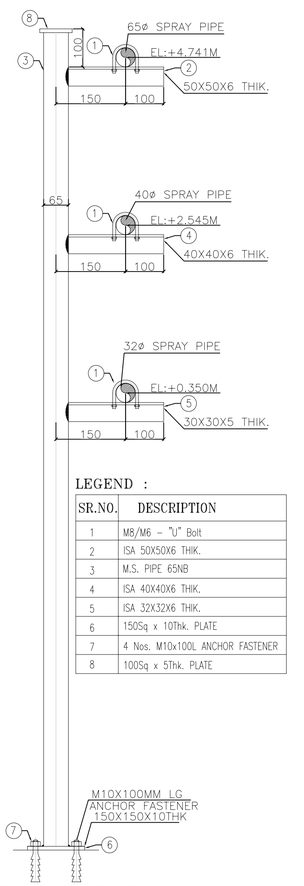
PYLON SUPPORT (PS1) =05 Nos.
(SCALE N.T.S.)



LEGEND :

SR.NO.	DESCRIPTION
1	M8/M6 – "U" Bolt
2	ISA 50X50X6 THIK.
3	M.S. PIPE 65NB
4	ISA 25X25X5 THIK.
5	ISA 40X40X6 THIK.
6	150Sq x 10Thk. PLATE
7	4 Nos. M10x100L ANCHOR FASTENER
8	100Sq x 5Thk. PLATE

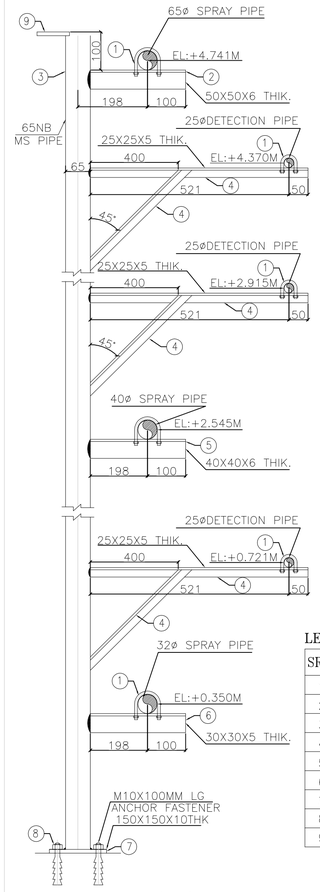
PYLON SUPPORT (PS2) =12 Nos.
(SCALE N.T.S.)



LEGEND :

SR.NO.	DESCRIPTION
1	M8/M6 – "U" Bolt
2	ISA 50X50X6 THIK.
3	M.S. PIPE 65NB
4	ISA 40X40X6 THIK.
5	ISA 32X32X6 THIK.
6	150Sq x 10Thk. PLATE
7	4 Nos. M10x100L ANCHOR FASTENER
8	100Sq x 5Thk. PLATE

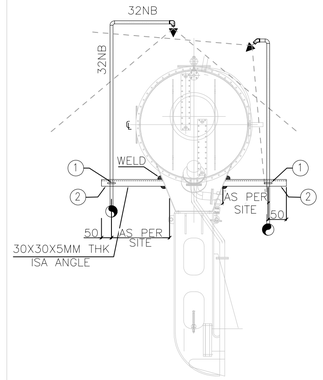
PYLON SUPPORT (PS3) =01 Nos.
(SCALE N.T.S.)



LEGEND :

SR.NO.	DESCRIPTION
1	M8/M6 – "U" Bolt
2	ISA 50X50X6 THIK.
3	M.S. PIPE 65NB
4	ISA 25X25X5 THIK.
5	ISA 40X40X6 THIK.
6	ISA 30X30X5 THIK.
7	150Sq x 10Thk. PLATE
8	4 Nos. M10x100L ANCHOR FASTENER
9	100Sq x 5Thk. PLATE

PYLON SUPPORT (PS4) =02 Nos.
(SCALE N.T.S.)



TYPICAL PIPE SUPPORT DETAIL
FOR PIPES IN CONSERVATOR TANK
(SCALE N.T.S.)

LEGEND :

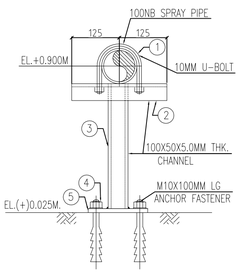
SR.NO.	DESCRIPTION
1	M8/M6 – "U" Bolt
2	30X30X5MM THK ISA ANGLE

BILL OF QUANTITY

SL. NO.	DESCRIPTION	UNIT	GT−1A	GT−1B	GT−1C	TOTAL	UNIQUE IDENTIFICATION NUMBER
1	SPRAY PIPING−GI PIPE						
	150NB	Mtr.	35	36	39	110	
	100NB	Mtr.	9	9	9	27	
	80NB	Mtr.	4	4	4	12	
	65NB	Mtr.	58	58	58	174	
	50NB	Mtr.	6	6	6	18	
	40NB	Mtr.	62	62	62	186	
	32NB	Mtr.	31	31	31	93	
	25NB	Mtr.	25	25	25	75	
2	MS ERW PIPE AS PER IS:1239						
	100NB	Mtr.	5	5	5	15	
	65NB	Mtr.	122	122	122	366	
	25NB	Mtr.	198	199	199	596	
3	SPRAY NOZZLES						
	K−FACTOR = 26 (SPRAY ANGLE−100°)	Nos.	94	94	94	282	
4	QB DETECTOR – 79°C	Nos.	55	55	55	165	
5	DELUGE VALVE 100NB	Nos.	1	1	1	3	
6	GATE VALVE 100NB	Nos.	2	2	2	6	
7	'Y' STRAINER 100NB	Nos.	1	1	1	3	
8	BUTTERFLY VALVE 100NB	Nos.	1	1	1	3	
9	PRESSURE GAUGE	Nos.	2	2	2	6	
10	PRESSURE SWITCH	Nos.	2	2	2	6	
11	DVLCP	Nos.	1	1	1	3	
12	15NB BALL VALVE	Nos.	1	1	1	3	
13	FITTINGS AND STRUCTURAL STEEL	1 LOT					
12	SOLENOID VALVE	Nos.	1	1	1	3	

NOTES:–

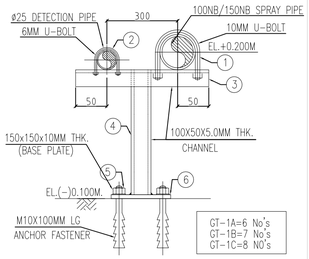
1. ALL DIMENSIONS ARE IN MM. UNLESS OTHERWISE STATED.
2. THE ARRANGEMENT OF SPRAY PIPING HAS SHOWN AS PER AVAILBLE DATA AND SAME SHALL BE MODIFIED AT SITE TO SUIT THE SITE CONDITION IF REQUIRED.
3. THE DESIGN OF HVW SPRAY SYSTEM AND PIPE SUPPORTS RULES FOR WATER SPRAY SYSTEM AS PER TAC CL. 4.4.7.10.
4. ALL ANGLE SUPPORT WOULD HAVE SMOOTH FINISH.
5. MINOR MODIFICATION IN PIPE ROUTING, PIPE SUPPORT & ORIENTATION OF NOZZLE SHALL BE DONE TO SUIT SITE CONDITION.
6. ALL MATERIAL SPECIFICATION SHOULD BE AS PER APPROVED TDS.
7. PROJECTOR ON THE RINGS SHALL BE LOCATED AT NOT LESS THAN 500 MM. & NOT MORE THAN 800 MM. AWAY FROM TRANSFORMER/RADIATOR & REACTOR SURFACES AS PER TAC CL. 3.23.6.2.1.
8. DETECTOR SHALL BE AS CLOSED TO SURFACE AS POSSIBLE AND IN NO CASE MORE THAN 300 MM AS PER TAC CL. 3.2.4.1.3.
9. DETECTORS SHALL BE SPACED NOT MORE THAN 2.5 M. AS PER TAC CL. 3.2.4.1.2.
10. FOR NOZZLE MOUNTING DETAIL etc REF. DRG NO. AFP/364/012017/001 SHT 1 OF 4.
11. ALL CO−ORIDNATES PROVIDED ARE TENTATIVE ONLY EXACT LOCATION SHALL SUIT TO SITE CONDITION.



PYLON SUPPORT (PS5) =03 Nos.
SCALE N.T.S

LEGEND :

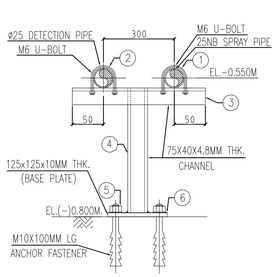
SR.NO.	DESCRIPTION
1	M10 – "U" Bolt
2	ISMC 100X50X5.0MM THK.
3	ISMC 100X50X5.0MM THK.
4	4 Nos. M10x100L ANCHOR FASTENER
5	150Sq x 10Thk. PLATE



PIPE SUPPORT (PS6)
SCALE N.T.S

LEGEND :

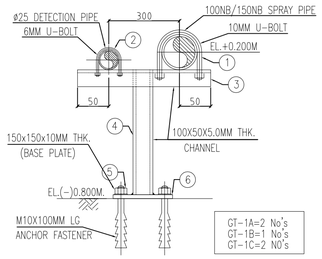
SR.NO.	DESCRIPTION
1	M8/M10 – "U" Bolt
2	M8/M6 – "U" Bolt
3	ISMC 100X50X5.0MM THK.
4	ISMC 100X50X5.0MM THK.
5	4 Nos. M10x100L ANCHOR FASTENER
6	150Sq x 10Thk. PLATE



PIPE SUPPORT (PS7) =02 Nos.
SCALE N.T.S

LEGEND :

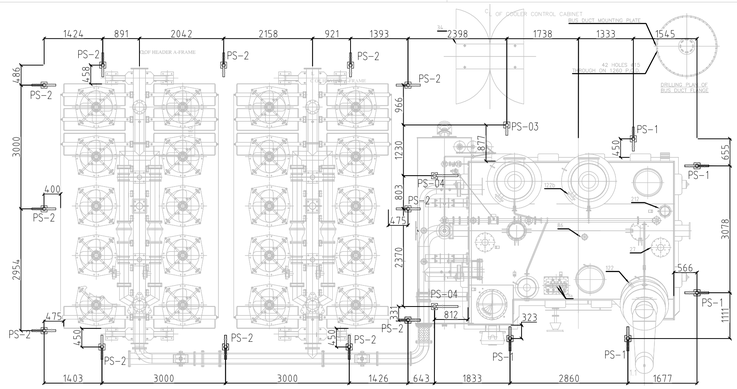
SR.NO.	DESCRIPTION
1	M8/M6 – "U" Bolt
2	M8/M6 – "U" Bolt
3	ISMC 75X40X4.8MM THK.
4	ISMC 75X40X4.8MM THK.
5	4 Nos. M10x100L ANCHOR FASTENER
6	125Sq x 10Thk. PLATE



PIPE SUPPORT (PS8)
SCALE N.T.S

LEGEND :

SR.NO.	DESCRIPTION
1	M8/M10 – "U" Bolt
2	M8/M6 – "U" Bolt
3	ISMC 100X50X5.0MM THK.
4	ISMC 100X50X5.0MM THK.
5	4 Nos. M10x100L ANCHOR FASTENER
6	150Sq x 10Thk. PLATE



PYLON SUPPORT LOCATION

REF DWG. NO.

DRAWING NAME	DRAWING NO.
OUT LINE GENERAL ARRANGEMENT GENERATOR TRANSFORMER	3 452 00 00946 (Sh−1to3)
FOUNDATION PLAN	3 452 00 00948
HYDRAULIC CALCULATION OF HVWS SYSTEM FOR GENERATOR TRANSFORMER	AFP/364/012017/060

	NAME	SIGN.	DATE	NO.OF VAR.
DRN.				–N.A.–
CHD.				
APPD.				

ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD	ZONE		CHD/APPD

DEPT. I.T.D. CODE. 415 | UNTOL. DIMS. GR. ~~C/M/F~~ | SCALE 1:75 | WEIGHT (KG) | REF. TO ASSY. DRG. –N.A.– | ITEM NO. –N.A.– | NO.OF ITEMS –N.A.–

TITLE
HVW SPRAY SYSTEM FOR GT−1A.
TYPICAL FOR GT−1B, GT−1C.

CARD CODE N.A. | REV. 02 | SHT. No 02 | NO. OF SHT. 04

JCS

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

GENERAL DIMENSIONAL LIMITS,FITS & TOLERANCES AS PER HY0230261

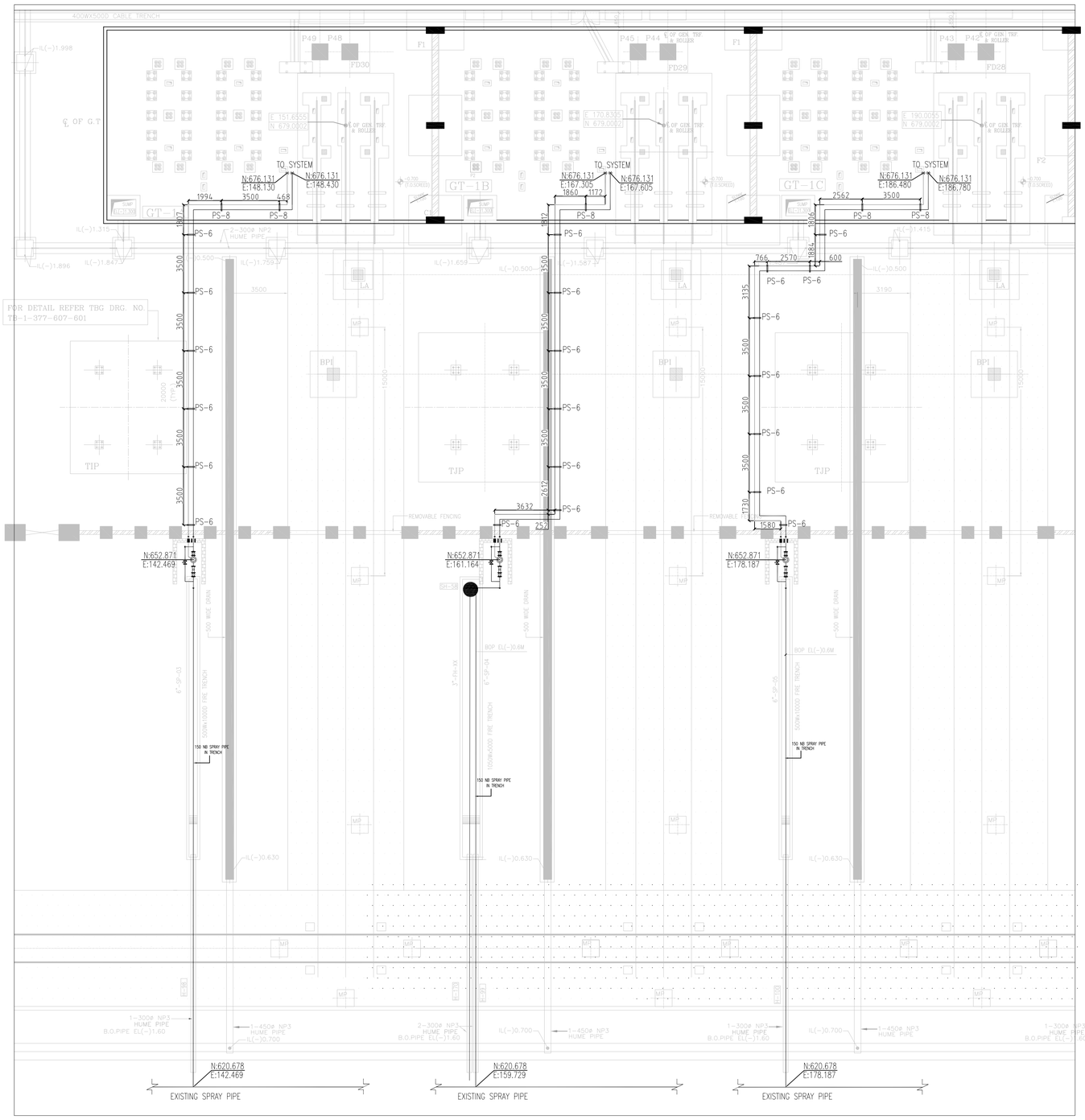
COMPUTER FILE NAME | REF. DRG. NO. | SIGN. AND DATE | INVENTORY NO

FIRST ANGLE PROJECTION

(ALL DIMENSIONS ARE IN mm)

SH. 03 OF 04 DRG. NO.

NORTH



DELUGE VALVE PLAN VIEW

SCALE :N.T.S

REF DWG. NO.	
DRAWING NAME	DRAWING NO.
OUT LINE GENERAL ARRANGEMENT GENERATOR TRANSFORMER	3 452 00 00946 (Sh-1to3)
FOUNDATION PLAN	3 452 00 00948
HYDRAULIC CALCULATION OF HVWS SYSTEM FOR GENERATOR TRANSFORMER	AFP/364/012017/060

BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

	NAME	SIGN.	DATE	NO.OF VAR.
DRN.				–N.A.–
CHD.				
APPD.				

DEPT. I.T.D.	UNTOL. DIMS. GR. C/M/F		SCALE 1:75	WEIGHT (KG)	REF. TO ASSY. DRG.	ITEM NO. –N.A.–	NO.OF ITEMS –N.A.–
CODE. 415							

TITLE
HVW SPRAY SYSTEM FOR GT-1A.
TYPICAL FOR GT-1B, GT-1C.

CARD CODE N.A.

REV.

SHT. No 03 NO. OF SHT. 04

ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED	REV.	DATE	ALTERED
CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD			CHD/APPD
	ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE			ZONE		

JCS

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

GENERAL DIMENSIONAL LIMITS,FITS & TOLERANCES AS PER HY0230261

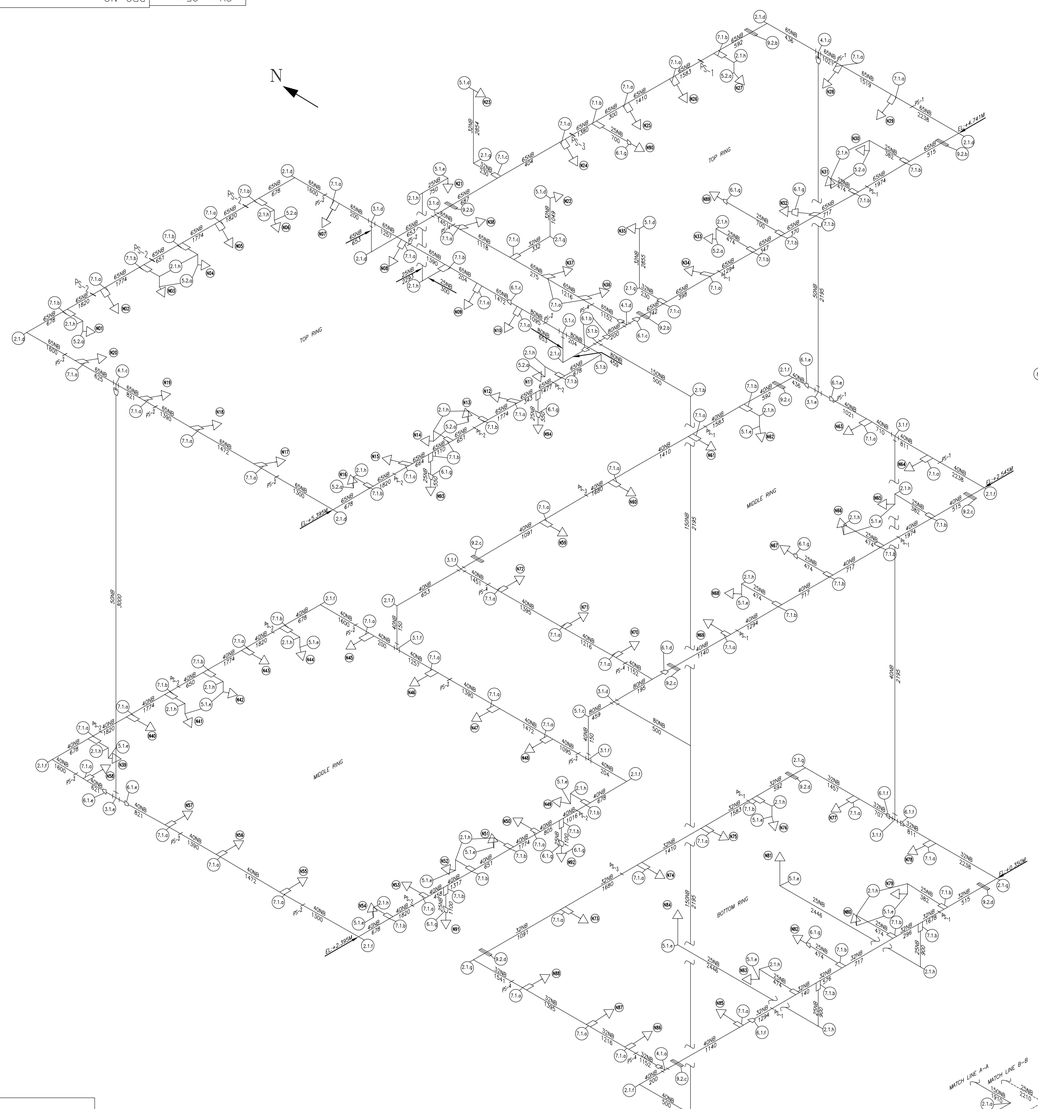
COMPUTER FILE NAME | REF. DRG. NO. | SIGN. AND DATE | INVENTORY NO

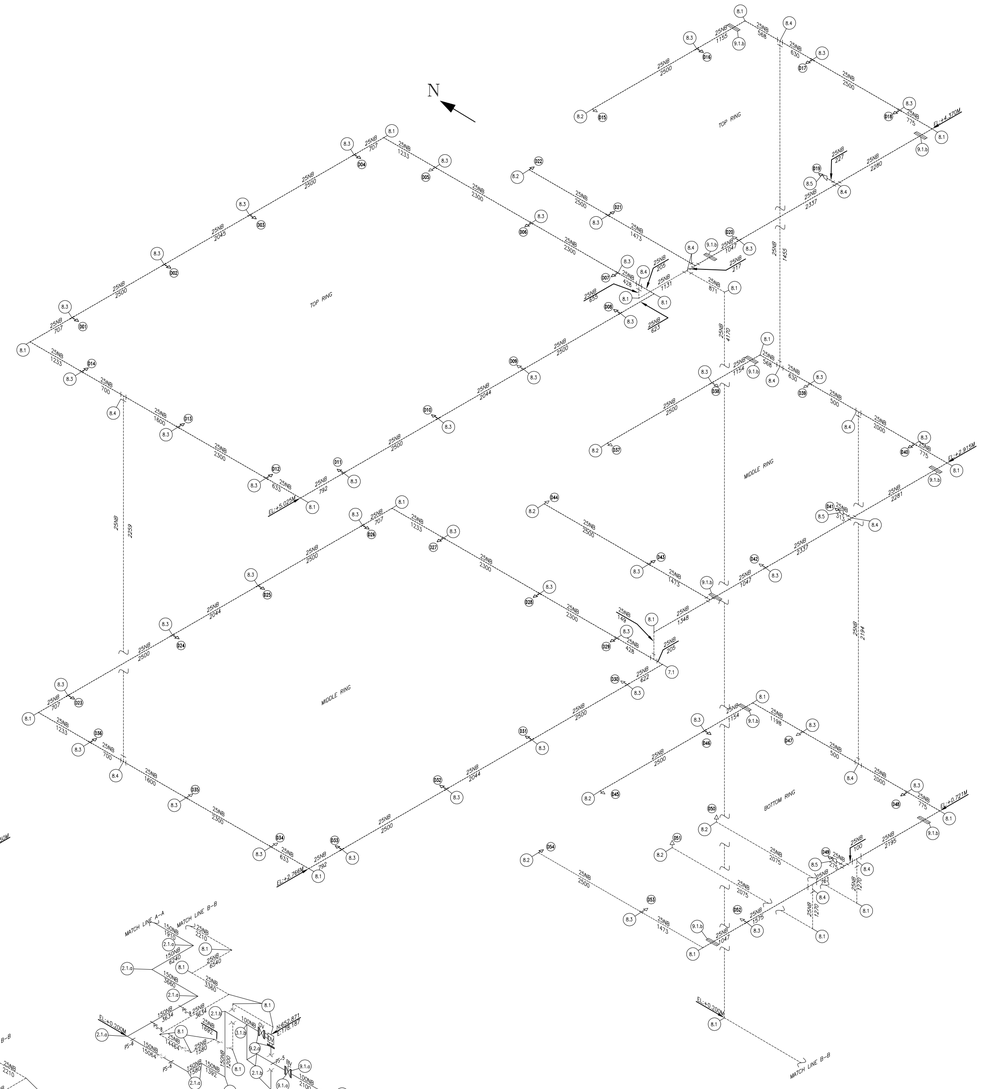
FIRST ANGLE PROJECTION

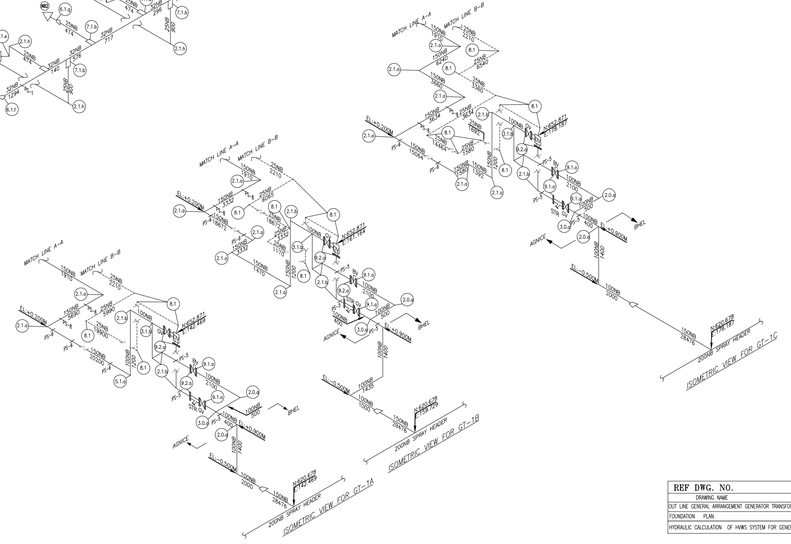
(ALL DIMENSIONS ARE IN mm)

DRG. NO.

SH. - OF -







BILL OF QUANTITIES

SL. NO.	DESCRIPTION	SIZE	STANDARD	END CONNECTION	MATERIAL	GT-1A	GT-1B	GT-1C	TOTAL	UNIT	TOTAL WEIGHT (KGS)
1.0	M.S.PIPES UP TO 150 NB										
a	PIPE	100NB	IS : 1239 P-I	BEVELED	M.S	5	5	5	15	MTRS	
b	PIPE	25NB	IS : 1239 P-I	PLAIN	M.S	198	199	199	596	MTRS	
1.1	G.I PIPES UP TO 150 NB										
a	PIPE	150NB	IS : 1239 P-I	BEVELED	G.I	35	36	39	110	MTRS	
b	PIPE	100NB	IS : 1239 P-I	BEVELED	G.I	9	9	9	27	MTRS	
c	PIPE	80NB	IS : 1239 P-I	BEVELED	G.I	4	4	4	12	MTRS	
d	PIPE	65NB	IS : 1239 P-I	BEVELED	G.I	58	58	58	174	MTRS	
e	PIPE	50NB	IS : 1239 P-I	SCREWED	G.I	6	6	6	18	MTRS	
f	PIPE	40NB	IS : 1239 P-I	SCREWED	G.I	62	62	62	186	MTRS	
g	PIPE	32NB	IS : 1239 P-I	SCREWED	G.I	31	31	31	93	MTRS	
h	PIPE	25NB	IS : 1239 P-I	SCREWED	G.I	25	25	25	75	MTRS	
2.0	ASTM A234 ELBOW WELDABLE (90 DEG)										
a	EQL. ELBOW	100NB	ASTM A 234	BUTT.WELD	C.S	2	2	2	6	NOS	
2.1	G.I ELBOW WELDABLE (90 DEG)										
a	EQL. ELBOW	150NB	IS : 1239 P-II	BUTT.WELD	G.I	5	6	8	19	NOS	
b	EQL. ELBOW	100NB	IS : 1239 P-II	BUTT.WELD	G.I	4	4	4	12	NOS	
c	EQL. ELBOW	80NB	IS : 1239 P-II	BUTT.WELD	G.I	1	1	1	3	NOS	
d	EQL. ELBOW	65NB	IS : 1239 P-II	BUTT.WELD	G.I	6	6	6	18	NOS	
2.1	G.I ELBOW SCREWED (90 DEG)										
e	EQL. ELBOW	50NB	IS : 1239 P-II	SCREWED	G.I	0	0	0	00	NOS	
f	EQL. ELBOW	40NB	IS : 1239 P-II	SCREWED	G.I	8	8	8	24	NOS	
g	EQL. ELBOW	32NB	IS : 1239 P-II	SCREWED	G.I	6	6	6	18	NOS	
h	EQL. ELBOW	25NB	IS : 1239 P-II	SCREWED	G.I	31	31	31	93	NOS	
3.0	ASTM A234 EQUAL TEE WELDABLE										
a	EQL. TEE	100NB	ASTM A 234	BUTT.WELD	C.S	1	1	1	3	NOS	
3.1	G.I EQUAL TEE WELDABLE										
a	EQL. TEE	150NB	IS : 1239 P-II	BUTT.WELD	G.I	0	0	0	00	NOS	
b	EQL. TEE	100NB	IS : 1239 P-II	BUTT.WELD	G.I	2	2	2	6	NOS	
c	EQL. TEE	80NB	IS : 1239 P-II	BUTT.WELD	G.I	1	1	1	3	NOS	
d	EQL. TEE	65NB	IS : 1239 P-II	BUTT.WELD	G.I	3	3	3	9	NOS	
3.1	G.I EQUAL TEE SCREWED										
e	EQL. TEE	50NB	IS : 1239 P-II	SCREWED	G.I	2	2	2	6	NOS	
f	EQL. TEE	40NB	IS : 1239 P-II	SCREWED	G.I	5	5	5	15	NOS	
4.1	G.I UNEQUAL TEE SCREWED										
a	UN-EQL. TEE	40X40X32NB	IS : 1239 P-II	SCREWED	G.I	1	1	1	3	NOS	
4.1	G.I UNEQUAL TEE WELDABLE										
b	UN-EQL. TEE	65X65X40NB	IS : 1239 P-II	BUTT.WELD	G.I	0	0	0	0	NOS	
c	UN-EQL. TEE	65X65X50NB	IS : 1239 P-II	BUTT.WELD	G.I	2	2	2	6	NOS	
d	UN-EQL. TEE	80X80X65NB	IS : 1239 P-II	BUTT.WELD	G.I	1	1	1	3	NOS	
5.1	G.I REDUCING ELBOW WELDABLE (90 DEG)										
a	RED.ELBOW	150X100NB	IS : 1239 P-II	BUTT.WELD	G.I	1	1	1	3	NOS	
b	RED.ELBOW	80X65NB	IS : 1239 P-II	BUTT.WELD	G.I	1	1	1	3	NOS	
c	RED.ELBOW	80X40NB	IS : 1239 P-II	BUTT.WELD	G.I	1	1	1	3	NOS	
5.1	G.I REDUCING ELBOW SCREWED (90 DEG)										
d	RED.ELBOW	32X20NB	IS : 1239 P-II	SCREWED	G.I	3	3	3	09	NOS	
e	RED.ELBOW	25X20NB	IS : 1239 P-II	SCREWED	G.I	19	19	19	57	NOS	
5.2	G.I REDUCING ELBOW THREADED (45 DEG)										
a	RED.ELBOW	25X20NB	IS : 1239 P-II	SCREWED	G.I	12	12	12	36	NOS	
b	RED.ELBOW	32X20NB	IS : 1239 P-II	SCREWED	G.I	0	0	0	0	NOS	
6.1	G.I REDUCER WELDABLE										
a	REDUCER	150X100NB	IS : 1239 P-II	BUTT.WELD	G.I	0	0	0	0	NOS	
b	REDUCER	150X80NB	IS : 1239 P-II	BUTT.WELD	G.I	2	2	2	6	NOS	
c	REDUCER	80X65NB	IS : 1239 P-II	BUTT.WELD	G.I	2	2	2	6	NOS	
d	REDUCER	80X40NB	IS : 1239 P-II	BUTT.WELD	G.I	1	1	1	3	NOS	
6.1	G.I REDUCER SCREWED										
e	REDUCER	50X40NB	IS : 1239 P-II	SCREWED	G.I	4	4	4	12	NOS	
f	REDUCER	40X32NB	IS : 1239 P-II	SCREWED	G.I	1	1	1	3	NOS	
g	REDUCER	25X20NB	IS : 1239 P-II	SCREWED	G.I	9	9	9	27	NOS	
7.1	G.I THREADOLET										
a	THREADOLET	20NB	IS : 1239 P-II	SCREWED	G.I	51	51	51	153	NOS	
b	THREADOLET	25NB	IS : 1239 P-II	SCREWED	G.I	40	40	40	120	NOS	
c	THREADOLET	32NB	IS : 1239 P-II	SCREWED	G.I	3	3	3	9	NOS	
8	ASTM A105 FITTINGS										
8.1	EQL. ELBOW	25NB	ASTM A-105	SOCKET WELD	C.S	26	26	28	80	NOS	
8.2	RED. ELBOW	25X15NB(90 DEG)	ASTM A-105	15NB SCREWED 25NB SOCKET WELD	C.S	8	8	8	24	NOS	
8.3	UNEQL.TEE	25X25X15NB	ASTM A-105	15NB SCREWED 25NB SOCKET WELD	C.S	43	43	43	129	NOS	
8.4	EQL. TEE	25NB	ASTM A-105	15NB SCREWED 25NB SOCKET WELD	C.S	16	16	16	48	NOS	
8.5	REDUCER	25X15NB	ASTM A-105	15NB SCREWED 25NB SOCKET WELD	C.S	3	3	3	9	NOS	
9.1	MS FLANGES										
a.	FLANGES	100NB	IS 2062 GR.B 150#	-	M.S	2	2	2	6	NOS	
b.	FLANGES	25NB	IS 2062 GR.B 150#	-	M.S	18	18	18	54	NOS	
9.2	GI FLANGES										
a.	FLANGES	100NB	IS 2062 GR.B 150#	-	G.I	4	4	4	12	NOS	
b.	FLANGES	65NB	IS 2062 GR.B 150#	-	G.I	8	8	8	24	NOS	
c.	FLANGES	40NB	IS 2062 GR.B 150#	-	G.I	10	10	10	30	NOS	
d.	FLANGES	32NB	IS 2062 GR.B 150#	-	G.I	6	6	6	18	NOS	

SL. NO.	DESCRIPTION	SIZE	MATERIAL	GT-1A	GT-1B	GT-1C	TOTAL	UNIT	TOTAL WEIGHT (KGS)
10.0	GASKET(2MM THK)	100NB	NON ASBESTOS	8	8	8	24	NOS	
10.1	GASKET(2MM THK)	65NB	NON ASBESTOS	4	4	4	12	NOS	
10.2	GASKET(2MM THK)	40NB	NON ASBESTOS	5	5	5	15	NOS	
10.3	GASKET(2MM THK)	32NB	NON ASBESTOS	3	3	3	9	NOS	
10.4	GASKET(2MM THK)	25NB	NON ASBESTOS	9	9	9	27	NOS	
11.0	BOLT AND NUT	M16X70	G.I	80	80	80	240	NOS	
11.1	BOLT AND NUT	M14X70	G.I	68	68	68	204	NOS	
12.0	STUD & ROD	M16X150	G.I	08	08	08	24	NOS	

BOQ FOR PIPE SUPPORTS

SL. NO.	DESCRIPTION	GT-1A	GT-1B	GT-1C	TOTAL	UNIT	TOTAL WEIGHT (KGS)
A.	ISA ANGLE						
1.	50X50X6MM THK	7	7	7	21	MTRS	
2.	40X40X6MM THK	6	6	6	18	MTRS	
3.	30X30X5MM THK	3	3	3	09	MTRS	
4.	25X25X5MM THK	17	17	17	51	MTRS	
B.	ISMC CHANNEL						
5.	ISMC 100	11	12	12	35	MTRS	
6.	ISMC 75	1.5	1.5	1.5	4.5	MTRS	
C.	GI U-BOLT WITH NUT & WASHER						
1.	M-6						
1.1	25NB	53	53	55	161	NOS	
1.2	32NB	08	08	08	24	NOS	
2.	M-8						
2.1	40NB	20	20	20	60	NOS	
2.2	65NB	20	20	20	60	NOS	
3.	M-10						
3.1	100NB	03	03	03	09	NOS	
3.2	150NB	08	08	10	26	NOS	
D.	MS PLATE						
1.	100X100X5MM THK	20	20	20	60	NOS	
2.	150X150X10MM THK	31	31	33	93	NOS	
3.	125X125X10MM THK	02	02	02	06	NOS	
E.	ANCHOR FASTENER						
1.	M10X100MM LG.	132	132	140	404	NOS	
F.	MS PIPES						
1.	65NB	122	122	122	366	MTRS	
G.	MS FLANGE 65NB	10	10	10	30	NOS	
H.	GI BOLT AND NUT						
1.	M16X70	40	40	40	120	NOS	

BOQ FOR VALVES AND OTHER ACCESSORIES

SL. NO.	DESCRIPTION	GT-1A	GT-1B	GT-1C	TOTAL	UNIT	TOTAL WEIGHT (KGS)
A.	DELUGE VALVE						
1.	100NB	01	01	01	03	NOS	
B.	GATE VALVE						
1.	100NB	02	02	02	06	NOS	
C.	PRESSURE SWITCH	02	02	02	06	NOS	
D.	SPRAY NOZZLES						
1.	K-26, 100°	94	94	94	282	NOS	
E.	QBD, 79°C	54	54	54	162	NOS	
F.	Y-STRAINER						
1.	100NB	01	01	01	03	NOS	
G.	BUTTERFLY VALVE						
1.	100NB	01	01	01	03	NOS	
H.	PRESSURE GAUGE	02	02	02	06	NOS	
I.	DVLCP	01	01	01	03	NOS	
J.	SOLENOID VALVE	01	01	01	03	NOS	
K.	15NB BALL VALVE	01	01	01	03	NOS	

LEGEND

SL.NO.	ITEM	DESCRIPTION
1.0		H.V.W. SPRAY PIPE LINE
2.0		H.V. PROJECTOR
3.0		DELUGE VALVE
4.0		Y STRAINER
5.0		BUTTERFLY VALVE
6.0		GATE VALVE
7.0		Q.B. DETECTOR
8.0		DETECTION LINE
9.0		UNEQUAL TEE(G.I)
10.0		THREADOLET
11.0		REDUCER
12.0		FLANGES
13.0		UNEQUAL TEE FOR DETECTION PIPE
14.0		EQUAL TEE
15.0		EQUAL TEE FOR DETECTION PIPE

REF DWG. NO.

DRAWING NAME	DRAWING NO.
SUT LINE GENERAL ARRANGEMENT GENERATOR TRANSFORMER	3 4G2 00 00946 (2b-1to3)
FOUNDATION PLAN	3 4G2 00 00948
HYDRAULIC CALCULATION OF HWWS SYSTEM FOR GENERATOR TRANSFORMER	AFP/364/01/2017/060

TYPICAL QBD ORIENTATION
D51,D52

TYPICAL QBD ORIENTATION
D12 TO D14,D21, D34 TO D36,D43,D53

TYPICAL QBD ORIENTATION
D05 TO D07,D17, D18,D27 TO D29 D39,D40,D47,D48

TYPICAL QBD ORIENTATION
D01 TO D04,D16, D23 TO D26,D38,D46

TYPICAL QBD ORIENTATION
D08 TO D11,D20, D30 TO D33,D42,D52

TYPICAL QBD ORIENTATION
D15,D37,D45

TYPICAL QBD ORIENTATION
D22,D44,D54

TYPICAL QBD ORIENTATION
D19,D41,D49

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N60

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N35

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N22

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N23

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N21

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N86,N87,N88

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N73,N74,N75

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N77,N78

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N91,N92,N93,N94

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N55,N56,N57,N58
N70,N71,N72

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N40,N43,N59,N60,N61

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N50,N53,N85,N89

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N45,N46,N47,N48
N83,N84

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N17,N18,N19,N20
N36,N37,N38

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N07,N08,N09,N10
N28,N29

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N12,N15,N34

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N02,N05,N24,N25,N26

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N39,N41,N42,N44,N62,N76

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N01,N03,N04,N06,N27

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N49,N51,N52,N54
N65,N66,N68,N79,N80,N83

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N30,N31,N33,N11,N13,N14,N16

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N81,N84

TYPICAL NOZZLE ORIENTATION
NOZZLE 'K' FACTOR-26
N32,N89,N67,N82

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.

GENERAL DIMENSIONAL LIMITS,FITS & TOLERANCES AS PER HY0230261

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

REV.	DATE	ALTERED CHD/APPD	ZONE

BHARAT HEAVY ELECTRICALS LTD.
HYDERABAD

	NAME	SIGN.	DATE	NO.OF VAR.
DRN.				
CHD.				
APPD.				

DEPT. I.T.D. CODE 415 | UNTOL. DIMS. OR. ~~C/M/F~~ | SCALE N.T.S | WEIGHT (KG) | REF. TO ASSY. DRG. -N.A.- | ITEM NO. -N.A.- | NO.OF ITEMS -N.A.-

TITLE
CONSTRUCTION DWG OF HWW SPRAY SYSTEM FOR GT-1A, TYPICAL FOR GT-1B, GT-1C.

CARD CODE N.A. | DRAWING NO. | REV.

SHT. No 4 | NO. OF SHT. 4