

**Annexure – 1****List of Documents (400kV Switchyard at Bhadradri TPS) -**

<b>SI No</b>	<b>Doc No.</b>	<b>Description</b>	<b>Pages</b>
1	TB-3-380-510-001	Single Line Diagram of 400kV Switchyard	2
2	TB-0-380-510-002 (Sh.1/2)	400kV Switchyard Plan	1
3	TB-0-380-510-002 (Sh.2/2)	Sectional Elevation of 400kV Switchyard	1
4	TB-0-380-510-004	Cable Trench Layout for 400kV Switchyard	1
5	TB-3-380-316-009	Panel Placement & Trench Layout in 400kV Switchyard Control Room Bldg.	2

**List of Documents (400kV Switchyard at Kothagudem TPS) -**

<b>SI No</b>	<b>Doc No.</b>	<b>Description</b>	<b>Pages</b>
1	TB-0-377-510-002 (Sh.1/2)	400kV Switchyard Plan	1
2	TB-0-377-510-002 (Sh.2/2)	Sectional Elevation of 400kV Switchyard	1
3	TB-0-377-316-005	Cable Trench Layout for 400kV Switchyard	1

100-015-082-2-B1 'ON' NO

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## SCHEDULE OF EQUIPMENT

S.NO.	DESCRIPTION	SYMBOL	QTY.
1	400KV, 3150A, 50KA FOR 3 SEC, 3PH, SF6 CIRCUIT BREAKER, SPRING TYPE AND WITHOUT PIR		18
2	400KV 3150A, 50KA FOR 3 SEC, 3PH HCB ISOLATOR MOTOR AS WELL AS MANUALLY OPERATED, MECHANICALLY GANGED WITH ONE EARTH SWITCH MOTOR AS WELL AS MANUALLY OPERATED.		48
3	400KV 3150A, 50KA FOR 3 SEC, 3PH HCB ISOLATOR MOTOR AS WELL AS MANUALLY OPERATED, MECHANICALLY GANGED WITH TWO EARTH SWITCH MOTOR AS WELL AS MANUALLY OPERATED.		02
4	400KV 3000A, 5 CORE, 50KA FOR 3 SEC 1PH. CURRENT TRANSFORMER		72
4a	400KV 3000A, 2 CORE, 50KA FOR 3 SEC 1PH. CURRENT TRANSFORMER (METERING)		15
5	400KV, 4400pF, 1PH. CAPACITIVE VOLTAGE TRANSFORMER (3 SECONDARY)		25
5a	400KV, 4400pF, 1PH. METERING CAPACITIVE VOLTAGE TRANSFORMER (2 SECONDARY)		15
6	360KV, 20KA, 1-PH, METAL OXIDE, GAPLESS TYPE, CLASS-IV SURGE ARRESTER		36
7	400KV 3150A, 50KA FOR 3 SEC, 1PH HCB ISOLATOR MOTOR AS WELL AS MANUALLY OPERATED, WITH ONE EARTH SWITCH MOTOR AS WELL AS MANUALLY OPERATED.		04

## SYSTEM PARAMETERS

DESCRIPTION	400KV
HIGHEST SYSTEM VOLTAGE (kV)	420
SYSTEM VOLTAGE (kV)	400±5%
FREQUENCY	50 Hz, +3% TO -5%
NO. OF PHASE	3
SYSTEM FAULT LEVEL (kA for 1sec)	50
LIGHTNING IMPULSE WITHSTAND VOLTAGE (kVp)	1425
SWITCHING IMPULSE WITHSTAND VOLTAGE (kVp)	1050
P.f. WITHSTAND VOLTAGE (kVrms)	630
CREEPAGE DISTANCE (mm)	10500
SYSTEM EARTHING	EFFECTIVELY EARTHED
DESIGN AMBIENT TEMPERATURE	50 DEG. C.

## NOTE:-

- 400KV, 3150A, 50Hz, 25mm/kV, 50 KA FOR 1 SEC. EFFECTIVELY EARTHED.
- SUPPLY, ETC AND CIVIL WORK FOR 400KV BUS REACTOR IS NOT IN SCOPE.
- OVERHEAD LINE CONNECTIONS - GT/ST BAYS (TWIN ACSR MOOSE)  
- LINE BAYS (QUAD ACSR MOOSE)

NAME OF CUSTOMER/PROJECT

TELANGANA STATE POWER GENERATION CORPORATION LIMITED  
BHADRADRI THERMAL POWER STATION, UNIT#1 TO 4 (4X270 MW)

NAME OF CONSULTANT:

DESEIN PRIVATE LIMITED

BHARAT HEAVY ELECTRICALS LIMITED  
TRANSMISSION BUSINESS GROUP

CARD CODE

SINGLE LINE DIAGRAM OF 400KV SWITCHYARD

NEXT  
SHEET  
02SHEET  
No.  
01REV.  
05

DRG. No. TB-3-380-510-001

SCALE NTS

W.O. No. 84010

DEPT.

TBEM

CODE

422

DATE

09.04.15

09.04.15

09.04.15

DISTRIBUTION OF PRINTS

SIGNED

DATE

10.04.15

PR/RK

SD/-

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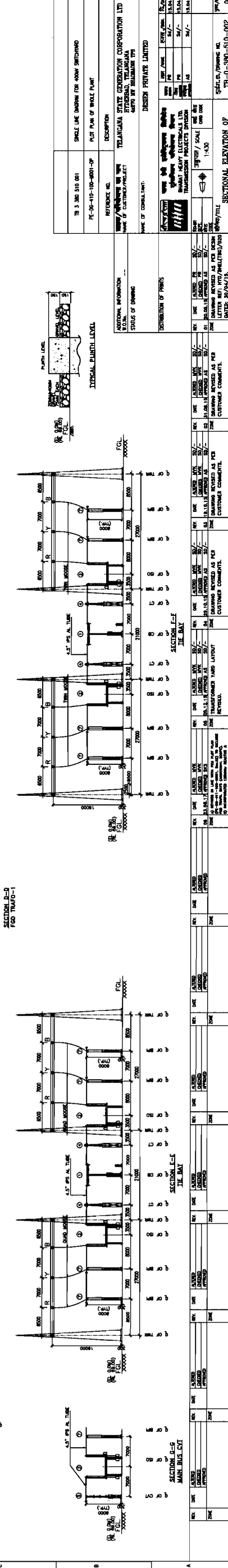
COMPUTER DRG. PATH NAME :

SIGN &amp; DATE

INVENTORY NO.



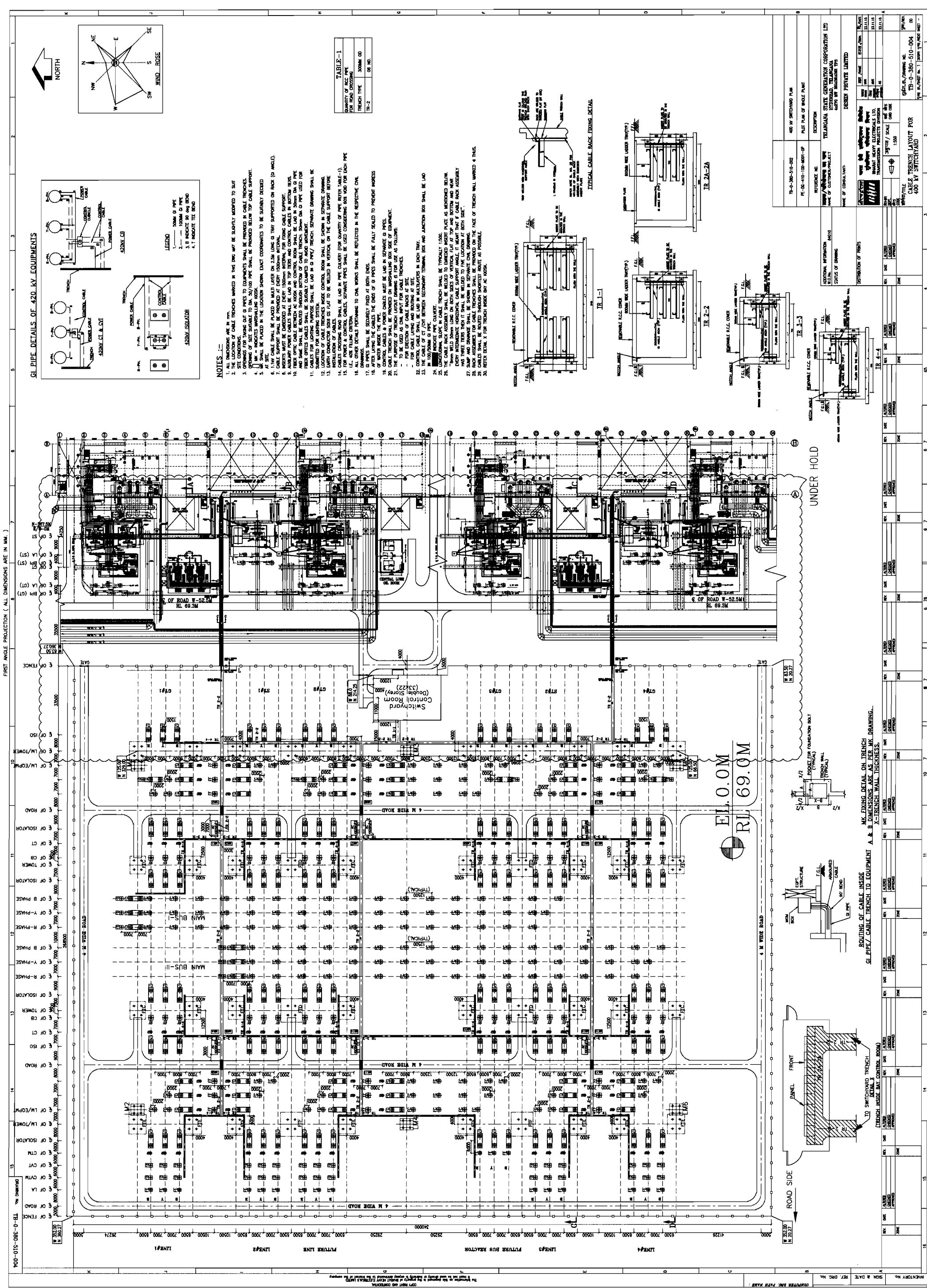




The figure contains three main architectural drawings:

- TYPICAL PORCH LEVEL:** A cross-section of a porch area showing structural elements like columns, beams, and stairs. It includes dimensions for height and width.
- TYPICAL GROUND LEVEL:** A cross-section of the ground floor showing the building's footprint, internal layout, and structural details. It includes dimensions for room sizes and overall building dimensions.
- SECTION E-F:** A vertical section of the building showing multiple floors, a central corridor, and various rooms. It includes detailed structural information such as column sizes, beam depths, and floor slabs. Dimensions are provided for each floor and the overall height.

The drawings are labeled with 'SECTION E-F' and 'TYPICAL PORCH LEVEL' and 'TYPICAL GROUND LEVEL'.



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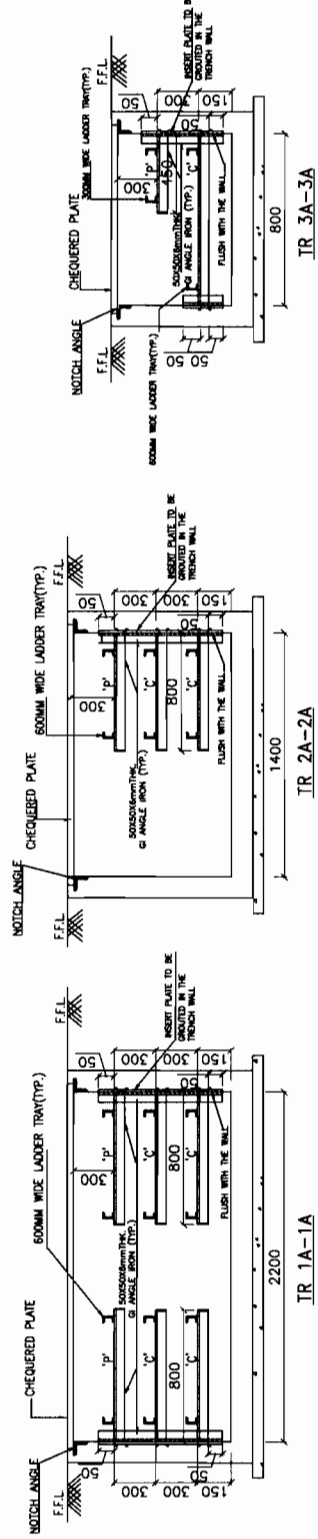




1. ALL DIMENSIONS/ASPECTS OF THE INSIDE FACE OF THE WALLS, INSIDE CABLE SPREADER RIGGING SHALL BE FIXED AT EVERY 1500 MM INTERVAL IN TRENCHES.
2. INSIDE CABLE SPREADER RIGGING SHALL BE PROVIDED FOR TRENCH LAYOUT & PANEL PLACEMENT DETAILS ALSO.
3. THIS DRAWING IS TO BE REFERRED FOR TRENCH LAYOUT & PANEL PLACEMENT DETAILS ALSO.
4. THEREAS, THE TRENCHES SHALL BE PROVIDED WITH TIERS AND CONTROL CABLES IN BOTTOM OF TRENCHES (SECTION DRAWING).
5. ALL OTHER DETAILS PERTAINING TO CABLE WORKS SHALL BE REFLECTED IN THE RESPECTIVE CABLE DRAWINGS.
6. CEILING PLATE TO BE PROVIDED FOR THE TRENCHES INSIDE THE CABLE SPREADER RIGGING.
7. PANELS CHANGING OUTSIDE OF THE TRENCHES SHALL BE COVERED WITH FLUSHED WITH THE TRENCHES.
8. THE TRENCHES SHALL BE SUPPORTED ON FINISHED FLOOR.
9. DETAILED ARRANGEMENT OF CABLE ENTRY IN CABLE SPREADER RIGGING SHALL BE SHOWN IN CABLE DRAWING.
10. 11.14V CABLE SHALL BE PLACED IN MULTI LAYER DN 25MM LONG AT TRENCH SUPPORTED ON RACK GOI ANGLES.
11. 12.14V CABLES INSIDE CONTROL RIGGING SHALL BE LAID IN 50MM DIA GI PIPE AND SOME CABLES SHALL BE ROUTED THROUGH BOTTOM OF CABLE TRENCH. 50MM DIA GI PIPE USED FOR FIBER OPTICS CABLES SHALL BE SUITABLY CLAMPED TO AVOID MOVEMENT.
12. CONTROL CABLE SHALL BE LAID IN MULTILAYERS IN EACH TRENCH.
13. LONGITUDINAL SLOPE IN CABLE TRENCH SHALL BE TYPICALLY 1:500.
14. THE TRENCHES SHALL BE PROVIDED WITH SLOPE SUPPORT RACK ANGLE.
15. THE TRENCHES SHALL BE WELDED STEEL CHANNEL WHICH IF REQUIRED UNDERGOES PAINT AFTER WELDING.
16. THE TRENCHES SHALL BE COATED WITH TWO COATS OF COLD GALVANIZING ANTI-CORROSIVE PAINT AFTER WELDING.
17. FOUNDATION DETAIL OF 50MM DIA PIPE TRANSFORMER SHALL BE SHOWN IN CABLE DRAWING.

GROUND FLOOR PLAN AT RL69.50M FFL

ADDITIONAL INFORMATION W.O.No. 84010	आरक्षक/परियोजना का नाम NAME OF CUSTOMER/PROJECT	<b>TSGENCO</b> 400KV SWITCHYARD AT 4x270 MW BHADRADRI TPS	
STATUS OF DRAWING DISTRIBUTION OF PRINTS	CONSULTANT:- DESEIN PRIVATE LIMITED <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>बीएल ईल</b> </div> <div style="text-align: center;"> <b>भारत हेवी इलेक्ट्रिकल्स लिमिटेड</b>  <b>द्वैतसिंघन परियोजना विभाग</b>  <b>भारत हेवी इलेक्ट्रिकल्स लि.</b>  <b>TRANSMISSION BUSINESS GROUP</b> </div> </div>		
REV.	DATE ALTERED CHECKED APPROVED	डिजाईन DEPT. कोड CODE	अनुपात / SCALE <div style="text-align: center;">  </div> कार्ड कोड CARD CODE
ZONE	क्षेत्र/कोड/TITLE PANEL PLACEMENT & TRENCH LAYOUT IN 400KV SWITCHYARD CONTROL ROOM BLDG		पृष्ठ क्र./SHEET No. 1 कुल पृष्ठ/NO. OF SHEET 2
जमा/REV 00			ड्राईंग क्र./DRAWING NO. TB-3-380-316-009



COMPUTER DRG. PATH NAME :

SIGN. & DATE

INVENTORY NO.


DISTRIBUTION OF PRINTS				<div>भारत भारी बिजली</div> <div></div>		<div>भारत हेवी इलेक्ट्रिकल्स लिमिटेड</div> <div>द्वारांमिशान परियोजना विभाग</div> <div>BHARAT HEAVY ELECTRICALS LTD.</div> <div>TRANSMISSION BUSINESS GROUP</div>		<div>डाटा/DATE</div> <div>हस्ता./SIGN</div> <div>24.08.17</div> <div>24.08.17</div> <div>24.08.17</div>	
REV.	DATE	ALTERED CHECKED APPROVED	विभागा DEPT.	TBWM कोड 422 CODE	<div></div> उत्प्रात / SCALE	कार्ड कोड CARD CODE			
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							पृष्ठ क्र./SHEET No. 2 (अगला पृष्ठ/NEXT SHEET - )		

NAME OF CUSTOMER/PROJECT 400KV SWITCHYARD AT 4x270 MW BHADRADRI TPS

POWER CUM MOTOR CONTROL CENTER  
600KVA DRY TRANSFORMER  
AC DISTRIBUTION BOARD  
DC DISTRIBUTION BOARD  
EMERGENCY POWER DISTRIBUTION BOARD  
MAIN LIGHTING DISTRIBUTION BOARD  
EMERGENCY LIGHTING DISTRIBUTION BOARD  
FINISHED FLOOR LEVEL  
FINISHED GROUND LEVEL  
FRONT  
CABLE TRAY  
RCC SLAB

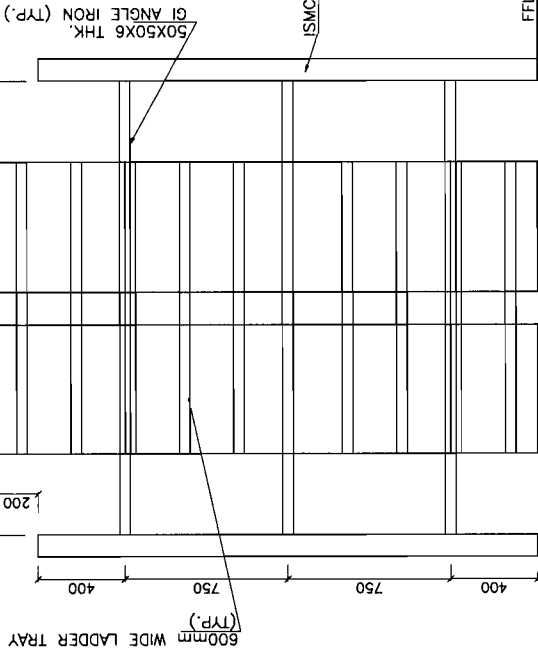
**LEGEND—**

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ACDB	=
DCDB	=
EPDB	=
MLDB	=
ELDB	=
FFL	=
FGL	=
F	=

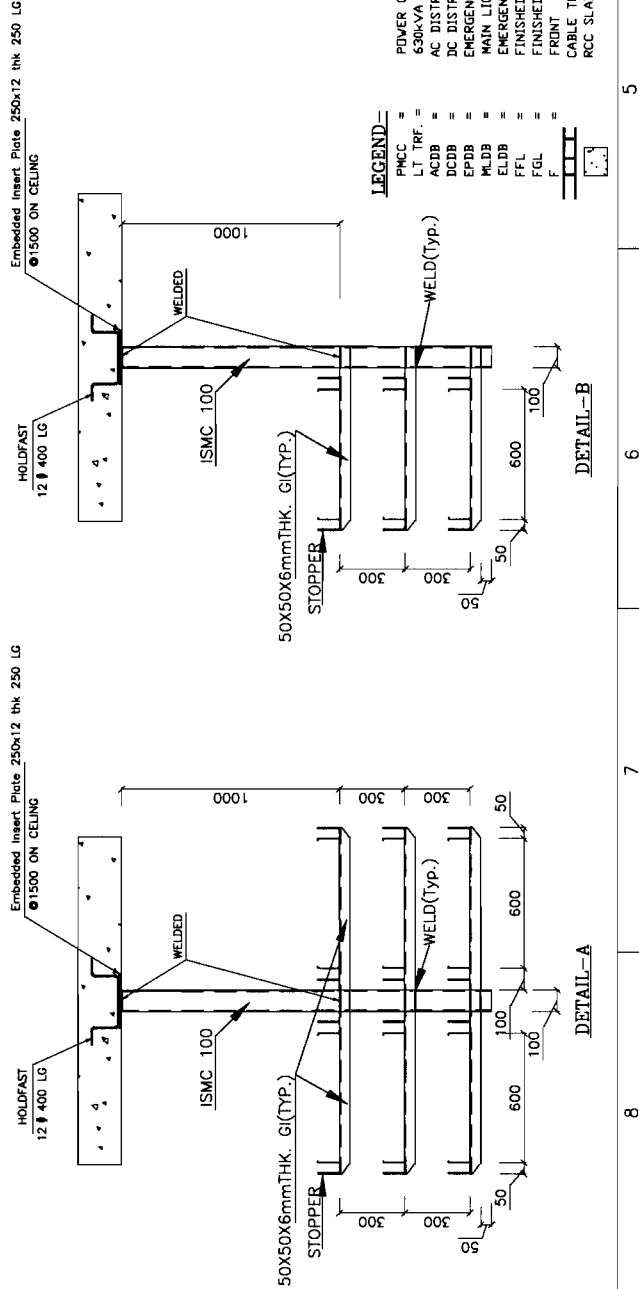




FIRST FLOOR PLAN AT RL73.50M FFL



**SECTION – XX**










**TYPICAL PLINTH LEVEL**

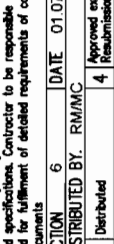
TYPICAL PLINTH LEVEL

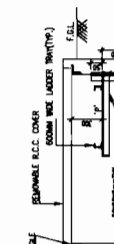
GENERAL INFORMATION		STATUS OF DRAWING		DESCRIPTION		SECTIONAL ELEVATION OF		400 KV SWITCHYARD	
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PROJECT NAME 1000		DATE 10/10/10		DRAWN BY 1000		CHECKED BY 1000		APPROVED BY 1000	
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PROJECT LEGAL AFFAIRS 1000		DATE 10/10/10		DRAWN BY 1000		CHECKED BY 1000		APPROVED BY 1000	
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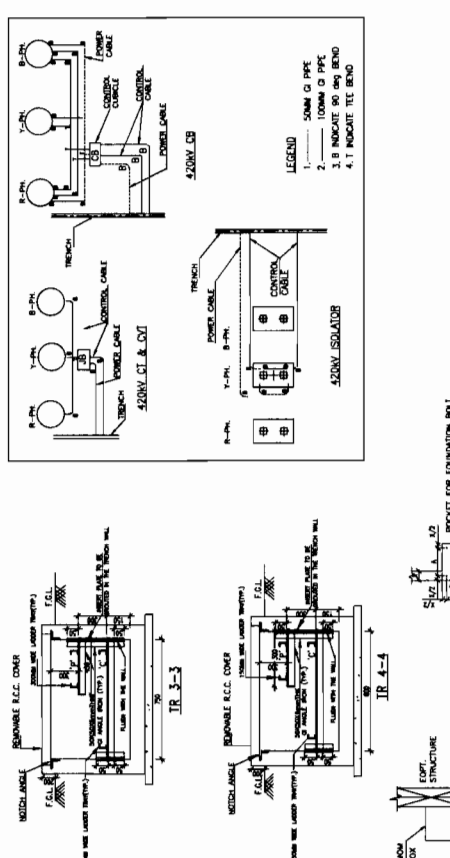
 <b>DEVELOPMENT CONSULTANT</b> <b>PHILIPPINES LIMITED</b> ENGINEERING, DESIGN, SURVEYING, DETAIL		DATE	01/07/15
<b>REVIEWED only for general conformance with contract drawings and specifications. Contractor is responsible for any errors and for fulfillment of detailed requirements of contract documents.</b>		<b>6</b> <b>APPROVED BY: RM/MAC</b>	<b>APPROVED except as noted. No amendments required.</b>
<b>1</b> Distributed		<b>4</b>	<b>APPROVED except as noted. No amendments required.</b>
<b>2</b> Approved		<b>5</b>	<b>APPROVED except as noted. No amendments required.</b>
<b>3</b> Approved except as noted. Forward final drawings.		<b>6</b>	<b>FOR INFORMATION ONLY</b>
<b>SEE COVERING LETTER</b>		<b>LETTER REF NO. 1737</b>	
<b>DATE</b>		<b>01/07/15</b>	





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ROUTING SLIP FOR THE FOLLOWING INFORMATION

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