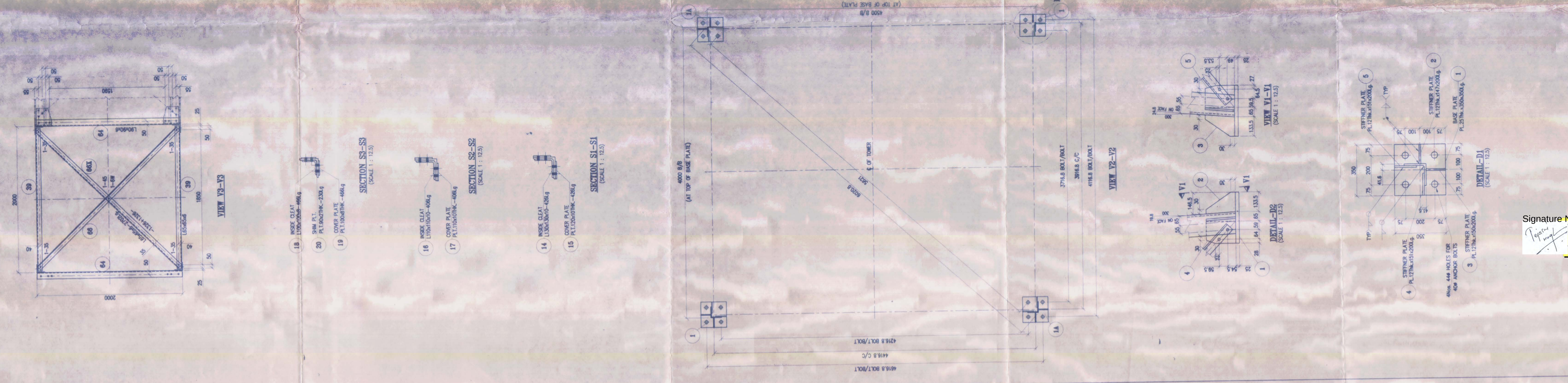
400kV Koldam Substation

400 KV Switchyard Structure drawing



REQUIREMENT OF BOLTS, NUTS AND WASHERS (GRADE 5.6)			
SIZE	QTY.	GRADE	REMARKS
16ø x 35mm Lg.	62	5.6	BOLTS & NUTS
16ø x 40mm Lg.	218	5.6	"
16ø x 45mm Lg.	150	5.6	"
16ø x 50mm Lg.	36	5.6	"
16ø x 55mm Lg.	246	5.6	"
16ø x 60mm Lg.	12	5.6	"
16ø x 175mm Lg.	50		STEP BOLT
16ø x 6 THK	96	-	PACK WASHERS
16ø x 8 THK	2	-	PACK WASHERS
16ø x 10 THK	12	-	PACK WASHERS
16ø x 3.5 THK	724	-	SPRING WASHERS

NTPC Limited PE-ELECTRICAL
APPROVED UNDER CATEGORY AS MARKED
I : APPROVED
II APPROVED AS MARKED. RESUBMIT
III : NOT APPROVED RESUBMIT
IV : FOR INFORMATION & RECORDS
SIGN. & DATE 03/11/06
DESIGNATION AcDE(E)

Recommended for approval in Cat-I 03/11/06

Signature Not Verified
Digitally signed by Tejaswi Waghmare
Date: 2012.10.15 10:31:52 IST
Reason: CAT I
Location: NTPCEOC

NUMBER OF STRUCTURES REQUIRED FOR TOWER-TA - 13 Nos.

PART NO. 1 TO 84

LEGEND:

1. NS - NEAR SIDE
2. FS - FAR SIDE
3. ① ② ERRECTION MARKS
4. TYP - TYPICAL
5. THE QTY. & LENGTH OF BOLTS ARE SHOWN AS 1-35, 1-40 ETC.,
6. THE QTY. & THICKNESS OF PACK WASHER ARE SHOWN AS 1-6W, 1-8W ETC.,
7. BL - BEND LINE

NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. BOLT SYMBOLS 16ø ⊕ = 17.5ø HOLES
3. ALL ERECTION MARKS ARE TO BE PREFIXED WITH - "KLTA".
4. 3.5mm SPRING WASHER TO BE SUPPLIED WITH EVERY BOLT
5. ALL CONNECTION BOLTS ARE OF GRADE 5.6
6. MILD STEEL SHALL CONFORM TO GRADE A OF IS:2062
7. MINIMUM EDGE SECURITY FOR 16ø BOLT SHALL BE 25mm FROM CUT EDGE
8. ALL UNNOTED MEMBERS ARE L45x45x5 WITH 23 BM
9. UNNOTED GUSSETS ARE 6mm THICK
10. STEP BOLTS SHALL BE IN ONE LEG ONLY
11. ALL FABRICATION MATERIALS INCLUDING BOLTS, NUTS & WASHERS SHALL BE GALVANISED AS PER SPECIFICATION. MINIMUM COATING THICKNESS SHALL BE 610 g/m^2 FOR STRUCTURAL STEEL & 300 g/m^2 FOR BOLTS, NUTS & WASHERS AS PER CL.6.00.03 OF PART-II TECHNICAL SPECIFICATION FOR CIVIL & STRUCTURAL WORKS.
12. HIGHER MEMBER SIZE OF SAME THICKNESS OR MORE THICKNESS MAY BE USED FOR BRACING MEMBERS INCASE THE MEMBER INDICATED AS PER ABOVE DRAWING ARE NOT AVAILABLE.(OTHER DETAILS SUCH AS NO. OF BOLTS, etc SHALL BE KEPT THE SAME) 02

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
02.	27.10.06	REVISED AS PER NTPC COMMENTS DTD. 11/07/06	DA	GASM	5501-500-PVC-F-001	400kV SWITCHYARD STRUCTURAL LAYOUT
01.	28.06.06	MAIN LEG JOINT DETAILS REVISED AS MARKED.	DA	GASM	5501-500-PVE-F-002	400kV SWITCHYARD LAYOUT-SECTION
00.	20.06.06	FIRST SUBMISSION / ISSUED FOR APPROVAL	DA	GASM	5501-500-PVE-F-001	400kV SWITCHYARD LAYOUT-PLAN
REVISION					REFERENCE DRAWINGS	

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY: MECHANICAL		
APPROVED BY: ELECTRICAL		
APPROVED BY: CIVIL & STRL.		

एनटीपीसी NTPC
नेशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400 SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

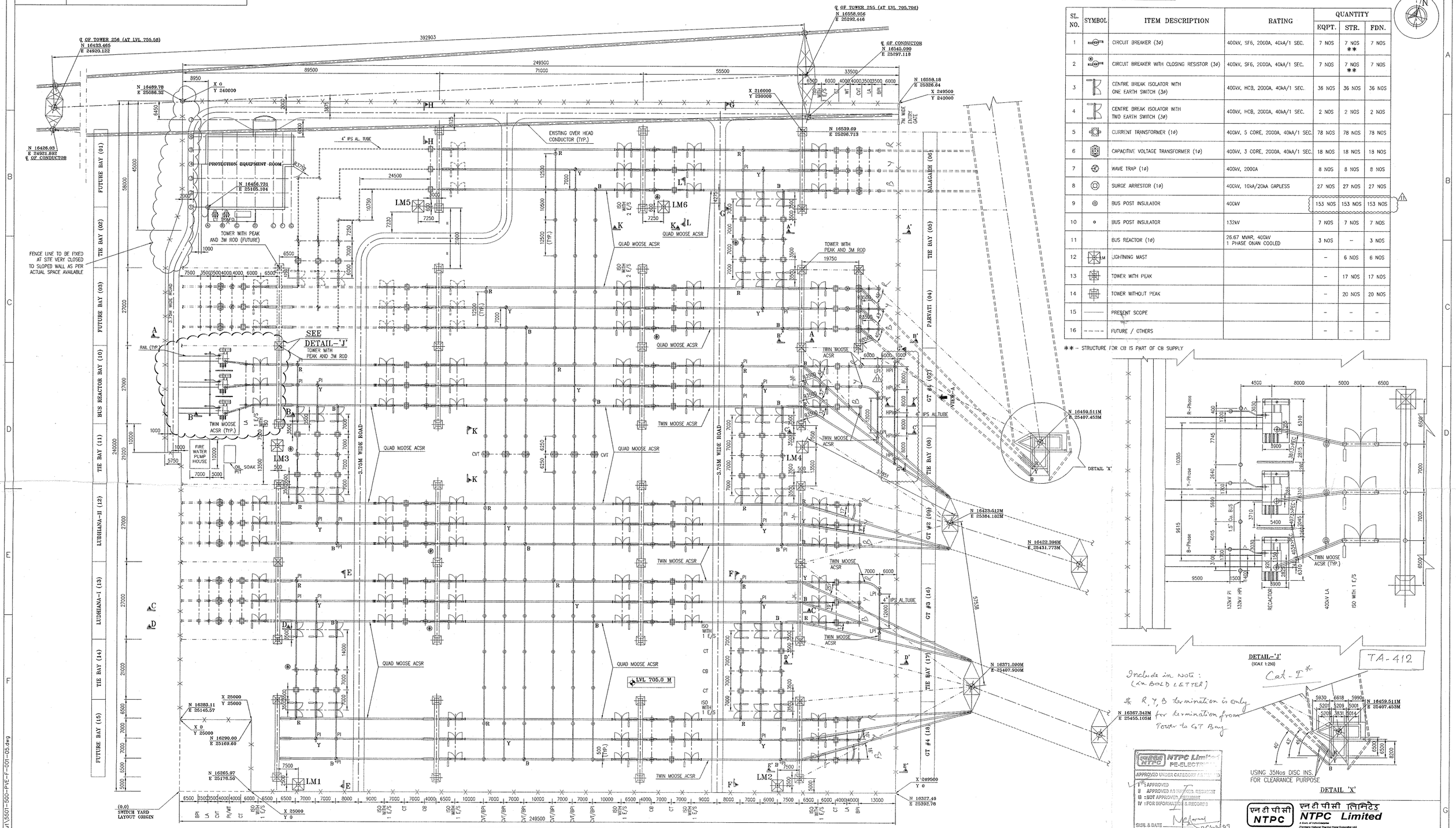
CODE	SOURCE	SCALE	DATE	20.06.06	20.06.06	20.06.06	20.06.06
		1:20	NAME	KA	UTS	DA	GASM
				DSN.	DRWN.	CHKD.	APPRD.

TITLE: 400KV SWITCHYARD STRUCTURE DRAWING TOWER-TA

DRAWING NO. 5501-500-PVC-C-001 REV. 02

400 KV Switchyard layout Plan

DRG.NO. 5501-500-PVE-F-001 REV. 11



(SCALE 1:600)

BILL OF MATERIAL SWITCHYARD

SL. NO.	SYMBOL	ITEM DESCRIPTION	RATING	QUANTITY EQPT.	STR.	FDN.
1		CIRCUIT BREAKER (3ø)	400kV, SF6, 2000A, 40kA/1 SEC.	7 NOS	7 NOS **	7 NOS
2		CIRCUIT BREAKER WITH CLOSING RESISTOR (3ø)	400kV, SF6, 2000A, 40kA/1 SEC.	7 NOS	7 NOS **	7 NOS
3		CENTRE BREAK ISOLATOR WITH ONE EARTH SWITCH (3ø)	400kV, HCB, 2000A, 40kA/1 SEC.	36 NOS	36 NOS	36 NOS
4		CENTRE BREAK ISOLATOR WITH TWO EARTH SWITCH (3ø)	400kV, HCB, 2000A, 40kA/1 SEC.	2 NOS	2 NOS	2 NOS
5		CURRENT TRANSFORMER (1ø)	400kV, 5 CORE, 2000A, 40kA/1 SEC.	78 NOS	78 NOS	78 NOS
6		CAPACITIVE VOLTAGE TRANSFORMER (1ø)	400kV, 3 CORE, 2000A, 40kA/1 SEC.	18 NOS	18 NOS	18 NOS
7		WAVE TRAP (1ø)	400kV, 2000A	8 NOS	8 NOS	8 NOS
8		SURGE ARRESTOR (1ø)	400kV, 10kA/20kA GAPLESS	27 NOS	27 NOS	27 NOS
9		BUS POST INSULATOR	400kV	153 NOS	153 NOS	153 NOS
10		BUS POST INSULATOR	132kV	7 NOS	7 NOS	7 NOS
11		BUS REACTOR (1ø)	26.67 MVAR, 400kV 1 PHASE ONAN COOLED	3 NOS	–	3 NOS
12	LM	LIGHTNING MAST		–	6 NOS	6 NOS
13		TOWER WITH PEAK		–	17 NOS	17 NOS
14		TOWER WITHOUT PEAK		–	20 NOS	20 NOS
15	———	PRESENT SCOPE		–	–	–
16	– – – –	FUTURE / OTHERS		–	–	–

11

** - STRUCTURE FOR CB IS PART OF CB SUPPLY

Include in Note :
(in BOLD LETTER)
* R,Y,B termination is only for termination from Tower to GT Bay

TA-412
Cat-I*

NTPC Limited
PRE-ELECTION
APPROVED UNDER CATEGORY AS MARKED
I : APPROVED
II : APPROVED AS PER NOTES RESPECTIVELY
III : NOT APPROVED / RESUBMIT
IV : FOR INFORMATION & RECORDS
SIGN. & DATE
DESIGNATION

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NTPC Limited
A Govt. of India Enterprise
(Formerly National Thermal Power Corporation Ltd.)

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
11	13.02.2009	REVISED BASED ON CIVIL FOUNDATION LAYOUT	SSL	KKJK		
10	30.06.2008	REVISED AS PER NTPC COMMENTS DTD. 18.06.2008	SSL	KKJK		
09	04.06.2008	REVISED AS PER NTPC COMMENTS DTD. 12.05.2008	SSL	KKJK		
08	24.04.2008	REVISED FOR GT & LINE TERMINATION WITH SWITCHYARD	SSL	KKJK		NTPC & PGCIL MOM DT: 04.10.2007
07	14.05.2007	REVISED INCORPORATING CLEARANCE DIAGRAM FOR REACTOR AREA	KVRN	KVRN		GT1, GT2, GT3 & GT4 SURVEY REPORT
06	13.04.2007	REVISED REACTOR AREA IN LINE WITH REACTOR GA DRAWING	SSV	KVRN	5501-500-PVE-F-014 (R-00)	CLEARANCE DIAGRAM FOR REACTOR AREA – PLAN & SECTION
05	18.01.2007	REVISED AS PER NTPC TELECON DATED 18.01.07	SSV	KVRN	5501-500-PVE-F-002 (R-00)	400kV SWITCHYARD SECTIONS
04	14.06.2006	REVISED AS PER NTPC COMMENTS DTD. 05.06.2006	SSV	KVRN	5501-500-PVE-P-001 (R-00)	400kV SWITCHYARD – SINGLE LINE DIAGRAM
03	31.05.2006	REVISED AS PER DISCUSSION WITH NTPC ON 18.05.2006	SSV	KVRN	5501-500-PGE-A-001 (R-B)	SINGLE LINE DIAGRAM FOR 400kV SWITCHYARD. (TENDER DRAWING)
02	07.02.2006	REVISED AS PER NTPC COMMENTS DTD. 13.01.2006	SSV	HVB	SKETCH-A (R-0)	OVER ALL PLOT PLAN (TENDER DRAWING)
01	27.12.2005	REVISED AS PER NTPC COMMENTS DTD. 20.12.2005	SSV	HVB	SKETCH-B (R-0)	400kV SWYD G.A (TENDER DRAWING)
00	16.11.2005	FOR APPROVAL / FIRST SUBMISSION	HVB	DM		

REFERENCE DRAWINGS

NOTES:

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METRES
2. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH DRG. NO.: 5501-500-PVE-F-002
3. FOLLOWING CLEARANCES ARE ADOPTED (MINIMUM)

	400kV	132kV (AS PERIS 10118)
PHASE TO PHASE	4000mm	1300mm
PHASE TO EARTH	3500mm	1300mm
SECTION CLEARANCE	6500mm	4000mm
GROUND CLEARANCE	2550mm	2550mm

4. CONDUCTOR DETAILS
   LINE BAY : QUAD MOOSE GENERATOR BAY : TWIN MOOSE
5. LOCATION OF WAVE TRAPS ARE INDICATIVE ONLY AND THE EXACT LOCATION WILL BE BASED ON PLCC REQUIREMENT.
6. PI SHALL BE INSTALLED FOR THE 3RD. PHASE WITHOUT WAVE TRAP. HOWEVER, FOUNDATIONS SHALL BE SUITABLE FOR WAVE TRAPS
7. NORMAL TENSION FOR CONDUCTORS
   TWIN MOOSE : 2T/CONDUCTOR ~ 4T/PHASE
   QUAD MOOSE : 1.5T/CONDUCTOR ~ 6T/PHASE
8. NEW TOWER & GANTRY SHALL BE DESIGNED AS PER ANGLE OF DEVIATION
9. POWER GRID LINE DEAD END TOWER SHALL BE MADE & POSITIONED AS INDICATED TO ACHIEVE ADEQUATE CLEARANCE
10. THE MAXIMUM CONDUCTOR TENSION ON THE O/G PHASE CONDUCTOR SHALL BE SUCH THE TENSION VALUES SHALL NOT EXCEED THE FOLLOWING VALUES
    a. MAX. TENSION/CONDUCTOR IN THE DIRECTION PERPENDICULAR TO THE GURDER IN HORIZONTAL PLANE = 2.0 MT
    b. MAX. TENSION/CONDUCTOR IN THE DIRECTION PARALLEL TO THE GURDER IN HORIZONTAL PLANE = 1.0 MT
11. R,Y,B PHASE SEQUENCE LINE & GT FEEDERS SHALL BE CONFIRMED BY NTPC.
12. TO OBTAIN THE PHASE TO EARTH CLEARANCE WE PROPOSE TO PROVIDE ONE PLATFORM AT 25 M LEVEL FOR LM5 AND LM6

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		

APPROVED BY: MECHANICAL / ELECTRICAL / CIVIL & STRL.

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division – EDRC

CODE	SOURCE	SCALE	DATE	27.10.05	28.10.05	14.11.05	16.11.05
		1 : 600	NAME	SSV/VTN	AGS	HVB	DM
				DSN.	DRWN.	CHKD.	APPRD.

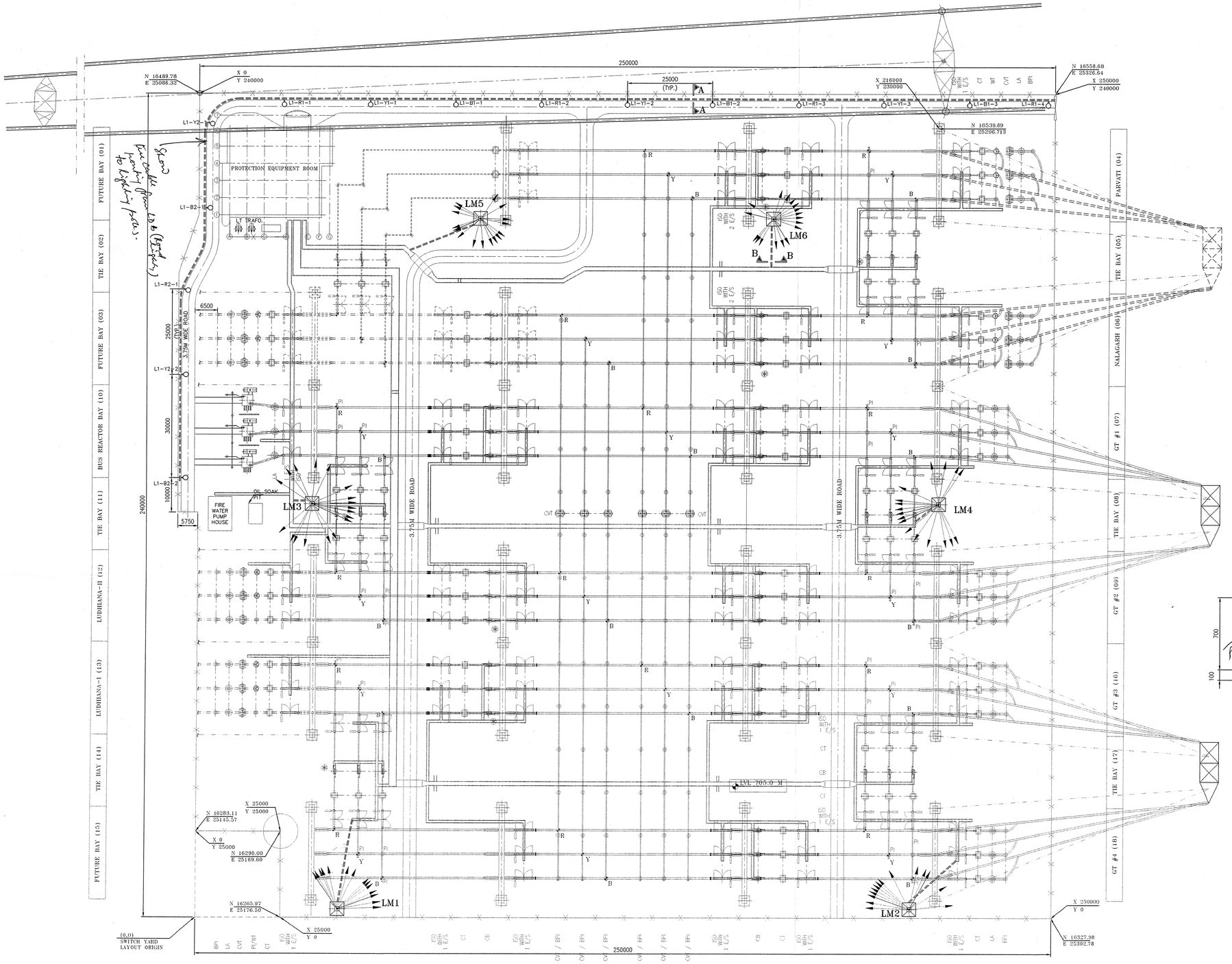
TITLE: 400kV SWITCHYARD LAYOUT – PLAN

DRAWING NO. 5501-500-PVE-F-001 REV. 11

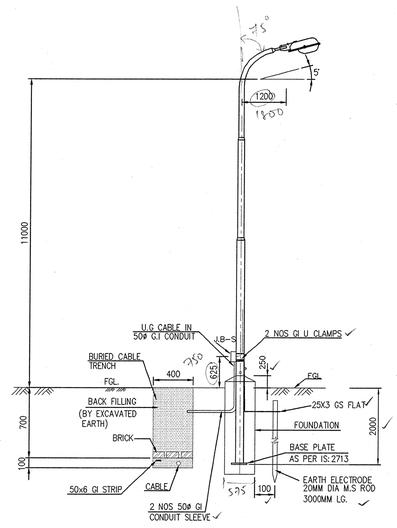
Drawings\Agt\05101-E-SY (NTPC-KOLDAM)\Deliverables\Layout\5501-500-PVE-F-001-05.dwg

Switchyard Ligthing Layout

DRG.NO. 5501-500-PVE-G-001 (SH 1 OF 2) REV. 01

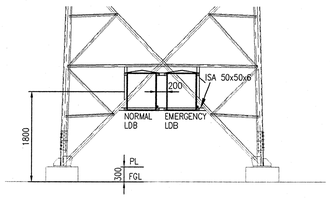


(SCALE 1:600)



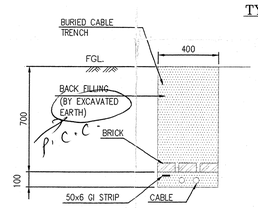
SECTION A-A

(SCALE : NTS)



TYPICAL MOUNTING DETAILS OF LIGHTING PANEL

(SCALE - 1:30)



SECTION B-B

(SCALE - 1:30)

TA-227

BOQ:-

SYMBOL	DESCRIPTION	QTY.
	HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BGENF22)	85 NOS
	HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 1x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BJEF21S)	12 NOS
	HEAVY DUTY STREET LIGHT LUMINAIRE WITH 1x150W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BGEST150SV)	15 NOS
	OUTDOOR LIGHTING PANEL WITH SYNCHRONOUS TIMER (NORMAL)	07 NOS
	OUTDOOR LIGHTING PANEL WITH SYNCHRONOUS TIMER (EMERGENCY)	06 NOS
	1.3M HIGH ROAD LIGHTING POLE	15 NOS
	16 WAY JUNCTION BOX	48 NOS
	8 WAY JUNCTION BOX	15 NOS
=====	300W BURIED CABLE TRENCH	450 Mts

CAT-II

NTPC Limited PE-ELECTRICAL

APPROVED UNDER CATEGORY AS MARKED

I : APPROVED
II : APPROVED AS MARKED, RESUBMIT
III : NOT APPROVED, RESUBMIT
IV : FOR INFORMATION & RECORDS

SIGN. & DATE 08/12/06
DESIGNATION A.DGM(E) PEF

NOTES:

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METRES
2. FOR LOCATION ANGLE OF TILT AND ORIENTATION OF FLOOD LIGHT FITTING REFER DOCUMENTS 5501-500-PVE-U-007 AND 5501-500-PVE-U-008 RESPECTIVELY.

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
						REVISION
					5501-500-PVC-F-003	CABLE TRENCH LAYOUT
					5501-500-PVE-U-007	ROAD LIGHTING DESIGN CALCULATION
					5501-500-PVE-U-008	AREA LIGHTING DESIGN CALCULATION
01	14.11.2006	REVISED AS PER NTPC COMMENTS DTD 30.08.06	SSV	KVRN	5501-500-PVE-P-008	AC POWER DISTRIBUTION SLD
00	04.08.2006	FOR APPROVAL / FIRST SUBMISSION	SSV	KVRN	5501-500-PVE-F-001	400kV SWITCHYARD PLAN
						REFERENCE DRAWINGS

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY: MECHANICAL		
APPROVED BY: ELECTRICAL		
APPROVED BY: CIVIL & STRL.		

एनटीपीसी NTPC एनटीपीसी लिमिटेड NTPC Limited
A Govt. of India Enterprise (Formerly National Thermal Power Corporation Ltd.)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

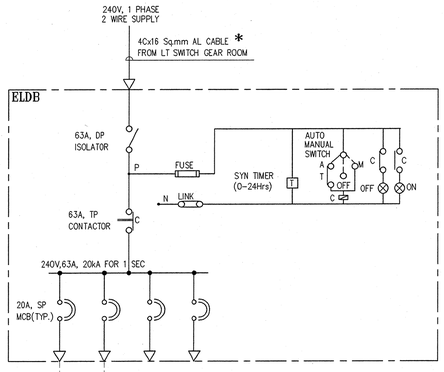
PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

CODE	SOURCE	SCALE				
		1:600	DATE	01.08.06	01.08.06	02.08.06	04.08.06
			NAME	VTN	AGS	SSV	KVRN
				DSN.	DRWN.	CHKD.	APPRD.

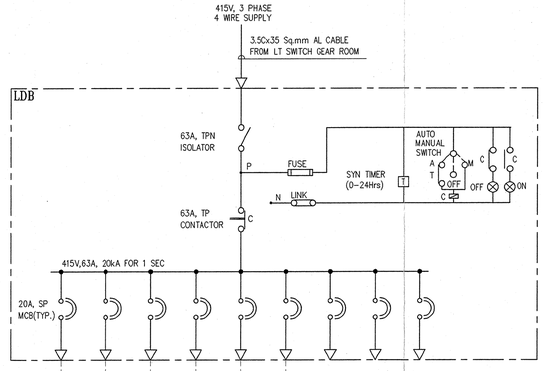
TITLE: SWITCHYARD LIGHTING LAYOUT

DRAWING NO. 5501-500-PVE-G-001 (SH 1 OF 2) REV. 01



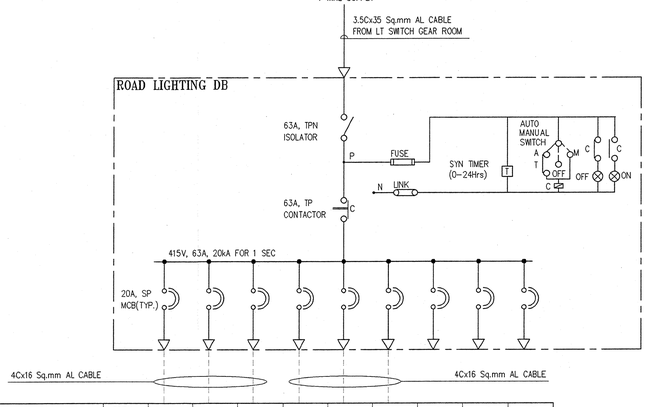
REEFER AREA LIGHTING WIRING DETAILS

LDB	SYMBOL	DESCRIPTION	TOTAL	L1	L2	L3	L4
ELDB-1 LOC::LM1		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGENF22)	3	2	1	SPARE	SPARE
		TOTAL CONNECTED LOAD (kW)	2.66	1.77	0.89		
ELDB-2 LOC::LM2		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGENF22)	3	2	1	SPARE	SPARE
		TOTAL CONNECTED LOAD (kW)	2.66	1.77	0.89		
ELDB-3 LOC::LM3		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGENF22)	4	2	2	SPARE	SPARE
		TOTAL CONNECTED LOAD (kW)	3.54	1.77	1.77		
ELDB-4 LOC::LM4		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGENF22)	4	2	2	SPARE	SPARE
		TOTAL CONNECTED LOAD (kW)	3.54	1.77	1.77		
ELDB-5 LOC::LM5		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGENF22)	4	2	2	SPARE	SPARE
		TOTAL CONNECTED LOAD (kW)	3.54	1.77	1.77		
ELDB-6 LOC::LM6		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGENF22)	4	2	2	SPARE	SPARE
		TOTAL CONNECTED LOAD (kW)	3.54	1.77	1.77		

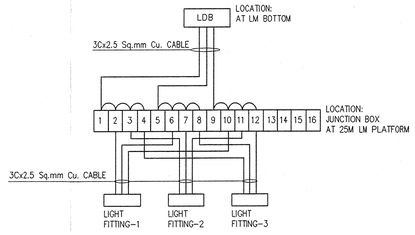


REEFER AREA LIGHTING WIRING DETAILS

LDB	SYMBOL	DESCRIPTION	TOTAL	R1	Y1	B1	R2	Y2	B2	R3	Y3	B3
LDB-1 LOC::LM1		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BGENF22)	9	1	1	2	2	2	1	SPARE	SPARE	SPARE
		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 1x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BJEF21S)	2	1	1							
		TOTAL CONNECTED LOAD (kW)	8.86	1.33	1.33	1.77	1.77	1.77	0.89			
LDB-2 LOC::LM2		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGENF22)	9	1	1	2	2	2	1	SPARE	SPARE	SPARE
		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 1x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BJEF21S)	2	1	1							
		TOTAL CONNECTED LOAD (kW)	8.86	1.33	1.33	1.77	1.77	1.77	0.89			
LDB-3 LOC::LM3		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BGENF22)	12	2	2	2	2	2	2	SPARE	SPARE	SPARE
		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 1x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BJEF21S)	2	1	1							
		TOTAL CONNECTED LOAD (kW)	11.50	2.21	2.21	1.77	1.77	1.77	1.77			
LDB-4 LOC::LM4		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BGENF22)	11	1	2	2	2	2	2	SPARE	SPARE	SPARE
		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 1x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BJEF21S)	2	1	1							
		TOTAL CONNECTED LOAD (kW)	10.62	1.33	2.21	1.77	1.77	1.77	1.77			
LDB-5 LOC::LM5		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BGENF22)	11	1	2	2	2	2	2	SPARE	SPARE	SPARE
		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 1x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BJEF21S)	2	1	1							
		TOTAL CONNECTED LOAD (kW)	10.62	1.33	2.21	1.77	1.77	1.77	1.77			
LDB-6 LOC::LM6		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 2x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (REFER BAJAJ CAT. No. BGENF22)	11	1	2	2	2	2	2	SPARE	SPARE	SPARE
		HEAVY DUTY FLOOD LIGHT LUMINAIRE WITH 1x400W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BJEF21S)	2	1	1							
		TOTAL CONNECTED LOAD (kW)	10.62	1.33	2.21	1.77	1.77	1.77	1.77			



SYMBOL	DESCRIPTION	TOTAL	R1	Y1	B1	R2	Y2	B2	R3	Y3	B3
	HEAVY DUTY ROAD LIGHT LUMINAIRE WITH 1x150W HPSV LAMP WITH NECESSARY CONTROL GEAR BOX. (BAJAJ CAT. No. BGEST150SV)	15	4	3	3	1	2	2	SPARE	SPARE	SPARE
	TOTAL CONNECTED LOAD (kW)	2.61	0.69	0.52	0.52	0.18	0.35	0.35			



AREA LIGHTING WIRING DETAILS (TYP)

TA-227

CAT-I

NTPC Limited
RE-ELECTRICAL
APPROVED UNDER CATEGORY AS MARKED
I : APPROVED
II : APPROVED ... RESUBMIT
III : NOT APPROVED ... RESUBMIT
IV : FOR INFORMATION ... RECORDS
SIGN. & DATE 08/12/06
DESIGNATION AGM(E)-IC

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
		REVISION			REFERENCE DRAWINGS	
					5501-500-PVC-U-007	AREA LIGHTING DESIGN CALCULATION
					5501-500-PVE-U-008	ROAD LIGHTING DESIGN CALCULATION
01	14.11.2006	REVISED AS PER NTPC COMMENTS DTD 30.08.06	SSV	KVRN	5501-500-PVE-P-008	AC POWER DISTRIBUTION SLD
00	04.08.2006	FOR APPROVAL / FIRST SUBMISSION	SSV	KVRN	5501-500-PVE-F-001	400kV SWITCHYARD PLAN

NOTES:

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METERS
2. FOR LEGEND & NOTES REFER SHEET 1 OF 2
3. * ONLY TWO CORES ARE USED AND OTHER TWO ARE LOOPED TO NEXT LM
4. 2# 4Cx16 SQ.MM CABLE HAVE TO BE LOOPED IN - LOOPED OUT

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY: MECHANICAL		
APPROVED BY: ELECTRICAL		
APPROVED BY: CIVIL & STRL.		

एन टी पी सी NTPC एन टी पी सी लिमिटेड NTPC Limited
A Govt. of India Enterprise (Formerly National Thermal Power Corporation Ltd.)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

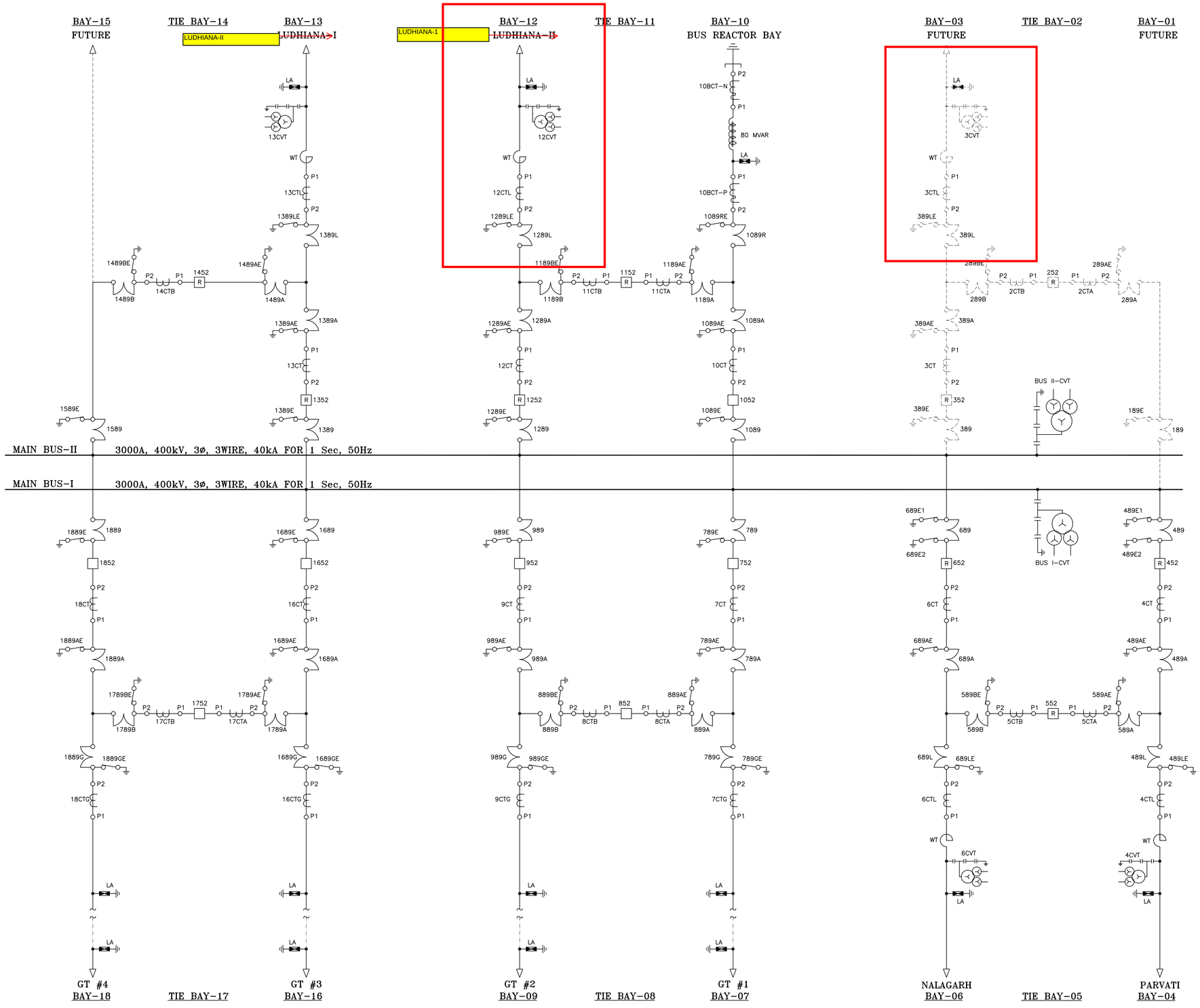
CODE	SOURCE	SCALE					
		NTS	DATE	01.08.06	01.08.06	01.08.06	04.08.06
			NAME	VTN	AGS	SSV	KVRN
				DSN.	DRWN.	CHKD.	APPRD.

TITLE: SWITCHYARD LIGHTING LAYOUT

DRAWING NO. 5501-500-PVE-G-001 (SH 2 OF 2) | REV. 01

Single Line Diagram for 400 kV Switchyard

DRG.NO. 5501-500-PVE-P-001 REV. 01



BILL OF MATERIAL (PRESENT SCOPE)

SL.NO.	SYMBOL	ITEM DESCRIPTION	RATING		QTY.
01.		CIRCUIT BREAKER	400kV, SF6, 2000A, 40kA/1 SEC.		7 Nos.
02.	R	CIRCUIT BREAKER WITH CLOSING RESISTOR	400kV, SF6, 2000A, 40kA/1 SEC.		7 Nos.
03.		CENTRE BREAK ISOLATOR WITH ONE EARTH SWITCH	400kV, HCB, 2000A, 40kA/1 SEC.		36 Nos.
04.		CENTRE BREAK ISOLATOR WITH TWO EARTH SWITCH	400kV, HCB, 2000A, 40kA/1 SEC.		2 Nos.
05.		CURRENT TRANSFORMER (1ø)	400kV, 5 CORE, 2000A, 40kA/1 SEC.		78 Nos.
06.		BUSHING CURRENT TRANSFORMER (1ø)	400kV, 5 CORE, 2000A, 40kA/1 SEC.		78 Nos.
07.		CAPACITOR VOLTAGE TRANSFORMER (1ø)	400kV, 3 CORE, 2000A, 40kA	4400 pf *	6 Nos.
				6600 pf *	6 Nos.
				8800 pf *	6 Nos.
08.		WAVE TRAP (1ø)	400kV, 2000A	0.5 mH *	4 Nos.
				1.0 mH *	4 Nos.
09.		SURGE ARRESTOR (1ø)	400kV, GAPLESS		39 Nos.
10.		BUS REACTOR (1ø)	26.67 MVAR		3 Nos.

CT & CVT PARAMETERS

CORE	400kV CT	400kV CVT
CORE-1	2000-1000/1A, PS Vk > 2000V/1000V Imag = 30/60 mA AT Vk RCT < 10-5 Ohm	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$, CL. 3P, 200VA
CORE-2	2000-1000/1A, PS Vk > 2000V/1000V Imag = 30/60 mA AT Vk RCT < 10-5 Ohm	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$, CL. 3P, 200VA
CORE-3	2000-1000-500/1A 40VA, CL-0.2	$\frac{400kV}{\sqrt{3}} / \frac{110V}{\sqrt{3}}$, CL. 0.2, 100VA
CORE-4	2000-1000-500/1A,PS Vk > 4000/2000/1000V Imag = 30/60/120 mA AT Vk RCT < 10-5-2.5 Ohm	-
CORE-5	2000-1000-500/1A,PS Vk > 4000/2000/1000V Imag = 30/60/120 mA AT Vx RCT < 10-5-2.5 Ohm	-

SHUNT REACTOR - BCT PARAMETERS

CORE	400kV BUSHING CT (10BCT-P)	400kV BUSHING CT (10BCT-N)
CORE-1	200/1A, 5P20, 10VA	RATING SHALL BE PROVIDED BY MANUFACTURER (WTI)
CORE-2	200/1A, PS Vk > 200V Imag = 60 mA AT Vk RCT < 1 Ohm	200/1A, Cl. 0.5, ISF<5, 10VA
CORE-3	200/1A, PS Vk > 200V Imag = 60 mA AT Vk RCT < 1 Ohm	200/1A, PS, Vk > 200V Imag = 60 mA AT Vk RCT < 1 Ohm
CORE-4		200/1A, PS Vk > 200V Imag = 60 mA AT Vk RCT < 1 Ohm

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
01	27.12.2005	REVISED AS PER NTPC COMMENTS DTD. 19.12.2005	HVB	DM		
00	16.11.2005	FOR APPROVAL / FIRST SUBMISSION	HVB	DM	5501-999-POE-J-001 (R-B)	SINGLE LINE DIAGRAM FOR 400kV SWITCHYARD. (TENDER DRAWING)

REVISION | REFERENCE DRAWINGS

LEGEND:

- PRESENT SCOPE (SPEC. No.: CS-5501-500-2)
- FUTURE
- TL BETWEEN POWER HOUSE & SUBSTATION (L&T SCOPE)
- * RATING WILL BE FINALISED BASED ON PGCIL REQUIREMENTS

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY: MECHANICAL		
ELECTRICAL		
CIVIL & STRL.		

एन टी पी सी NTPC नैशनल थर्मल पावर कारपोरेशन लिमिटेड
National Thermal Power Corporation Ltd.
(A GOVERNMENT OF INDIA ENTERPRISE)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400 SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

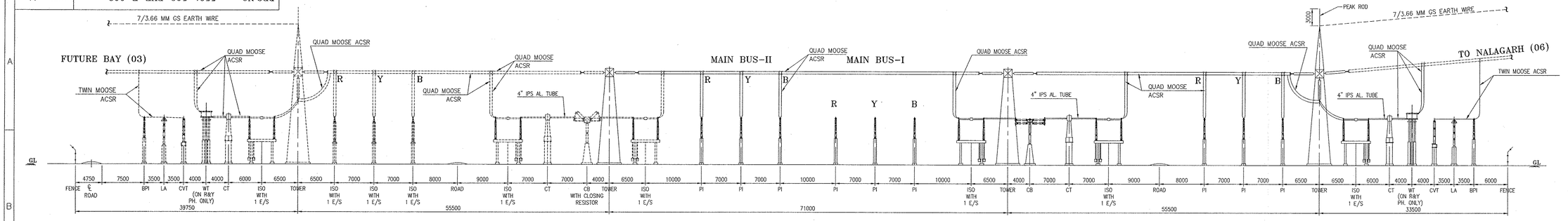
CODE	SOURCE	SCALE		DATE	27.10.05	28.10.05	14.11.05	16.11.05
		~		NAME	SSV/VTN	AGS	HVB	DM
					DSN.	DRWN.	CHKD.	APPRD.

TITLE: SINGLE LINE DIAGRAM FOR 400kV SWITCHYARD

DRAWING NO. 5501-500-PVE-P-001 REV. 01

400 KV Switchyard Layout - Section

DRG.NO. 5501-500-PVE-F-002 REV. 11



SECTION A-A
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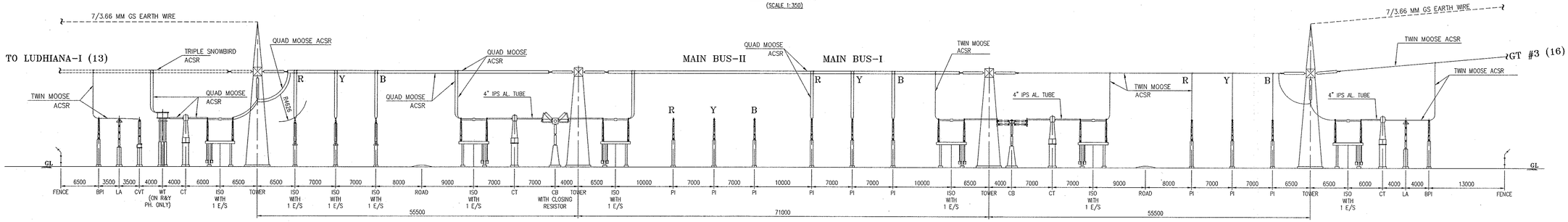
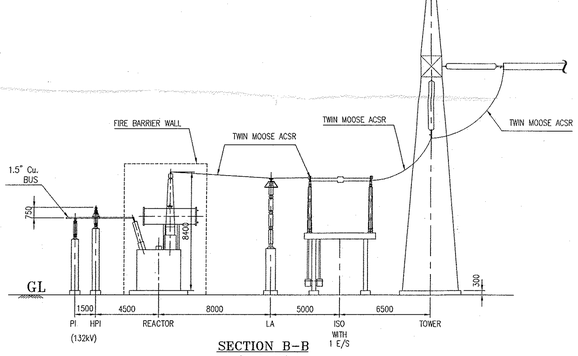
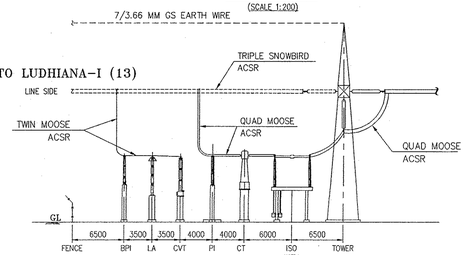


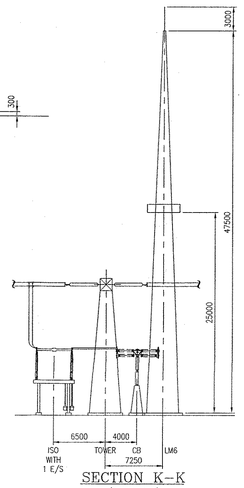
SECTION C-C
(SCALE 1:350)



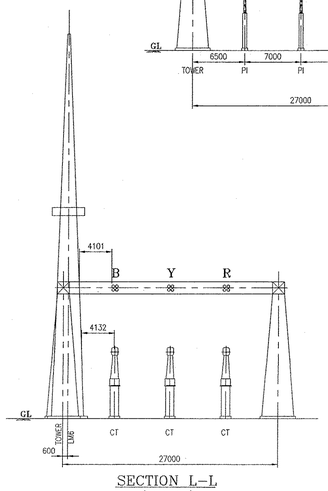
SECTION B-B
(SCALE 1:200)



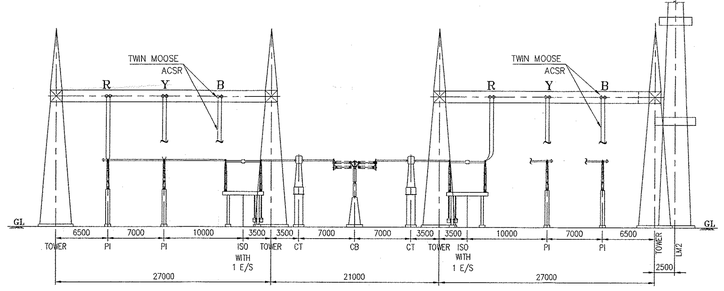
SECTION D-D
(SCALE 1:350)



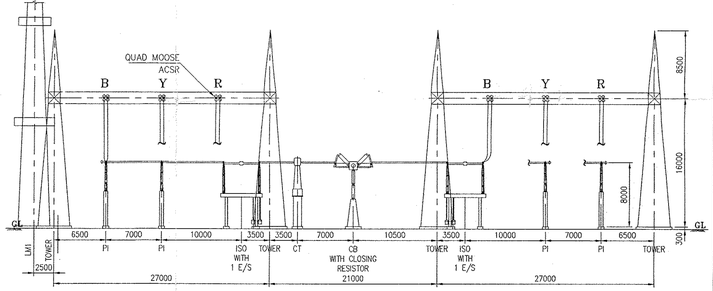
SECTION K-K
(SCALE 1:350)



SECTION L-L
(SCALE 1:350)

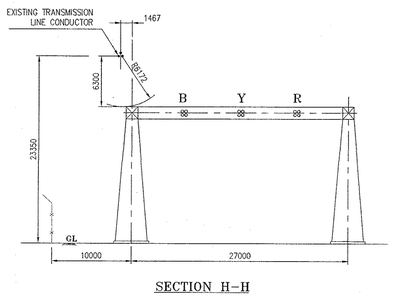


SECTION F-F
(SCALE 1:350)

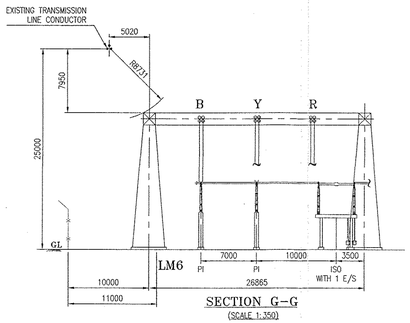


SECTION E-E
(SCALE 1:350)

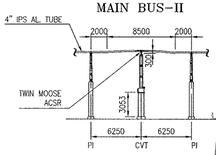
TA-412



SECTION H-H
(SCALE 1:350)



SECTION G-G
(SCALE 1:350)



SECTION K-K

NTPC LIMITED NOIDA
APPROVED UNDER CATEGORY REMARKS
I : APPROVED
II : APPROVED SUBJECT TO REMARKS
III : NOT APPROVED, RESUBMIT
IV : FOR INFORMATION & RECORDS
SIGN. & DATE
DESIGNATION

NO.	DATE	REMARKS	BY	APPD.
11	13.02.2009	REVISED BASED ON CIVIL FOUNDATION LAYOUT	SSL	KK/JK
10	30.06.2008	REVISED AS PER NTPC COMMENTS DTD. 18.06.2008	SSL	KK/JK
09	04.06.2008	REVISED AS PER NTPC COMMENTS DTD. 12.05.2008	SSL	KK/JK
08	24.04.2008	REVISED FOR GT & LINE TERMINATION WITH SWITCHYARD	SSL	KK/JK
07	14.05.2007	REVISED INCORPORATING CLEARANCE DIAGRAM FOR REACTOR AREA	KVRN	KVRN
06	13.04.2007	REVISED REACTOR AREA IN LINE WITH REACTOR GA DRAWING	SSV	KVRN
05	18.01.2007	REVISED AS PER NTPC TELECON DATED 18.01.07	SSV	KVRN
04	14.06.2006	REVISED AS PER NTPC COMMENTS DTD. 05.06.2006	SSV	KVRN
03	31.05.2006	REVISED AS PER DISCUSSION WITH NTPC ON 18.05.2006	SSV	KVRN
02	07.02.2006	REVISED AS PER NTPC COMMENTS DTD. 13.01.2006	SSV	HVB
01	27.12.2005	REVISED AS PER NTPC COMMENTS DTD. 20.12.2005	SSV	HVB
00	16.11.2005	FOR APPROVAL / FIRST SUBMISSION	HVB	DM

REVISION

DRG.NO.	TITLE
5501-500-PVE-F-014 (R-00)	CLEARANCE DIAGRAM FOR REACTOR AREA -- PLAN & SECTION
5501-500-PVE-F-001 (R-00)	400kV SWITCHYARD PLAN LAYOUT
5501-500-PVE-P-001 (R-00)	SINGLE LINE DIAGRAM FOR 400kV SWITCHYARD.
5501-500-POE-A-001 (R-B)	SINGLE LINE DIAGRAM FOR 400kV SWITCHYARD. (TENDER DRAWING)
SKETCH-A (R-0)	OVER ALL PLOT PLAN (TENDER DRAWING)
SKETCH-B (R-0)	400kV SWYD G.A (TENDER DRAWING)

REFERENCE DRAWINGS

NOTES:

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METRES
2. FOR NOTES & BILL OF MATERIAL, REFER SHEET 1 OF 2
3. PI SHALL BE INSTALLED FOR THE 3RD. PHASE WITHOUT WAVE TRAP, HOWEVER, FOUNDATIONS SHALL BE SUITABLE FOR WAVE TRAPS

LEGEND:

——— PRESENT SCOPE
- - - - - - FUTURE / OTHERS

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY: MECHANICAL		
APPROVED BY: ELECTRICAL		
APPROVED BY: CIVIL & STRL.		

एन टी पी सी NTPC — एन टी पी सी लिमिटेड NTPC Limited
A Govt. of India Enterprise (Formerly National Thermal Power Corporation Ltd.)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

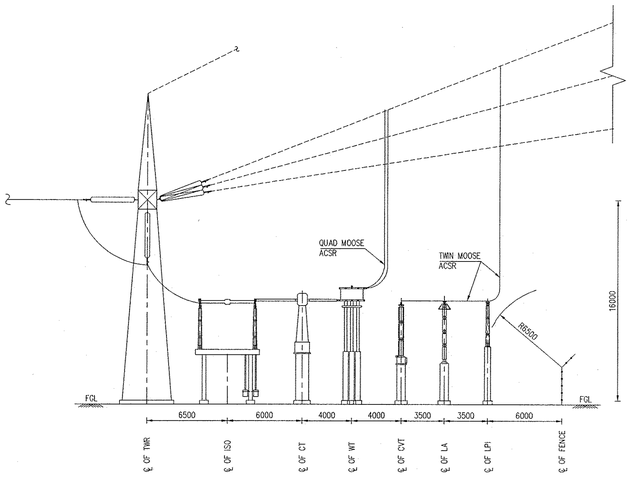
CODE	SOURCE	SCALE	DATE	27.10.05	28.10.05	14.11.05	16.11.05
		AS MARKED	NAME	SSV/VTN	AGS	HVB	DM
				DSN.	DRWN.	CHKD.	APPRD.

TITLE:
400kV SWITCHYARD LAYOUT - SECTION

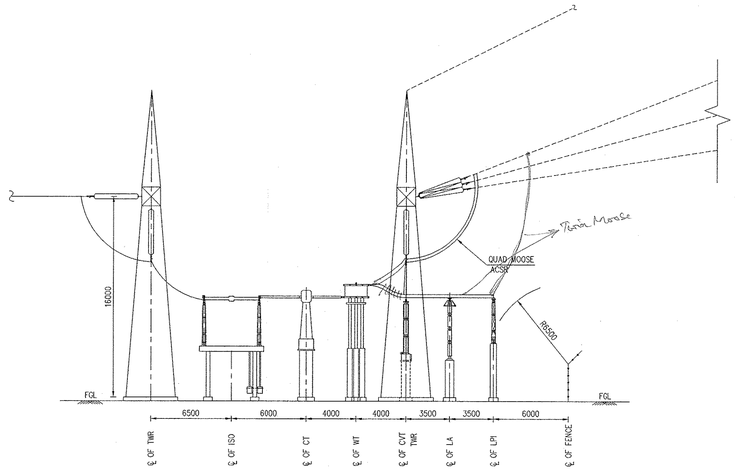
DRAWING NO.5501-500-PVE-F-002 (sh 01 OF 02) REV. 11

Drawings\Acad\05101-E-SY (NTPC-KOLDAM)\Dailworables\Layout\5501-500-PVE-F-002-05.dwg

DRG.NO. 5501-500-PVE-F-002 REV. 11



SECTION A'-A'
SCALE 1:225



SECTION B'-B'
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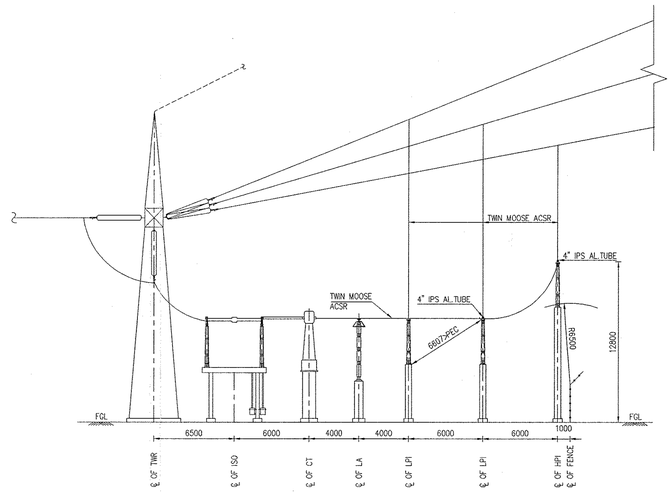
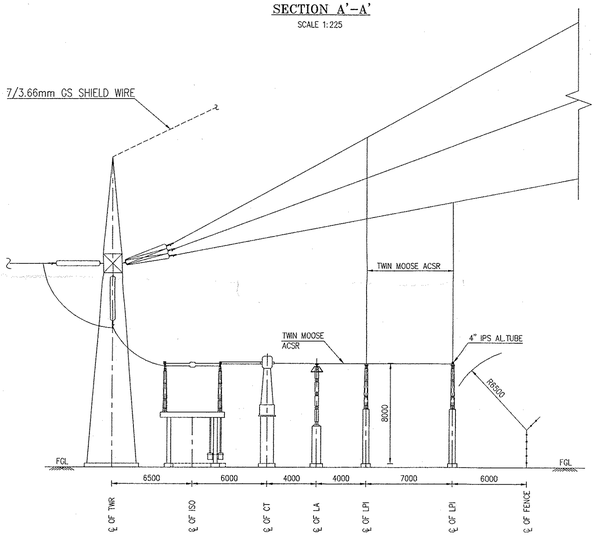
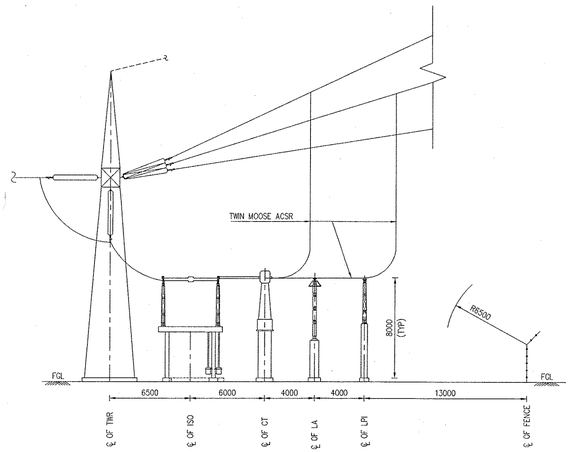


SECTION C'-C'
SCALE 1:225



SECTION D'-D'
SCALE 1:225



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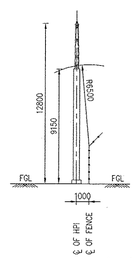
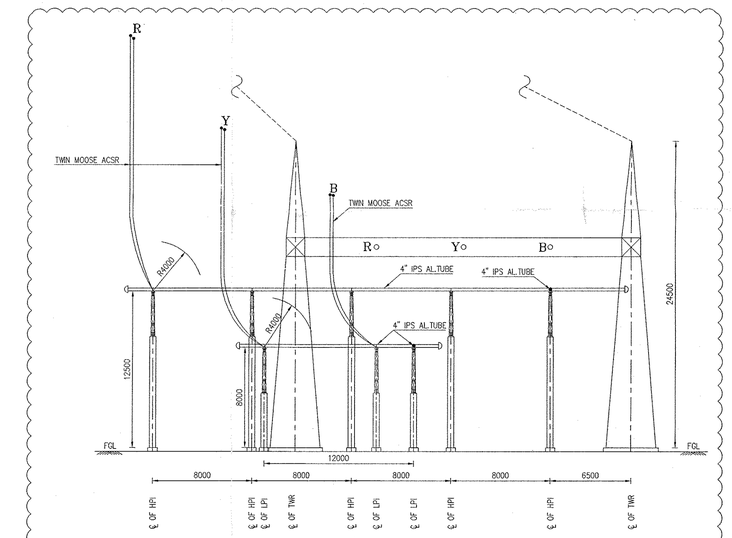
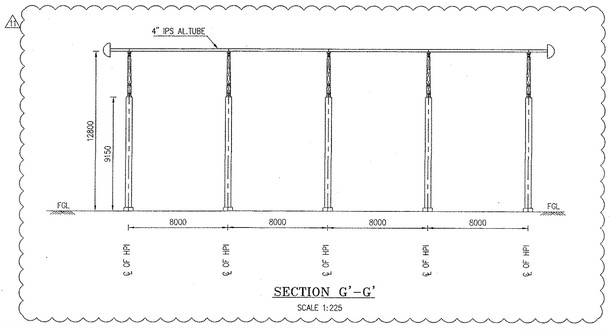
SCALE 1:225



SECTION F'-F'
SCALE 1:225



VIEW-A
SCALE 1:225



SECTION G'-G'
SCALE 1:225

TA-412

Cat-I*

NTPC Limited
NTPC PE-ELECTRICAL
APPROVED UNDER CATEGORY AS MARKED
I : APPROVED
II APPROVED AS MARKED, RESUBMIT
III : NOT APPROVED, RESUBMIT
IV : FOR INFORMATION & RECORDS
SIGN. & DATE
DESIGNATION

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
11	13.02.2009	REVISED BASED ON CIVIL FOUNDATION LAYOUT	SSV	KKJK		
10	30.06.2008	REVISED AS PER NTPC COMMENTS DTD. 18.06.08	SSL	KKJK		
09	04.06.2008	REVISED AS PER NTPC COMMENTS DTD. 12.05.08	SSL	KKJK		
08	24.04.2008	REVISED FOR GT & LINE TERMINATION WITH SWITCHYARD	SSL	KKJK		
07	14.05.2007	REVISED INCORPORATING CLEARANCE DIAGRAM FOR REACTOR AREA	KVRN	KVRN		
06	13.04.2007	REVISED REACTOR AREA IN LINE WITH REACTOR GA DRAWING	SSV	KVRN		
05	18.01.2007	REVISED AS PER NTPC TELECON DATED 18.01.07	SSV	KVRN	5501-500-PVE-F-014 (R-00)	CLEARANCE DIAGRAM FOR REACTOR AREA - PLAN & SECTION
04	14.06.2006	REVISED AS PER NTPC COMMENTS DTD. 05.06.2006	SSV	KVRN	5501-500-PVE-F-001 (R-00)	400kV SWITCHYARD PLAN LAYOUT
03	31.05.2006	REVISED AS PER DISCUSSION WITH NTPC ON 18.05.2006	SSV	KVRN	5501-500-PVE-P-001 (R-00)	SINGLE LINE DIAGRAM FOR 400kV SWITCHYARD.
02	07.02.2006	REVISED AS PER NTPC COMMENTS DTD. 13.01.2006	SSV	HVB	5501-500-POE-A-001 (R-B)	SINGLE LINE DIAGRAM FOR 400kV SWITCHYARD. (TENDER DRAWING)
01	27.12.2005	REVISED AS PER NTPC COMMENTS DTD. 20.12.2005	SSV	HVB	SKETCH-A (R-0)	OVER ALL PLOT PLAN (TENDER DRAWING)
00	16.11.2005	FOR APPROVAL / FIRST SUBMISSION	HVB	DM	SKETCH-B (R-0)	400kV SWYD G.A (TENDER DRAWING)

REVISION | REFERENCE DRAWINGS

NOTES:

1. ALL DIMENSIONS ARE IN mm AND LEVELS ARE IN METRES
2. FOR NOTES & BILL OF MATERIAL, REFER SHEET 1 OF 3
3. PI SHALL BE INSTALLED FOR THE 3RD. PHASE WITHOUT WAVE TRAP. HOWEVER, FOUNDATIONS SHALL BE SUITABLE FOR WAVE TRAPS

LEGEND:

——— PRESENT SCOPE
- - - - - - - - FUTURE / OTHERS

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY: MECHANICAL		
APPROVED BY: ELECTRICAL		
APPROVED BY: CIVIL & STRL.		

एन टी पी सी लिमिटेड
NTPC Limited
A Govt. of India Enterprise
(Formerly National Thermal Power Corporation Ltd.)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

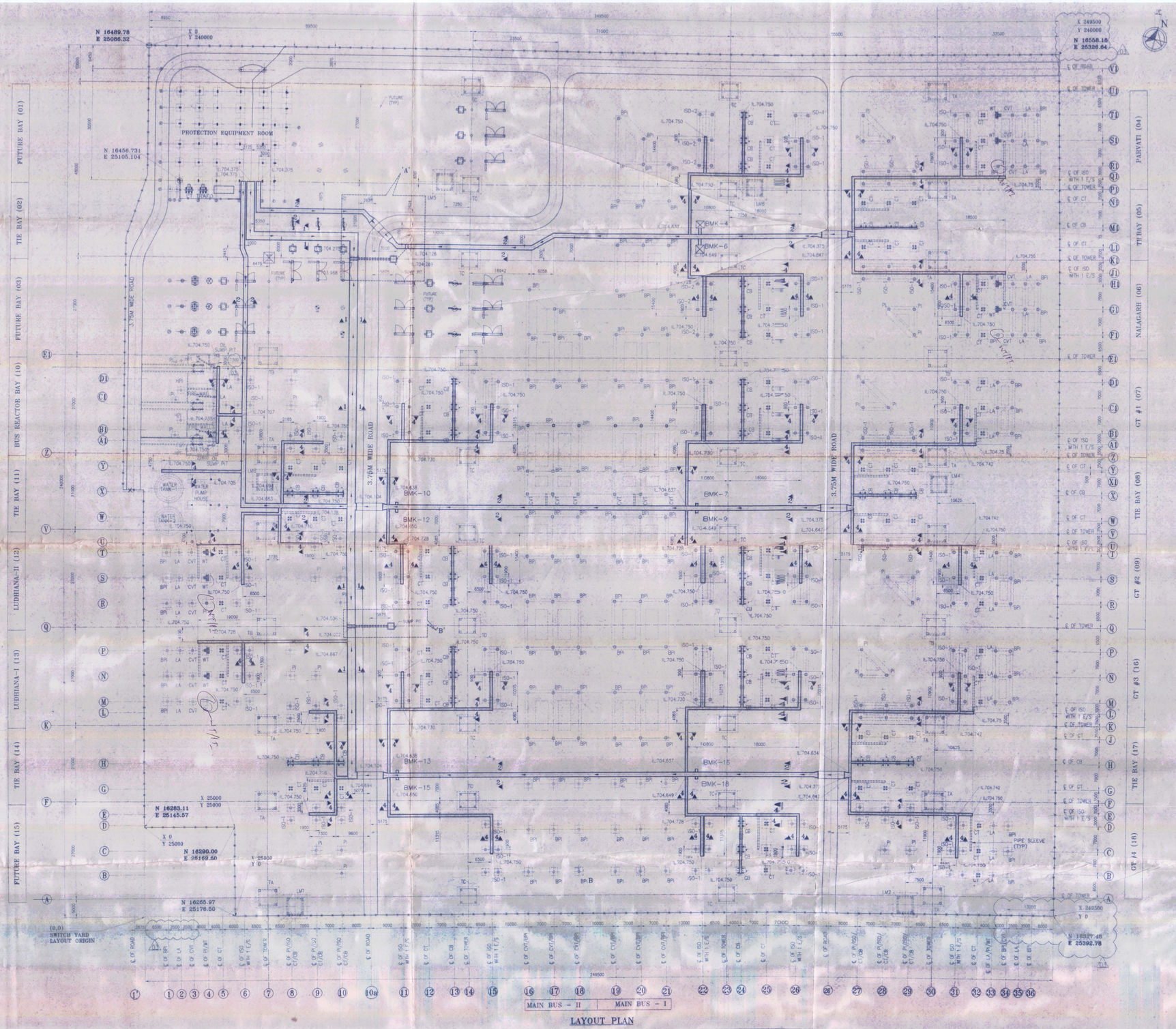
CODE	SOURCE	SCALE	DATE	27.10.05	28.10.05	14.11.05	16.11.05
		AS MARKED	NAME	SSV/VTN	AGS	HVB	DM
				DSN.	DRWN.	CHKD.	APPRD.

TITLE:
400kV SWITCHYARD LAYOUT - SECTION

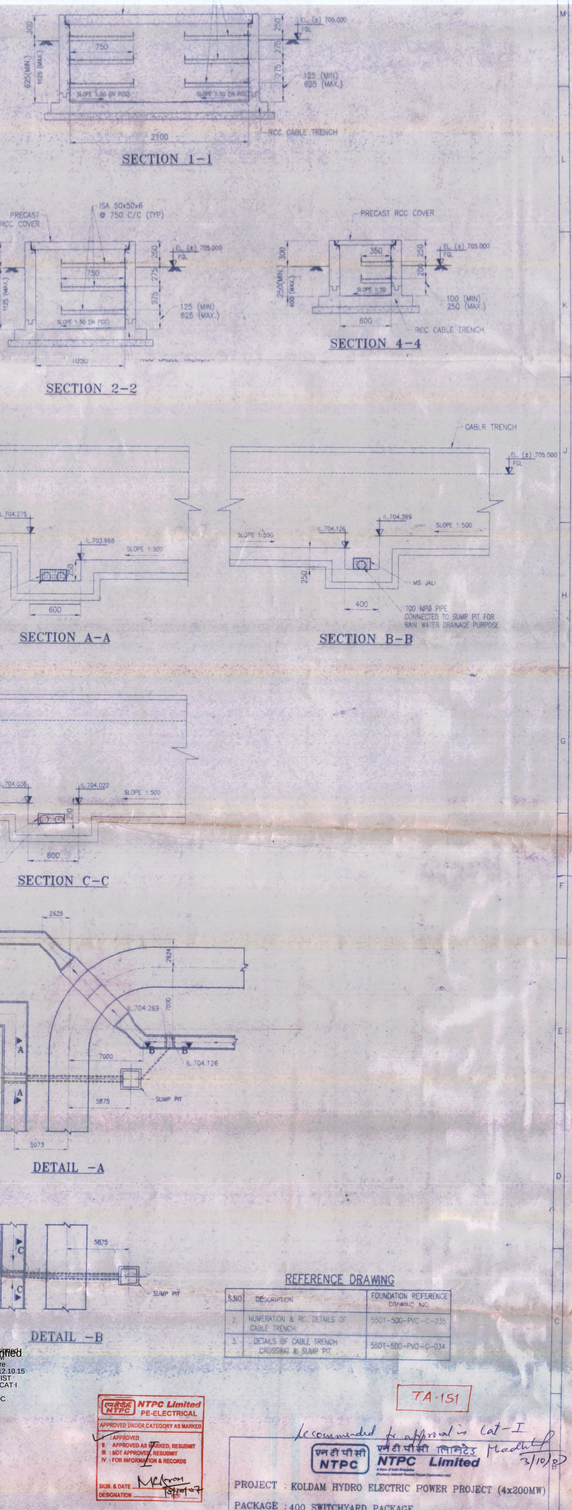
DRAWING NO. 5501-500-PVE-F-002 (SHT.02 OF 02) REV. 11

Drawings\Vega\DS101-E-SY (NTPC-KOLDAM)\Deliverables\Layout\5501-500-PVE-F-002-05.dwg

400 KV Switchyard – Cable Trench Layout



LAYOUT PLAN



REFERENCE DRAWING

S.NO	DESCRIPTION	FOUNDATION REFERENCE DRAWING NO.
2.	NUMERATION & RL. DETAILS OF CABLE TRENCH	5501-500-PVC-C-035
3.	DETAILS OF CABLE TRENCH CROSSING & SUMP PIT	5501-500-PVC-C-034

Signature Not Verified
Digitally signed by Mukesh Gupta
Date: 2012.10.15 10:10:53 IST
Reason: CAT-I
Location: NTPCEOC

NTPC Limited
PE-ELECTRICAL
APPROVED UNDER CATEGORY AS MARKED
APPROVED
A : APPROVED AS CORRECTED, RESUBMIT
B : NOT APPROVED, RESUBMIT
R : FOR INFORMATION & RECORDS
SIGN & DATE
DESIGNATION

TA-151

Recommended for approval in Cat-I
3/10/12

NTPC Limited

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400 SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

CODE	SOURCE	SCALE	DATE	30.03.06	30.03.06	30.03.06
		1:400	NAME	AK	CH-E	DA/AK
			DSN	DRWN	CHKD	APPRD

TITLE: 400 kV SWITCHYARD
CABLE TRENCH LAYOUT

DRAWING NO. 5501-500-PVC-F-003 REV. 03

NO.	DATE	REMARKS	BY	APPD.	DRG NO.	TITLE
		REVISION			REFERENCE DRAWINGS	
03	09.10.07	REVISED AS PER NTPC'S COMMENT DATED 17.01.07	AK	DA/AK		
02	26.10.06	REVISED AS PER NTPC'S COMMENT DATED 03.10.06	AK	DA/AK		
01	15.09.06	REVISED AS PER NTPC'S COMMENT DATED 04.05.06	AK	DA/AK	5501-500-PVC-F-002	EQUIPMENT FOUNDATION LAYOUT
00	30.03.06	FOR APPROVAL / FIRST SUBMISSION	AK	DA/AK	5501-500-PVC-F-006	SWITCHYARD CABLE ROUTING LAYOUT

LEGEND:

IL = INVERT LEVEL
FGL = FINISH GROUND LEVEL

NOTES

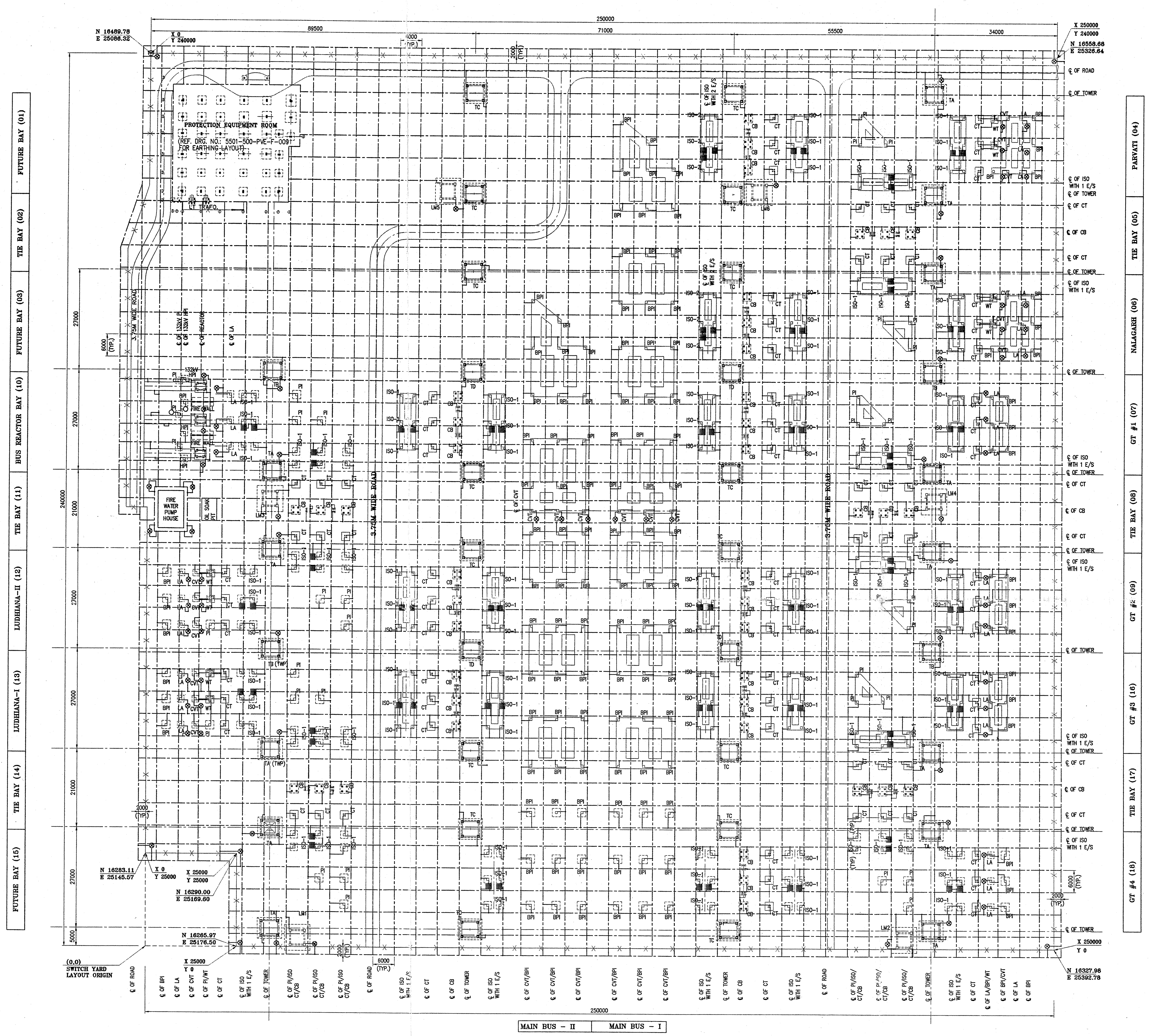
1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. LEVEL (+)705.000 CORRESPONDS TO FGL.
3. TRENCHES SHALL BE AS CLOSE TO EQPMENT AS POSSIBLE BUT AWAY BY MINIMUM OF 100mm. IF ANY OF THE CABLE TRENCH IS FOULING WITH ANY FOUNDATIONS, IT MAY BE REROUTED AS SITE SUITABLY.
4. PLINTH LEVEL OF CABLE TRENCH SHALL BE 0.30m ABOVE FGL.
5. A SLOPE OF 1:500 IS TO BE PROVIDED ALONG THE RUN OF THE CABLE TRENCH & SLOPE OF 1:50 PERPENDICULAR OF SLOPE OF CABLE TRENCH DRAINAGE.
6. CABLES FROM CABLE TRENCHES SHALL BE TAKEN THROUGH PVC PIPE SLEEVES FURTHER ROUTING MAY BE THROUGH (a) PVC PIPE & CABLE TRAY (b) FLEXIBLE CONDUITS (FOR EQUIPMENT EXPERIENCING VIBRATIONS)
7. NO. OF PIPES SHALL BE CONSIDERING ADB CABLE OCCUPANCY. AFTER COMPLETION/COMMISSIONING, END OF PIPE/SLEEVES SHALL BE SEALLED WITH SEALING COMPOUND TO AVOID SEEPAGE OF WATER.
8. DRG. SHOWS THE ROUTING OF THE MAIN CABLE TRENCH AND BAY TRENCHES ONLY. SUITABLE OPENING IN THE BAY TRENCH WILL BE KEPT AT APPROXIMATE LOCATION FOR FOR ROUTING THE CABLES TO MARSHALLING BOXES.
9. EXCEPT FOR CIRCUIT BREAKER, INTERPOLE CABLING SHALL BE DONE THROUGH Ø100 PVC PIPES.
10. POWER CABLES SHALL BE ROUTED IN SEPARATE PIPES.
11. PIPES SHALL BE BURIED 250mm BELOW GROUND. THE CABLE TRENCHES INVERT LEVELS SHALL BE PLANNED TO FACILITATE THE SAME.
12. LOCATION OF PIPES SHALL BE DECIDED ONLY AFTER FINALIZING THE LOCATION OF AUXILIARY EARTHMAT BELOW RESPECTIVE MOM BOX.
13. FOR SECTIONS & DETAILS OF CABLE TRENCH REFER DRG NO. 5501-500-PVC-C-035
14. FOR DETAILS OF CABLE TRENCH CROSSING & SUMP PIT REFER DRG NO. 5501-500-PVC-C-034

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		

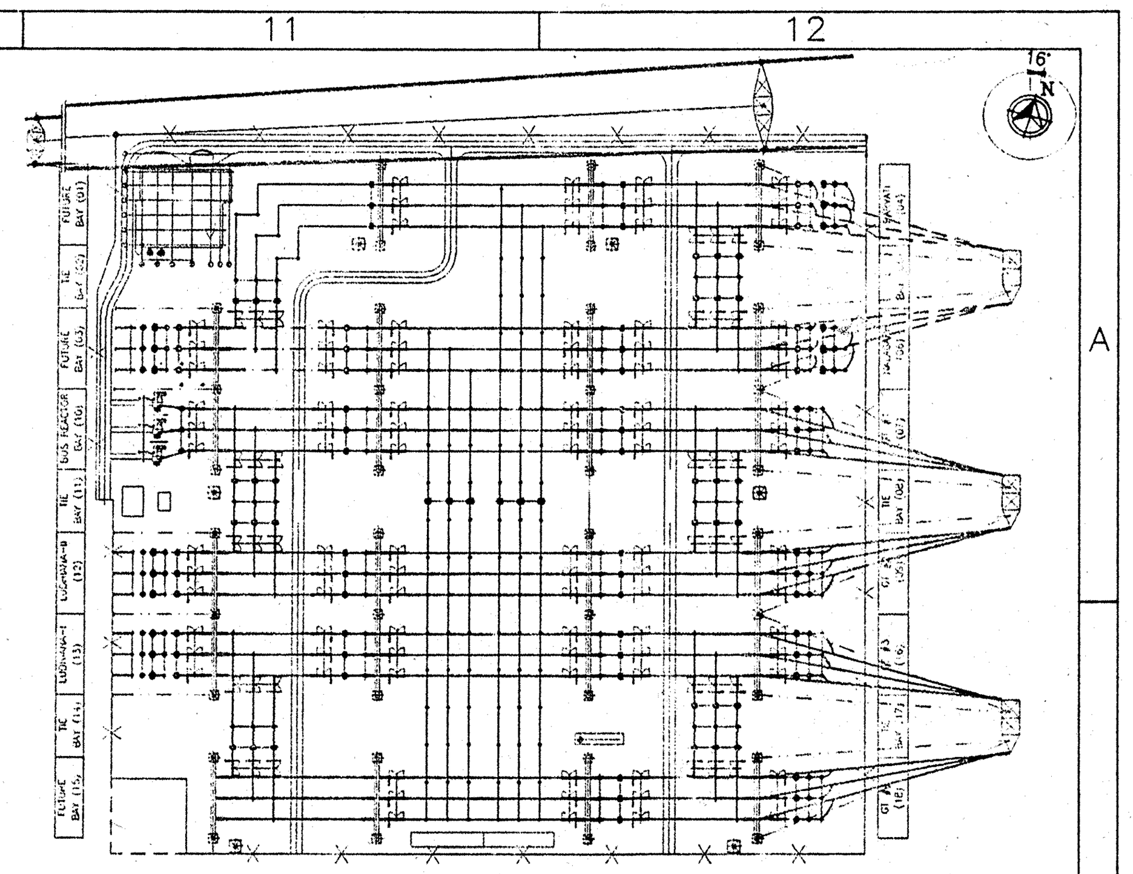
APPROVED BY: MECHANICAL; ELECTRICAL; CIVIL & STRL.

400 KV Switchyard Earthmat Layout

DRG.NO. 5501-500-PVE-F-004 REV. 01



PLAN



KEY PLAN

BOQ

SYMBOL	DESCRIPTION	QTY
⊗	40mm DIA, 3M LONG M.S ROD ELECTRODE	86 Nos.
○	40mm DIA, 3M LONG G.S PIPE ELECTRODE WITH TREATED EARTH PIT	8 Nos.
	20mm DIA, 3M LONG M.S ROD ELECTRODE (STREET LIGHTING POLES)	14 Nos.
— · · —	40ø M.S. ROD FOR MAIN GRID	21500m
	ABOVE GROUND RISER – 75x12 GS FLAT	4700 m
	ABOVE GROUND RISER – 50x6 GS FLAT	2900 m
	REACTOR NEUTRAL EARTHING – 50x6 CU. FLAT	10 m
———	BELOW GROUND RISER – 40ø M.S. ROD	5600 m
	FLEXIBLE COPPER BRAID WIRE	3 m

EARTHING NOTES

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. EARTHING CONDUCTORS RUNNING ON COLUMNS, BEAMS ETC. SHALL BE CLEATED SUITABLY AT EVERY 750mm INTERVAL APPROXIMATELY AND 2M FOR EARTH WIRE DOWN CONDUCTOR UNLESS SHOWN OTHERWISE IN EQUIPMENT EARTHING DRAWING.
3. EARTH STRIP TO BE LAID FLAT ALONG THE STRUCTURE AS FAR AS POSSIBLE.
4. CONNECTIONS TO ALL EQUIPMENT AND TOWERS SHALL BE BY BOLTED JOINTS.
5. THE SURFACES TO BE WELDED CLEANED OF DIRT, OIL GREASE AND OXIDES BEFORE WELDING.
6. ANY OXIDE FILMS THAT MAY HAVE FORMED DURING WELDING MUST BE REMOVED FROM THE WELDED JOINT.
7. EQUIPMENT EARTHING CONDUCTOR (SIZE 75x12mm) FOR EQUIPMENT AND TOWER EARTHING SHALL BE OF M.S GALVANIZED. THE CONDUCTOR BELOW THE GROUND LEVEL (MAIN EARTH MAT AND EXTENDED EARTH MAT INCLUDING RISERS) SHALL BE 40mm DIA BLACK M.S ROD.
8. ALL EQUIPMENT SHALL BE EARTHED AT TWO POINTS WITH 75x12mm G.S FLAT FOR THIS TWO SEPARATE RISERS SHALL BE PROVIDED BY NTPC UPTO DIAGONALLY OPPOSITE CORNERS OF EACH EQUIPMENT THROUGH EXTENDED EARTH MAT BELOW GROUND. THESE RISERS SHALL BE PROVIDED CLOSE TO THE EQUIPMENT STRUCTURES.
9. ALL JUNCTION BOXES, OPERATING MECHANISM BOXES ETC. SHALL BE EARTHED AT ONE POINT WITH 50x6mm G.S FLAT AND MARSHALING KIOSKS, GROUND MOUNTED AND CONTROL CABINETS, PANELS SHALL BE EARTHED AT TWO POINTS WITH 75x12mm G.S FLAT.
10. ALL WELDED JOINTS ABOVE GROUND LEVEL SHALL BE COATED WITH 2 COATS OF RED OXIDE AND FOLLOWED BY TWO COATS OF GALVOSEAL (COLD GALVANISING) PAINT AND UNDERGROUND WELDED JOINTS SHALL BE COATED WITH TWO COATS OF RED OXIDE PAINT FOLLOWED BY TWO COATS OF BITUMIN COMPOUND
11. FOR WELDED JOINTS LOW HYDROGEN CONTENT ELECTRODE SHALL BE USED.
12. FOR ISOLATOR OPERATING BOX, AUXILIARY MESH OF SIZE 1500x1500mm, WITH 300mm SUB CONDUCTOR SPACING SHALL BE PROVIDED. AUXILIARY MESH SHALL BE MADE OF 40mm DIA M.S BLACK ROD.
13. ALL JOINTS BETWEEN 40mm DIA M.S ROD AND 75x12mm G.S FLAT SHALL BE BELOW GRAVEL LEVEL.
14. FOR EQUIPMENT & STRUCTURE EARTHING DETAILS, REFER DRAWING No.: 5501-500-PVE-C-002
15. EARTHING SHALL BE LAID UP TO 2Mtrs BEYOND THE SWITCHYARD FENCE. FENCE AND FENCE POSTS SHALL BE EARTHED AT SUITABLE INTERVAL AS PER EQUIPMENT EARTHING DETAILS IN DRAWING No.: 5501-500-PVE-C-002
16. CABLE TRENCH SHALL BE EARTHED SUITABLY.
17. SAs, CVTs & EARTHING DOWN CONDUCTOR FROM LIGHTNING MAST AND TOWER PEAK SHALL BE CONNECTED TO THE EARTH THROUGH ROD ELECTRODES.
18. EARTHING CONNECTIONS SHOWN FOR SHUNT REACTOR ARE INDICATIVE ONLY EARTHING OF THIS EQUPMENTS MARSHALING BOX RADIATOR BANK, FAN SUPPORTS, ETC., SHALL BE DONE AS PER EARTHING DETAILS OF RESPECTIVE EQUIPMENTS
19. EARTHMAT, EARTHPIT LOCATIONS, CONNECTIONS TO EARTH GRID AND WHEREVER EARTHING GRID INFRINGES WITH FOUNDATION, MODIFICATIONS SHALL BE CARRIED OUT TO SUIT SITE CONDITIONS.
20. MINIMUM DISTANCE OF 6000mm SHALL BE MAINTAINED BETWEEN ANY TWO ADJACENT EARTH ELECTRODES.

TA-088

NTPC Limited RE-ELECTRICAL

एन टी पी सी NTPC

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NTPC Limited
A Govt. of India Enterprise
(Formerly National Thermal Power Corporation Ltd.)

Darbal 07/09/06

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

NO.	DATE	REMARKS	BY	APPD.
01	26.07.2006	REVISED AS PER NTPC COMMENT LETTER DTD.: 05.05.06	SSV	KVRN
00	12.04.2006	FOR APPROVAL / FIRST SUBMISSION	SSV	HVB

REVISION

DRG.NO.	TITLE
5501-500-PVE-U-004	EARTH MAT LAYOUT CALCULATION
5501-500-PVE-F-009	PROTECTION EQUIPMENT ROOM EARTHING LAYOUT
5501-500-PVE-F-002	400kV SWITCHYARD FOUNDATION LAYOUT
5501-500-PVE-C-001	WELDING DETAILS
5501-500-PVE-C-002	EQUIPMENT EARTHING DETAILS
5501-500-PVE-F-001	400kV SWITCHYARD LAYOUT PLAN

REFERENCE DRAWINGS

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY – MECHANICAL		
APPROVED BY – ELECTRICAL		
APPROVED BY – CIVIL & STRL.		

LARSEN & TOUBRO LIMITED
ECC Division – EDRC

CODE	SOURCE	SCALE	DATE	06.04.06	07.04.06	10.04.06	12.04.06
		1 : 600	NAME	VTN	SMK	SSV	HVB
				DSN.	DRWN.	CHKD.	APPRD.

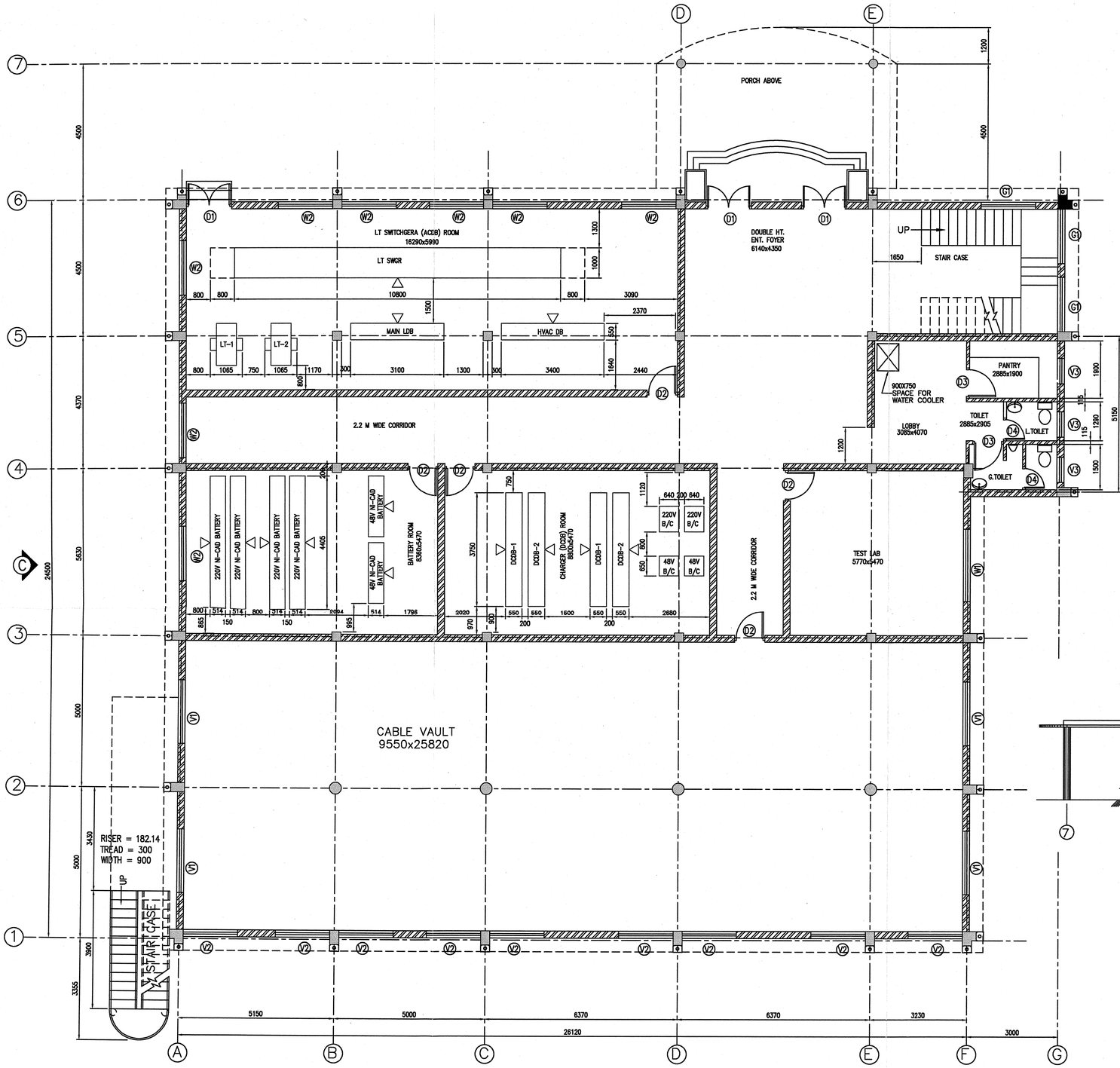
TITLE: 400kV SWITCHYARD EARTH MAT LAYOUT

DRAWING NO. 5501-500-PVE-F-004 REV. 01

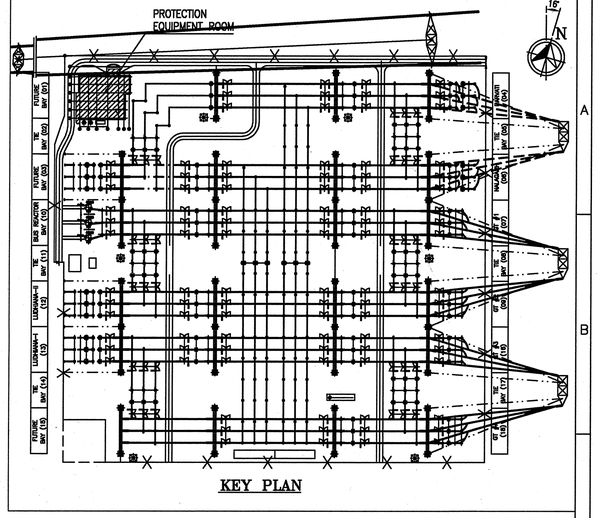
Switchyard protection

Equipment Room-Equipment Layout

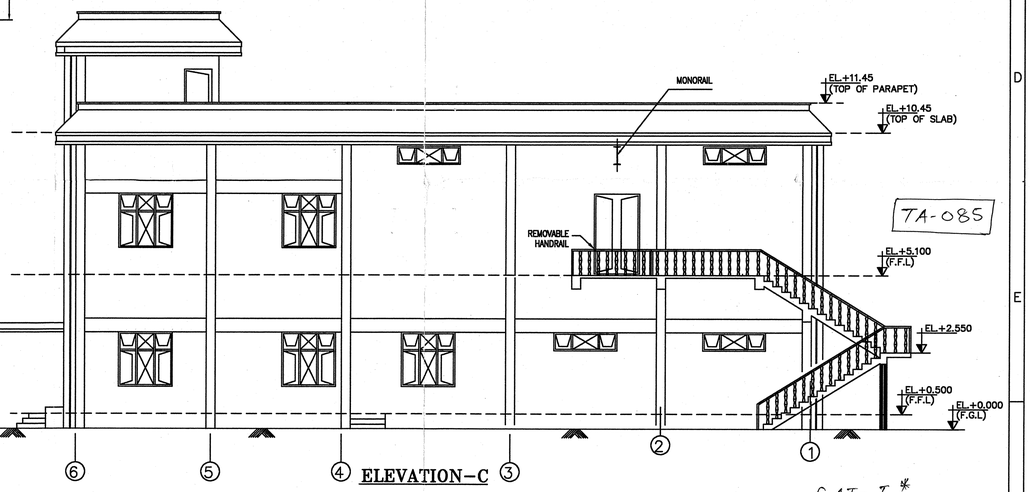
DRG.NO.5501-500-PVE-F-008 1 OF 2 REV. 04



GROUND FLOOR PLAN



KEY PLAN



ELEVATION-C

TA-085

CAT-I *

PE-CLEC
APPROVED UNDER CATEGORY
AS MANAGER, RESIDENT
RESIDENT
RECORDS
SIGN
DESIGNATION
A.DET(E)
31/08/06

No comments from fire protection group.
31/08/06

NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. THE DIMENSIONS OF EQUIPMENTS INDICATED ARE THE MAXIMUM LIMITING DIMENSIONS. HOWEVER, THE ACTUAL DIMENSIONS SHALL BE MENTIONED ON RECEIPT ON FINAL VENDOR DRAWING.
3. THE SIZES AND NUMBER OF PANELS SHOWN ARE INDICATIVE. AFTER APPROVAL OF GA OF ALL THE PANELS, THIS DRAWING WILL BE REVISED AND SUBMITTED TO NTPC.
4. DETAILS OF HVAC, PLUMBING AND OTHER SERVICES SHALL BE SHOWN IN RESPECTIVE DRAWINGS.
5. THIS DRAWING SHALL BE REFERRED FOR EQUIPMENT LAYOUT ONLY.
6. FOR EXACT LOCATION AND SIZES OF WINDOWS & DOORS RELEVANT ARCHITECTURE LAYOUT SHALL BE REFERRED.

LEGEND

PRESENT
FUTURE (F)
FENCE

REVISION					REFERENCE DRAWINGS	
NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
04	13.07.2006	REVISED AS PER NTPC COMMENTS DTD. 28.03.2006	SSV	KVRm		
03	13.03.2006	REVISED AS PER NTPC COMMENTS DTD. 06.03.2006	SSV	HVB		
02	24.02.2006	REVISED AS PER NTPC COMMENTS DTD. 21.02.2006	SSV	HVB		
01	02.02.2006	REVISED AS PER NTPC COMMENTS DTD. 12.01.2006	SSV	HVB	5501-500-PVC-A-037 (R-A)	GA OF PROTECTION EQUIPMENT ROOM - PLAN, ELEVATION & SECTION
00	22.12.2005	FOR APPROVAL / FIRST SUBMISSION	SSV	HVB	5501-500-POC-A-001 (R-A)	SWITCHYARD CONTROL ROOM FLOORS PLANS, ELEVATIONS & SECTION (TENDER)

	PRELIMINARY
	FOR TENDER ONLY
	FOR APPROVAL/REFERENCE/INFORMATION
	FOR CONSTRUCTION
APPROVED BY	MECHANICAL
	ELECTRICAL
	CIVIL & STRL.

एन टी पी सी NTPC एन टी पी सी लिमिटेड NTPC Limited
A Govt. of India Enterprise (Formerly National Thermal Power Corporation Ltd.)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

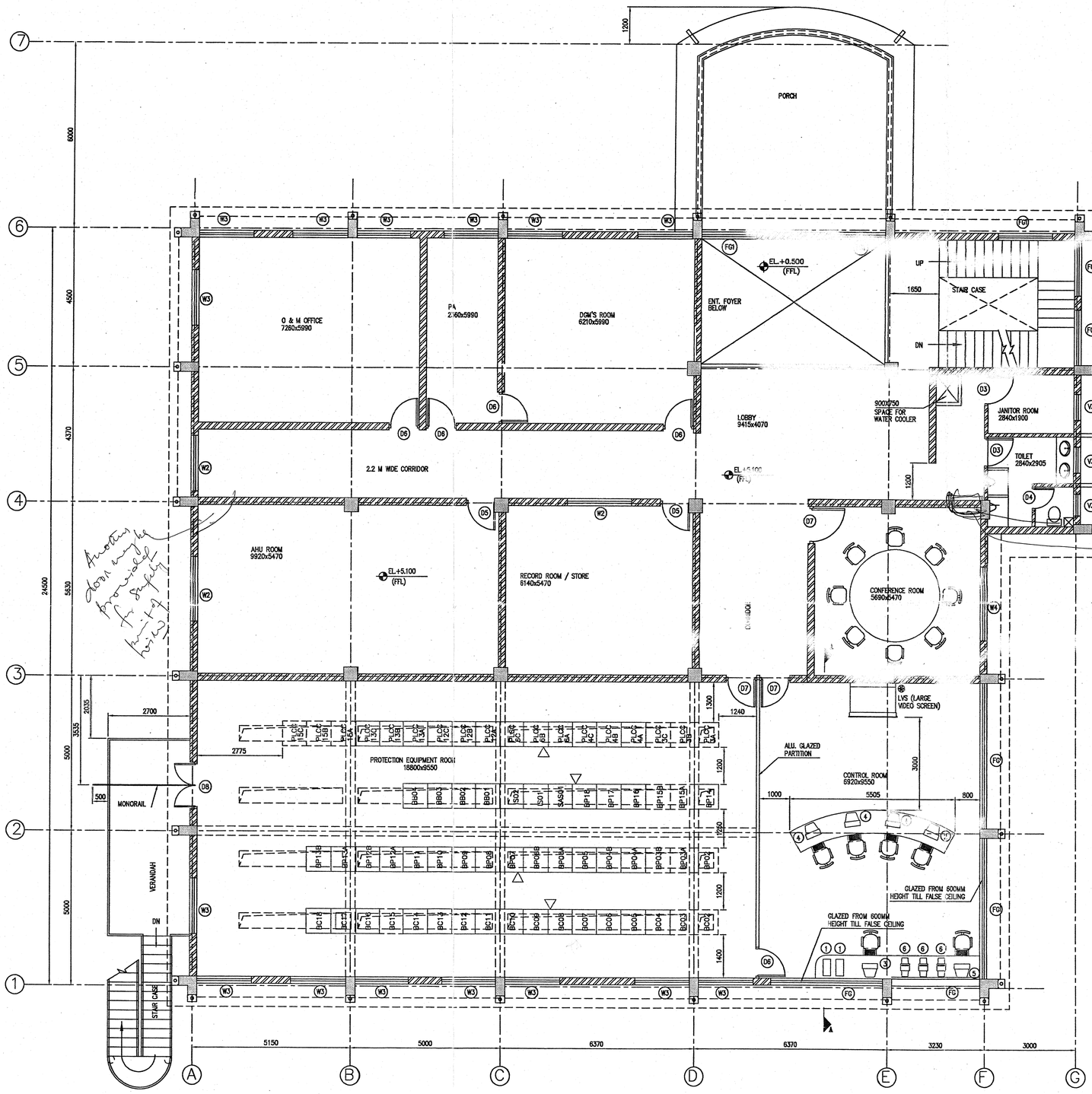
PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

CODE	SOURCE	SCALE	DATE	15.12.05	16.12.05	20.12.05	22.12.05
		1 : 75	NAME	VTN	AGS	SSV	HVB
				DSN.	DRWN.	CHKD.	APPRD.

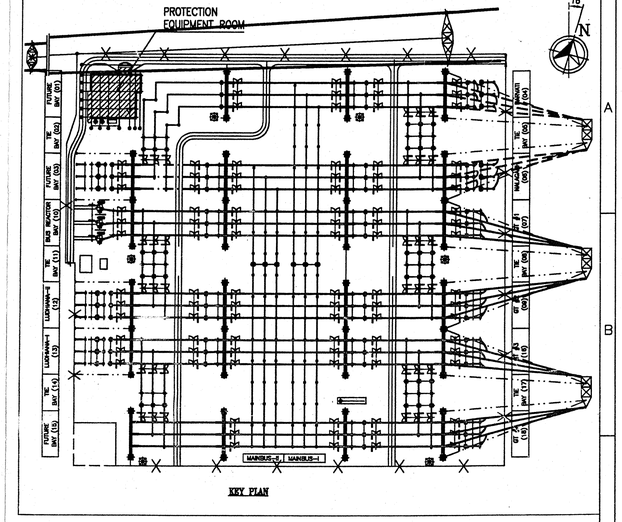
TITLE:
SWITCHYARD PROTECTION EQUIPMENT ROOM
EQUIPMENT LAYOUT

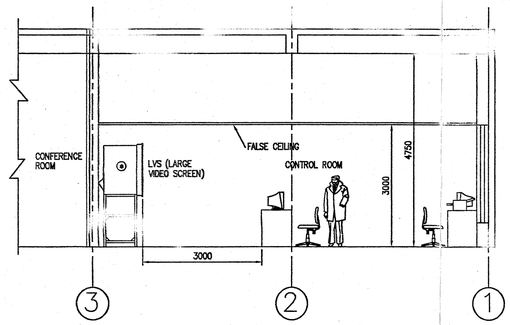
DRAWING NO. 5501-500-PVE-F-008 1 OF 2 REV. 04



Another door will be provided for safety purpose

Doorway by provider.





No comment from protection group. 31/01/06

Cat-I*

Cat-I*

400KV BAY CONTROL AND BAY PROTECTION UNIT DETAILS

S.NO.	BAY NO.	DESCRIPTION	BAY CONTROL UNIT	BAY PROTECTION UNIT
1	BAY-1	FUTURE	–	–
2	BAY-2	TIE BAY – FUTURE	BC02	BP02
3	BAY-3	FUTURE (LINE)	BC03	BP03A,B
	BAY-4	PARVA LINE	BC04	BP04A,B
5	BAY-5	TIE BAY	BC05	BP05
6	BAY-6	NALAGARH LINE	BC06	BP06A,B
7	BAY-7	GT # 1	BC07	BP07
8	BAY-8	TIE BAY	BC08	BP08
9	BAY-9	GT # 2	BC09	BP09
	BAY-10	BUS REACTOR BAY	BC10	BP10
11	BAY-11	TIE BAY	BC11	BP11
12	BAY-12	LUDHIANA-II LINE	BC12	BP12A,B
13	BAY-13	LUDHIANA-I LINE	BC13	BP13A,B
14	BAY-14	TIE BAY	BC14	BP14
15	BAY-15	FUTURE (LINE)	BC15	BP15A,B
16	BAY-16	GT # 3	BC16	BP16
		TIE BAY	BC17	BP17
18	BAY-18	GT # 4	BC18	BP18
19	BB	BUS BAR PROTECTION PANEL	–	BB01 to 04
20	IS	ISLANDING SCHEME	–	IS01 & 02
21	SAS	SAS CPUs, GPS, REMOTE GATEWAYS AND STATION ETHERNET SWITCH	SAS01	–
22	TSE	TIME SYNCHRONISING EQUIPMENT	PART OF SAS	
23	EM	ENERGY METERING	PART OF BCU	
24	PLCC	POWER LINE CARRIER COMMUNICATION	PLCC	–

TA-085

CONTROL ROOM EQUIPMENTS

S.NO.	DESCRIPTION	QTY. (NOS.)
1	SERVER	2
2	ENERGY METERING SYSTEM WORK STATION	1
3	ENGINEERING & FAULT RECORDING STATION	1
4	OPERATOR WORK STATION	3
5	WORK STATION FOR FIRE FIGHTING SYSTEM	1
6	COLOR LASER PRINTER	3

NTPC Limited PE-ELECTRICAL
APPROVED UNDER CATEGORY AS MARKED
I APPROVED
II APPROVED AS MARKED, RESUBMIT
III NOT APPROVED, RESUBMIT
IV FOR INFORMATION & RECORDS
SIGN & DATE
DESIGNATION
REF.

एनटीपीसी लिमिटेड NTPC Limited
A Govt. of India Enterprise
(Formerly National Thermal Power Corporation Ltd.)

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)
PACKAGE : 400KV SWITCHYARD PACKAGE
(CS-5501-500-2)

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
		REVISION			REFERENCE DRAWINGS	
04	13.07.2006	REVISED AS PER NTPC COMMENTS DTD. 28.03.2006	SSV	KVRn		
03	13.03.2006	REVISED AS PER NTPC COMMENTS DTD. 09.03.2006	SSV	HVB		
02	24.02.2006	REVISED AS PER NTPC COMMENTS DTD. 21.02.2006	SSV	HVB		
01	02.02.2006	REVISED AS PER NTPC COMMENTS DTD. 12.01.2006	SSV	HVB		
00	22.12.2005	FOR APPROVAL / FIRST SUBMISSION	SSV	HVB		

NOTES:

1. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE SPECIFIED.
2. FOR NOTES AND REFERENCE DRAWING NO. REFER SHEET 1 OF 2
3. ⊛ THE EXACT SIZE OF LVS SHALL BE FURNISHED DURING DETAIL ENGINEERING.

LEGEND

PRESENT
FUTURE (F)
FENCE

PRELIMINARY
FOR TENDER ONLY
FOR APPROVAL/REFERENCE/INFORMATION
FOR CONSTRUCTION

APPROVED BY: MECHANICAL / ELECTRICAL / CIVIL & STRL.

LARSEN & TOUBRO LIMITED
ECC Division – EDRC

CODE	SOURCE	SCALE	DATE	15.12.05	16.12.05	20.12.05	22.12.05
		1 : 75	NAME	VTN	AGS	SSV	HVB
				DSN.	DRWN.	CHKD.	APPRD.

TITLE:
SWITCHYARD PROTECTION EQUIPMENT ROOM
EQUIPMENT LAYOUT

DRAWING NO. 5501-500-PVE-F-008 2 OF 2 REV. 04

AC Power Distribution – Single Line Diagram

DRG.NO. 5501-500-PVE-P-008 | REV. 01

MAIN DISTRIBUTION BOARD
11000V/415V 800kVA Dyn11, ONAN LT OUT DOOR TRAFO-A
11000V/415V 800kVA Dyn11, ONAN LT OUT DOOR TRAFO-B
NTPC SCOPE
L&T SCOPE
(FOR OWNERS USE)
200 KVA DG 415V AC, 50 Hz. 3ϕ, 4W AC
AMF PANEL
415V/√3 / 110V/√3 CL. 2, 50VA
CT 1250/5A CL. 2
1250/5A CL. 5P15
1250/5A CL. PS
ASS
VSS
KWH
B Y R
REF. NOTE # 1
TPN ACB 1600A
TPP ACB 1600A
4P MCCB 400A
4P ACB 1600A
BUS-A 415V 50Hz., 3Ph.,4WIRE,1250A,25kA FOR 1 SEC.
BUS-B 415V 3Ph.,4WIRE, 1250A,25kA FOR 1 SEC.
BUS-C 415V 3Ph.,4WIRE,1250A,25kA FOR 1 SEC.
LIGHTING TRAFO-A
220V BATTERY CHARGER-A
HVAC DB-A
48V BATTERY CHARGER-A
BAY PROTECTION UNIT
BMK-1 (FUTURE)
BMK-4
BMK-7
BMK-10
BMK-13
BMK-16
PLCC SYSTEM
FT ANNUNCIATION PANEL
JOCKEY PUMP-1
SUMP PUMP
OIL FILTRATION UNIT
WELDING SOCKET
SPARE
220V BATTERY CHARGER-B
48V BATTERY CHARGER-B
LIGHTING TRAFO-B
HVAC DB-B
BAY CONTROL UNIT
BUSBAR PROTECTION ISLANDING / SAS / DM PANEL
BMK-3 (FUTURE)
BMK-6
BMK-9
BMK-12
BMK-15
BMK-18
FT ANNUNCIATION PANEL
FIRE WATER MAIN PUMP
JOCKEY PUMP-2
SUMP PUMP
WELDING SOCKET
415V/415V 100kVA Dyn11, LTG. TRAFO-A
415V/415V 50kVA Dyn11, LTG. TRAFO-B
MLDB
EMLDB
100A TP SFU
63A TP SFU
415V, 50Hz. 3PH, 4 WIRE, 25kA FOR 1 SEC
AREA LIGHTING
PE ROOM LIGHTING (GR. FLR.)
PE ROOM LIGHTING (1st. FLR.)
FIRE WATER PUMP ROOM LIGHTING
ROAD LIGHTING
LDB-LM1 LDB-LM2 LDB-LM3 LDB-LM4 LDB-LM5 LDB-LM6 LDB-GF1 LDB-FF1 LDB-FW1 LDB-RL1 LDB-RL2
ELDB-LM1 ELDB-LM2 ELDB-LM3 ELDB-LM4 ELDB-LM5 ELDB-LM6 ELDB-GF1 ELDB-FF1
LEGEND
MOULDED CASE CIRCUIT BREAKER (MCCB)
AIR CIRCUIT BREAKER (ACB) DRAWOUT TYPE
MINIATURE CIRCUIT BREAKER (MCB)
FUSE
SWITCH FUSE UNIT (SFU)
CABLE END TERMINATION
EARTH
DIESEL GENERATOR SET
TRANSFORMER
VOLTMETER
AMMETER
INDICATING LAMP
VOLTMETER SELECTOR SWITCH
AMMETER SELECTOR SWITCH
CURRENT TRAFO.
KILO WATT HOUR METER
UNDER VOLTAGE RELAY
IDMT OVER CURRENT RELAY
IDMT EARTH FAULT RELAY
NORMAL LIGHTING DISTRIBUTION BOARD (LDB)
EMERGENCY LIGHTING DISTRIBUTION BOARD (ELDB)
TA-085
CAT-I
NTPC Limited PE-ELECTRICAL
APPROVED UNDER CATEGORY AS MARKED
I : APPROVED
II : APPROVED AS MARKED - RESUBMIT
III : NOT APPROVED, RESUBMIT
IV : FOR INFORMATION & RECORDS
SIGN. & DATE
DESIGNATION

NOTE:

1. INTERLOCKING OF BREAKER SHALL BE PROVIDED TO PREVENT PARALLEL OPERATION OF DG SET, TRANSFORMER-A AND TRANSFORMER-B

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
01	13.07.06	REVISED AS PER NTPC COMMENTS DTD. 29.03.2006	SSV	KVRN		
00	22.03.06	FOR APPROVAL / FIRST SUBMISSION	SSV	HVB	5501-500-PVE-H-003	LT POWER CABLE SCHEDULE
REVISION					REFERENCE DRAWINGS	

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY — MECHANICAL		
APPROVED BY — ELECTRICAL		
APPROVED BY — CIVIL & STRL.		

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एन टी पी सी NTPC — एन टी पी सी लिमिटेड NTPC Limited

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400 SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED

ECC Division – EDRC

CODE	SOURCE	SCALE		DSN.	DRWN.	CHKD.	APPRD.
		~	DATE	16.02.06	16.02.06	22.03.06	22.03.06
			NAME	VTN	AGS	SSV	HVB

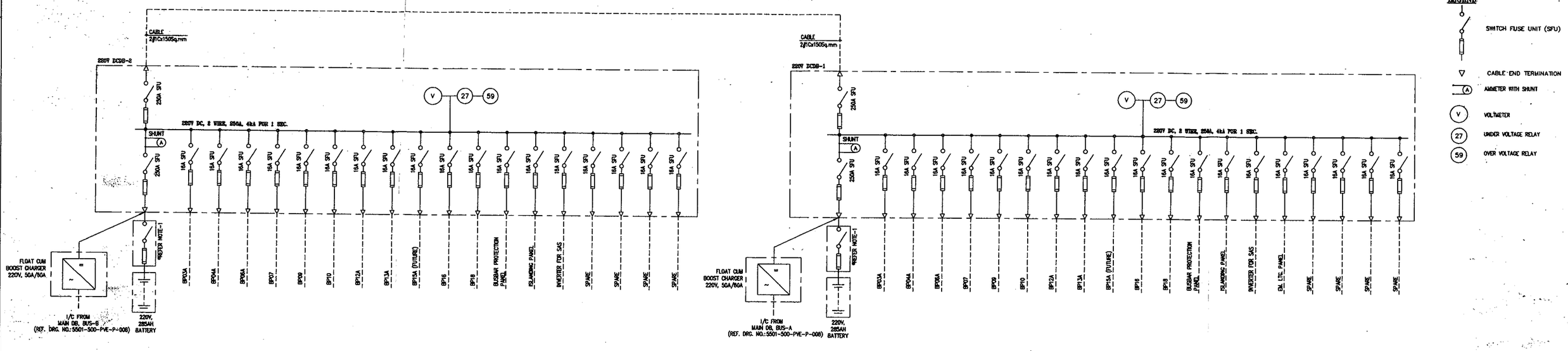
TITLE: AC POWER DISTRIBUTION – SINGLE LINE DIAGRAM

DRAWING NO. 5501-500-PVE-P-008 | REV. 01

DC Power Distribution – Single Line Diagram

DRG.NO. 5501-500-PVE-P-009 REV. 03

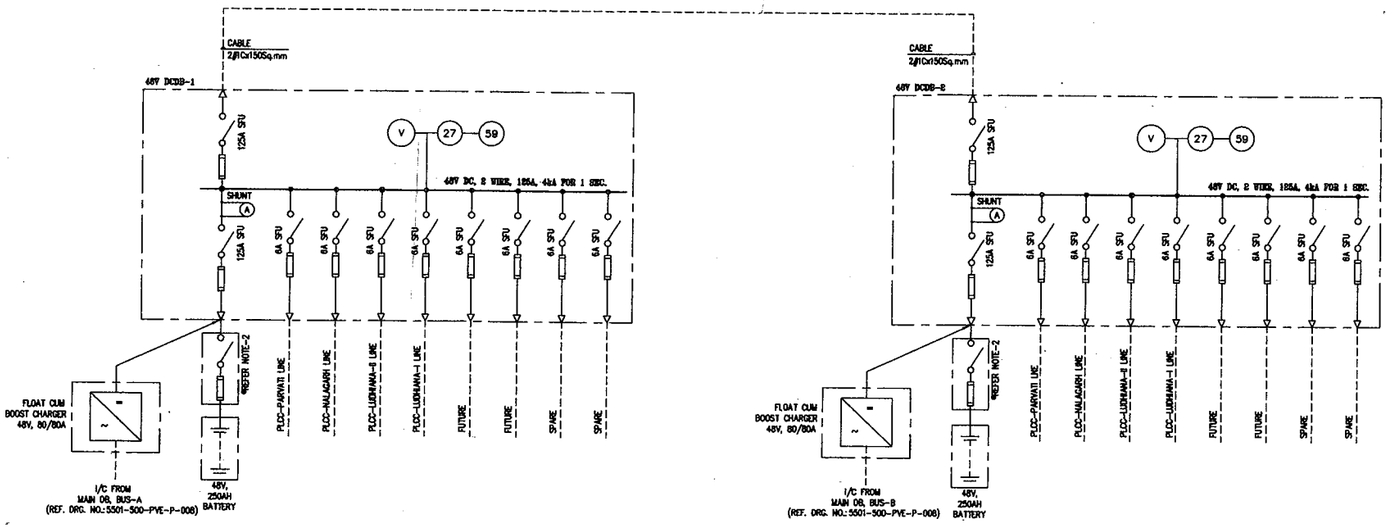
TA-368



LEGEND

- SWITCH FUSE UNIT (SFU)
- CABLE END TERMINATION
- (A) AMMETER WITH SHUNT
- (V) VOLTMETER
- (27) UNDER VOLTAGE RELAY
- (59) OVER VOLTAGE RELAY

Cat- I



NOTE:

1. * 250A SFU WALL MOUNTED UNIT SHALL BE PROVIDED AT BATTERY ROOM.
2. * 125A SFU WALL MOUNTED UNIT SHALL BE PROVIDED AT BATTERY ROOM.
3. TIE FEEDER CLOSING SHALL BE ENSURED AT ANY CONDITION BOTH SOURCES ARE NOT PARALLELED. THIS MUST BE TAKEN-CARE DURING OPERATION OF TIE FEEDER.

NTPC Limited
PE-ELECTRICAL

APPROVED UNDER CATEGORY AS MARKED

I : APPROVED
II APPROVED AS MARKED, RESUBMIT
III : NOT APPROVED, RESUBMIT
IV : FOR INFORMATION & RECORDS

SIGN. & DATE 12/09/08
DESIGNATION DGM(E) REF.

NO.	DATE	REMARKS	BY	APPD.	DRG.NO.	TITLE
03	20.02.08	REVISED AS PER NTPC COMMENTS VIDE E-MAIL DT.20.02.08	SSV	KVRN	5501-500-PVE-H-003	LT POWER CABLE SCHEDULE
02	19.02.08	REVISED AS PER NTPC COMMENTS VIDE E-MAIL DT.18.02.08	SSV	KVRN	5501-500-PVE-P-008	AC POWER DISTRIBUTION - SINGLE LINE DIAGRAM
01	13.07.06	REVISED AS PER NO. OF PANELS	SSL	KK,JK		
00	22.03.06	FOR APPROVAL / FIRST SUBMISSION	SSV	HVB		

REVISION | REFERENCE DRAWINGS

RELEASE STATUS	SIGN	DATE
PRELIMINARY		
FOR TENDER ONLY		
FOR APPROVAL/REFERENCE/INFORMATION		
FOR CONSTRUCTION		
APPROVED BY: MECHANICAL		
APPROVED BY: ELECTRICAL		
APPROVED BY: CIVIL & STRL.		

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PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT (4x200MW)

PACKAGE : 400 SWITCHYARD PACKAGE (CS-5501-500-2)

LARSEN & TOUBRO LIMITED
ECC Division - EDRC

CODE	SOURCE	SCALE				
		~	DATE	16.02.06	16.02.06	22.03.06	22.03.06
			NAME	VTN	AGS	SSV	HVB
				DSN.	DRWN.	CHKD.	APPRD.

TITLE:
DC POWER DISTRIBUTION - SINGLE LINE DIAGRAM

DRAWING NO. 5501-500-PVE-P-009 REV. 03

\\MH01\Electrical\Electrical Drawings\Vipul\05501-E-ST\NTPC-KOLDAM\Deliverables\PJ\5501-500-PVE-P-009.dgn

Protection and Substation Automation

NTPC

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT(4X200MW)
400kV SWITCHYARD PACKAGE
(CS-5501-500-2)

SAS ARCHITECTURE DIAGRAM

SAS ARCHITECTURE DIAGRAM	YN1M300819-ZAA	Rev02

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LARSEN & TOUBRO LIMITED
ECC Division – EDRC

NTPC DOC. NO.:5501-500-PVE-B-042

PROJECT : KOLDAM HYDRO ELECTRIC POWER PROJECT

PACKAGE : 400kV SWITCHYARD PACKAGE (CS-5501-500-2)

ABB REF:415446

PROTECTION & SUBSTATION AUTOMATION

ABB

SHEET NO.	REV. NO	DESCRIPTION
000	02	INDEX
001	02	CONFIGURATION DRAWING–STATION LEVEL
002	02	CONFIGURATION DRAWING–BAY LEVEL
003	02	CONFIGURATION DRAWING–ENERGY METERING SYSTEM

Rev	Revision	Appd	Year	Week
02	REVISED BASED ON NTPCs COMMENTS	KJT	06	44
01	REVISED BASED ON NTPCs COMMENTS	KJT	06	42

SUBSTATION AUTOMATION SYSYTEM

400KV NTPC KOLDAM SUBSTATION

Design checked by K.SRINIVASAN
Drawing checked by KIRAN.J.THOMAS
Drawn by KJT

GENERAL ARRANGEMENT
INDEX SHEET

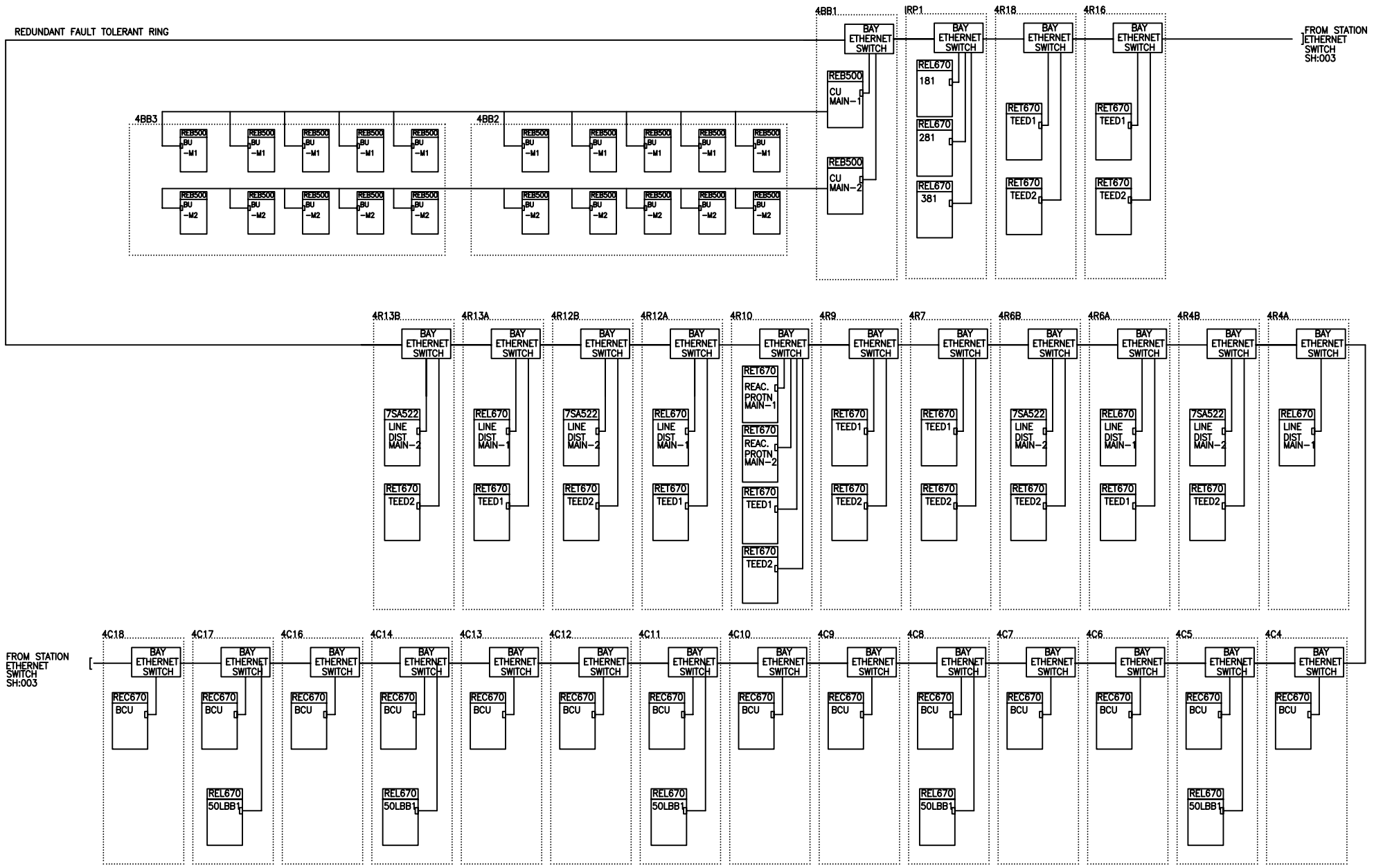
ABB INDIA

Iss by Dept SASE Year 06 Week 36

YN1M300819–ZAA

Rev 02 Sheet 000 Cont. 001

6917 5339 – AA (A3) Rev



Rev	Revision	Appd	Year	Week
02	REVISED BASED ON NTPCs COMMENTS	KJT	06	44
01	REVISED BASED ON NTPCs COMMENTS	KJT	06	42

SUBSTATION AUTOMATION SYSYTEM
400kV NTPC KOLDAM SUBSTATION

Design checked by K.SRINIVASAN
Drawing checked by KIRAN.J.THOMAS
Drawn by KJT

CONFIGURATION DRAWING
BAY LEVEL

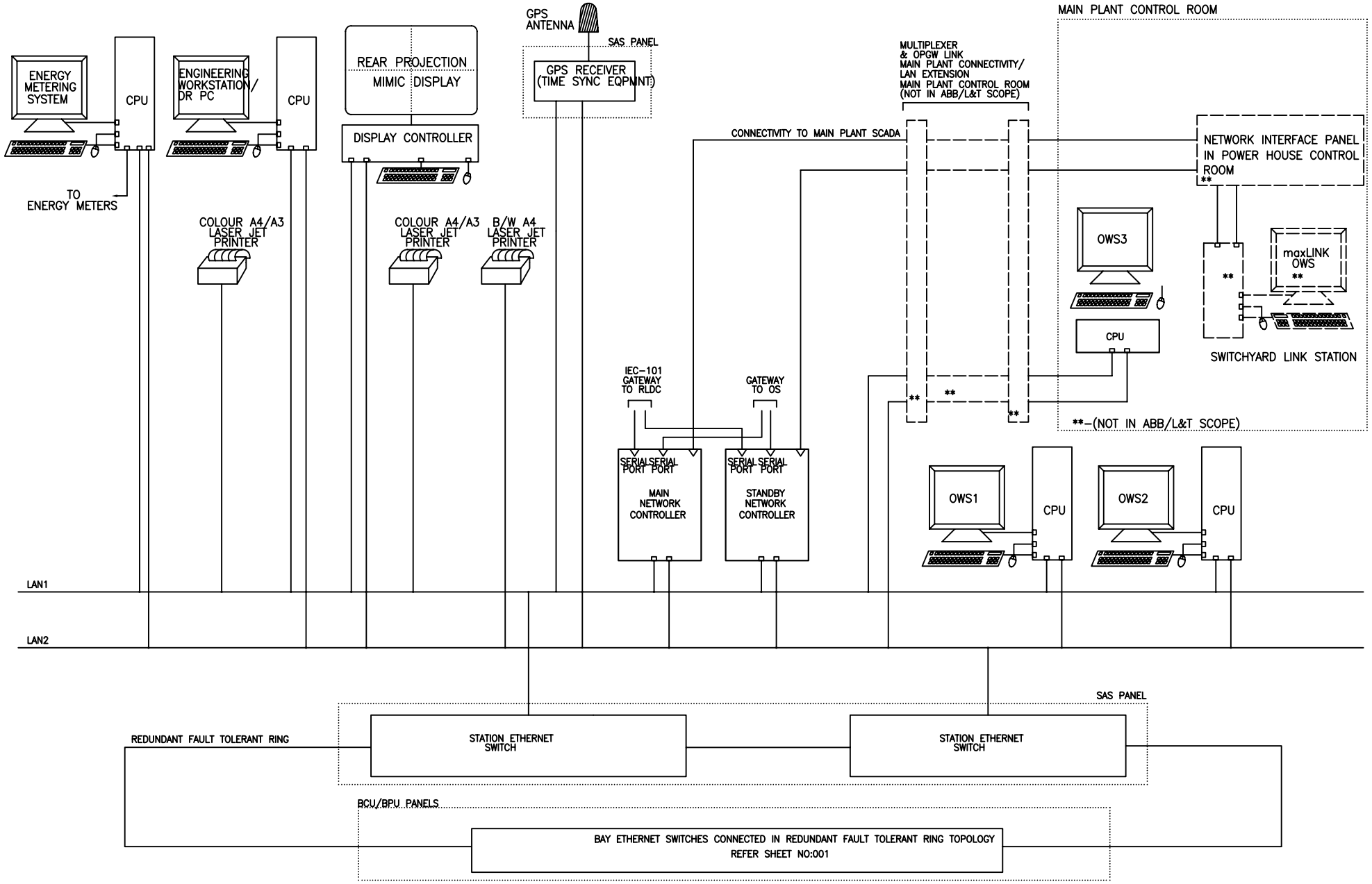
ABB

Iss by Dept Year Week SASE 06 36

YN1M300819-ZAA

Rev	Sheet
02	001
	Cont. 002

6917 5339 - AA (A3) Rev



Rev	Revision	Appd	Year	Week
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SUBSTATION AUTOMATION SYSYTEM
400kV NTPC KOLDAM SUBSTATION

Design checked by K.SRINIVASAN
Drawing checked by KIRAN.J.THOMAS
Drawn by KJT

CONFIGURATION DRAWING
STATION LEVEL

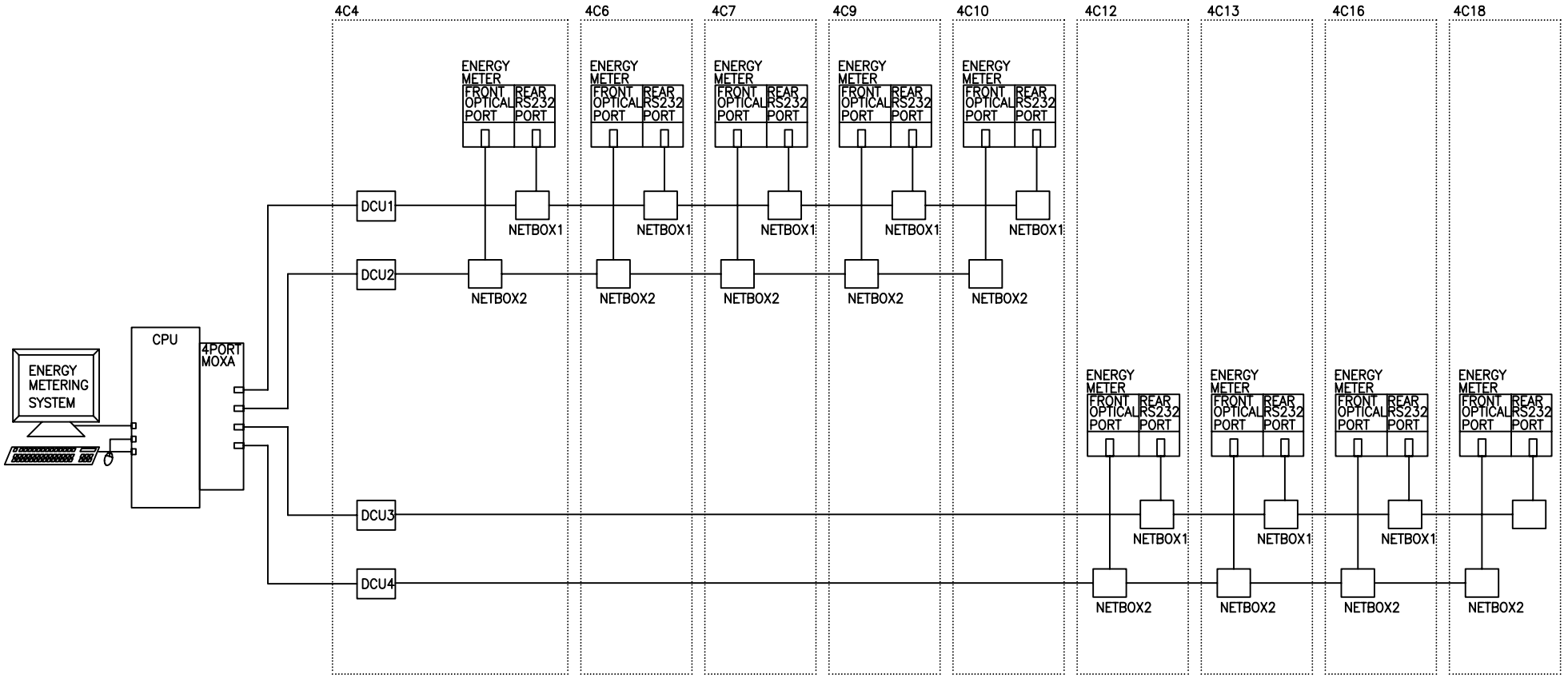
ABB

Iss by Dept Year Week SASE 06 36

YN1M300819-ZAA

Rev 02 | Sheet 002 | Cont. 003

6917 5339 - AA (A3) Rev



DETAILS OF VARIOUS PORTS IN ENERGY METER

1) REAR RS232 PORT FOR METER READING.
2) FRONT OPTICAL PORT ON DISPLAY MODULE FOR REAL TIME DATA ACQUISITION.
3) OPTICAL PORT ON METER MODULE FOR CONNECTING MRI.

DETAILS OF ENERGY METERING SOFTWARES

1) STARS– REAL TIME DATA ACQUISITION SOFTWARE
2) SMART2K–METER READING SOFTWARE

Rev	Revision	Appd	Year	Week
02	REVISED BASED ON NTPCs COMMENTS	KJT	06	44
01	REVISED BASED ON NTPCs COMMENTS	KJT	06	42

SUBSTATION AUTOMATION SYSYTEM
400kV NTPC KOLDAM SUBSTATION

Design checked by: K.SRINIVASAN
Drawing checked by: KIRAN.J.THOMAS
Drawn by: KJT

CONFIGURATION DRAWING
ENERGY METERING SYSYTEM

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Iss by Dept Year Week: SASE 06 36

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Cont.: --

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