

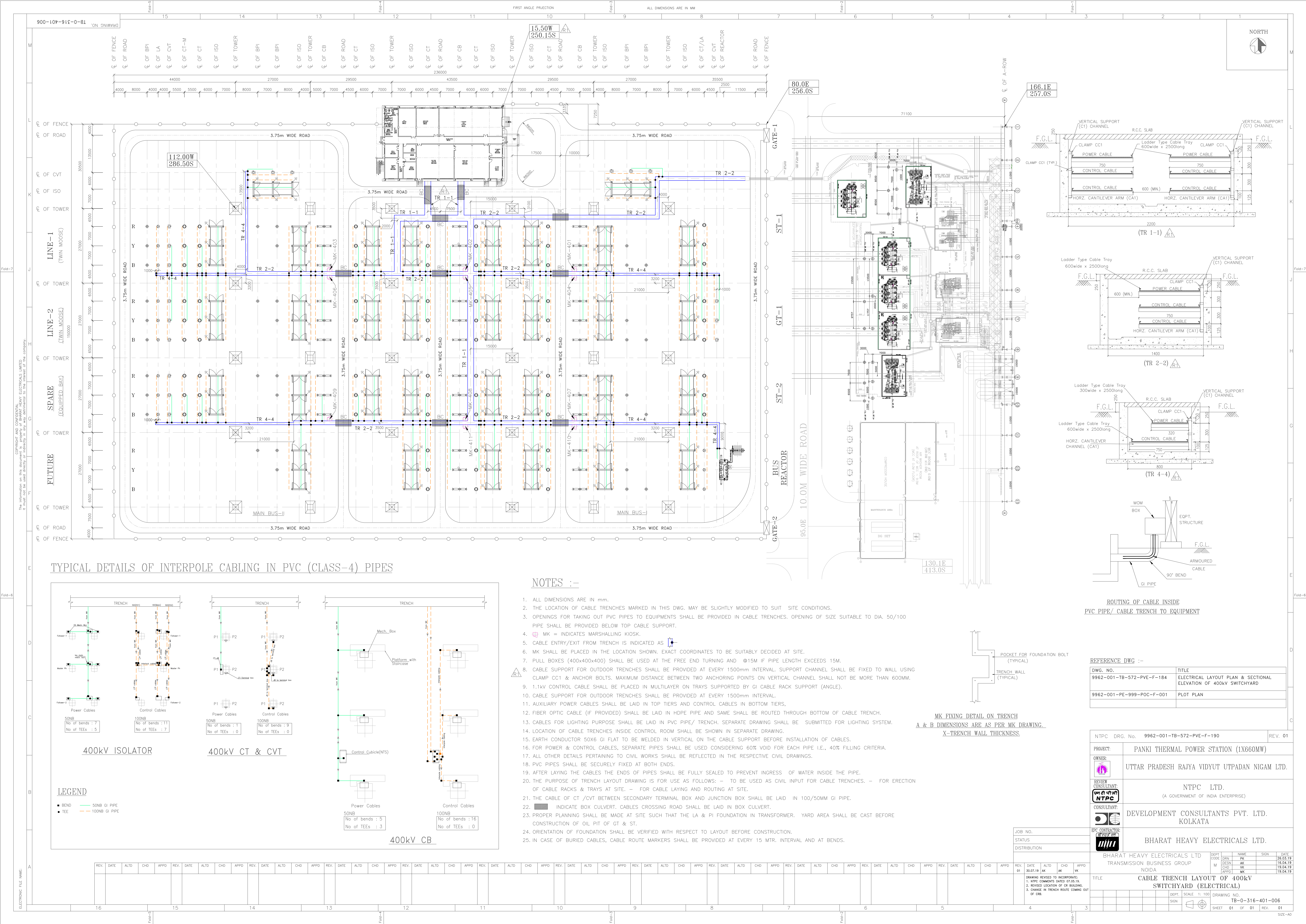
CLARIFICATION/ COMPLIANCE REPORT

400 kV Switchyard at Panki Thermal Power Project (1 X 660 MW)

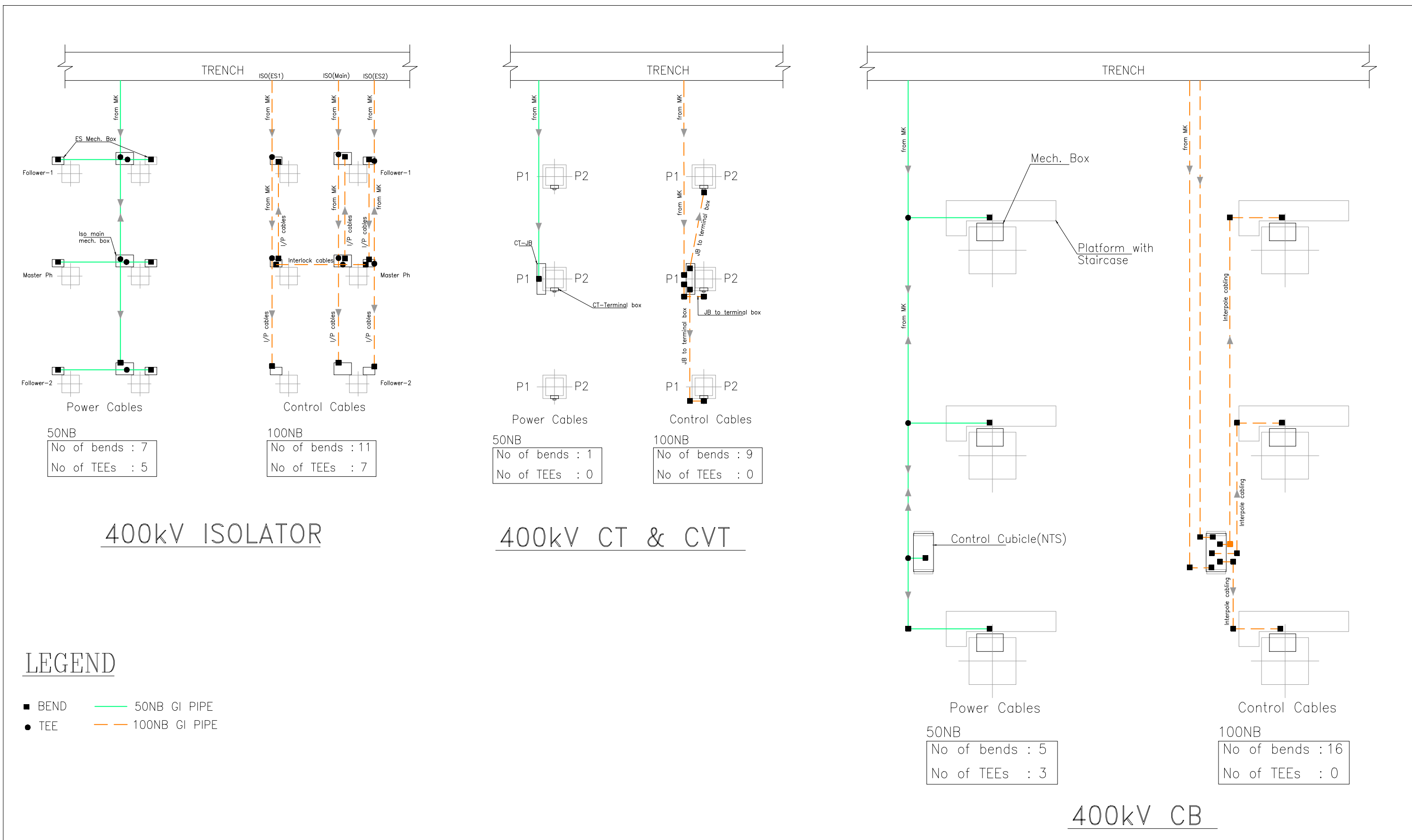
DRG. CABLE TRENCH LAYOUT OF 400kV SWITCHYARD (ELECTRICAL)

DRG NO. 9962-001-TB-572-PVE-F-190

SL. NO.	NTPC/ Customer COMMENTS	BHEL COMPLIANCE/ CLARIFICATION
NTPC comments dtd. 31.07.19		
1	As per the Chapter-26 cabling system, The cable tray support arrangement shall be C1 / C2 channels , with cantilever arms. Change the tray arrangement accordingly .	Noted & incorporated. Bolted type arrangement is shown in the revised layout with rack assembly made up of channels C1. The revised arrangement is in line with the BHEL PEM document : "CABLE TRAY SUPPORT SYSTEM - DETAILS & DRAWINGS FOR CHANNELS, ARMS, BRACKETS AND OTHER HARDWARE. , DRG. NO.: 9962-001-PE-215-PVE-B-005"
2	1. SHOW LOCATION OF CABLE TRENCH SUMP PIT AND MARK REFERENCE TO CABLE TRENCH SUMP PIT DRAWING. 2. SHOW CABLE TRENCH CROSSING ROAD AND DRAWIN DETAILS OR MARK REFERENCE. 3. INDICATE LONGITUDINAL AND LATERA SLOPE OF CABLE TRENCHES. 4. MARK REFEREBCE TO INTERANAL AND EXTERNAL CABLE TRENCH SECTION DRAWING.	This document is electrical drawing (refer the document description in MDL) submitted for the purpose of getting approval of trench sections (width & no. of tiers) and route of trench. Based on approval of this layout, a separate civil document: "OVERALL FOUNDATION & CABLE TRENCH LAYOUT & SECTION DETAILS (CIVIL) DRG. No. 9962-001-TB-572-PVC-V-018" will be submitted. All the desired details (as asked in the comment) will be shown in the civil drawing. As this drawing is for the purpose of input to our civil group, kindly approve the same. We confirm that the all these comments will be incorporated in the separate civil drawing.
Additional changes done in layout of Switchyard		
1	Entry route in building revised to incorporate the increase in trench width (Section 1-1).	
2	Co-ordinate of CRB modified as per revised trench entry in building. Same shall also be reflected in revised Layout of Switchyard.	

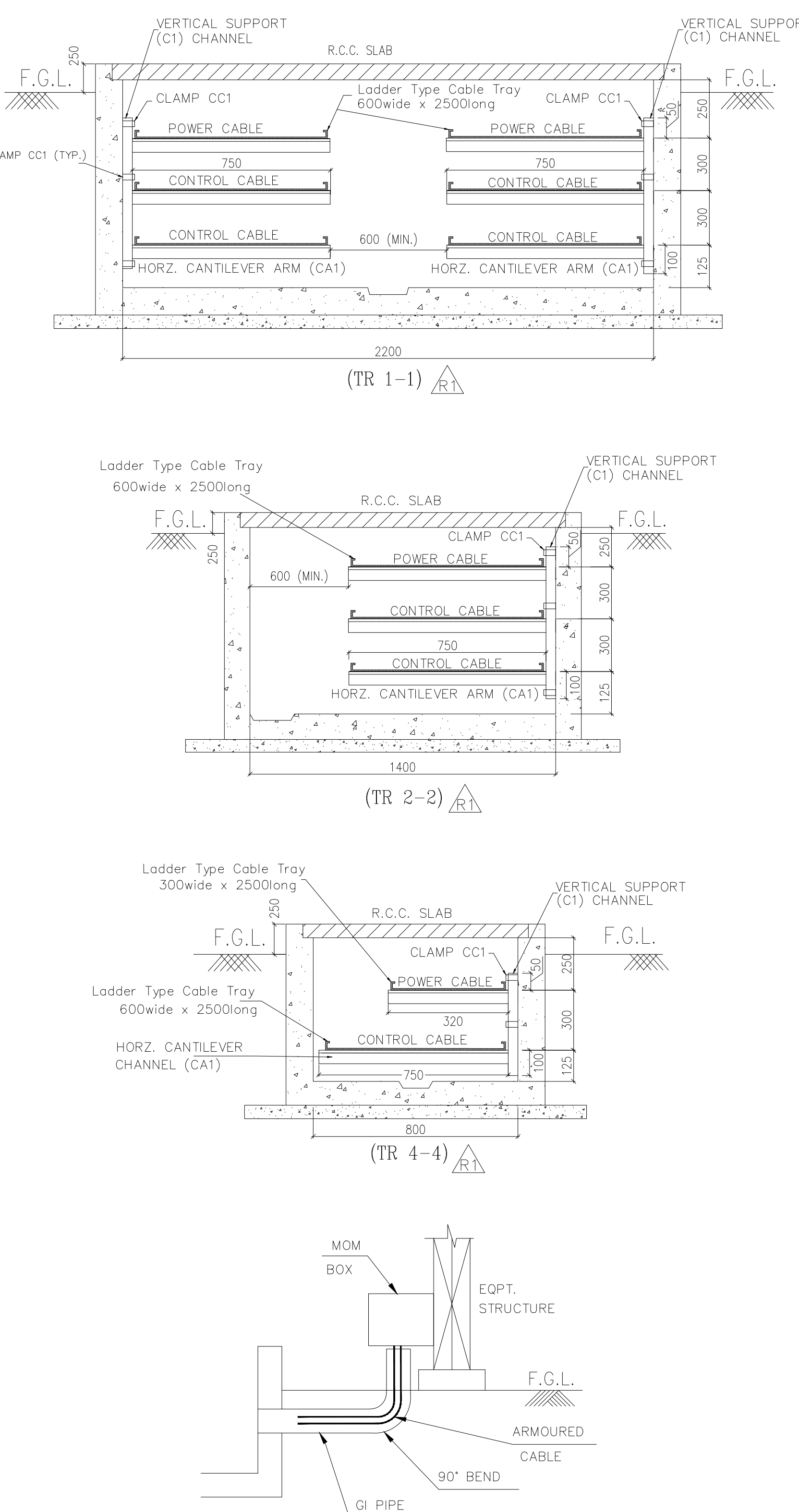


TYPICAL DETAILS OF INTERPOLE CABLING IN PVC (CLASS-4) PIPES






NOTES :-

- 1. ALL DIMENSIONS ARE IN MM.
- 2. THE LOCATION OF CABLE TRENCHES MARKED IN THIS DWG. MAY BE SLIGHTLY MODIFIED TO SUIT SITE CONDITIONS.
- 3. OPENINGS FOR TAKING OUT PVC PIPES TO EQUIPMENTS SHALL BE PROVIDED IN CABLE TRENCHES. OPENING OF SIZE SUITABLE TO DIA. 50/100 PIPE SHALL BE PROVIDED BELOW TOP CABLE SUPPORT.
- 4. MK = INDICATES MARSHALLING KIOSK.
- 5. CABLE ENTRY/EXIT FROM TRENCH IS INDICATED AS [Symbol].
- 6. MK SHALL BE PLACED IN THE LOCATION SHOWN. EXACT COORDINATES TO BE SUITABLY DECIDED AT SITE.
- 7. PULL BOXES (400x400x400) SHALL BE USED AT THE FREE END TURNING AND 15M IF PIPE LENGTH EXCEEDS 15M.
- 8. CABLE SUPPORT FOR OUTDOOR TRENCHES SHALL BE PROVIDED AT EVERY 1500mm INTERVAL. SUPPORT CHANNEL SHALL BE FIXED TO WALL USING CLAMP CC1 & ANCHOR BOLTS. MAXIMUM DISTANCE BETWEEN TWO ANCHORING POINTS ON VERTICAL CHANNEL SHALL NOT BE MORE THAN 600MM.
- 9. 1.1kV CONTROL CABLE SHALL BE PLACED IN MULTILAYER ON TRAYS SUPPORTED BY GI CABLE RACK SUPPORT (ANGLE).
- 10. CABLE SUPPORT FOR OUTDOOR TRENCHES SHALL BE PROVIDED AT EVERY 1500mm INTERVAL.
- 11. AUXILIARY POWER CABLES SHALL BE LAID IN TOP TIERS AND CONTROL CABLES IN BOTTOM TIERS.
- 12. FIBER OPTIC CABLE (IF PROVIDED) SHALL BE LAID IN HDPE PIPE AND SAME SHALL BE ROUTED THROUGH BOTTOM OF CABLE TRENCH.
- 13. CABLES FOR LIGHTING PURPOSE SHALL BE LAID IN PVC PIPE/ TRENCH. SEPARATE DRAWING SHALL BE SUBMITTED FOR LIGHTING SYSTEM.
- 14. LOCATION OF CABLE TRENCHES INSIDE CONTROL ROOM SHALL BE SHOWN IN SEPARATE DRAWING.
- 15. EARTH CONDUCTOR 50x6 GI FLAT TO BE WELDED IN VERTICAL ON THE CABLE SUPPORT BEFORE INSTALLATION OF CABLES.
- 16. FOR POWER & CONTROL CABLES, SEPARATE PIPES SHALL BE USED CONSIDERING 60% VOID FOR EACH PIPE I.E., 40% FILLING CRITERIA.
- 17. ALL OTHER DETAILS PERTAINING TO CIVIL WORKS SHALL BE REFLECTED IN THE RESPECTIVE CIVIL DRAWINGS.
- 18. PVC PIPES SHALL BE SECURELY FIXED AT BOTH ENDS.
- 19. AFTER LAYING THE CABLES THE ENDS OF PIPES SHALL BE FULLY SEALED TO PREVENT INGRESS OF WATER INSIDE THE PIPE.
- 20. THE PURPOSE OF TRENCH LAYOUT DRAWING IS FOR USE AS FOLLOWS: - TO BE USED AS CIVIL INPUT FOR CABLE TRENCHES. - FOR ERECTION OF CABLE RACKS & TRAYS AT SITE. - FOR CABLE LAYING AND ROUTING AT SITE.
- 21. THE CABLE OF CT /CVT BETWEEN SECONDARY TERMINAL BOX AND JUNCTION BOX SHALL BE LAID IN 100/50MM GI PIPE.
- 22. [Symbol] INDICATE BOX CULVERT. CABLES CROSSING ROAD SHALL BE LAID IN BOX CULVERT.
- 23. PROPER PLANNING SHALL BE MADE AT SITE SUCH THAT THE LA & PI FOUNDATION IN TRANSFORMER. YARD AREA SHALL BE CAST BEFORE CONSTRUCTION OF OIL PIT OF GT & ST.
- 24. ORIENTATION OF FOUNDATION SHALL BE VERIFIED WITH RESPECT TO LAYOUT BEFORE CONSTRUCTION.
- 25. IN CASE OF BURIED CABLES, CABLE ROUTE MARKERS SHALL BE PROVIDED AT EVERY 15 MTR. INTERVAL AND AT BENDS.



MK FIXING DETAIL ON TRENCH
A & B DIMENSIONS ARE AS PER MK DRAWING.
X-TRENCH WALL THICKNESS.

REFERENCE DWG :-	
DWG. NO.	TITLE
9962-001-TB-572-PVE-F-184	ELECTRICAL LAYOUT PLAN & SECTIONAL ELEVATION OF 400KV SWITCHYARD
9962-001-PE-999-POC-F-001	PLOT PLAN

NTPC DRG. No. 9962-001-TB-572-PVE-F-190		REV. 01	
PROJECT:	PANKI THERMAL POWER STATION (1X660MW)		
OWNER:	UTTAR PRADESH RAJYA VIDYUT UTPADAN NIGAM LTD.		
 REVIEW CONSULTANT:	NTPC LTD. (A GOVERNMENT OF INDIA ENTERPRISE)		
CONSULTANT:	DEVELOPMENT CONSULTANTS PVT. LTD. KOLKATA		
 EXECUTIVE CONTRACTOR:	BHARAT HEAVY ELECTRICALS LTD.		
	BHARAT HEAVY ELECTRICALS LTD TRANSMISSION BUSINESS GROUP NOIDA		
DEPT.	NAME	DATE	SIGN
M	DRN.	AK	26.03.19
	DESIGN	AK	16.04.19
	CHECK	AK	16.04.19
	APPROV	AK	19.04.19

TITLE		DEPT.	SCALE	1:100	DRAWING NO.	DATE
CABLE TRENCH LAYOUT OF 400KV SWITCHYARD (ELECTRICAL)					TB-0-316-401-006	
SIGN						
SHEET	01	OF	01	REV.	01	

CONSENT AND CONFIDENTIALITY: The information on this document is property of BHARAT HEAVY ELECTRICALS LIMITED. It shall not be used directly or indirectly in any way detrimental to the interest of the company.

15.50W 250.15S
80.0E 256.0S
166.1E 257.0S
112.00W 286.50S
130.1E 413.0S